UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 90/013,740 | 05/18/2016 | 8155012 | 31AE-226116 | 1868 |

27572 7590 10/27/2017

HARNESS, DICKEY & PIERCE, P.L.C.
P.O. BOX 828
BLOOMFIELD HILLS, MI 48303

| EXAMINER | |
|---|---|
| CRAVER, CHARLES R | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 3992 | |

| MAIL DATE | DELIVERY MODE |
|---|---|
| 10/27/2017 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

**DO NOT USE IN PALM PRINTER**

(THIRD PARTY REQUESTER'S CORRESPONDENCE ADDRESS)

SHEPPARD, MULLIN, RICHTER & HAMPTON LLP
379 LYTTON AVENUE
PALO ALTO, CA 94301

# *EX PARTE* REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. *90/013,740*.

PATENT NO. *8155012*.

ART UNIT *3992*.

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

PTOL-465 (Rev.07-04)

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

## BEFORE THE PATENT TRIAL AND APPEAL BOARD

Application Number: 90/013,740
Filing Date: May 18, 2016
Appellant(s): 8155012

____________________
Jeffrey Snyder
For Appellant

## EXAMINER'S ANSWER

This is in response to the appeal brief filed August 16, 2017

**(1) Grounds of Rejection to be Reviewed on Appeal**

Every ground of rejection set forth in the Office action dated February 16, 2017 from which the appeal is taken is being maintained by the examiner except for the grounds of rejection (if any) listed under the subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

The following ground(s) of rejection are applicable to the appealed claims.

Rejections below that were provided essentially as presented in the Request for reexamination are referred thereto by number which corresponds to those presented in the Order Granting Reexamination mailed 6/21/2016.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

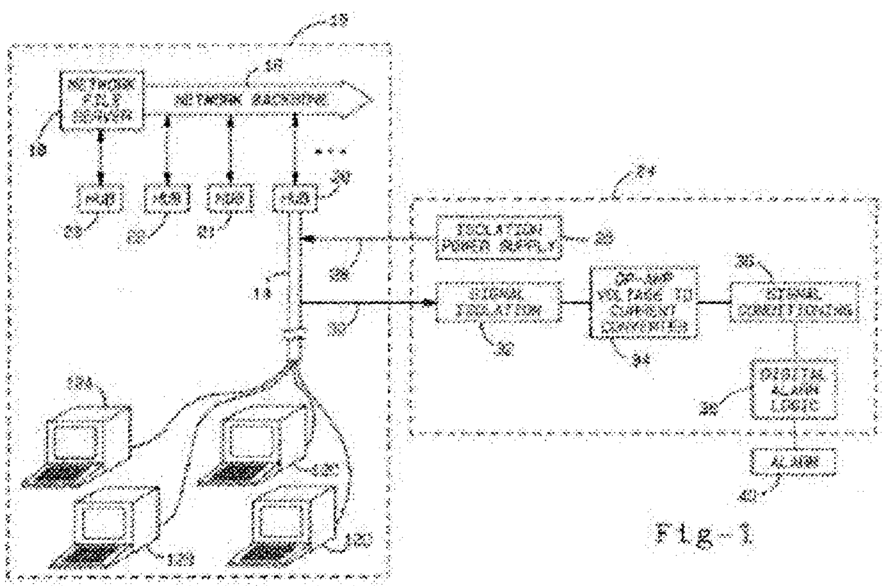
> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

***CUMMINGS/MAMAN***

**REJ 13)** Claims 1-3, 5, 6, 10, 11, 13, 16, 18, 19, 22, 24-33, 35, 36, 40-41, 43, 46, 48, 49, 52, 54-73, 76, 80-88, 91, 93-96, 98-104 and 106 are rejected under pre-AIA 35 USC 103(a) as being obvious over Cummings in view of Maman.

**CUMMINGS:**

Cummings was issued to the owner of the ‘012 patent in 1995. Many of the teachings of the ‘012 patent are found in Cummings. Figure 1 illustrates a network with a path that includes both data and power, as demonstrated by the use of an isolation power supply 26 and signal isolation 32:




Cummings, FIG. 1.

**MAMAN:**

Maman is provided for the sole purpose of illustrating detection of impedance over A.C. power lines for the purpose of theft prevention. (Corresponding references with which Maman is combined use D.C. power and the detection would be of voltage, current, or resistance, whereas in an A.C. power context, the detection would be of voltage, current, or impedance) Maman teaches:

> In the embodiment of the invention to be described hereinafter, the connecting cable comprises a first connector adapted to be removably connected to the electrical equipment, a second connector adapted to be removably connected to the power source through the detection and alarm device, power conductors connecting the first connector to the second connector, and first and second status conductors adapted to exhibit a first impedance value between the individual status conductors corresponding to the first state of the cable when the electrical equipment is connected to the equipment and a second impedance value between the individual status conductors corresponding to the second state of the cable when the electrical equipment is disconnected from the cable. Maman, col. 2 ll. 31-45.
>
> FIG. 3 is illustrative:

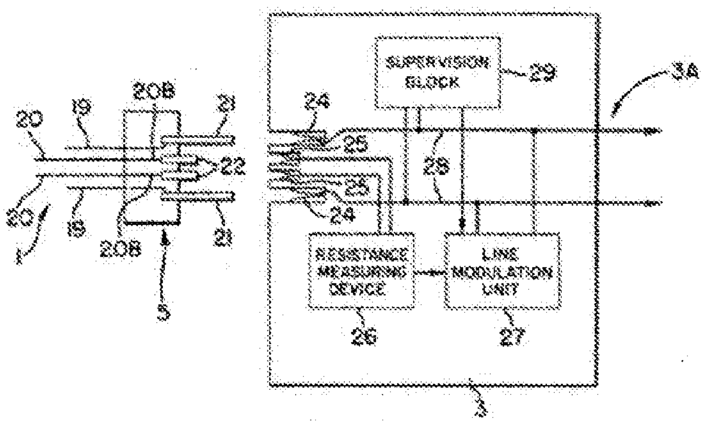



FIG. 3

FIG. 3, Maman.

It should be noted resistance (as in “Resistance Measuring Device 26”) is a component of impedance.

As to **claims 1-3, 5, 6, 10, 11, 13, 16, 18, 19, 22, 24-33, 35, 36, 40-41, 43, 46, 48, 49, 52, 54-73, 76, 80-88, 91, 93-96, 98-104 and 106**, the unmodified rejection from the Final rejection is as follows:

| **Claim 1** | **Prior Art** |
|---|---|
| 1. A method for adapting a piece of Ethernet data terminal equipment, the piece of Ethernet data terminal equipment having an Ethernet connector, the method comprising: | Cummings teaches Ethernet. See, e.g., Cummings, col. 3 ll. 18-19.<br><br>Maman teaches a method for adapting a piece of data terminal equipment (such as a computer), the data terminal equipment having a connector. See, Maman, FIG. 1.<br><br>Maman does not explicitly teach Ethernet, but IEEE 802.3i, which is AAPA, is part of the IEEE 802.3 (Ethernet) Standards. |
| selecting contacts of the Ethernet connector comprising a plurality of contacts, the selected contacts comprising at least one of the plurality of contacts of the Ethernet connector and at least another one of the plurality of contacts of the Ethernet connector; coupling at least one path across the selected contacts of the Ethernet connector; and | Cummings teaches "In accordance with conventional wiring approaches, data communication link 14 generally includes a plurality of pairs of transmit wires 44 and 46 as well as a plurality of pairs of receive wires (not shown) connected to each of personal computers 12a through 12d." Cummings, col. 3 ll. 37-42. See also, Cummings, col. 4 ll. 20-24 ("Transmit wires 44a through 44d and 46a through 46d are existing wires found within data communication link 14 that are selectively tapped as pairs in accordance with the present invention to provide current loops 50a through 50d"). |
| associating distinguishing information about the piece of Ethernet data terminal equipment to impedance within the at least one path. | Cummings actually claims "said respective pairs of data communication lines are associated with different ones of the associated pieces of equipment," "supplying a low DC current signal to each current loop so as to achieve continuous current flow through each current loop while each of said associated pieces of equipment is physically connected to said network via the data communication lines," and sensing "DC current signal in each of said current loops so as to detect a change in current flow indicative of disconnection of one of said pieces of |

| | |
|---|---|
| | associated equipment." Cummings, claim 14; see also claims 1 and 9 for similar language.<br><br>Maman teaches associating distinguishing information about the data terminal equipment to impedance within a corresponding path. Maman, col. 2 ll. 31-45 ("first and second status conductors adapted to exhibit a first impedance value between the individual status conductors corresponding to the first state of the cable when the electrical equipment is connected to the equipment and a second impedance value between the individual status conductors corresponding to the second state of the cable when the electrical equipment is disconnected from the cable"); see also, *id.*, FIG. 3. |

Cummings teaches the use of Ethernet to couple equipment, such as computers, to a network via data communication lines. Cummings controls voltage to create current. The control of current using voltage demonstrates an understanding of Ohm's Law, which, assuming active elements, can be characterized as V = IZ, where V is voltage, I is current, and Z is impedance. Because Cummings knows Ohm's Law, the voltage across the path, and the current through the path, Cummings also knows the impedance and can associate distinguishing information about the equipment to impedance within the path. For example, when current drops to 0 because the path is interrupted, impedance also drops to 0. It may be noted that even if there are no active elements, impedance includes resistance and, therefore, a path without active elements can also be defined using V = IZ (as opposed to V = IR).

To the extent it is determined a person of ordinary skill in the art of electronics does not know Ohm's Law, Cummings can be combined with Maman, which explicitly teaches associating distinguishing information about the data terminal equipment to impedance within a corresponding path.

The 802.3i standard specifies a cable with certain characteristics, such as 8 contacts that can be allocated into contact pairs. With specific reference to the claim language, “selecting contacts” involves picking one contact pair of the various possible permutations. The “selected contacts” therefore comprise at least one of the plurality of contacts of the Ethernet connector and at least another one of the plurality of contacts of the Ethernet connector (i.e., the pair). A path is coupled across contact pairs, and specifically across the “selected contacts.” IEEE 802.3i does not explicitly teach associating distinguishing information about the piece of equipment to impedance within the path. However, Maman, in a related field of endeavor, teaches associating distinguishing information about a piece of data terminal equipment (which in the context of IEEE 802.3i would be Ethernet data terminal equipment) to impedance within a path.

Please note the reasons for combining from the Final Action, as follows:

Cummings measures and detects fluctuations in electrical conditions on a network path to determine connectivity state of data terminal equipment, explicitly in an Ethernet network. Maman describes a connectivity detection system that explicitly mentions impedance.

The differences between Cummings and the ‘012 patent are quite small. The patents are co-owned and Cummings explicitly mentions Ethernet. The ‘012 patent goes into more detail regarding various components of Ethernet systems, all of which were known, as is discussed in more detail later, but still simply describes a connectivity state detection system as was described by Cummings.

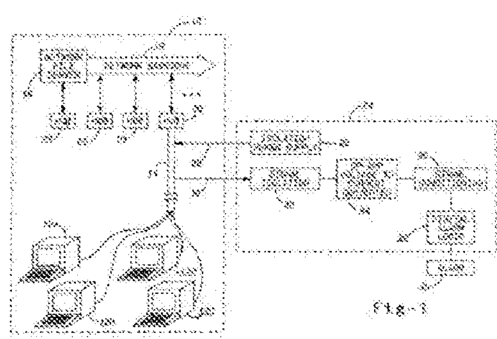
As well as the Graham Inquiries and rationale under KSR in the Final action, as follows:

The scope and content of the prior art includes Ohm's law, V = IR, which expresses the relationship between voltage, current, and resistance, and which can be rewritten to take into account reactive elements to which AC voltage or current is applied as V = IZ, where Z represents impedance. The level of skill of an ordinary person of skill in the art should include at least the level of skill of college-level electrical engineering (and specifically Ohm's Law) and inventors of the abovementioned patents. The level of skill of an ordinary person of skill in the art should also include at least the level of creativity to apply well-known electrical engineering principles across standards, such as IEEE 802.3 standards for Ethernet networks (as provided in AAPA), and to utilize well known circuit components in standard ways.

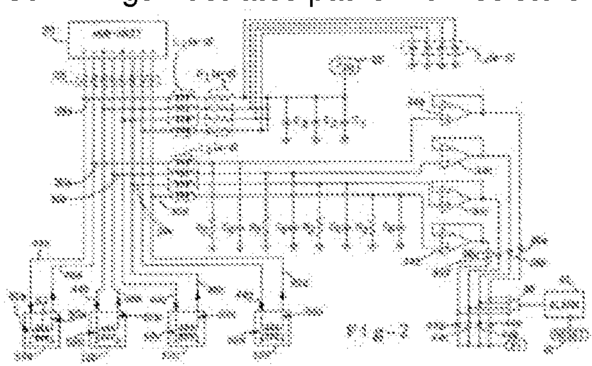
The Examination Guidelines for Determining Obviousness Under 35 U.S.C. 103 in view of the Supreme Court Decision in KSR International Co. v. Teleflex Inc., 72 FR 57526 (Oct. 10, 2007), 1324 Off. Gaz. Pat. Office 23 (Nov. 6, 2007) (2007 KSR Guidelines) have been incorporated into the MPEP. See MPEP 2141 (8th ed. 2001 (Rev. 6, Sept. 2007). The Examination Guidelines Update: Developments in the Obviousness Inquiry After KSR v. Teleflex, which became effective September 1, 2010, highlights case law developments on obviousness under 35 U.S.C. 103 since the 2007 decision by the United States Supreme Court in KSR Int'l Co. v. Teleflex Inc. Guidelines state that the teaching-suggestion-motivation test is one possible approach to support an obviousness determination. Six other rationales identified in the Guidelines include:

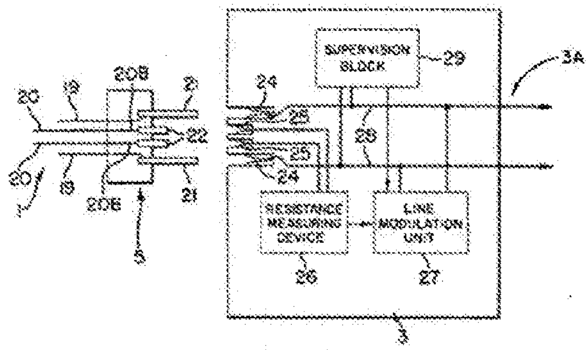
(1) combining prior art elements according to known methods to yield predictable results; (2) simple substitution of one known element for another to obtain predictable results; (3) use of a known technique to improve similar devices, methods, or products in the same way; (4) applying a known technique to a known device, method, or product ready for improvement to yield predictable results; (5) obvious to try—choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success; and (6) known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art.

Therefore it would have been obvious to combine the references.

| **Claim 2:** | **Prior Art:** |
|---|---|
| 2. The method according to claim 1 wherein the piece of Ethernet data terminal equipment is a personal computer. | The reasons for rejecting claim 1, from which claim 2 depends, are provided above. Claim 2 requires the Ethernet data terminal equipment be a personal computer.<br><br>Cummings teaches Ethernet. See, e.g., Cummings, col. 3 11. 18-19. Cummings also illustrates computers 12A-12D (data terminal equipment) in FIG. 1:<br><br><br>Cummings, FIG. 1. |

| Claim 3: | Prior Art: |
|---|---|
| 3. The method according to claim 1 wherein the associating distinguishing information about the piece of Ethernet data terminal equipment to impedance within the at least one path comprises associating identifying information about the piece of Ethernet data terminal equipment to impedance within the at least one path. | The reasons for rejecting claim 1, from which claim 3 depends, are provided above. Claim 3 requires associating identifying information about the equipment to impedance.<br><br>As discussed above, Cummings understands the relationship between current and impedance. Cummings also teaches "detection of a current flow discontinuity further energizes the appropriate light emitting diodes 44a through 44d associated with the disconnected personal computer 12." Thus, Cummings teaches associating identifying information about a computer to impedance.<br><br>Maman teaches "the connecting cable 1 is adapted such that when the equipment 2 is disconnected from the cable 1, as when the equipment 2 is removed from female connector 4 or the cable 1 is cut, the cable changes from a first or closed to second or open state, causing the device 3 to generate an alarm signal which contains a unique address identifying the device 3." Because Maman knows a unique address identifying the device and which is associated with the impedance, Maman teaches associating identifying information about the equipment to impedance. |
| **Claim 5:** | **Prior Art:** |
| 5. The method according to claim 1 wherein the impedance within the at least one path is part of a detection protocol. | The reasons for rejecting claim 1, from which claim 5 depends, are provided above. Claim 5 requires the impedance is part of a detection protocol.<br><br>Cummings also teaches a theft detection protocol. Cummings, col. 1 11. 8-12 ("This invention relates generally to theft protection security systems and, more particularly, to a network security system for detecting the unauthorized removal of remotely located electronic equipment from a network.") |
| **Claims 6 and 16:** | **Prior Art:** |
| 6. The method according to claim 1 wherein the piece of Ethernet | The reasons for rejecting claim 1, from which claims 6 and 16 depend, are provided above. Claims 6 and |

| | |
|---|---|
| data terminal equipment is a piece of BaseT Ethernet data terminal equipment.<br><br>16. The method according to claim 1 wherein the piece of Ethernet data terminal equipment is a piece of BaseT Ethernet data terminal equipment. | 16 require BaseT Ethernet data terminal equipment. (Claims 6 and 16 are identical.)<br><br>BaseT is not described in the '012 patent; the designation "BaseT" is found only in the claims. However, 10BASE-T, for example, is described in 802.3i. A piece of Ethernet data terminal equipment (such as an Ethernet-capable computer) would presumably be a "BaseT Ethernet data terminal equipment" if it used 10BASE-T.<br><br>Using broadest reasonable interpretation of the term "BaseT," Cummings teaches "BaseT." See, e.g., col. 3 ll. 35-37. |
| **Claim 10:** | **Prior Art:** |
| 10. The method according to claim 1 wherein the coupling at least one path across the selected contacts comprises coupling at least one path having at least one resistor. | The reasons for rejecting claim 1, from which claim 10 depends, are provided above. Claim 10 requires a resistor in the path.<br><br>Cummings illustrates paths with resistors:<br><br>Cummings, FIG. 2<br><br>Manan illustrates a "Resistance Measuring Device 26" that measures resistance on the path: |

| | |
|---|---|
| | <br>FIG. 3<br>FIG. 3, Maman. |
| **Claim 11:** | **Prior Art:** |
| 11. The method according to claim 1 wherein the coupling at least one path across the selected contacts comprises coupling two paths across the selected contacts. | The reasons for rejecting claim 1, from which claim 11 depends, are provided above. Claim 11 requires coupling two paths across the selected contacts.<br><br>Because Cummings teaches a combined communication and power path (see, e.g., Cummings, FIG. 1), Cummings teaches coupling two paths across the selected contacts.<br><br>AAPA illustrates contacts 1, 2 and 3, 6, which are respectively associated with a first path (TD+, TD-) and a second path (RD-, RD+). |
| **Claim 13:** | **Prior Art:** |
| 13. The method according to claim 1 wherein the coupling at least one path across the selected contacts comprises coupling at least one path having a controller across the selected contacts. | The reasons for rejecting claim 1, from which claim 13 depends, are provided above. Claim 13 requires a controller to be on the path.<br><br>A controller is not described in the '012 patent; the word "controller" is found only in the claims. As such, it is not entirely clear what is meant by the term. However, a broadest reasonable interpretation of the claim language is embodied in the "network security system 24" of Cummings. Cummings, col. 2 11. 65-68 ("a network security system 24 is provided therein for achieving theft protection of electronic computer equipment associated with a computer network 10"). |

| **Claim 18:** | **Prior Art:** |
|---|---|
| 18. The method according to claim 1 wherein the associating distinguishing information about the piece of Ethernet data terminal equipment to impedance within the at least one path comprises associating distinguishing information related to an electrical aspect of the piece of Ethernet data terminal equipment to impedance within the at least one path. | The reasons for rejecting claim 1, from which claim 18 depends, are provided above. Claim 18 requires associating distinguishing information related to an electrical aspect of the equipment to impedance. As discussed above, Cummings understands the relationship between current and impedance. Cummings also teaches “detection of a current flow discontinuity further energizes the appropriate light emitting diodes 44a through 44d associated with the disconnected personal computer 12.” Thus, Cummings teaches associating distinguishing information related to an electrical aspect, e.g., whether the computer is electrically connected to the network, to impedance. Maman teaches “the connecting cable 1 is adapted such that when the equipment 2 is disconnected from the cable 1, as when the equipment 2 is removed from female connector 4 or the cable 1 is cut, the cable changes from a first or closed to second or open state, causing the device 3 to generate an alarm signal which contains a unique address identifying the device 3.” Because Maman knows a unique address identifying the device and which is associated with the impedance, Maman teaches associating distinguishing information related to an electrical aspect, e.g., whether the equipment is electrically connected to the network, to impedance. |
| **Claim 19:** | **Prior Art:** |
| 19. The method according to claim 1 wherein the associating distinguishing information about the piece of Ethernet data terminal equipment to impedance within the at least one path comprises associating distinguishing information related to a physical aspect of the piece of Ethernet data terminal equipment to impedance within the at least one path. | The reasons for rejecting claim 1, from which claim 19 depends, are provided above. Claim 19 requires associating distinguishing information related to a physical aspect of the equipment to impedance.<br><br>As discussed above, Cummings understands the relationship between current and impedance. Cummings also teaches “detection of a current flow discontinuity further energizes the appropriate light emitting diodes 44a through 44d associated with the disconnected personal computer 12.” Thus, Cummings teaches associating distinguishing information related to a physical aspect, e.g., |

| | |
|---|---|
| | whether the computer is physically connected to a network, to impedance.<br><br>Maman teaches "the connecting cable 1 is adapted such that when the equipment 2 is disconnected from the cable 1, as when the equipment 2 is removed from female connector 4 or the cable 1 is cut, the cable changes from a first or closed to second or open state, causing the device 3 to generate an alarm signal which contains a unique address identifying the device 3." Because Maman knows a unique address identifying the device and which is associated with the impedance, Maman teaches associating distinguishing information related to a physical aspect, e.g., whether the equipment is physically connected to a network, to impedance. |
| **Claim 22:** | **Prior Art:** |
| 22. The method according to claim 1 wherein the impedance within the at least one path is a function of voltage across the selected contacts. | The reasons for rejecting claim 1, from which claim 22 depends, are provided above. Claim 22 requires impedance be a function of voltage across the selected contacts.<br><br>Cummings teaches "The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d." Cummings, col. 3 ll. 53-56.<br><br>Maman teaches associating distinguishing information about the data terminal equipment to impedance within a corresponding path. Maman, col. 2 ll. 31-45 ("first and second status conductors adapted to exhibit a first impedance value between the individual status conductors corresponding to the first state of the cable when the electrical equipment is connected to the equipment and a second impedance value between the individual status conductors corresponding to the second state of the cable when the electrical equipment is disconnected from the cable"); see also, id., FIG. 3.<br><br>The function of voltage across the selected contacts |

| | |
|---|---|
| | is not defined in the '012 patent specification; the function is found only in the claims. However, the function is Ohm's Law: V = IR rewritten for circuits with reactive elements as V = IZ, where Z (impedance) replaces R (resistance). There is no alternative but for impedance to be a function of voltage across the selected contacts in accordance with the two century old law. This function is inherent in any of the electrical engineering references included. |
| **Claim 24:** | **Prior Art:** |
| 24. The method according to claim 1 further comprising physically connecting the adapted piece of Ethernet data terminal equipment to a network. | The reasons for rejecting claim 1, from which claim 24 depends, are provided above. Claim 24 requires connecting the equipment to a network.<br><br>Cummings teaches: "FIG. 3 illustrates the connection of the network security system 24 to an existing computer network 10." Cummings, col. 5 ll. 34-35. |
| **Claim 25 and 29:** | **Prior Art:** |
| 25. The method according to claim 1 wherein the selected contacts are the same contacts used for normal network communication.<br><br>29. The method according to any one of claims 1 through 24 and claim 27 wherein the selected contacts are at least some of the same contacts used for normal network communication. | The reasons for rejecting claim 1, from which claim 25 depends, are provided above. The reasons for rejecting claims 1-24, from which claim 29 depends, are provided above. Claims 25 and 29 require contacts are used for normal network communication.<br><br>Cummings illustrates a path that includes both communication and power. See, Cummings, FIG. 1 (data communication link 14). |
| **Claim 26 and 30:** | **Prior Art:** |
| 26. The method according to claim 25 wherein the normal network communication is BaseT Ethernet communication.<br><br>30. The method according to claim 29 wherein the normal network communication is BaseT | The reasons for rejecting claim 25, from which claim 26 depends, are provided above. The reasons for rejecting claim 29, from which claim 30 depends, are provided above. Claims 26 and 29 require the normal network communication of claim 25 is BaseT Ethernet communication.<br><br>BaseT is not described in the '012 patent; the |

| | |
|---|---|
| Ethernet communication. | designation “BaseT” is found only in the claims. However, 10BASE-T, for example, is described in 802.3i. A piece of Ethernet data terminal equipment (such as an Ethernet-capable computer) would presumably be a “BaseT Ethernet data terminal equipment” if it used 10BASE-T.<br><br>Using broadest reasonable interpretation of the term “BaseT,” Cummings teaches “BaseT.” See, e.g., col. 3 ll. 35-37. |
| **Claim 27 and 28:** | **Prior Art:** |
| 27. The method according to claim 1 wherein the at least one path coupled across the selected contacts is formed through the piece of Ethernet data terminal equipment.<br><br>28. The method according to any one of claims 1 through 26 wherein the at least one path coupled across the selected contacts is formed through the piece of Ethernet data terminal equipment. | The reasons for rejecting claim 1, from which claim 27 depends, are provided above. The reasons for rejecting claims 1-26, from which claim 28 depends, are provided above. Claims 27 and 28 require the path be formed through the Ethernet data terminal equipment.<br><br>Cummings teaches: “The low current power signal flows through an internal path provided by existing circuitry in personal computer 12a.” Cummings, col. 4 ll. 27-30. |
| | |
| **Claim 31:** | **Prior Art:** |
| 31. An adapted piece of Ethernet data terminal equipment comprising: | Cummings teaches Ethernet. See, e.g., Cummings, col. 3 ll. 18-19.<br><br>Maman teaches adapted data terminal equipment (such as a computer). See, Maman, FIG. 1. Maman does not explicitly teach Ethernet, but IEEE 802.3i, which is AAPA, is part of the IEEE 802.3 (Ethernet) Standards. |
| an Ethernet connector comprising a plurality of contacts; and<br><br>at least one path coupled across selected contacts, the selected contacts comprising at least one | Cummings teaches “In accordance with conventional wiring approaches, data communication link 14 generally includes a plurality of pairs of transmit wires 44 and 46 as well as a plurality of pairs of receive wires (not shown) connected to each of personal computers 12a through 12d.” Cummings, col. 3 ll. 37-42. See also, |

| | |
|---|---|
| of the plurality of contacts of the Ethernet connector and at least another one of the plurality of contacts of the Ethernet connector, | Cummings, col. 4 ll. 20-24 ("Transmit wires 44a through 44d and 46a through 46d are existing wires found within data communication link 14 that are selectively tapped as pairs in accordance with the present invention to provide current loops 50a through 50d."). |
| wherein distinguishing information about the piece of Ethernet data terminal equipment is associated to impedance within the at least one path. | Cummings actually claims "said respective pairs of data communication lines are associated with different ones of the associated pieces of equipment," "supplying a low DC current signal to each current loop so as to achieve continuous current flow through each current loop while each of said associated pieces of equipment is physically connected to said network via the data communication lines," and sensing "DC current signal in each of said current loops so as to detect a change in current flow indicative of disconnection of one of said pieces of associated equipment." Cummings, claim 14; see also claims 1 and 9 for similar language.<br><br>Maman teaches associating distinguishing information about the data terminal equipment to impedance within a corresponding path. Maman, col. 2 ll. 31-45 ("first and second status conductors adapted to exhibit a first impedance value between the individual status conductors corresponding to the first state of the cable when the electrical equipment is connected to the equipment and a second impedance value between the individual status conductors corresponding to the second state of the cable when the electrical equipment is disconnected from the cable"); see also, id., FIG. 3. |

Cummings teaches the use of Ethernet to couple equipment, such as computers, to a network via data communication lines. Cummings controls voltage to create current. The control of current using voltage demonstrates an understanding of Ohm's Law, which, assuming active elements, can be characterized as V = IZ, where V is voltage, I is current, and Z is impedance. Because Cummings knows Ohm's Law, the voltage across the path, and the current through the path, Cummings also knows the impedance and can associate distinguishing information about the equipment to impedance within the path. For example, when current drops to 0 because the path is interrupted, impedance also drops to 0. It may be noted that even if there are no active elements, impedance includes resistance and, therefore, a path without active elements can also be defined using V = IZ (as opposed to V = IR).

To the extent it is determined a person of ordinary skill in the art of electronics does not know Ohm's Law, Cummings can be combined with Manan, which explicitly teaches associating distinguishing information about the data terminal equipment to impedance within a corresponding path.

The 802.3i standard specifies a cable with certain characteristics, such as 8 contacts that can be allocated into contact pairs. With specific reference to the claim language, "selecting contacts" involves picking one contact pair of the various possible permutations. The "selected contacts" therefore comprise at least one of the plurality of contacts of the Ethernet connector and at least another one of the plurality of contacts of the Ethernet connector (i.e., the pair). A path is coupled across contact pairs, and specifically across the "selected contacts." IEEE 802.3i does not explicitly teach associating distinguishing information about the piece of equipment to impedance within the path. However, Maman, in a related field of endeavor, teaches associating distinguishing information about a piece of data terminal equipment (which in the context of IEEE 802.3i would be Ethernet data terminal equipment) to impedance within a path.

Please note the reasons for combining from the Final Action, as follows:

Cummings measures and detects fluctuations in electrical conditions on a network path to determine connectivity state of data terminal equipment, explicitly in an Ethernet network. Maman describes a connectivity detection system that explicitly mentions impedance.

The differences between Cummings and the '012 patent are quite small. The patents are co-owned and Cummings explicitly mentions Ethernet. The '012 patent goes into more detail regarding various components of Ethernet systems, all of which were known, as is discussed in more detail later, but still simply describes a connectivity state detection system as was described by Cummings.

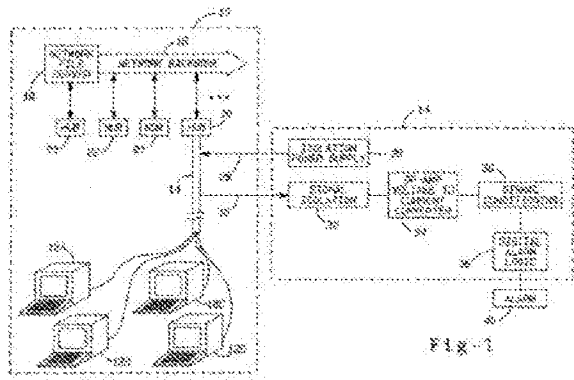
As well as the Graham Inquiries and rationale under KSR in the Final action, as follows:

The scope and content of the prior art includes Ohm's law, V = IR, which expresses the relationship between voltage, current, and resistance, and which can be rewritten to take into account reactive elements to which AC voltage or current is applied as V = IZ, where Z represents impedance. The level of skill of an ordinary person of skill in the art should include at least the level of skill of college-level electrical engineering (and specifically Ohm's Law) and inventors of the abovementioned patents. The level of skill of an ordinary person of skill in the art should also include at least the level of creativity to apply well-known electrical engineering principles across standards, such as IEEE 802.3 standards for Ethernet networks (as provided in AAPA), and to utilize well known circuit components in standard ways.

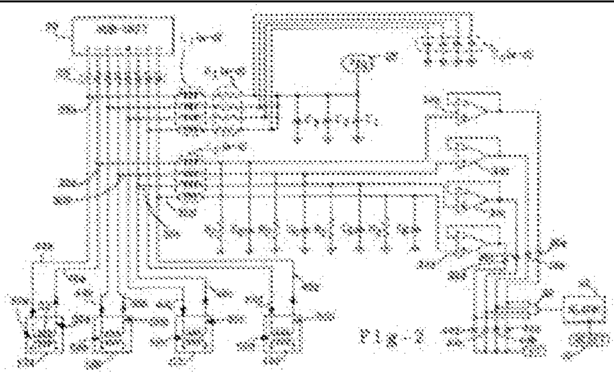
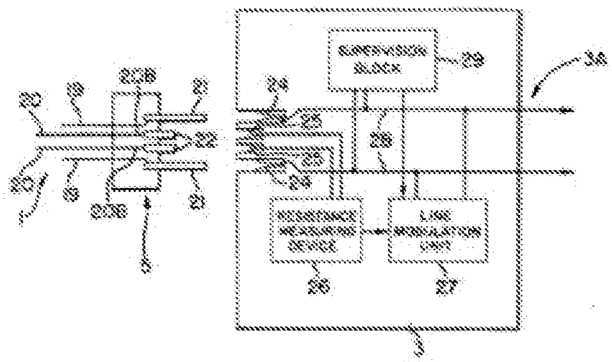
The Examination Guidelines for Determining Obviousness Under 35 U.S.C. 103 in view of the Supreme Court Decision in KSR International Co. v. Teleflex Inc., 72 FR 57526 (Oct. 10, 2007), 1324 Off. Gaz. Pat. Office 23 (Nov. 6, 2007) (2007 KSR Guidelines) have been incorporated into the MPEP. See MPEP 2141 (8th ed. 2001 (Rev. 6, Sept. 2007). The Examination Guidelines Update: Developments in the Obviousness Inquiry After KSR v. Teleflex, which became effective September 1, 2010, highlights case law developments on obviousness under 35 U.S.C. 103 since the 2007 decision by the United States Supreme Court in KSR Int'l Co. v. Teleflex Inc. Guidelines state that the teaching-suggestion-motivation test is one possible approach to support an obviousness determination. Six other rationales identified in the Guidelines include: (1) combining prior art elements according to known methods to yield predictable results; (2) simple substitution of one known element for another to obtain predictable results; (3) use of a known technique to improve similar devices, methods, or products in the same way; (4) applying a known technique to a known device, method, or product ready for improvement to yield predictable results; (5) obvious to try—choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success; and (6) known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art.

Therefore it would have been obvious to combine the references.

| **Claim 32:** | **Prior Art:** |
|---|---|
| 32. The piece of Ethernet data terminal equipment according to | The reasons for rejecting claim 31, from which claim 32 depends, are provided above. Claim 32 requires |

| | |
|---|---|
| claim 31 wherein the piece of Ethernet data terminal equipment is a personal computer. | the Ethernet data terminal equipment be a personal computer.<br><br>Cummings teaches Ethernet. See, e.g., Cummings, col. 3 ll. 18-19. Cummings also illustrates computers 12A-12D (data terminal equipment) in FIG. 1:<br><br>Cummings, FIG. 1. |
| **Claim 33:** | **Prior Art:** |
| 33. The piece of Ethernet data terminal equipment according to claim 31 wherein the distinguishing information about the piece of Ethernet data terminal equipment associated to impedance within the at least one path comprises identifying information about the piece of Ethernet data terminal equipment. | The reasons for rejecting claim 31, from which claim 33 depends, are provided above. Claim 33 requires associating identifying information about the equipment to impedance. As discussed above, Cummings understands the relationship between current and impedance. Cummings also teaches “detection of a current flow discontinuity further energizes the appropriate light emitting diodes 44a through 44d associated with the disconnected personal computer 12.” Thus, Cummings teaches associating identifying information about a computer to impedance.<br><br>Maman teaches “the connecting cable 1 is adapted such that when the equipment 2 is disconnected from the cable 1, as when the equipment 2 is removed from female connector 4 or the cable 1 is cut, the cable changes from a first or closed to second or open state, causing the device 3 to generate an alarm signal which contains a unique address identifying the device 3.” Because Maman knows a unique address identifying the device and which is associated with the impedance, Maman teaches associating identifying information about the |

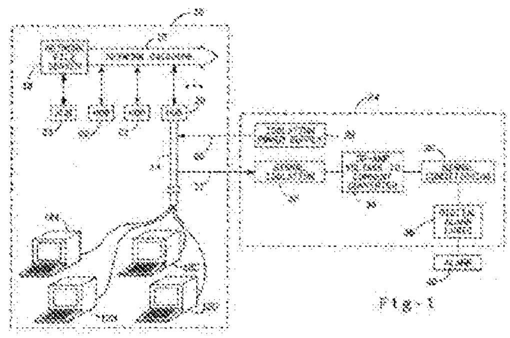
| | |
|---|---|
| | equipment to impedance. |
| **Claim 35:** | **Prior Art:** |
| 35. The piece of Ethernet data terminal equipment according to claim 31 wherein the impedance within the at least one path is part of a detection protocol. | The reasons for rejecting claim 31, from which claim 35 depends, are provided above. Claim 35 requires the impedance is part of a detection protocol.<br><br>Cummings also teaches a theft detection protocol. Cummings, col. 1 ll. 8-12 ("This invention relates generally to theft protection security systems and, more particularly, to a network security system for detecting the unauthorized removal of remotely located electronic equipment from a network.") |
| **Claims 36 and 46:** | **Prior Art:** |
| 36. The piece of Ethernet data terminal equipment according to claim 31 wherein the piece of Ethernet data terminal equipment is a piece of BaseT Ethernet data terminal equipment.<br><br>46. The piece of Ethernet data terminal equipment according to claim 31 wherein the piece of Ethernet data terminal equipment is a piece of BaseT Ethernet data terminal equipment | The reasons for rejecting claim 31, from which claims 36 and 46 depend, are provided above. Claims 36 and 46 require BaseT Ethernet data terminal equipment. (Claims 36 and 46 are identical.)<br><br>BaseT is not described in the '012 patent; the designation "BaseT" is found only in the claims. However, 10BASE-T, for example, is described in 802.3i. A piece of Ethernet data terminal equipment (such as an Ethernet-capable computer) would presumably be a "BaseT Ethernet data terminal equipment" if it used 10BASE-T.<br><br>Using broadest reasonable interpretation of the term "BaseT," Cummings teaches "BaseT." See, e.g., col. 3 ll. 35-37. |
| **Claim 40:** | **Prior Art:** |
| 40. The piece of Ethernet data terminal equipment according to claim 31 wherein the at least one path comprises at least one resistor. | The reasons for rejecting claim 31, from which claim 40 depends, are provided above. Claim 40 requires a resistor in the path.<br><br>Cummings illustrates paths with resistors: |

| | |
|---|---|
| | <br>Cummings, FIG. 2<br><br>Manan illustrates a “Resistance Measuring Device 26” that measures resistance on the path:<br><br><br>FIG. 3<br>FIG. 3, Manan |
| **Claim 41:** | **Prior Art:** |
| 41. The piece of Ethernet data terminal equipment according to claim 31 wherein the at least one path comprises two paths. | The reasons for rejecting claim 31, from which claim 41 depends, are provided above. Claim 41 requires coupling two paths across the selected contacts.<br><br>Because Cummings teaches a combined communication and power path (see, e.g., Cummings, FIG. 1), Cummings teaches coupling two paths across the selected contacts.<br><br>AAPA illustrates contacts 1, 2 and 3, 6, which are respectively associated with a first path (TD+, TD-) and a second path (RD-, RD+). |

| Claim 43: | Prior Art: |
|---|---|
| 43. The piece of Ethernet data terminal equipment according to claim 31 wherein the at least one path comprises a controller. | The reasons for rejecting claim 31, from which claim 43 depends, are provided above. Claim 43 requires a controller to be on the path.<br><br>A controller is not described in the ‘012 patent; the word “controller” is found only in the claims. As such, it is not entirely clear what is meant by the term. However, a broadest reasonable interpretation of the claim language is embodied in the “network security system 24” of Cummings. Cummings, col. 2 ll. 65-68 (“a network security system 24 is provided therein for achieving theft protection of electronic computer equipment associated with a computer network 10”). |
| **Claim 48:** | **Prior Art:** |
| 48. The piece of Ethernet data terminal equipment according to claim 31 wherein the distinguishing information is related to an electrical aspect of the piece of Ethernet data terminal equipment | The reasons for rejecting claim 31, from which claim 48 depends, are provided above. Claim 48 requires associating distinguishing information related to an electrical aspect of the equipment to impedance.<br><br>As discussed above, Cummings understands the relationship between current and impedance. Cummings also teaches “detection of a current flow discontinuity further energizes the appropriate light emitting diodes 44a through 44d associated with the disconnected personal computer 12.” Thus, Cummings teaches distinguishing information is related to an electrical aspect, e.g., whether the computer is electrically connected to the network, to impedance.<br><br>Maman teaches “the connecting cable 1 is adapted such that when the equipment 2 is disconnected from the cable 1, as when the equipment 2 is removed from female connector 4 or the cable 1 is cut, the cable changes from a first or closed to second or open state, causing the device 3 to generate an alarm signal which contains a unique address identifying the device 3.” Because Maman knows a unique address identifying the device and which is associated with the impedance, Maman teaches associating distinguishing information is |

| | |
|---|---|
| | related to an electrical aspect, e.g., whether the equipment is electrically connected to the network, to impedance. |
| **Claim 49:** | **Prior Art:** |
| 49. The piece of Ethernet data terminal equipment according to claim 31 wherein the distinguishing information is related to a physical aspect of the piece of Ethernet data terminal equipment | The reasons for rejecting claim 31, from which claim 49 depends, are provided above. Claim 49 requires associating distinguishing information related to a physical aspect of the equipment to impedance.<br><br>As discussed above, Cummings understands the relationship between current and impedance. Cummings also teaches “detection of a current flow discontinuity further energizes the appropriate light emitting diodes 44a through 44d associated with the disconnected personal computer 12.” Thus, Cummings teaches distinguishing information is related to an electrical aspect, e.g., whether the computer is physically connected to the network, to impedance.<br><br>Maman teaches “the connecting cable 1 is adapted such that when the equipment 2 is disconnected from the cable 1, as when the equipment 2 is removed from female connector 4 or the cable 1 is cut, the cable changes from a first or closed to second or open state, causing the device 3 to generate an alarm signal which contains a unique address identifying the device 3.” Because Maman knows a unique address identifying the device and which is associated with the impedance, Maman teaches associating distinguishing information is related to an electrical aspect, e.g., whether the equipment is physically connected to the network, to impedance. |
| **Claim 52:** | **Prior Art:** |
| 52. The piece of Ethernet data terminal equipment according to claim 31 wherein the impedance within the at least one path is a function of voltage across the selected contacts. | The reasons for rejecting claim 31, from which claim 52 depends, are provided above. Claim 52 requires impedance be a function of voltage across the selected contacts.<br><br>Cummings teaches “The network security system 24 includes an isolation power supply 26 which supplies |

| | |
|---|---|
| | a continuous direct current (DC) power signal to each of current loops 50a through 50d." Cummings, col. 3 ll. 53-56.<br><br>Maman teaches associating distinguishing information about the data terminal equipment to impedance within a corresponding path. Maman, col. 2 ll. 31-45 ("first and second status conductors adapted to exhibit a first impedance value between the individual status conductors corresponding to the first state of the cable when the electrical equipment is connected to the equipment and a second impedance value between the individual status conductors corresponding to the second state of the cable when the electrical equipment is disconnected from the cable"); see also, id., FIG. 3. The function of voltage across the selected contacts is not defined in the '012 patent specification; the function is found only in the claims. However, the function is Ohm's Law: V = IR rewritten for circuits with reactive elements as V = IZ, where Z (impedance) replaces R (resistance). There is no alternative but for impedance to be a function of voltage across the selected contacts in accordance with the two century old law. This function is inherent in any of the electrical engineering references included. |
| **Claim 54:** | **Prior Art:** |
| 54. The piece of Ethernet data terminal equipment according to claim 31 wherein the adapted piece of Ethernet data terminal equipment is physically connected to a network. | The reasons for rejecting claim 31, from which claim 54 depends, are provided above. Claim 54 requires connecting the equipment to a network.<br><br>Cummings illustrates computers 12A-12D physically connected to a network in FIG. 1: |

| | |
|---|---|
| | <br>Cummings, FIG. 1. |
| **Claim 55 and 59:** | **Prior Art:** |
| 55. The piece of Ethernet data terminal equipment according to claim 31 wherein the selected contacts are the same contacts used for normal network communication.<br><br>59. The piece of Ethernet data terminal equipment according to any one of claims 31 through 54 and claim 57 wherein the selected contacts are at least some of the same contacts used for normal network communication. | The reasons for rejecting claim 31, from which claim 55 depends, are provided above. The reasons for rejecting claims 31-54 and 57, from which claim 59 depends, are provided above. Claims 55 and 59 require contacts are used for normal network communication. Note: Claim 59 includes additional language “at least some of,” but claim construction is similar for “are the same contacts” and “are at least some of the same contacts.”<br><br>Cummings illustrates a path that includes both communication and power. See, Cummings, FIG. 1 (data communication link 14). |
| **Claim 56 and 60:** | **Prior Art:** |
| 56. The piece of Ethernet data terminal equipment according to claim 55 wherein the normal network communication is BaseT Ethernet communication.<br><br>60. The piece of Ethernet data terminal equipment according to claim 59 wherein the normal network communication is BaseT Ethernet communication. | The reasons for rejecting claim 55, from which claim 56 depends, are provided above. The reasons for rejecting claim 59, from which claim 60 depends, are provided above. Claims 56 and 60 require the normal network communication of claim 55 is BaseT Ethernet communication.<br><br>BaseT is not described in the ‘012 patent; the designation “BaseT” is found only in the claims. However, 10BASE-T, for example, is described in 802.3i. A piece of Ethernet data terminal equipment (such as an Ethernet-capable computer) would presumably be a “BaseT Ethernet data terminal equipment” if it used 10BASE-T. |

| | |
|---|---|
| | Using broadest reasonable interpretation of the term "BaseT," Cummings teaches "BaseT." See, e.g., col. 3 ll. 35-37. |
| **Claim 57 and 58:** | **Prior Art:** |
| 57. The piece of Ethernet data terminal equipment according to claim 31 wherein the at least one path coupled across the selected contacts is formed through the piece of Ethernet data terminal equipment.<br><br>58. The piece of Ethernet data terminal equipment according to any one of claims 31 through 56 wherein the at least one path coupled across the selected contacts is formed through the piece of Ethernet data terminal equipment. | The reasons for rejecting claim 31, from which claim 57 depends, are provided above. The reasons for rejecting claims 31-56, from which claim 58 depends, are provided above. Claims 57 and 58 require the path be formed through the Ethernet data terminal equipment.<br><br>Cummings teaches: "The low current power signal flows through an internal path provided by existing circuitry in personal computer 12a." Cummings, col. 4 ll. 27-30. |

| | |
|---|---|
| **Claim 61:** | **Prior Art:** |
| 61. The method according to claim 1 wherein the piece of Ethernet data terminal equipment is powered-on. | The reasons for rejecting claim 1, from which claim 61 depends, are provided above. Claim 61 requires the equipment is powered-on.<br><br>Cummings teaches a computer (data terminal equipment), which is powered-on during operation |
| **Claim 62:** | **Prior Art:** |
| 62. The method according to any one of claims 1 through 27 and claim 61 wherein the at least one path permits use of the selected contacts for Ethernet communication. | The reasons for rejecting claims 1-27 and 61, from which claim 62 depends, are provided above. Claim 62 requires the path permits Ethernet communication.<br><br>Cummings illustrates a path, which can be an Ethernet path that includes both communication and power. See, Cummings, FIG. 1 (data communication link 14). |
| **Claim 63:** | **Prior Art:** |

| | |
|---|---|
| 63. The method according to claim 62 wherein the selected contacts are used for Ethernet communication. | The reasons for rejecting claim 62, from which claim 63 depends, are provided above. Claim 63 requires the path that permits Ethernet communication is actually used for Ethernet communication.<br><br>Cummings illustrates a path, which can be an Ethernet path that includes both communication and power. See, Cummings, FIG. 1 (data communication link 14). |
| **Claim 64:** | **Prior Art:** |
| 64. The method according to claim 31 wherein the piece of Ethernet data terminal equipment is powered-on. | The reasons for rejecting claim 31, from which claim 64 depends, are provided above. Claim 64 requires the equipment is powered-on.<br><br>Cummings teaches a computer (data terminal equipment), which is powered-on during operation |
| **Claim 65:** | **Prior Art:** |
| 65. The method according to any one of claims 31 through 54 and claim 64 wherein the at least one path permits use of the selected contacts for Ethernet communication. | The reasons for rejecting claims 31-54 and 64, from which claim 65 depends, are provided above. Claim 65 requires the path permits Ethernet communication.<br><br>Cummings illustrates a path, which can be an Ethernet path that includes both communication and power. See, Cummings, FIG. 1 (data communication link 14). |
| **Claim 66:** | **Prior Art:** |
| 66. The method according to claim 65 wherein the selected contacts are used for Ethernet communication. | The reasons for rejecting claim 65, from which claim 66 depends, are provided above. Claim 66 requires the path that permits Ethernet communication is actually used for Ethernet communication.<br><br>Cummings illustrates a path, which can be an Ethernet path that includes both communication and power. See, Cummings, FIG. 1 (data communication link 14). |

| | |
|---|---|
| **Claim 67:** | **Prior Art:** |
| 67. A method for adapting a | Cummings teaches Ethernet. See, e.g., Cummings, |

| | |
|---|---|
| piece of terminal equipment, the piece of terminal equipment having an Ethernet connector, the method comprising: | col. 3 ll. 18-19. Maman teaches a method for adapting a piece of data terminal equipment (such as a computer), the data terminal equipment having a connector. See, Maman, FIG. 1. Maman does not explicitly teach Ethernet, but IEEE 802.3i, which is AAPA, is part of the IEEE 802.3 (Ethernet) Standards. |
| coupling at least one path across specific contacts of he Ethernet connector, the at least one path permits use of the specific contacts for Ethernet communication, the Ethernet connector comprising the contact 1 through the contact 8, the specific contacts of the Ethernet connector comprising at least one of the contacts of the Ethernet connector and at least another one of the contacts of the Ethernet connector; and | Cummings teaches "In accordance with conventional wiring approaches, data communication link 14 generally includes a plurality of pairs of transmit wires 44 and 46 as well as a plurality of pairs of receive wires (not shown) connected to each of personal computers 12a through 12d." Cummings, col. 3 ll. 37-42. See also, Cummings, col. 4 ll. 20-24 ("Transmit wires 44a through 44d and 46a through 46d are existing wires found within data communication link 14 that are selectively tapped as pairs in accordance with the present invention to provide current loops 50a through 50d"). |
| arranging impedance within the at least one path to distinguish the piece of terminal equipment. | Cummings actually claims "said respective pairs of data communication lines are associated with different ones ofthe associated pieces of equipment," "supplying a low DC current signal to each current loop so as to achieve continuous current flow through each current loop while each of said associated pieces of equipment is physically connected to said network via the data communication lines," and sensing "DC current signal in each of said current loops so as to detect a change in current flow indicative of disconnection of one of said pieces of associated equipment." Cummings, claim 14; see also claims 1 and 9 for similar language.<br><br>Maman teaches arranging impedance to distinguish the data terminal equipment. Maman, col. 2 ll. 31-45 ("first and second status conductors adapted to exhibit a first impedance value between the individual status conductors corresponding to the first state of the cable when the electrical equipment is connected to the equipment and a second impedance value between the individual status |

| | |
|---|---|
| | conductors corresponding to the second state of the cable when the electrical equipment is disconnected from the cable”); see also, id., FIG. 3. |

Cummings teaches the use of Ethernet to couple equipment, such as computers, to a network via data communication lines. Cummings controls voltage to create current. The control of current using voltage demonstrates an understanding of Ohm’s Law, which, assuming active elements, can be characterized as V = IZ, where V is voltage, I is current, and Z is impedance. Because Cummings knows Ohm’s Law, the voltage across the path, and the current through the path, Cummings also knows the impedance and can associate distinguishing information about the equipment to impedance within the path. For example, when current drops to 0 because the path is interrupted, impedance also drops to 0. It may be noted that even if there are no active elements, impedance includes resistance and, therefore, a path without active elements can also be defined using V = IZ (as opposed to V = IR).

To the extent it is determined a person of ordinary skill in the art of electronics does not know Ohm’s Law, Cummings can be combined with Manan, which explicitly teaches associating distinguishing information about the data terminal equipment to impedance within a corresponding path.

The 802.3i standard specifies a cable with certain characteristics, such as 8 contacts that can be allocated into contact pairs. With specific reference to the claim language, “selecting contacts” involves picking one contact pair of the various possible permutations. The “selected contacts” therefore comprise at least one of the plurality of contacts of the Ethernet connector and at least another one of the plurality of contacts of the Ethernet connector (i.e., the pair). A path is coupled across contact pairs, and specifically across the “selected contacts.” IEEE 802.3i does not explicitly teach associating distinguishing information about the piece of equipment to impedance within the path. However, Maman, in a related field of endeavor, teaches associating distinguishing information about a piece of data terminal equipment (which in the context of IEEE 802.3i would be Ethernet data terminal equipment) to impedance within a path.

Please note the reasons for combining from the Final Action, as follows:

Cummings measures and detects fluctuations in electrical conditions on a network path to determine connectivity state of data terminal equipment, explicitly in an Ethernet network. Maman describes a connectivity detection system that explicitly mentions impedance.

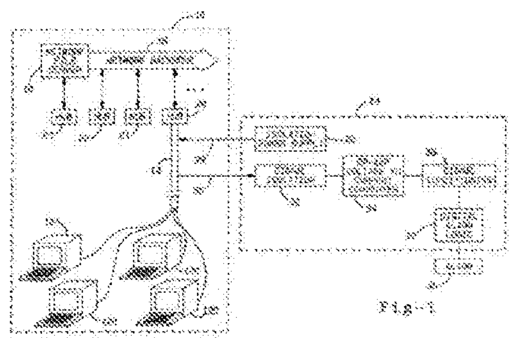
The differences between Cummings and the ‘012 patent are quite small. The patents are co-owned and Cummings explicitly mentions Ethernet. The ‘012 patent goes into more detail regarding various components of Ethernet systems, all of which were known, as is discussed in more detail later, but still simply describes a connectivity state detection system as was described by Cummings.

As well as the Graham Inquiries and rationale under KSR in the Final action, as follows:

The scope and content of the prior art includes Ohm’s law, $V = IR$, which expresses the relationship between voltage, current, and resistance, and which can be rewritten to take into account reactive elements to which AC voltage or current is applied as $V = IZ$, where Z represents impedance. The level of skill of an ordinary person of skill in the art should include at least the level of skill of college-level electrical engineering (and specifically Ohm's Law) and inventors of the abovementioned patents. The level of skill of an ordinary person of skill in the art should also include at least the level of creativity to apply well-known electrical engineering principles across standards, such as IEEE 802.3 standards for Ethernet networks (as provided in AAPA), and to utilize well known circuit components in standard ways.

The Examination Guidelines for Determining Obviousness Under 35 U.S.C. 103 in view of the Supreme Court Decision in KSR International Co. v. Teleflex Inc., 72 FR 57526 (Oct. 10, 2007), 1324 Off. Gaz. Pat. Office 23 (Nov. 6, 2007) (2007 KSR Guidelines) have been incorporated into the MPEP. See MPEP 2141 (8th ed. 2001 (Rev. 6, Sept. 2007). The Examination Guidelines Update: Developments in the Obviousness Inquiry After KSR v. Teleflex, which became effective September 1, 2010, highlights case law developments on obviousness under 35 U.S.C. 103 since the 2007 decision by the United States Supreme Court in KSR Int'l Co. v. Teleflex Inc. Guidelines state that the teaching-suggestion-motivation test is one possible approach to support an obviousness determination. Six other rationales identified in the Guidelines include: (1) combining prior art elements according to known methods to yield predictable results; (2) simple substitution of one known element for another to obtain predictable results; (3) use of a known technique to improve similar devices, methods, or products in the same way; (4) applying a known technique to a known device, method, or product ready for improvement to yield predictable results; (5) obvious to try—choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success; and (6) known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art.

Therefore it would have been obvious to combine the references.

| **Claim 68:** | **Prior Art:** |
|---|---|
| 68. The method according to claim 67 wherein the piece of Ethernet data terminal equipment is a personal computer. | The reasons for rejecting claim 67, from which claim 68 depends, are provided above. Claim 68 requires the Ethernet data terminal equipment be a personal computer.<br><br>Cummings teaches Ethernet. See, e.g., Cummings, col. 3 ll. 18-19. Cummings also illustrates computers 12A-12D (data terminal equipment) in FIG. 1:<br><br><br>Cummings, FIG. 1. |
| **Claim 69:** | **Prior Art:** |
| 69. The method according to claim 67 wherein the arranging impedance within the at least one path to distinguish the piece of terminal equipment comprises arranging impedance within the at least one path to uniquely distinguish the piece of terminal equipment. | The reasons for rejecting claim 67, from which claim 69 depends, are provided above. Claim 69 requires uniquely distinguishing the piece of terminal equipment.<br><br>As discussed above, Cummings understands the relationship between current and impedance. As discussed above, Cummings understands the relationship between current and impedance. Cummings also teaches "detection of a current flow discontinuity further energizes the appropriate light emitting diodes 44a through 44d associated with the |

| | |
|---|---|
| | disconnected personal computer 12." Thus, Cummings teaches uniquely distinguishing a computer.<br><br>Maman teaches "the connecting cable 1 is adapted such that when the equipment 2 is disconnected from the cable 1, as when the equipment 2 is removed from female connector 4 or the cable 1 is cut, the cable changes from a first or closed to second or open state, causing the device 3 to generate an alarm signal which contains a unique address identifying the device 3." Because Maman knows a unique address identifying the device and which is associated with the impedance, Maman teaches uniquely distinguishing equipment. |
| **Claim 70:** | **Prior Art:** |
| 70. The method according to claim 67 wherein the arranging impedance within the at least one path to distinguish the piece of terminal equipment comprises arranging impedance within the at least one path to identify the piece of terminal equipment. | The reasons for rejecting claim 67, from which claim 70 depends, are provided above. Claim 70 requires identifying the equipment.<br><br>As discussed above, Cummings understands the relationship between current and impedance. As discussed above, Cummings understands the relationship between current and impedance. Cummings also teaches "detection of a current flow discontinuity further energizes the appropriate light emitting diodes 44a through 44d associated with the disconnected personal computer 12." Thus, Cummings teaches identifying a computer.<br><br>Maman teaches "the connecting cable 1 is adapted such that when the equipment 2 is disconnected from the cable 1, as when the equipment 2 is removed from female connector 4 or the cable 1 is cut, the cable changes from a first or closed to second or open state, causing the device 3 to generate an alarm signal which contains a unique address identifying the device 3." Because Maman knows a unique address identifying the device and which is associated with the impedance, Maman teaches identifying equipment. |
| **Claim 71:** | **Prior Art:** |

| | |
|---|---|
| 71. The method according to claim 67 wherein the arranging impedance within the at least one path to distinguish the piece of terminal equipment comprises arranging impedance within the at least one path to uniquely identify the piece of terminal equipment. | The reasons for rejecting claim 67, from which claim 71 depends, are provided above. Claim 71 requires uniquely identifying the equipment.<br><br>As discussed above, Cummings understands the relationship between current and impedance. As discussed above, Cummings understands the relationship between current and impedance. Cummings also teaches “detection of a current flow discontinuity further energizes the appropriate light emitting diodes 44a through 44d associated with the disconnected personal computer 12.” Thus, Cummings teaches uniquely identifying a computer.<br><br>Maman teaches “the connecting cable 1 is adapted such that when the equipment 2 is disconnected from the cable 1, as when the equipment 2 is removed from female connector 4 or the cable 1 is cut, the cable changes from a first or closed to second or open state, causing the device 3 to generate an alarm signal which contains a unique address identifying the device 3.” Because Maman knows a unique address identifying the device and which is associated with the impedance, Maman teaches uniquely identifying equipment. |
| **Claim 72:** | **Prior Art:** |
| 72. The method according to claim 67 wherein the piece of terminal equipment has a particular electrical aspect and the arranging impedance within the at least one path to distinguish the piece of terminal equipment comprises arranging impedance within the at least one path to distinguish that the piece of terminal equipment has the particular electrical aspect. | The reasons for rejecting claim 67, from which claim 72 depends, are provided above. Claim 72 requires [determining] equipment has a particular electrical aspect. It may be noted the claim requires “to distinguish that the piece of terminal equipment has the particular electrical aspect.” This does not make any sense, so the quoted claim language is interpreted to mean “to [determine] that the piece ofterminal equipment has the particular electrical aspect.”<br><br>As discussed above, Cummings understands the relationship between current and impedance. Cummings also teaches “detection of a current flow discontinuity further energizes the appropriate light emitting diodes 44a through 44d associated with the disconnected personal computer 12.” Thus, |

| | |
|---|---|
| | Cummings teaches distinguishing that the computer has an electrical aspect, e.g., whether the computer is electrically connected to the network. Maman teaches “the connecting cable 1 is adapted such that when the equipment 2 is disconnected from the cable 1, as when the equipment 2 is removed from female connector 4 or the cable 1 is cut, the cable changes from a first or closed to second or open state, causing the device 3 to generate an alarm signal which contains a unique address identifying the device 3.” Because Maman knows a unique address identifying the device and which is associated with the impedance,<br><br>Maman teaches distinguishing the equipment has an electrical aspect, e.g., whether the equipment is electrically connected to the network. |
| **Claim 73:** | **Prior Art:** |
| 73. The method according to claim 67 wherein the arranging impedance within the at least one path comprises arranging impedance within the at least one path to be part of a detection protocol. | The reasons for rejecting claim 67, from which claim 73 depends, are provided above. Claim 73 requires the impedance is part of a detection protocol. Cummings also teaches a theft detection protocol. Cummings, col. 1 ll. 8-12 (“This invention relates generally to theft protection security systems and, more particularly, to a network security system for detecting the unauthorized removal of remotely located electronic equipment from a network.”) |
| **Claim 76:** | **Prior Art:** |
| 76. The method according to claim 67 wherein the arranging impedance within the at least one path comprises arranging the impedance within the at least one path to draw DC current. | The reasons for rejecting claim 67, from which claim 76 depends, are provided above. Claim 76 requires drawing DC current.<br><br>Cummings teaches “The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d.” Cummings, col. 3 ll. 53-56. A DC power signal means DC current is drawn. |
| **Claim 80:** | **Prior Art:** |
| 80. The method according to claim 67 wherein the arranging | The reasons for rejecting claim 67, from which claim 80 depends, are provided above. Claim 80 requires |

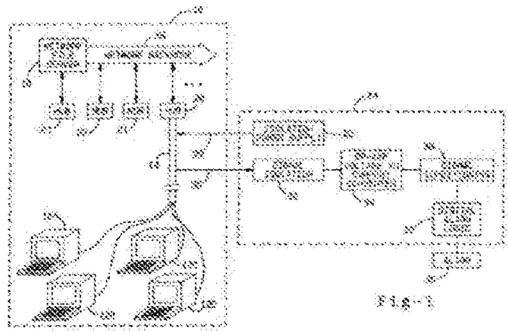
| | |
|---|---|
| impedance within the at least one path comprises arranging impedance within the at least one path to be a function of voltage across the selected contacts. | impedance be a function of voltage across the selected contacts.<br><br>The function of voltage across the selected contacts is not defined in the '012 patent specification; the function is found only in the claims. However, the function is Ohm's Law: V = IR rewritten for circuits with reactive elements as V = IZ, where Z (impedance) replaces R (resistance). There is no alternative but for impedance to be a function of voltage across the selected contacts in accordance with the two century old law. This function is inherent in any of the electrical engineering references included. |
| **Claim 81:** | **Prior Art:** |
| 81. The method according to claim 67 wherein the arranging impedance within the at least one path comprises arranging impedance within the at least one path to have a first impedance followed by a second impedance. | The reasons for rejecting claim 67, from which claim 81 depends, are provided above. Claim 81 requires the impedance be variable.<br><br>Cummings actually claims "said respective pairs of data communication lines are associated with different ones of the associated pieces of equipment," "supplying a low DC current signal to each current loop so as to achieve continuous current flow through each current loop while each of said associated pieces of equipment is physically connected to said network via the data communication lines," and sensing "DC current signal in each of said current loops so as to detect a change in current flow indicative of disconnection of one of said pieces of associated equipment." If a device is disconnected, causing current to drop to 0, impedance also drops to 0 and, therefore, a first impedance follows a second impedance. |
| **Claim 82:** | **Prior Art:** |
| 82. The method according to claim 67 wherein the arranging impedance within the at least one path comprises arranging impedance within the at least one path to have a first impedance for a first condition applied to the | The reasons for rejecting claim 67, from which claim 82 depends, are provided above. Claim 82 requires the impedance be variable.<br><br>Cummings actually claims "said respective pairs of data communication lines are associated with different ones of the associated pieces of |

| | |
|---|---|
| specific contacts followed by a second impedance for a second condition applied to the specific contacts. | equipment," "supplying a low DC current signal to each current loop so as to achieve continuous current flow through each current loop while each of said associated pieces of equipment is physically connected to said network via the data communication lines," and sensing "DC current signal in each of said current loops so as to detect a change in current flow indicative of disconnection of one of said pieces of associated equipment." If a device is disconnected, causing current to drop to 0, impedance also drops to 0 and, therefore, a first impedance (associated with a connected condition) follows a second impedance (associated with a disconnected condition). |
| **Claim 83:** | **Prior Art:** |
| 83. The method according to claim 82 wherein the first and second conditions applied to the specific contacts are voltage conditions. | The reasons for rejecting claim 82, from which claim 83 depends, are provided above. Claim 83 requires applying voltage conditions to the contacts to impact the conditions [impedance].<br><br>Cummings teaches "The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d." Cummings, col. 3 11. 53-56.<br><br>Maman teaches associating distinguishing information about the data terminal equipment to impedance within a corresponding path. Maman, col. 2 ll. 31-45 ("first and second status conductors adapted to exhibit a first impedance value between the individual status conductors corresponding to the first state of the cable when the electrical equipment is connected to the equipment and a second impedance value between the individual status conductors corresponding to the second state of the cable when the electrical equipment is disconnected from the cable"); see also, id., FIG. 3.<br><br>The function of voltage across the selected contacts is not defined in the '012 patent specification; the function is found only in the claims. However, the function is Ohm's Law: V = IR rewritten for circuits |

| | |
|---|---|
| | with reactive elements as V = IZ, where Z (impedance) replaces R (resistance). There is no alternative but for impedance to be a function of voltage across the selected contacts in accordance with the two century old law. This function is inherent in any of the electrical engineering references included. |
| **Claim 84:** | **Prior Art:** |
| 84. The method according to claim 83 wherein the voltage conditions are DC voltage conditions. | The reasons for rejecting claim 83, from which claim 84 depends, are provided above. Claim 84 requires applying DC voltage conditions to the contacts to impact the conditions [impedance].<br><br>Cummings teaches “The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d.” Cummings, col. 3 ll. 53-56. |
| **Claim 85:** | **Prior Art:** |
| 85. The method according to claim 82 wherein the first and second conditions applied to the specific contacts are current conditions. | The reasons for rejecting claim 82, from which claim 85 depends, are provided above. Claim 85 requires applying current conditions to the contacts to impact the conditions [impedance]. As discussed above, Cummings understands the relationship between current and impedance. Cummings also teaches “detection of a current flow discontinuity further energizes the appropriate light emitting diodes 44a through 44d associated with the disconnected personal computer 12.” Current flow discontinuity is a current condition. |
| **Claim 86:** | **Prior Art:** |
| 86. The method according to claim 83 wherein the current conditions are DC current conditions. | The reasons for rejecting claim 85, from which claim 86 depends, are provided above. Claim 86 requires applying DC current conditions to the contacts to impact the conditions [impedance]<br><br>Cummings teaches “The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d.” Cummings, col. 3 ll. 53-56 |

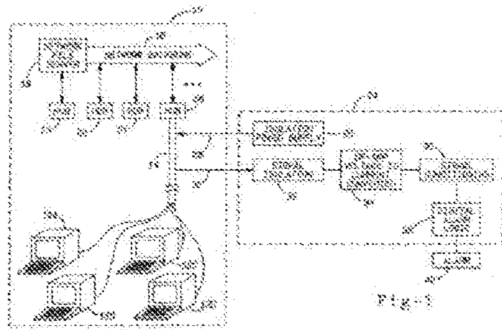
| **Claim 87:** | **Prior Art:** |
|---|---|
| 87. The method according to claim 67 wherein the piece of terminal equipment is powered-on. | The reasons for rejecting claim 67, from which claim 87 depends, are provided above.<br><br>Claim 87 requires the equipment is powered-on. Cummings teaches a computer (data terminal equipment), which is powered-on during operation. |
| **Claim 88:** | **Prior Art:** |
| 88. The method according to claim 67 wherein the coupling at least one path across the specific contacts comprises coupling a controller across the specific contacts. | The reasons for rejecting claim 67, from which claim 88 depends, are provided above. Claim 88 requires a controller to be on the path.<br><br>A controller is not described in the '012 patent; the word "controller" is found only in the claims. As such, it is not entirely clear what is meant by the term. However, a broadest reasonable interpretation of the claim language is embodied in the "network security system 24" of Cummings. Cummings, col. 2 ll. 65-68 ("a network security system 24 is provided therein for achieving theft protection of electronic computer equipment associated with a computer network 10"). |
| **Claim 91:** | **Prior Art:** |
| 91. The method according to claim 67 wherein the coupling at least one path across the specific contacts comprises coupling the at least one path internal to the piece of terminal equipment. | The reasons for rejecting claim 67, from which claim 91 depends, are provided above. Claim 91 requires the path be internal to the piece of terminal equipment.<br><br>Cummings teaches: "The low current power signal flows through an internal path provided by existing circuitry in personal computer 12a." Cummings, col. 4 ll. 27-30. |
| **Claim 93:** | **Prior Art:** |
| 93. The method according to any one of claim 67 wherein the specific contacts are used for Ethernet communication. | The reasons for rejecting claim 67, from which claim 93 depends, are provided above. Claim 93 requires the path is for Ethernet communication.<br><br>Cummings illustrates a path, which can be an Ethernet path that includes both communication and power. See, Cummings, FIG. 1 (data |

| | |
|---|---|
| | communication link 14). |
| **Claim 94:** | **Prior Art:** |
| 94. The method according to any one of claim 67 wherein the specific contacts are used for Ethernet communication and at least some of the specific contacts are actually carrying Ethernet signals. | The reasons for rejecting claim 67, from which claim 94 depends, are provided above. Claim 94 requires the path is for Ethernet communication and the path is active.<br><br>Cummings illustrates a path, which can be an Ethernet path, that includes both communication and power. See, Cummings, FIG. 1 (data communication link 14). |
| **Claim 95:** | **Prior Art:** |
| 95. The method according to any one of claim 67 wherein the specific contacts are used for Ethernet communication and at least some of the specific contacts are actually carrying DC current. | The reasons for rejecting claim 67, from which claim 95 depends, are provided above. Claim 95 requires the path is for Ethernet communication along with DC current.<br><br>Cummings illustrates a path, which can be an Ethernet path, that includes both communication and power. See, Cummings, FIG. 1 (data communication link 14). Cummings teaches "The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d." Cummings, col. 3 ll. 53-56. A DC power signal means DC current is drawn. |
| **Claim 96:** | **Prior Art:** |
| 96. The method according to claim 67 wherein the specific contacts are used for Ethernet communication and at least some of the specific contacts are actually carrying Ethernet signals and DC current. | The reasons for rejecting claim 67, from which claim 96 depends, are provided above. Claim 96 requires Ethernet and DC current.<br><br>Cummings illustrates a path, which can be an Ethernet path, that includes both communication and power. See, Cummings, FIG. 1 (data communication link 14). Cummings teaches "The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d." Cummings, col. 3 ll. 53-56. A DC power signal means DC current is drawn. |

| **Claim 98:** | **Prior Art:** |
|---|---|
| 98. The method according to claim 67 further comprising physically connecting the adapted piece of terminal equipment to a network. | The reasons for rejecting claim 67, from which claim 98 depends, are provided above. Claim 98 requires physically connecting the equipment to a network.<br><br>Cummings illustrates computers 12A-12D physically connected to a network in FIG. 1:<br><br>Cummings, FIG. 1 |
| **Claim 99:** | **Prior Art:** |
| 99. The method according to claim 67 further comprising at least one electrical condition applied to the specific contacts. | The reasons for rejecting claim 67, from which claim 99 depends, are provided above. Claim 99 requires an electrical condition be applied to the contacts.<br><br>Cummings teaches “The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d.” Cummings, col. 3 ll. 53-56.<br><br>Maman teaches associating distinguishing information about the data terminal equipment to impedance within a corresponding path. Maman, col. 2 ll. 31-45 (“first and second status conductors adapted to exhibit a first impedance value between the individual status conductors corresponding to the first state of the cable when the electrical equipment is connected to the equipment and a second impedance value between the individual status conductors corresponding to the second state of the cable when the electrical equipment is disconnected from the cable”); see also, id., FIG. 3. |
| **Claim 100:** | **Prior Art:** |

| | |
|---|---|
| 100. The method according to claim 99 wherein the at least one electrical condition comprises a voltage applied across the specific contacts. | The reasons for rejecting claim 69, from which claim 100 depends, are provided above. Claim 100 requires a voltage be applied across the contacts.<br><br>Cummings teaches "The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d." Cummings, col. 3 ll. 53-56.<br><br>Maman teaches associating distinguishing information about the data terminal equipment to impedance within a corresponding path. Maman, col. 2 ll. 31-45 ("first and second status conductors adapted to exhibit a first impedance value between the individual status conductors corresponding to the first state of the cable when the electrical equipment is connected to the equipment and a second impedance value between the individual status conductors corresponding to the second state of the cable when the electrical equipment is disconnected from the cable"); see also, id., FIG. 3.<br><br>The function of voltage across the selected contacts is not defined in the '012 patent specification; the function is found only in the claims. However, the function is Ohm's Law: V = IR rewritten for circuits with reactive elements as V = IZ, where Z (impedance) replaces R (resistance). There is no alternative but for impedance to be a function of voltage across the selected contacts in accordance with the two century old law. This function is inherent in any of the electrical engineering references included. |
| **Claim 101:** | **Prior Art:** |
| 101. The method according to claim 100 wherein the voltage is a DC voltage. | The reasons for rejecting claim 100, from which claim 101 depends, are provided above. Claim 101 requires DC voltage.<br><br>Cummings teaches "The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d." |

| | |
|---|---|
| | Cummings, col. 3 11. 53-56. |
| **Claim 102:** | **Prior Art:** |
| 102. The method according to claim 99 wherein the at least one electrical condition comprises a current applied to the specific contacts | The reasons for rejecting claim 102, from which claim 103 depends, are provided above. Claim 103 requires a DC current be applied to the contacts.<br><br>Cummings teaches "The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d." Cummings, col. 3 11. 53-56. |
| **Claim 103:** | **Prior Art:** |
| 103. The method according to claim 102 wherein the current is a DC current | The reasons for rejecting claim 102, from which claim 103 depends, are provided above. Claim 103 requires a DC current be applied to the contacts.<br><br>Cummings teaches "The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d." Cummings, col. 3 11. 53-56. |
| **Claim 104:** | **Prior Art:** |
| 104. The method according to claim 67 wherein Ethernet communication is BaseT Ethernet communication. | The reasons for rejecting claim 67, from which claim 104 depends, are provided above. Claim 104 requires BaseT Ethernet communication.<br><br>BaseT is not described in the '012 patent; the designation "BaseT" is found only in the claims. However, 10BASE-T, for example, is described in 802.3i. A piece of Ethernet data terminal equipment (such as an Ethernet-capable computer) would presumably be a "BaseT Ethernet data terminal equipment" if it used 10BASE-T.<br><br>Using broadest reasonable interpretation of the term "BaseT," Cummings teaches "BaseT." See, e.g., col. 3 ll. 35-37. |
| **Claim 106:** | **Prior Art:** |
| 106. The method according to any one of claims 67 through 104 | The reasons for rejecting claim 67, from which claim 106 depends, are provided above. Claim 106 |

| | |
|---|---|
| wherein the piece of terminal equipment is a piece of Ethernet data terminal equipment. | requires Ethernet data terminal equipment.<br><br>Cummings teaches Ethernet. See, e.g., Cummings, col. 3 11. 18-19. Cummings also illustrates computers 12A-12D (data terminal equipment) in FIG. 1:<br><br>Cummings, FIG. 1. |

**REJ 14)** Claims 4, 7-9, 14, 15, 17, 34, 37-39, 44, 45, 47, 92, 108-114, 117, 121, 128, 129, 132-137, 139-145, and 147 are rejected under pre-AIA 35 USC 103(a) as being obvious over Cummings in view of Maman and PCNet.

**PCNET:**

"The PCnet™-FAST board is an advanced PC network interface adapter card targeted for the Ethemet-PCI adapter card market. It is based on the AM79C971 PCnet-FAST device, a singlechip 32-bit full-duplex, 10/100-Mbps highly integrated Ethernet system solution." PCnet, 1-1.

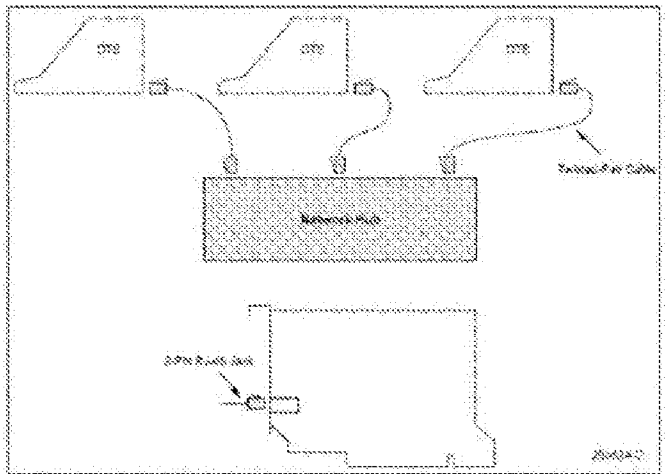
"The single-chip Am79C971 PCnet-FAST Ethernet solution is a highly integrated solution that contains a Bus Interface Unit (BIU), a DMA buffer management unit, an ISO/IEC 8802-3 and ANSI/IEEE 802.3-compliant Media Access Control (MAC) function, a flexible buffer architecture with an SRAM-based FIFO extension for support up to 128 Kbytes of external frame buffering, optional remote boot PROM/FLASH, integrated 10BASE-T and 10BASE-2/5 (AUI) physical layer interface, and an ANSI/IEEE 802.3-compliant Media Independent Interface (Mil) " PCnet, 2-1, 2.2 ETHERNET NODE CONTROLLER.

Table 2-1 illustrates PCnet's auto-negotiation capabilities:

**Table 2-1 Auto-Negotiation Capabilities**

| Network Speed | Physical Network Type |
|---|---|
| 200 Mbps | 100BASE-TX, Full Duplex |
| 100 Mbps | 100BASE-TX, Half Duplex |
| 20 Mbps | 10BASE-T, Full Duplex |
| 10 Mbps | 10BASE-T, Half Duplex |

"A Data Terminal Equipment (DTE) system with the installed PCnet-FAST board can connect to an Ethernet network using the on-board RJ-45 jack for either 10BAST-T or 100BASE-TX connection. Figure 3-1 illustrates a typical network configuration for the network using the PCnet-FAST board" PCnet, 3-1, 3.2 10/100BASE-T PHYSICAL CONNECTIONS.



PCnet, Figure 3-1.

"The PCnet-FAST board is equipped with a RJ-45 type, eight-pin modular interface. The pin configuration and definition for the RJ-45 connection are as follows:" PCnet.

**Table 4-2 RJ-45 Pinout**

| Pin Number | Color Code | Function |
|---|---|---|
| Pin 1 | white/orange band | TX+ |
| Pin 2 | orange/white band | TX- |
| Pin 3 | white/green band | RX+ |
| Pin 6 | green/white band | RX- |
| Pin 4 | blue/white band | Not Used |
| Pin 5 | white/blue band | Not Used |
| Pin 7 | solid orange | Not Used |
| Pin 8 | solid gray | Not Used |

The color code may vary from one cable manufacturer to another. Make sure that the TX+ and the TX- wires are twisted as a pair and the RX+ and the RX- wires are twisted as another pair. For 100-Mbps operation, category 5 wire must be used for proper 100BASE-TX operation.

As to claims **4, 7-9, 14, 15, 17, 34, 37-39, 44, 45, 47, 92, 108-114, 117, 121, 128, 129, 132-137, 139-145, and 147**, the unmodified rejection from the Final rejection is as follows:

| **Claim 4:** | **Prior Art:** |
|---|---|
| 4. The method according to claim 1 wherein the Ethernet connector comprising the plurality of contacts is an RJ45 jack comprising the contact 1 through the contact 8. | The reasons for rejecting claim 1, from which claim 4 depends, are provided above. Claim 4 requires an RJ45 jack comprising 8 contacts.<br><br>PCnet illustrates the use of an 8-Pin RJ-45 jack in an Ethernet context. See, e.g., 3-1 (“8-Pin RJ- 45 jack”). |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman (citing the Graham factors and reasons under KSR), and further stating:

Cummings and PCnet both describe Ethernet networks. Moreover, AAPA illustrates pinouts for connectors that are identical to those illustrated by PCnet and Cummings appears to have language extremely similar to that of the ‘012 patent. (Cummings and the ‘012 patent are co-owned.)

PCnet discloses that each DTE with an installed PCnet board can connect to an Ethernet network using the on-board 8-Pin RJ-45 jack for 10BASE-T connection. PCnet, 3-1 (“8-Pin RJ-45 Jack”). Thus, PCnet corroborates and subsumes AAPA.

| **Claim 7:** | **Prior Art:** |
|---|---|
| 7. The method according to claim 1 wherein the at least one of the plurality of contacts of the Ethernet connector comprises two of the plurality of contacts of the Ethernet connector. | The reasons for rejecting claim 1, from which claim 7 depends, are provided above. Claim 7 requires selecting a third contact.<br><br>Because the “selecting” of the contacts is simply for creating paths by coupling the path across the |

selected contacts, AAPA illustrates the limitations of the claim by virtue of having two assigned paths, TD-/TD+ and RD-/RD+, as well as four other unassigned contacts that could also be used to create paths.

AAPA illustrates contacts 1, 2 and 3, 6, which are respectively associated with a first path (TD+, TD-) and a second path (RD-, RD+). Thus, the two of the plurality of contacts includes at least contact 1 or 2 and contact 3 or 6.

PCnet illustrates the same pinout as AAPA:

Table 4-2 RJ-45 Pinout

| Pin Number | Color Code | Function |
|---|---|---|
| Pin 1 | white/orange band | TX+ |
| Pin 2 | orange/white band | TX- |
| Pin 3 | white/green band | RX+ |
| Pin 6 | green/white band | RX- |
| Pin 4 | blue/white band | Not Used |
| Pin 5 | white/blue band | Not Used |
| Pin 7 | solid orange | Not Used |
| Pin 8 | solid gray | Not Used |

The color code may vary from one cable manufacturer to another. Make sure that the TX+ and the TX- wires are twisted as a pair and the RX+ and the RX- wires are twisted as another pair. For 100-Mbps operation, category 5 wire must be used for proper 100BASE-TX operation.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman (citing the Graham factors and reasons under KSR), and further stating:

Cummings and PCnet both describe Ethernet networks. Moreover, AAPA illustrates pinouts for connectors that are identical to those illustrated by PCnet and Cummings appears to have language extremely similar to that of the ‘012 patent. (Cummings and the ‘012 patent are co-owned.)

PCnet discloses that each DTE with an installed PCnet board can connect to an Ethernet network using the on-board 8-Pin RJ-45 jack for 10BASE-T connection. PCnet, 3-1 (“8-Pin RJ-45 Jack”). Thus, PCnet corroborates and subsumes AAPA.

| **Claim 8:** | **Prior Art:** |
|---|---|
| 8. The method according to claim 1 wherein the at least another one of the plurality of contacts of the Ethernet connector comprises two of the plurality of contacts of the Ethernet connector. | The reasons for rejecting claim 1, from which claim 8 depends, are provided above. Claim 8 requires selecting a third contact.<br><br>AAPA illustrates contacts 1, 2 and 3, 6, which are respectively associated with a first path (TD+, TD-) and a second path (RD-, RD+). Thus, the two of the plurality of contacts includes at least contact 1 or 2 and contact 3 or 6.<br><br>PCnet illustrates the same pinout as AAPA: |

Table 4-2 RJ-45 Pinout

| Pin Number | Color Code | Function |
|---|---|---|
| Pin 1 | white/orange band | TX+ |
| Pin 2 | orange/white band | TX- |
| Pin 3 | white/green band | RX+ |
| Pin 6 | green/white band | RX- |
| Pin 4 | blue/white band | Not Used |
| Pin 5 | white/blue band | Not Used |
| Pin 7 | solid orange | Not Used |
| Pin 8 | solid gray | Not Used |

The color code may vary from one cable manufacturer to another. Make sure that the TX+ and the TX- wires are twisted as a pair and the RX+ and the RX- wires are twisted as another pair. For 100 Mbps operation, category 5 wire must be used for proper 100BASE-TX operation.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman (citing the Graham factors and reasons under KSR), and further stating:

Cummings and PCnet both describe Ethernet networks. Moreover, AAPA illustrates pinouts for connectors that are identical to those illustrated by PCnet and

Cummings appears to have language extremely similar to that of the ‘012 patent. (Cummings and the ‘012 patent are co-owned.)

PCnet discloses that each DTE with an installed PCnet board can connect to an Ethernet network using the on-board 8-Pin RJ-45 jack for 10BASE-T connection. PCnet, 3-1 (“8-Pin RJ-45 Jack”). Thus, PCnet corroborates and subsumes AAPA.

<table>
<tr><th>Claim 9:</th><th>Prior Art:</th></tr>
<tr><td>9. The method according to claim 1 wherein the Ethernet connector is an RJ45 jack comprising the contact 1 through the contact 8, the at least one of the plurality of contacts of the Ethernet connector comprises two of the plurality of contacts of the Ethernet connector and the two of the plurality of contacts comprise the contact 3 and the contact 6.</td><td>The reasons for rejecting claim 1, from which claim 9 depends, are provided above. Claim 9 requires selecting contacts 3 and 6.<br><br>As was illustrated in AAPA, contacts 3 and 6 correspond to RD- and RD+:<br><br><table><tr><th>CONTACT</th><th>MDI SIGNAL</th></tr><tr><td>1</td><td>TD+</td></tr><tr><td>2</td><td>TD-</td></tr><tr><td>3</td><td>RD+</td></tr><tr><td>4</td><td>Not used by 10BASE-T</td></tr><tr><td>5</td><td>Not used by 10BASE-T</td></tr><tr><td>6</td><td>RD-</td></tr><tr><td>7</td><td>Not used by 10BASE-T</td></tr><tr><td>8</td><td>Not used by 10BASE-T</td></tr></table><br>’012 patent file history, 2011-12-06 Applicant Arguments/Remarks Made in an Amendment, p. 27.<br><br>PCnet illustrates the same pinout as AAPA as an “RJ-45 Pinout”:<br><br>Table 4-2 RJ-45 Pinout<br><table><tr><th>Pin Number</th><th>Color Code</th><th>Function</th></tr><tr><td>Pin 1</td><td>white/orange band</td><td>TX+</td></tr><tr><td>Pin 2</td><td>orange/white band</td><td>TX-</td></tr><tr><td>Pin 3</td><td>white/green band</td><td>RX+</td></tr><tr><td>Pin 6</td><td>green/white band</td><td>RX-</td></tr><tr><td>Pin 4</td><td>blue/white band</td><td>Not Used</td></tr><tr><td>Pin 5</td><td>white/blue band</td><td>Not Used</td></tr><tr><td>Pin 7</td><td>solid orange</td><td>Not Used</td></tr><tr><td>Pin 8</td><td>solid gray</td><td>Not Used</td></tr></table>The color code may vary from one cable manufacturer to another. Make sure that the TX+ and the TX- wires are twisted as a pair and the RX+ and the RX- wires are twisted as another pair. For 100-Mbps operation, category 5 wire must be used for proper 100BASE-TX operation.</td></tr>
</table>

| | |
|---|---|
| | Cummings teaches: "Transmit wires 44a through 44d and 46a through 46d are existing wires found within data communication link 14 that are selectively tapped as pairs in accordance with the present invention to provide current loops 50a through 50d." Cummings, col. 4 ll. 20-24. |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman (citing the Graham factors and reasons under KSR), and further stating:

Cummings and PCnet both describe Ethernet networks. Moreover, AAPA illustrates pinouts for connectors that are identical to those illustrated by PCnet and Cummings appears to have language extremely similar to that of the '012 patent. (Cummings and the '012 patent are co-owned.)

PCnet discloses that each DTE with an installed PCnet board can connect to an Ethernet network using the on-board 8-Pin RJ-45 jack for 10BASE-T connection. PCnet, 3-1 ("8-Pin RJ-45 Jack"). Thus, PCnet corroborates and subsumes AAPA.

| **Claims 14 and 17:** | **Prior Art:** |
|---|---|
| 14. The method according to claim 1 wherein the Ethernet connector is an RJ45 jack comprising the contact 1 through the contact 8 and the piece of Ethernet data terminal equipment is a piece of BaseT Ethernet terminal data equipment.<br><br>17. The method according to claim 1 wherein the Ethernet connector is an RJ45 jack comprising the contact 1 through | The reasons for rejecting claim 1, from which claims 14 and 17 depend, are provided above. Claims 14 and 17 require 8 contacts and BaseT Ethernet terminal data equipment, which is essentially a combination of claims 4 and 6. (Claims 14 and 17 are identical.)<br><br>BaseT is not described in the '012 patent; the designation "BaseT" is found only in the claims. However, 10BASE-T, for example, is described in 802.3i. A piece of Ethernet data terminal equipment (such as an Ethernet-capable computer) would presumably be a "BaseT Ethernet data terminal equipment" if it used 10BASE-T. |

| | |
|---|---|
| the contact 8 and the piece of Ethernet data terminal equipment is a piece of BaseT Ethernet data terminal equipment. | Using the broadest reasonable interpretation of the term "BaseT," Cummings teaches "BaseT." See, e.g., Cummings, col. 3 11. 35-37.<br><br>PCnet teaches both RJ-45 jacks (see, e.g., PCnet, 2-1, Figure 2-1 Board Diagram ("RJ-45") and "BaseT" (see, e.g., PCnet, 2-2, Table 2-1 Auto-Negotiation Capabilities ("10BASE-T, Half Duplex"). |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman (citing the Graham factors and reasons under KSR), and further stating:

Cummings and PCnet both describe Ethernet networks. Moreover, AAPA illustrates pinouts for connectors that are identical to those illustrated by PCnet and Cummings appears to have language extremely similar to that of the '012 patent. (Cummings and the '012 patent are co-owned.)

PCnet discloses that each DTE with an installed PCnet board can connect to an Ethernet network using the on-board 8-Pin RJ-45 jack for 10BASE-T connection. PCnet, 3-1 ("8-Pin RJ-45 Jack"). Thus, PCnet corroborates and subsumes AAPA.

| **Claim 15:** | **Prior Art:** |
|---|---|
| 15. The method according to claim 1 wherein the Ethernet connector is an RJ45 jack comprising the contact 1 through the contact 8 and the associating distinguishing information about the piece of Ethernet data terminal equipment to impedance within the at least one path comprises associating identifying | The reasons for rejecting claim 1, from which claim 15 depends, are provided above. Claim 15 requires 8 contacts and associating identifying information about the equipment to impedance, which is essentially a combination of claims 3 and 4.<br><br>As discussed above, Cummings understands the relationship between current and impedance. Cummings also teaches "detection of a current flow discontinuity further energizes the appropriate light emitting diodes 44a through 44d associated with the |

| | |
|---|---|
| information about the piece of Ethernet data terminal equipment to impedance within the at least one path. | disconnected personal computer 12." Thus, Cummings teaches associating identifying information about a computer to impedance.<br><br>Maman teaches "the connecting cable 1 is adapted such that when the equipment 2 is disconnected from the cable 1, as when the equipment 2 is removed from female connector 4 or the cable 1 is cut, the cable changes from a first or closed to second or open state, causing the device 3 to generate an alarm signal which contains a unique address identifying the device 3." Because Maman knows a unique address identifying the device and which is associated with the impedance, Maman teaches associating identifying information about the equipment to impedance.<br><br>Cummings and Maman do not explicitly disclose RJ-45 jacks. However, PCnet, in a related field of endeavor, illustrates the use of an 8-Pin RJ-45 jack in an Ethernet context. See, e.g., 3-1 ("8-Pin RJ-45 jack"). |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman (citing the Graham factors and reasons under KSR), and further stating:

Cummings and PCnet both describe Ethernet networks. Moreover, AAPA illustrates pinouts for connectors that are identical to those illustrated by PCnet and Cummings appears to have language extremely similar to that of the '012 patent. (Cummings and the '012 patent are co-owned.)

PCnet discloses that each DTE with an installed PCnet board can connect to an Ethernet network using the on-board 8-Pin RJ-45 jack for 10BASE-T connection. PCnet, 3-1 ("8-Pin RJ-45 Jack"). Thus, PCnet corroborates and subsumes AAPA.

| Claim 34: | Prior Art: |
|---|---|
| 34. The piece of Ethernet data terminal equipment according to claim 31 wherein the Ethernet connector is an RJ45 jack and the plurality of contacts comprises the contact 1 through the contact 8 ofthe RJ45 jack. | The reasons for rejecting claim 31, from which claim 34 depends, are provided above. Claim 34 requires an RJ45 jack comprising 8 contacts.<br><br>PCnet illustrates the use of an 8-Pin RJ-45 jack in an Ethernet context. See, e.g., 3-1 ("8-Pin RJ- 45 jack"). |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman (citing the Graham factors and reasons under KSR), and further stating:

Cummings and PCnet both describe Ethernet networks. Moreover, AAPA illustrates pinouts for connectors that are identical to those illustrated by PCnet and Cummings appears to have language extremely similar to that of the '012 patent. (Cummings and the '012 patent are co-owned.)

PCnet discloses that each DTE with an installed PCnet board can connect to an Ethernet network using the on-board 8-Pin RJ-45 jack for 10BASE-T connection. PCnet, 3-1 ("8-Pin RJ-45 Jack"). Thus, PCnet corroborates and subsumes AAPA.

| Claims 37 and 38: | Prior Art: |
|---|---|
| 37. The piece of Ethernet data terminal equipment according to claim 31 wherein the at least one of the plurality of contacts of the Ethernet connector comprises two of the plurality of contacts of the Ethernet connector.<br><br>38. The piece of Ethernet data terminal equipment according to | The reasons for rejecting claim 31, from which claim 37 depends, are provided above. Claim 37 requires selecting a third contact.<br><br>Because the "selecting" of the contacts is simply for creating paths by coupling the path across the selected contacts, AAPA illustrates the limitations of the claim by virtue of having two assigned paths, TD-/TD+ and RD-/RD+, as well as four other unassigned contacts that could also be used to create paths. |

<table>
<tr><td>claim 31 wherein the at least another one of the plurality of contacts of the Ethernet connector comprises two of the plurality of contacts of the Ethernet connector.</td><td>AAPA illustrates contacts 1, 2 and 3, 6, which are respectively associated with a first path (TD+, TD-) and a second path (RD-, RD+). Thus, the two of the plurality of contacts includes at least contact 1 or 2 and contact 3 or 6.<br><br>PCnet illustrates the same pinout as AAPA:<br><br>Table 4.2 RJ-45 Pinout<br>
<table>
<tr><th>Pin Number</th><th>Color Code</th><th>Function</th></tr>
<tr><td>Pin 1</td><td>white/orange band</td><td>TX+</td></tr>
<tr><td>Pin 2</td><td>orange/white band</td><td>TX-</td></tr>
<tr><td>Pin 3</td><td>white/green band</td><td>RX+</td></tr>
<tr><td>Pin 6</td><td>green/white band</td><td>RX-</td></tr>
<tr><td>Pin 4</td><td>blue/white band</td><td>Not Used</td></tr>
<tr><td>Pin 5</td><td>white/blue band</td><td>Not Used</td></tr>
<tr><td>Pin 7</td><td>solid orange</td><td>Not Used</td></tr>
<tr><td>Pin 8</td><td>solid gray</td><td>Not Used</td></tr>
</table>
The color code may vary from one cable manufacturer to another. Make sure that the TX+ and the TX- wires are twisted as a pair and the RX+ and the RX- wires are twisted as another pair. For 100-Mbps operation, category 5 wire must be used for proper 100BASE-TX operation.</td></tr>
</table>

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman (citing the Graham factors and reasons under KSR), and further stating:

Cummings and PCnet both describe Ethernet networks. Moreover, AAPA illustrates pinouts for connectors that are identical to those illustrated by PCnet and Cummings appears to have language extremely similar to that of the ‘012 patent. (Cummings and the ‘012 patent are co-owned.)

PCnet discloses that each DTE with an installed PCnet board can connect to an Ethernet network using the on-board 8-Pin RJ-45 jack for 10BASE-T connection. PCnet, 3-1 (“8-Pin RJ-45 Jack”). Thus, PCnet corroborates and subsumes AAPA.

| **Claim 39:** | **Prior Art:** |
|---|---|
| 39. The piece of Ethernet data | The reasons for rejecting claim 31, from which claim |

<table>
<tr>
<td>terminal equipment according to claim 31 wherein the Ethernet connector is an RJ45 jack comprising the contact 1 through the contact 8, the at least one of the plurality of contacts of the Ethernet connector comprises two of the plurality of contacts of the Ethernet connector and the two of the plurality of contacts comprise the contact 3 and the contact 6.</td>
<td>39 depends, are provided above. Claim 39 requires selecting contacts 3 and 6. As was illustrated in AAPA, contacts 3 and 6 correspond to RD- and RD+:
<table>
<tr><th>CONTACT</th><th>MDI SIGNAL</th></tr>
<tr><td>1</td><td>TD+</td></tr>
<tr><td>2</td><td>TD-</td></tr>
<tr><td>3</td><td>RD+</td></tr>
<tr><td>4</td><td>Not used by 10BASE-T</td></tr>
<tr><td>5</td><td>Not used by 10BASE-T</td></tr>
<tr><td>6</td><td>RD-</td></tr>
<tr><td>7</td><td>Not used by 10BASE-T</td></tr>
<tr><td>8</td><td>Not used by 10BASE-T</td></tr>
</table>
'012 patent file history, 2011-12-06 Applicant Arguments/Remarks Made in an Amendment, p. 27.<br><br>
PCnet illustrates the same pinout as AAPA:<br><br>
Table 4.2 RJ-45 Pinout
<table>
<tr><th>Pin Number</th><th>Color Code</th><th>Function</th></tr>
<tr><td>Pin 1</td><td>white/orange band</td><td>TX+</td></tr>
<tr><td>Pin 2</td><td>orange/white band</td><td>TX-</td></tr>
<tr><td>Pin 3</td><td>white/green band</td><td>RX+</td></tr>
<tr><td>Pin 6</td><td>green/white band</td><td>RX-</td></tr>
<tr><td>Pin 4</td><td>blue/white band</td><td>Not Used</td></tr>
<tr><td>Pin 5</td><td>white/blue band</td><td>Not Used</td></tr>
<tr><td>Pin 7</td><td>solid orange</td><td>Not Used</td></tr>
<tr><td>Pin 8</td><td>solid gray</td><td>Not Used</td></tr>
</table>
The color code may vary from one cable manufacturer to another. Make sure that the TX+ and the TX- wires are twisted as a pair and the RX+ and the RX- wires are twisted as another pair. For 100-Mbps operation, category 5 wire must be used for proper 100BASE-TX operation.<br><br>
Cummings teaches: “Transmit wires 44a through 44d and 46a through 46d are existing wires found within data communication link 14 that are selectively tapped as pairs in accordance with the present invention to provide current loops 50a through 50d.” Cummings, col. 4 ll. 20-24.</td>
</tr>
</table>

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman (citing the Graham factors and reasons under KSR), and further stating:

Cummings and PCnet both describe Ethernet networks. Moreover, AAPA illustrates pinouts for connectors that are identical to those illustrated by PCnet and Cummings appears to have language extremely similar to that of the ‘012 patent. (Cummings and the ‘012 patent are co-owned.)

PCnet discloses that each DTE with an installed PCnet board can connect to an Ethernet network using the on-board 8-Pin RJ-45 jack for 10BASE-T connection. PCnet, 3-1 (“8-Pin RJ-45 Jack”). Thus, PCnet corroborates and subsumes AAPA.

| **Claims 44 and 47:** | **Prior Art:** |
|---|---|
| 44. The method according to claim 1 wherein the Ethernet connector is an RJ45 jack comprising the contact 1 through the contact 8 and the piece of Ethernet data terminal equipment is a piece of BaseT Ethernet terminal data equipment.<br><br>47. The method according to claim 1 wherein the Ethernet connector is an RJ45 jack comprising the contact 1 through the contact 8 and the piece of Ethernet data terminal equipment is a piece of BaseT Ethernet terminal data equipment | The reasons for rejecting claim 31, from which claims 44 and 47 depend, are provided above. Claims 44 and 47 require 8 contacts and BaseT Ethernet terminal data equipment, which is essentially a combination of claims 34 and 36. (Claims 44 and 47 are identical.)<br><br>BaseT is not described in the ‘012 patent; the designation “BaseT” is found only in the claims. However, 10BASE-T, for example, is described in 802.3i. A piece of Ethernet data terminal equipment (such as an Ethernet-capable computer) would presumably be a “BaseT Ethernet data terminal equipment” if it used 10BASE-T.<br><br>Using the broadest reasonable interpretation of the term “BaseT,” Cummings teaches “BaseT.” See, e.g., Cummings, col. 3 11. 35-37.<br><br>PCnet teaches both RJ-45 jacks (see, e.g., PCnet, 2-1, Figure 2-1 Board Diagram (“RJ-45”) and “BaseT” (see, e.g., PCnet, 2-2, Table 2-1 Auto-Negotiation Capabilities (“10BASE-T, Half Duplex”). |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the

reasons set forth in the Final action, as noted above as to Cummings and Maman (citing the Graham factors and reasons under KSR), and further stating:

Cummings and PCnet both describe Ethernet networks. Moreover, AAPA illustrates pinouts for connectors that are identical to those illustrated by PCnet and Cummings appears to have language extremely similar to that of the ‘012 patent. (Cummings and the ‘012 patent are co-owned.)

PCnet discloses that each DTE with an installed PCnet board can connect to an Ethernet network using the on-board 8-Pin RJ-45 jack for 10BASE-T connection. PCnet, 3-1 (“8-Pin RJ-45 Jack”). Thus, PCnet corroborates and subsumes AAPA.

| **Claim 45:** | **Prior Art:** |
|---|---|
| 45. The piece of Ethernet data terminal equipment according to claim 31 wherein the Ethernet connector is an RJ45 jack comprising the contact 1 through the contact 8 and the distinguishing information about the piece of Ethernet data terminal equipment associated to impedance within the at least one path comprises identifying information about the piece of Ethernet data terminal equipment. | The reasons for rejecting claim 31, from which claim 45 depends, are provided above. Claim 45 requires 8 contacts and associating identifying information about the equipment to impedance, which is essentially a combination of claims 33 and 34.<br><br>As discussed above, Cummings understands the relationship between current and impedance. Cummings also teaches “detection of a current flow discontinuity further energizes the appropriate light emitting diodes 44a through 44d associated with the disconnected personal computer 12.” Thus, Cummings teaches associating identifying information about a computer to impedance.<br><br>Maman teaches “the connecting cable 1 is adapted such that when the equipment 2 is disconnected from the cable 1, as when the equipment 2 is removed from female connector 4 or the cable 1 .is cut, the cable changes from a first or closed to second or open state, causing the device 3 to generate an alarm signal which contains a unique address identifying the device 3.” Because Maman knows a unique address identifying the device and |

| | |
|---|---|
| | which is associated with the impedance, Maman teaches associating identifying information about the equipment to impedance.<br><br>Cummings and Maman do not explicitly disclose RJ-45 jacks. However, PCnet, in a related field of endeavor, illustrates the use of an 8-Pin RJ-45 jack in an Ethernet context. See, e.g., 3-1 (“8- Pin RJ-45 jack”). |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman (citing the Graham factors and reasons under KSR), and further stating:

Cummings and PCnet both describe Ethernet networks. Moreover, AAPA illustrates pinouts for connectors that are identical to those illustrated by PCnet and Cummings appears to have language extremely similar to that of the ‘012 patent. (Cummings and the ‘012 patent are co-owned.)

PCnet discloses that each DTE with an installed PCnet board can connect to an Ethernet network using the on-board 8-Pin RJ-45 jack for 10BASE-T connection. PCnet, 3-1 (“8-Pin RJ-45 Jack”). Thus, PCnet corroborates and subsumes AAPA.

| **Claim 92:** | **Prior Art:** |
|---|---|
| 92. The method according to claim 67 wherein the Ethernet connector is an RJ45 jack comprising the contact 1 through the contact 8. | The reasons for rejecting claim 67, from which claim 92 depends, are provided above. Claim 92 requires an RJ45 jack comprising 8 contacts<br><br>PCnet illustrates the use of an 8-Pin RJ-45 jack in an Ethernet context. See, e.g., 3-1 (“8-Pin RJ- 45 jack”). |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the

reasons set forth in the Final action, as noted above as to Cummings and Maman (citing the Graham factors and reasons under KSR), and further stating:

Cummings and PCnet both describe Ethernet networks. Moreover, AAPA illustrates pinouts for connectors that are identical to those illustrated by PCnet and Cummings appears to have language extremely similar to that of the ‘012 patent. (Cummings and the ‘012 patent are co-owned.)

PCnet discloses that each DTE with an installed PCnet board can connect to an Ethernet network using the on-board 8-Pin RJ-45 jack for 10BASE-T connection. PCnet, 3-1 (“8-Pin RJ-45 Jack”). Thus, PCnet corroborates and subsumes AAPA.

| **Claim 108:** | **Prior Art:** |
|---|---|
| 108. An adapted piece of terminal equipment having an Ethernet connector, the piece of terminal of equipment comprising: | Cummings teaches Ethernet. See, e.g., Cummings, col. 3 ll. 18-19.<br><br>Maman teaches a method for adapting a piece of data terminal equipment (such as a computer), the data terminal equipment having a connector. See, Maman, FIG. 1. Maman does not explicitly teach Ethernet, but IEEE 802.3i, which is AAPA, is part of the IEEE 802.3 (Ethernet) Standards.<br><br>PCnet describes how to use an Ethernet interface board. PCnet, 3-1). PCnet also illustrates data terminal equipment (“DTE”) for use in an Ethernet network. PCnet, 3-1. |
| at least one path coupled across specific contacts of the Ethernet connector, the at least one path permits use of the specific contacts for Ethernet communication, the Ethernet connector comprising the contact 1 through the contact 8, the specific contacts comprising at least one of the contacts of | Cummings teaches “In accordance with conventional wiring approaches, data communication link 14 generally includes a plurality of pairs of transmit wires 44 and 46 as well as a plurality of pairs of receive wires (not shown) connected to each of personal computers 12a through 12d.” Cummings, col. 3 ll. 37-42. See also, Cummings, col. 4 ll. 20-24 (“Transmit wires 44a through 44d and 46a through 46d are existing wires found within data communication link 14 that are selectively tapped as |

| | |
|---|---|
| the Ethernet connector and at least another one of the contacts of the Ethernet connector, | pairs in accordance with the present invention to provide current loops 50a through 50d”).<br><br>PCnet discloses that each DTE with an installed PCnet board can connect to an Ethernet network using the on-board 8-Pin RJ-45 jack for 10BASE-T connection. PCnet, 3-1 (“8-Pin RJ-45 Jack”). |
| impedance within the at least one path arranged to distinguish the piece of terminal equipment. | Cummings actually claims “said respective pairs of data communication lines are associated with different ones of the associated pieces of equipment,” “supplying a low DC current signal to each current loop so as to achieve continuous current flow through each current loop while each of said associated pieces of equipment is physically connected to said network via the data communication lines,” and sensing “DC current signal in each of said current loops so as to detect a change in current flow indicative of disconnection of one of said pieces of associated equipment.” Cummings, claim 14; see also claims 1 and 9 for similar language.<br><br>Maman teaches associating distinguishing information about the data terminal equipment to impedance within a corresponding path. Maman, col. 2 ll. 31-45 (“first and second status conductors adapted to exhibit a first impedance value between the individual status conductors corresponding to the first state of the cable when the electrical equipment is connected to the equipment and a second impedance value between the individual status conductors corresponding to the second state of the cable when the electrical equipment is disconnected from the cable”); see also, id., FIG. 3. |

Cummings teaches the use of Ethernet to couple equipment, such as computers, to a network via data communication lines. Cummings controls voltage to create current. The control of current using voltage demonstrates an understanding of Ohm’s Law, which, assuming active elements, can be characterized as V = IZ, where V is voltage, I is current, and Z is impedance. Because Cummings knows Ohm’s Law, the voltage across the path, and the current through the path, Cummings also knows the impedance and can associate distinguishing information about the equipment to impedance within the path. For example, when current drops to 0 because the path is interrupted, impedance also drops to 0. It may be noted that even if there are no active elements, impedance includes resistance and, therefore, a path without active elements can also be defined using V = IZ (as opposed to V = IR).

To the extent it is determined a person of ordinary skill in the art of electronics does not know Ohm's Law, Cummings can be combined with Manan, the latter explicitly teaching associating distinguishing information about the data terminal equipment to impedance within a corresponding path.

The 802.3i standard specifies a cable with certain characteristics, such as 8 contacts that can be allocated into contact pairs. With specific reference to the claim language, "selecting contacts" involves picking one contact pair of the various possible permutations. The "selected contacts" therefore comprise at least one of the plurality of contacts of the Ethernet connector and at least another one of the plurality of contacts of the Ethernet connector (i.e., the pair). A path is coupled across contact pairs, and specifically across the "selected contacts." IEEE 802.3i does not explicitly teach associating distinguishing information about the piece of equipment to impedance within the path. However, Maman, in a related field of endeavor, teaches associating distinguishing information about a piece of data terminal equipment (which in the context of IEEE 802.3i would be Ethernet data terminal equipment) to impedance within a path.

As was illustrated in AAPA, an appropriate connector has 8 contacts:

| CONTACT | MDI SIGNAL |
|---|---|
| 1 | TD+ |
| 2 | TD– |
| 3 | RD+ |
| 4 | Not used by 10BASE-T |
| 5 | Not used by 10BASE-T |
| 6 | RD– |
| 7 | Not used by 10BASE-T |
| 8 | Not used by 10BASE-T |

’012 patent file history, 2011-12-06 Applicant Arguments/Remarks Made in an Amendment, p. 27.

Please note the reasons for combining from the Final Action, as follows:

Cummings measures and detects fluctuations in electrical conditions on a network path to determine connectivity state of data terminal equipment, explicitly in an Ethernet network. PCnet describes state-of-the-art Ethernet equipment with specific reference to cables that are AAPA. Maman describes a connectivity detection system that explicitly mentions impedance.

The differences between Cummings and the ‘012 patent are quite small. The patents are co-owned and Cummings explicitly mentions Ethernet. The ‘012 patent goes into more detail regarding various components of Ethernet systems, all of which were known, as is discussed in more detail later, but still simply describes a connectivity state detection system as was described by Cummings.

Cummings and PCnet both describe Ethernet networks. Moreover, AAPA illustrates pinouts for connectors that are identical to those illustrated by PCnet and Cummings appears to have language extremely similar to that of the ‘012 patent. (Cummings and the ‘012 patent are co-owned.)

PCnet discloses that each DTE with an installed PCnet board can connect to an Ethernet network using the on-board 8-Pin RJ-45 jack for 10BASE-T connection. PCnet, 3-1 ("8-Pin RJ-45 Jack"). Thus, PCnet corroborates and subsumes AAPA.

Note also the Graham Inquiries and rationale under KSR in the Final action, as follows:

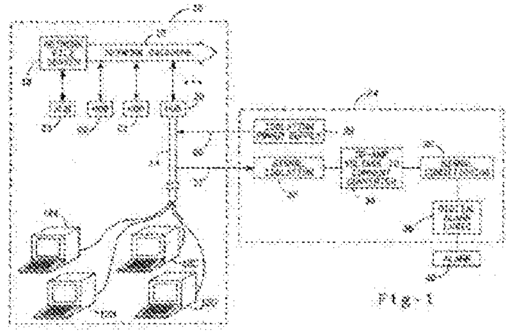
The scope and content of the prior art includes Ohm's law, V = IR, which expresses the relationship between voltage, current, and resistance, and which can be rewritten to take into account reactive elements to which AC voltage or current is applied as V = IZ, where Z represents impedance. The level of skill of an ordinary person of skill in the art should include at least the level of skill of college-level electrical engineering (and specifically Ohm's Law) and inventors of the abovementioned patents. The level of skill of an ordinary person of skill in the art should also include at least the level of creativity to apply well-known electrical engineering principles across standards, such as IEEE 802.3 standards for Ethernet networks (as provided in AAPA), and to utilize well known circuit components in standard ways.

The Examination Guidelines for Determining Obviousness Under 35 U.S.C. 103 in view of the Supreme Court Decision in KSR International Co. v. Teleflex Inc., 72 FR 57526 (Oct. 10, 2007), 1324 Off. Gaz. Pat. Office 23 (Nov. 6, 2007) (2007 KSR Guidelines) have been incorporated into the MPEP. See MPEP 2141 (8th ed. 2001 (Rev. 6, Sept. 2007). The Examination Guidelines Update: Developments in the Obviousness Inquiry After KSR v. Teleflex, which became effective September 1, 2010, highlights case law developments on obviousness under 35 U.S.C. 103 since the 2007

decision by the United States Supreme Court in KSR Int'l Co. v. Teleflex Inc. Guidelines state that the teaching-suggestion-motivation test is one possible approach to support an obviousness determination. Six other rationales identified in the Guidelines include: (1) combining prior art elements according to known methods to yield predictable results; (2) simple substitution of one known element for another to obtain predictable results; (3) use of a known technique to improve similar devices, methods, or products in the same way; (4) applying a known technique to a known device, method, or product ready for improvement to yield predictable results; (5) obvious to try—choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success; and (6) known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art.

Therefore it would have been obvious to combine the references.

| **Claim 109:** | **Prior Art:** |
|---|---|
| 109. The method according to claim 108 wherein the piece of Ethernet data terminal equipment is a personal computer. | The reasons for rejecting claim 108, from which claim 109 depends, are provided above. Claim 109 requires the Ethernet data terminal equipment be a personal computer.<br><br>Cummings teaches Ethernet. See, e.g., Cummings, col. 3 ll. 18-19. Cummings also illustrates computers 12A-12D (data terminal equipment) in FIG. 1: |

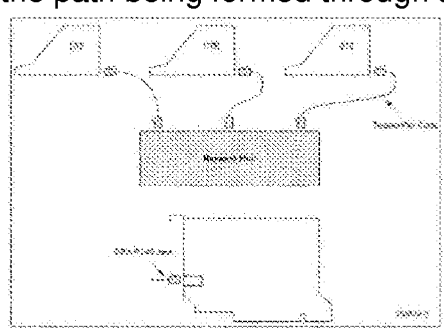
| | |
|---|---|
| |  Cummings, FIG. 1. |
| **Claim 110:** | **Prior Art:** |
| 110. The piece of terminal equipment according to claim 108 wherein the impedance within the at least one path is arranged to uniquely distinguish the piece of terminal equipment. | The reasons for rejecting claim 108, from which claim 110 depends, are provided above. Claim 110 requires uniquely distinguishing the piece of terminal equipment.<br><br>As discussed above, Cummings understands the relationship between current and impedance. As discussed above, Cummings understands the relationship between current and impedance. Cummings also teaches “detection of a current flow discontinuity further energizes the appropriate light emitting diodes 44a through 44d associated with the disconnected personal computer 12.” Thus, Cummings teaches uniquely distinguishing a computer.<br><br>Maman teaches “the connecting cable 1 is adapted such that when the equipment 2 is disconnected from the cable 1, as when the equipment 2 is removed from female connector 4 or the cable 1 is cut, the cable changes from a first or closed to second or open state, causing the device 3 to generate an alarm signal which contains a unique address identifying the device 3.” Because Maman knows a unique address identifying the device and which is associated with the impedance, Maman teaches uniquely distinguishing equipment. |
| **Claim 111:** | **Prior Art:** |
| 111. The piece of terminal equipment according to claim | The reasons for rejecting claim 108, from which claim 111 depends, are provided above. Claim 108 |

| | |
|---|---|
| 108 wherein the impedance within the at least one path is arranged to identify the piece of terminal equipment. | requires identifying the equipment.<br><br>As discussed above, Cummings understands the relationship between current and impedance. As discussed above, Cummings understands the relationship between current and impedance. Cummings also teaches "detection of a current flow discontinuity further energizes the appropriate light emitting diodes 44a through 44d associated with the disconnected personal computer 12." Thus, Cummings teaches identifying a computer.<br><br>Maman teaches "the connecting cable 1 is adapted such that when the equipment 2 is disconnected from the cable 1, as when the equipment 2 is removed from female connector 4 or the cable 1 is cut, the cable changes from a first or closed to second or open state, causing the device 3 to generate an alarm signal which contains a unique address identifying the device 3." Because Maman knows a unique address identifying the device and which is associated with the impedance, Maman teaches identifying equipment |
| **Claim 112:** | **Prior Art:** |
| 112. The piece of terminal equipment according to claim 108 wherein the impedance within the at least one path is arranged to uniquely identify the piece of terminal equipment. | The reasons for rejecting claim 108, from which claim 112 depends, are provided above. Claim 112 requires uniquely identifying the equipment.<br><br>As discussed above, Cummings understands the relationship between current and impedance. As discussed above, Cummings understands the relationship between current and impedance. Cummings also teaches "detection of a current flow discontinuity further energizes the appropriate light emitting diodes 44a through 44d associated with the disconnected personal computer 12." Thus, Cummings teaches uniquely identifying a computer.<br><br>Maman teaches "the connecting cable 1 is adapted such that when the equipment 2 is disconnected from the cable 1, as when the equipment 2 is removed from female connector 4 or the cable 1 is cut, the cable changes from a first or closed to |

| | |
|---|---|
| | second or open state, causing the device 3 to generate an alarm signal which contains a unique address identifying the device 3." Because Maman knows a unique address identifying the device and which is associated with the impedance, Maman teaches uniquely identifying equipment. |
| **Claim 113:** | **Prior Art:** |
| 113. The piece of terminal equipment according to claim 108 wherein the piece of terminal equipment has a particular electrical aspect and the impedance within the at least one path is arranged to distinguish that the piece of terminal equipment has the particular electrical aspect. | The reasons for rejecting claim 108, from which claim 113 depends, are provided above. Claim 113 requires distinguishing a particular electrical aspect of the equipment.<br><br>As discussed above, Cummings understands the relationship between current and impedance. Cummings also teaches "detection of a current flow discontinuity further energizes the appropriate light emitting diodes 44a through 44d associated with the disconnected personal computer 12." Thus, Cummings teaches distinguishing that the computer has an electrical aspect, e.g., whether the computer is electrically connected to the network.<br><br>Maman teaches "the connecting cable 1 is adapted such that when the equipment 2 is disconnected from the cable 1, as when the equipment 2 is removed from female connector 4 or the cable 1 is cut, the cable changes from a first or closed to second or open state, causing the device 3 to generate an alarm signal which contains a unique address identifying the device 3." Because Maman knows a unique address identifying the device and which is associated with the impedance, Maman teaches distinguishing the equipment has an electrical aspect, e.g., whether the equipment is electrically connected to the network. |
| **Claim 114:** | **Prior Art:** |
| 114. The piece of terminal equipment according to claim 108 wherein the impedance within the at least one path is arranged to be part of a detection protocol. | The reasons for rejecting claim 108, from which claim 114 depends, are provided above. Claim 114 requires variable impedance.<br><br>Cummings also teaches a theft detection protocol. Cummings, col. 1 ll. 8-12 ("This invention relates |

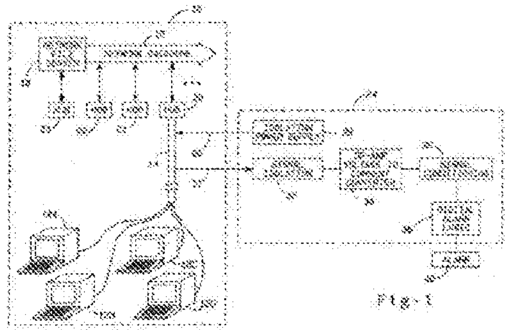
| | |
|---|---|
| | generally to theft protection security systems and, more particularly, to a network security system for detecting the unauthorized removal of remotely located electronic equipment from a network.")<br><br>Maman teaches a theft detection protocol. |
| **Claim 117:** | **Prior Art:** |
| 117. The piece of terminal equipment according to claim 108 wherein the impedance within the at least one path is arranged to draw DC current. | The reasons for rejecting claim 108, from which claim 117 depends, are provided above. Claim 117 requires drawing DC current.<br><br>Cummings teaches "The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d." Cummings, col. 3 ll. 53-56. A DC power signal means DC current is drawn.<br><br>PCnet describes power requirements of the PC Ethernet interface adapter card as "3.25 W maximum, 5 V DC, at 25°C (with NSC 10/100 PHY)" PCnet, 4-4, 4.6 POWER REQUIREMENTS. It is well understood that DC voltage draws DC current. |
| **Claim 121:** | **Prior Art:** |
| 121. The piece of terminal equipment according to claim 108 wherein the impedance within the at least one path is arranged to be a function of voltage across the specific contacts. | The reasons for rejecting claim 108, from which claim 121 depends, are provided above. Claim 121 requires impedance is a function of voltage.<br><br>Cummings teaches "The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d." Cummings, col. 3 ll. 53-56.<br><br>PCnet describes power requirements of the PC Ethernet interface adapter card as "3.25 W maximum, 5 V DC, at 25°C (with NSC 10/100 PHY)" PCnet, 4-4, 4.6 POWER REQUIREMENTS.<br><br>Maman teaches associating distinguishing information about the data terminal equipment to impedance within a corresponding path. Maman, col. |

| | |
|---|---|
| | 2 ll. 31-45 (“first and second status conductors adapted to exhibit a first impedance value between the individual status conductors corresponding to the first state of the cable when the electrical equipment is connected to the equipment and a second impedance value between the individual status conductors corresponding to the second state of the cable when the electrical equipment is disconnected from the cable”); see also, id., FIG. 3.<br><br>The function of voltage across the selected contacts is not defined in the ‘012 patent specification; the function is found only in the claims. However, the function is Ohm’s Law: V = IR rewritten for circuits with reactive elements as V = IZ, where Z (impedance) replaces R (resistance). There is no alternative but for impedance to be a function of voltage across the selected contacts in accordance with the two century old law. This function is inherent in any of the electrical engineering references included. |
| **Claim 128:** | **Prior Art:** |
| 128. The piece of terminal equipment according to claim 108 wherein the piece of terminal equipment is powered-on. | The reasons for rejecting claim 108, from which claim 128 depends, are provided above. Claim 128 requires the equipment be powered-on.<br><br>Cummings teaches a computer (data terminal equipment), which is powered-on during operation.<br><br>PCnet teaches: “Configuration of the I/O base address and the interrupt channel is automatic upon power up, without any hardware jumpers.” PCnet, 3-1, 3.1 BOARD CONFIGURATION. |
| **Claim 129:** | **Prior Art:** |
| 129. The piece of terminal equipment according to claim 108 wherein a controller is coupled across the specific contacts | The reasons for rejecting claim 108, from which claim 129 depends, are provided above. Claim 129 requires a controller coupled across the contacts.<br><br>A controller is not described in the ‘012 patent; the word “controller” is found only in the claims. As such, it is not entirely clear what is meant by the term. However, a broadest reasonable interpretation of the |

| | |
|---|---|
| | claim language is embodied in the "network security system 24" of Cummings. Cummings, col. 2 ll. 65-68 ("a network security system 24 is provided therein for achieving theft protection of electronic computer equipment associated with a computer network 10").<br><br>PCnet explicitly discloses coupling at least one path having a controller across the selected contacts: "The Auto-Poll™ feature of the PCnet-FAST controller determines that the MiI port is used for the network connection." PCnet, 3-1, 3.2 10/100BASE-T PHYSICAL CONNECTIONS, para. 2. |
| **Claim 132:** | **Prior Art:** |
| 132. The piece of terminal equipment according to claim 108 wherein the at least one path is internal to the piece of terminal equipment. | The reasons for rejecting claim 108, from which claim 132 depends, are provided above. Claim 132 requires a path be internal to the equipment.<br><br>Cummings teaches: "The low current power signal flows through an internal path provided by existing circuitry in personal computer 12a." Cummings, col. 4 11. 27-30.<br><br>PCnet illustrates an 8-Pin RJ-45 Jack that illustrates the path being formed through a DTE:<br><br>PCnet, Figure 3-1 |
| **Claim 133:** | **Prior Art:** |
| 133. The piece of terminal equipment according to claim 108 wherein the Ethernet connector is an RJ45 jack connector comprising the contact 1 through the contact 8. | The reasons for rejecting claim 108, from which claim 133 depends, are provided above. Claim 133 requires an RJ45 connector with contacts 1 through 8.<br><br>PCnet illustrates the use of an 8-Pin RJ-45 jack in an Ethernet context. See, e.g., 3-1 ("8-Pin RJ- 45 jack"). |

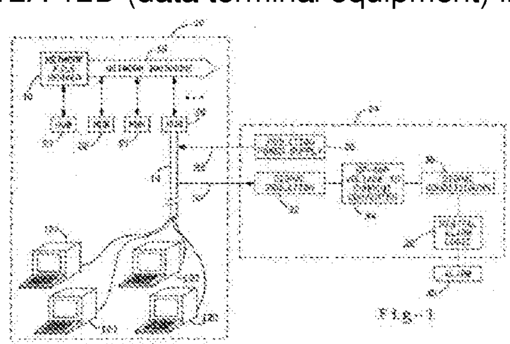
| Claim 134: | Prior Art: |
|---|---|
| 134. The piece of terminal equipment according to claim 108 wherein the specific contacts are used for Ethernet communication. | The reasons for rejecting claim 108, from which claim 134 depends, are provided above. Claim 134 requires the contacts are used for Ethernet communication.<br><br>Cummings illustrates a path, which can be an Ethernet path, that includes both communication and power. See, Cummings, FIG. 1 (data communication link 14). PCnet illustrates the use of an 8-Pin RJ-45 jack in an Ethernet context. See, e.g., 3-1 (“8-Pin RJ-45 jack”). |
| **Claim 135:** | **Prior Art:** |
| 135. The piece of terminal equipment according to claim 108 wherein the specific contacts are used for Ethernet communication and at least some of the specific contacts are actually carrying Ethernet signals. | The reasons for rejecting claim 108, from which claim 135 depends, are provided above. Claim 135 requires the contacts carry Ethernet signals.<br><br>Cummings illustrates a path, which can be an Ethernet path, that includes both communication and power. See, Cummings, FIG. 1 (data communication link 14).<br><br>PCnet illustrates the use of an 8-Pin RJ-45 jack in an Ethernet context. See, e.g., 3-1 (“8-Pin RJ- 45 jack”). |
| **Claim 136:** | **Prior Art:** |
| 136. The piece of terminal equipment according to claim 108 wherein the specific contacts are used for Ethernet communication and at least some of the specific contacts are actually carrying DC current. | The reasons for rejecting claim 108, from which claim 136 depends, are provided above. Claim 136 requires the contacts carry Ethernet signals and DC current.<br><br>Cummings illustrates a path, which can be an Ethernet path, that includes both communication and power. See, Cummings, FIG. 1 (data communication link 14). Cummings teaches “The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d.” Cummings, col. 3 ll. 53-56. A DC power signal means DC current is drawn.<br><br>PCnet describes power requirements of the PC |

| | |
|---|---|
| | Ethernet interface adapter card as “3.25 W maximum, 5 V DC, at 25℃ (with NSC 10/100 PHY)” PCnet, 4-4, 4.6 POWER REQUIREMENTS. It is well understood that DC voltage draws DC current. |
| **Claim 137:** | **Prior Art:** |
| 137. The piece of terminal equipment according to claim 108 wherein the specific contacts are used for Ethernet communication and at least some of the specific contacts are actually carrying Ethernet signals and DC current. | The reasons for rejecting claim 108, from which claim 137 depends, are provided above. Claim 137 requires the contacts carry Ethernet signals and DC current.<br><br>Cummings illustrates a path, which can be an Ethernet path, that includes both communication and power. See, Cummings, FIG. 1 (data communication link 14). Cummings teaches “The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d.” Cummings, col. 3 ll. 53-56. A DC power signal means DC current is drawn.<br><br>PCnet describes power requirements of the PC Ethernet interface adapter card as “3.25 W maximum, 5 V DC, at 25°C (with NSC 10/100 PHY)” PCnet, 4-4, 4.6 POWER REQUIREMENTS. It is well understood that DC voltage draws DC current. |
| **Claim 139:** | **Prior Art:** |
| 139. The piece of terminal equipment according to claim 108 wherein the adapted piece of terminal equipment is physically connected to a network. | The reasons for rejecting claim 108, from which claim 139 depends, are provided above. Claim 139 requires an electrical condition is applied to the contacts.<br><br>Cummings illustrates computers 12A-12D physically connected to a network in FIG. 1: |

| | |
|---|---|
| |  Cummings, FIG. 1.<br><br>PCnet teaches: "A Data Terminal Equipment (DTE) system with the installed PCnet-EHYTboard can connect to an Ethernet network using the on-board RJ-45 jack for either 10BASE-T or 100BASE-TX connection." PCnet, 3-1, 3.2 10/100BASE-T PHYSICAL CONNECTIONS. |
| **Claim 140:** | **Prior Art:** |
| 140. The piece of terminal equipment according to claim 108 wherein at least one electrical condition is applied to the specific contacts. | The reasons for rejecting claim 108, from which claim 140 depends, are provided above. Claim 140 requires an electrical condition is applied to the contacts.<br><br>Cummings teaches "The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d." Cummings, col. 3 ll. 53-56.<br><br>PCnet describes power requirements of the PC Ethernet interface adapter card as "3.25 W maximum, 5 V DC, at 25°C (with NSC 10/100 PHY)" PCnet, 4-4, 4.6 POWER REQUIREMENTS.<br><br>Maman teaches associating distinguishing information about the data terminal equipment to impedance within a corresponding path. Maman, col. 2 ll. 31-45 ("first and second status conductors adapted to exhibit a first impedance value between the individual status conductors corresponding to the first state of the cable when the electrical equipment is connected to the equipment and a second impedance value between the individual status conductors corresponding to the second state of the |

| | |
|---|---|
| | cable when the electrical equipment is disconnected from the cable"); see also, id., FIG. 3 |
| **Claim 141:** | **Prior Art:** |
| 141. The piece of terminal equipment according to claim 140 wherein the at least one electrical condition comprises a voltage applied across the specific contacts. | The reasons for rejecting claim 140, from which claim 141 depends, are provided above. Claim 141 requires voltage be applied across the contacts.<br><br>Cummings teaches "The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d." Cummings, col. 3 ll. 53-56. PCnet describes power requirements of the PC Ethernet interface adapter card as "3.25 W maximum, 5 V DC, at 25°C (with NSC 10/100 PHY)" PCnet, 4-4, 4.6 POWER REQUIREMENTS.<br><br>Maman teaches associating distinguishing information about the data terminal equipment to impedance within a corresponding path. Maman, col. 2 ll. 31-45 ("first and second status conductors adapted to exhibit a first impedance value between the individual status conductors corresponding to the first state of the cable when the electrical equipment is connected to the equipment and a second impedance value between the individual status conductors corresponding to the second state of the cable when the electrical equipment is disconnected from the cable"); see also, id., FIG. 3.<br><br>The function of voltage across the selected contacts is not defined in the '012 patent specification; the function is found only in the claims. However, the function is Ohm's Law: V = IR rewritten for circuits with reactive elements as V = IZ, where Z (impedance) replaces R (resistance). There is no alternative but for impedance to be a function of voltage across the selected contacts in accordance with the two century old law. This function is inherent in any of the electrical engineering references included. |
| **Claim 142:** | **Prior Art:** |
| 142. The piece of terminal | The reasons for rejecting claim 141, from which |

| | |
|---|---|
| equipment according to claim 141 wherein the voltage is a DC voltage. | claim 142 depends, are provided above. Claim 142 requires DC voltage.<br><br>Cummings teaches "The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d." Cummings, col. 3 ll. 53-56.<br><br>PCnet describes power requirements of the PC Ethernet interface adapter card as "3.25 W maximum, 5 V DC, at 25°C (with NSC 10/100 PHY)." PCnet, 4-4, 4.6 POWER REQUIREMENTS. |
| **Claim 143:** | **Prior Art:** |
| 143. The piece of terminal equipment according to claim 140 wherein the at least one electrical condition comprises a current applied to the specific contacts. | The reasons for rejecting claim 140, from which claim 143 depends, are provided above. Claim 143 requires current applied to the contacts.<br><br>As discussed above, Cummings understands the relationship between current and impedance. Cummings also teaches "detection of a current flow discontinuity further energizes the appropriate light emitting diodes 44a through 44d associated with the disconnected personal computer 12." Current flow discontinuity is a current condition. |
| **Claim 144:** | **Prior Art:** |
| 144. The piece of terminal equipment according to claim 143 wherein the current is a DC current. | The reasons for rejecting claim 143, from which claim 144 depends, are provided above. Claim 144 requires DC current.<br><br>Cummings teaches "The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d." Cummings, col. 3 ll. 53-56.<br><br>PCnet describes power requirements of the PC Ethernet interface adapter card as "3.25 W maximum, 5 V DC, at 25°C (with NSC 10/100 PHY)" PCnet, 4-4, 4.6 POWER REQUIREMENTS. |
| **Claim 145:** | **Prior Art:** |

| | |
|---|---|
| 145. The piece of terminal equipment according to claim 108 wherein Ethernet communication is BaseT Ethernet communication. | The reasons for rejecting claim 108, from which claim 145 depends, are provided above. Claim 145 requires BaseT Ethernet equipment.<br><br>BaseT is not described in the '012 patent; the designation "BaseT" is found only in the claims. However, 10BASE-T, for example, is described in 802.3i. A piece of Ethernet data terminal equipment (such as an Ethernet-capable computer) would presumably be a "BaseT Ethernet data terminal equipment" ifit used 10BASE-T.<br><br>Using broadest reasonable interpretation of the term "BaseT," Cummings teaches "BaseT." See, e.g., col. 3 ll. 35-37. Using a broadest reasonable interpretation of the term "BaseT,"<br><br>PCnet teaches BaseT: "A Data Terminal Equipment (DTE) system with the installed PCnet-FAST board can connect to an Ethernet network using the on-board RJ-45 jack for either 10BASE-T or 100BASE-TX connection." PCnet, 3-1, 3.2 10/100BASE-T PHYSICAL CONNECTIONS. |
| **Claim 147:** | **Prior Art:** |
| 147. The piece of terminal equipment according to any one of claims 108 through 145 wherein the piece of terminal equipment is a piece of Ethernet data terminal equipment. | The reasons for rejecting claim 108, from which claim 147 depends, are provided above. Claim 147 requires Ethernet equipment.<br><br>Cummings teaches Ethernet. See, e.g., Cummings, col. 3 ll. 18-19. Cummings also illustrates computers 12A-12D (data terminal equipment) in FIG. 1:<br><br>Cummings, FIG. 1<br><br>PCnet teaches: "The PCnet™-FAST board is an advanced PC network interface adapter card |

| | |
|---|---|
| | targeted for the Ethernet-PCI adapter card market." PCnet 1-1, 1.1 Introduction. The acronym "PC" stands for "personal computer" when used in this context. |

**REJ 15)** Claims 12, 42 and 89 are rejected under pre-AIA 35 USC 103(a) as being obvious over Cummings in view of Maman and Annunziata.

**ANNUNZIATA:**

Annunziata is provided for the sole purpose of illustrating a Zener diode in a media wire fault detect mechanism. Annunziata teaches:

> The prior art discloses test devices suitable for testing multiconductor cable for continuity, correct connections, and the absence of short circuits between conductors. U.S. Pat. No. 3,982,180 is an example of such prior art. In the patent, each end of the cable to be tested is connected to terminating contacts. A structure consisting of a plurality of zener diodes is connected to one of the terminating contacts. The diodes have dissimilar zener breakdown voltages and are poled in the same sense in respect to a common junction point. The connection is such that a diode is coupled to one conductor in the cable. A test circuit is connected to the other terminating contact. The connection is such that at any instant a single conductor is placed in series with the other conductors collectively, a resistor, a current meter, and a DC voltage source. The voltage source is poled so as to cause the zener diode connected at the opposite end of the single conductor to have a zener breakdown when that conductor is continuously correctly connected and not short circuited to another conductor. The breakdown causes a unique reading of the meter. When the single conductor is non-continuous, incorrectly connected or shorted to another conductor, other meter indications are produced. Annunziata, col. 1 ll. 34-57.

The Zener diodes described in Annunziata are described in the context of a connectivity-testing device, which is the same as that of the '012 patent and Maman.

As to claims **12, 42 and 89**, the unmodified rejection from the Final rejection is as follows:

| **Claim 12:** | **Prior Art:** |
|---|---|
| 12. The method according to | The reasons for rejecting claim 1, from which claim |

| | |
|---|---|
| claim 1 wherein the coupling at least one path across the selected contacts comprises coupling two paths across the selected contacts, at least one of the two paths having a zener diode. | 12 depends, are provided above. Claim 12 requires a Zener diode.<br><br>Cummings does not explicitly teach a Zener diode. However, Annunziata, in a related field of endeavor, does. See Annunziata, col. 1 11. 34-57 ("zener diode"). Although the claim does not specify how the Zener diodes are utilized, Annunziata appears to use the Zener diodes in precisely the manner that would be expected for a theft prevention system that senses impedance across a path and, in any case, the Zener diodes taught by Annunziata are on the paths as claimed. |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman (citing the Graham factors and reasons under KSR), and further stating:

Annunziata uses Zener diodes in a circuit. Cummings and [Annunziata] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

| **Claim 42:** | **Prior Art:** |
|---|---|
| 42. The piece of Ethernet data terminal equipment according to claim 41 wherein one of the two paths comprises a zener diode. | The reasons for rejecting claims 31 and 41, from which claim 42 depends, are provided above. Claim 42 requires a Zener diode.<br><br>Cummings does not explicitly teach a Zener diode. However, Annunziata, in a related field of endeavor, does. See Annunziata, col. 1 11. 34-57 ("zener diode"). Although the claim does not specify how the Zener diodes are utilized, Annunziata appears to use the Zener diodes in precisely the manner that would be expected for a theft prevention system that senses impedance across a path and, in any case, the Zener diodes taught by Annunziata are on the paths as claimed. |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman (citing the Graham factors and reasons under KSR), and further stating:

Annunziata uses Zener diodes in a circuit. Cummings and [Annunziata] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

| **Claim 89:** | **Prior Art:** |
|---|---|
| 89. The method according to claim 67 wherein the coupling at least one path across the specific contacts comprises coupling a zener diode across the specific contacts. | The reasons for rejecting claim 67, from which claim 89 depends, are provided above. Claim 89 requires a Zener diode.<br><br>Cummings does not explicitly teach a Zener diode. However, Annunziata, in a related field of endeavor, does. See Annunziata, col. 1 11. 34-57 (“zener diode”). Although the claim does not specify how the Zener diodes are utilized, Annunziata appears to use the Zener diodes in precisely the manner that would be expected for a theft prevention system that senses impedance across a path and, in any case, the Zener diodes taught by Annunziata are on the paths as claimed. |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman (citing the Graham factors and reasons under KSR), and further stating:

Annunziata uses Zener diodes in a circuit. Cummings and [Annunziata] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

**REJ 16)** Claims 20, 50, 77 and 78 are rejected under pre-AIA 35 USC 103(a) as being obvious over Cummings in view of Maman and Johnson.

**JOHNSON:**

Johnson is provided for the purpose of illustrating signal durations based on baud rate.

Johnson provides the mandated computations in tabular form, which eliminates the necessitating an inherency analysis of the claim using Cummings alone:

| BAUD RATE | SINGLE BIT TIMER VALUE |
|---|---|
| 1200 baud | 832 microseconds |
| 2400 baud | 416 microseconds |
| 4800 baud | 208 microseconds |
| 9600 baud | 104 microseconds |
| 19200 baud | 52 microseconds |

Johnson, col. 3 ll. 15-23

It may be noted Johnson apparently computed timer value at 19200 baud (1/19200=0.000052 seconds), then doubled the value at each 14 baud to 1200 baud, whereas had Johnson actually made the computation by hand, would have listed the single bit timer value as 833 microseconds at 1200 baud. Nevertheless, Johnson illustrates the same calculations to establish a signal duration.

Johnson recognizes the applicability of the baud rate analysis in networked devices: "The barcode printer then determines the lowest stored timer value and correlates the lowest stored timer value with a baud rate value that represents the baud rate of communications from the host computer." Johnson, col. 1 ll. 50-53.

The observation is applicable to any signal path from DTE to the network to which the DTE is connected.

As to claims **20, 50, 77 and 78**, the unmodified rejection from the Final rejection is as follows:

| **Claim 20:** | **Prior Art:** |
|---|---|
| 20. The method according to claim 1 wherein the associating distinguishing information about the piece of Ethernet data terminal equipment to impedance within the at least one path comprises associating distinguishing information about the piece of Ethernet data terminal equipment to impedance within the at least one path having at least one predetermined duration. | The reasons for rejecting claim 1, from which claim 20 depends, are provided above. Claim 20 requires the impedance have at least one predetermined duration.<br><br>The ‘012 patent explicitly mentions a duration of 833 microseconds: “By way of a specific example, the high frequency information in the embodiment of FIGS. 4-8 operates in the range of about 10 Mb/s while the encoded signal sent from remote module 16a to central module 15a operates in the range of about 1200 bits per second. In other words, the altered current flow has changes and each change is at least 833 microseconds in duration (1/1200=0.000833 seconds).” ‘012 patent, col. 12 ll. 32-38. Thus, the ‘012 patent has associated periodicity with Baud rate.<br><br>Any DTE connected to a network will have a baud rate associated with the path. 1200 baud rate corresponds to 833 microsecond duration/bit, 19200 baud rate corresponds to 52 microsecond duration/bit, and 58800 baud corresponds to 17 microsecond duration/bit. These values are predetermined based upon baud rate and are mathematically mandated for conventional networks.<br><br>Johnson provides the mandated computations in tabular form, which eliminates the need for an inherency analysis of the claim using Cummings alone: |

| BAUD RATE | SINGLE BIT TIMER VALUE |
|---|---|
| 1200 baud | 832 microseconds |
| 2400 baud | 416 microseconds |
| 4800 baud | 208 microseconds |
| 9600 baud | 104 microseconds |
| 19200 baud | 52 microseconds |

Johnson, col. 3 ll. 15-23

It may be noted Johnson apparently computed timer value at 19200 baud (1/19200=0.000052 seconds), then doubled the value at each 14 baud to 1200 baud, whereas had Johnson actually made the computation by hand, would have listed the single bit timer value as 833 microseconds at 1200 baud. Nevertheless, Johnson illustrates the same calculations to establish signal duration.

Johnson recognizes the applicability of the baud rate analysis in networked devices: “The barcode printer then determines the lowest stored timer value and correlates the lowest stored timer value with a baud rate value that represents the baud rate of communications from the host computer.” Johnson, col. 1 ll. 50-53.

Cummings is in the field of networked devices, making the baud rate and associated durations specified in Johnson applicable to the durations of signals on the paths. Moreover, the duration of signals would be the predetermined durations mandated by the baud rate.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman (citing the Graham factors and reasons under KSR), and further stating:

Cummings … describe[s] Ethernet networks. Moreover, AAPA illustrates pinouts for connectors that are identical to those illustrated by … Cummings appears to have language extremely similar to that of the ‘012 patent. (Cummings and the ‘012 patent

are co-owned.) Johnson is used to show the correlation between signal duration and baud rate, which is applicable at least to Ethernet network connections.

| **Claim 50:** | **Prior Art:** |
|---|---|
| 50. The piece of Ethernet data terminal equipment according to claim 31 wherein the distinguishing information about the piece of Ethernet data terminal equipment associated to impedance within the at least one path comprises distinguishing information about the piece of Ethernet data terminal equipment associated to impedance within the at least one path having a predetermined time duration. | The reasons for rejecting claim 31, from which claim 50 depends, are provided above. Claim 50 requires the impedance have at least one predetermined duration.<br><br>The ‘012 patent explicitly mentions a duration of 833 microseconds: “By way of a specific example, the high frequency information in the embodiment of FIGS. 4-8 operates in the range of about 10 Mb/s while the encoded signal sent from remote module 16a to central module 15a operates in the range of about 1200 bits per second. In other words, the altered current flow has changes and each change is at least 833 microseconds in duration (1/1200=0.000833 seconds).” ‘012 patent, col. 12 ll. 32-38. Thus, the ‘012 patent has associated periodicity with Baud rate.<br><br>Any DTE connected to a network will have a baud rate associated with the path. 1200 baud rate corresponds to 833 microsecond duration/bit, 19200 baud rate corresponds to 52 microsecond duration/bit, and 58800 baud corresponds to 17 microsecond duration/bit. These values are predetermined based upon baud rate and are mathematically mandated for conventional networks.<br><br>Johnson provides the mandated computations in tabular form, which eliminates the need for an inherency analysis of the claim using Cummings alone: |

| BAUD RATE | SINGLE BIT TIMER VALUE |
| --- | --- |
| 1200 baud | 832 microseconds |
| 2400 baud | 416 microseconds |
| 4800 baud | 208 microseconds |
| 9600 baud | 104 microseconds |
| 19200 baud | 52 microseconds |

Johnson, col. 3 ll. 15-23

It may be noted Johnson apparently computed timer value at 19200 baud (1/19200=0.000052 seconds), then doubled the value at each 14 baud to 1200 baud, whereas had Johnson actually made the computation by hand, would have listed the single bit timer value as 833 microseconds at 1200 baud. Nevertheless, Johnson illustrates the same calculations to establish signal duration.

Johnson recognizes the applicability of the baud rate analysis in networked devices: "The barcode printer then determines the lowest stored timer value and correlates the lowest stored timer value with a baud rate value that represents the baud rate of communications from the host computer." Johnson, col. 1 ll. 50-53.

Cummings is in the field of networked devices, making the baud rate and associated durations specified in Johnson applicable to the durations of signals on the paths. Moreover, the duration of signals would be the predetermined durations mandated by the baud rate.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman (citing the Graham factors and reasons under KSR), and further stating:

Cummings … describe[s] Ethernet networks. Moreover, AAPA illustrates pinouts for connectors that are identical to those illustrated by … Cummings appears to have language extremely similar to that of the '012 patent. (Cummings and the '012 patent

are co-owned.) Johnson is used to show the correlation between signal duration and baud rate, which is applicable at least to Ethernet network connections.

<table>
<tr><th>Claims 77 and 78:</th><th>Prior Art:</th></tr>
<tr><td>77. The method according to claim 67 wherein the arranging impedance within the at least one path comprises arranging the impedance within at least one path to have at least one predetermined duration.<br><br>78. The method according to claim 77 wherein the predetermined duration is between 17 and 833 microseconds.</td><td>The reasons for rejecting claim 67, from which claim 77 depends, are provided above. Claim 77 requires the impedance have at least one predetermined duration.<br><br>The ‘012 patent explicitly mentions a duration of 833 microseconds: “By way of a specific example, the high frequency information in the embodiment of FIGS. 4-8 operates in the range of about 10 Mb/s while the encoded signal sent from remote module 16a to central module 15a operates in the range of about 1200 bits per second. In other words, the altered current flow has changes and each change is at least 833 microseconds in duration (1/1200=0.000833 seconds).” ‘012 patent, col. 12 ll. 32-38. Thus, the ‘012 patent has associated periodicity with Baud rate.<br><br>Any DTE connected to a network will have a baud rate associated with the path. 1200 baud rate corresponds to 833 microsecond duration/bit, 19200 baud rate corresponds to 52 microsecond duration/bit, and 58800 baud corresponds to 17 microsecond duration/bit. These values are predetermined based upon baud rate and are mathematically mandated for conventional networks.<br><br>Johnson provides the mandated computations in tabular form, which eliminates the need for an inherency analysis of the claim using Cummings alone:<br><br><table><tr><th>BAUD RATE</th><th>SINGLE BIT TIMER VALUE</th></tr><tr><td>1200 baud</td><td>833 microseconds</td></tr><tr><td>2400 baud</td><td>416 microseconds</td></tr><tr><td>4800 baud</td><td>208 microseconds</td></tr><tr><td>9600 baud</td><td>104 microseconds</td></tr><tr><td>19200 baud</td><td>52 microseconds</td></tr></table>Johnson, col. 3 ll. 15-23</td></tr>
</table>

| | |
|---|---|
| | It may be noted Johnson apparently computed timer value at 19200 baud (1/19200=0.000052 seconds), then doubled the value at each 14 baud to 1200 baud, whereas had Johnson actually made the computation by hand, would have listed the single bit timer value as 833 microseconds at 1200 baud. Nevertheless, Johnson illustrates the same calculations to establish signal duration.<br><br>Johnson recognizes the applicability of the baud rate analysis in networked devices: “The barcode printer then determines the lowest stored timer value and correlates the lowest stored timer value with a baud rate value that represents the baud rate of communications from the host computer.” Johnson, col. 1 ll. 50-53.<br><br>Cummings is in the field of networked devices, making the baud rate and associated durations specified in Johnson applicable to the durations of signals on the paths. Moreover, the duration of signals would be the predetermined durations mandated by the baud rate. |

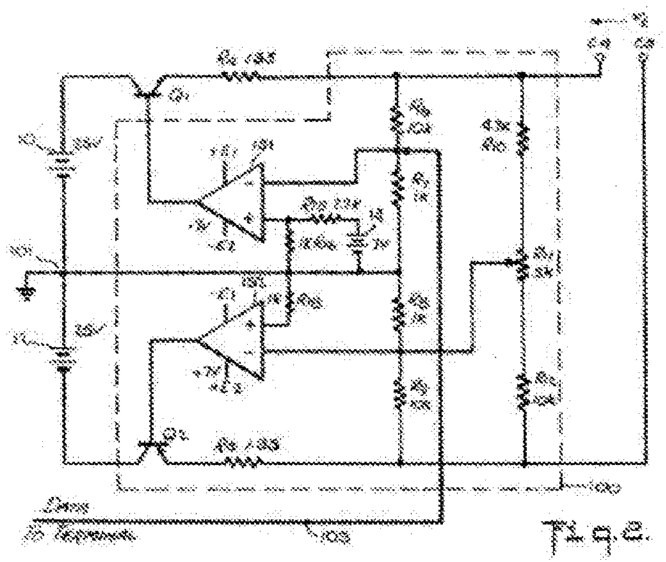
It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman (citing the Graham factors and reasons under KSR), and further stating:

Cummings … describe[s] Ethernet networks. Moreover, AAPA illustrates pinouts for connectors that are identical to those illustrated by … Cummings appears to have language extremely similar to that of the ‘012 patent. (Cummings and the ‘012 patent are co-owned.) Johnson is used to show the correlation between signal duration and baud rate, which is applicable at least to Ethernet network connections.

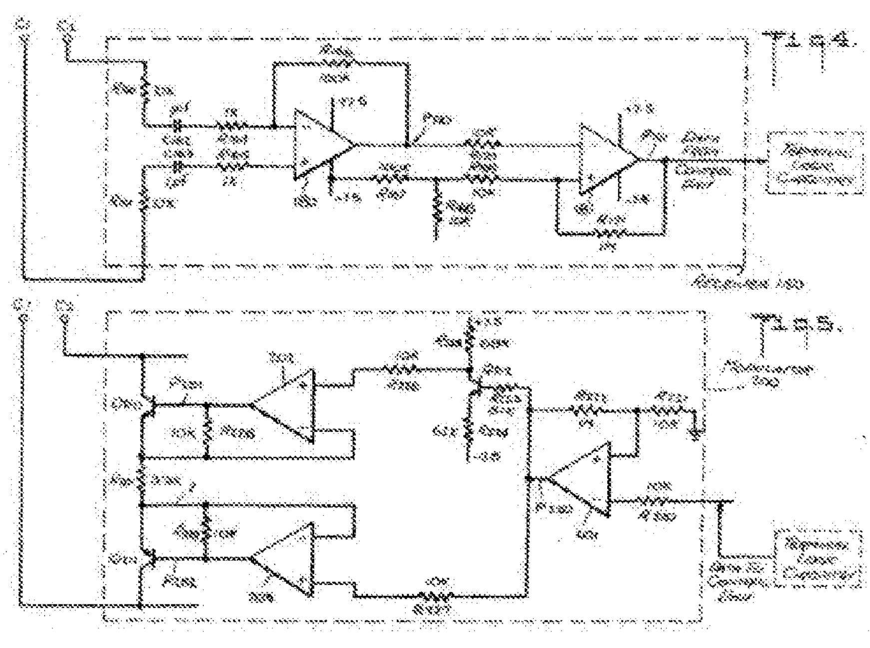
**REJ 17)** Claims 21, 23, 51, 53, 79 and 97 are rejected under pre-AIA 35 USC 103(a) as being obvious over Cummings in view of Maman and Bloch.

**BLOCH:**

Bloch is provided for the sole purpose of illustrating a path having impedance of between 10k Ohms and 15k Ohms. For example:



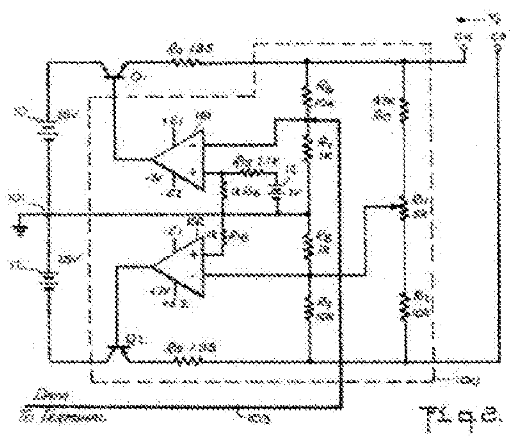
Bloch, FIG. 2.

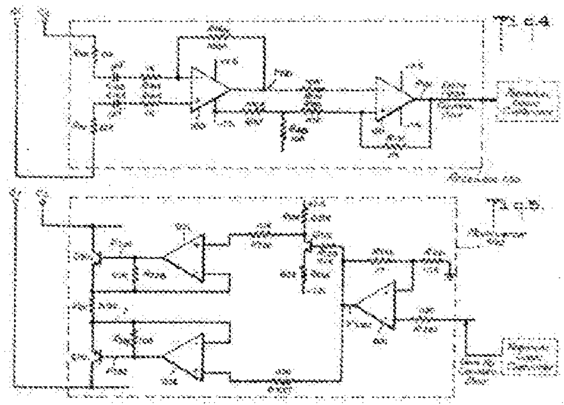


Bloch, FIGS. 4-5.

Bloch is in the same area of endeavor as the ‘012 patent, which is a communication circuit with combined power feed and data transmission.

As to claims **21, 23, 51, 53, 79 and 97**, the unmodified rejection from the Final rejection is as follows:

| **Claim 21:** | **Prior Art:** |
|---|---|
| 21. The method according to claim 20 wherein the impedance within the at least one path is between 10 k Ohms and 15 k Ohms. | The reasons for rejecting claim 1, from which claim 21 depends, are provided above. Claim 21 requires the impedance be between 10k and 15k Ohms.<br><br>The impedance is not quantified in the specification; the range between 10 k Ohms and 15 k Ohms is found only in the claims. There are some “10k” resistors illustrated in FIG. 8, but no indication as to whether the various components illustrated therein provide a path with an impedance between 10 k Ohms and 15 k Ohms. ‘012 patent, FIG. 8.<br><br>Bloch also teaches paths with 10k resistors similar to those provided in the figures of the ‘012 patent:<br><br>Bloch, FIG. 2. |

| | |
|---|---|
| |  Bloch, FIGS. 4-5<br><br>It would be well within the skills of one of ordinary skill in the relevant art to use the same building blocks used in Bloch and the ‘012 patent to provide a path having an impedance between 10k Ohms and 15k Ohms, which may be one of the reasons why no explicit enabling discussion was required when the ‘012 patent claim was allowed. |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman (citing the Graham factors and reasons under KSR), and further stating:

Cummings and [Bloch] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

| **Claim 23:** | **Prior Art:** |
|---|---|
| 23. The method according to claim 1 wherein the at least one path includes the center tap of at least one isolation transformer. | The reasons for rejecting claim 1, from which claim 23 depends, are provided above. Claim 23 requires the path include a center tap of at least one isolation transformer.<br><br>Cummings teaches “Each pair of transmit wires 44 and 46 are internally coupled to an associated personal computer 12 via one winding 53 of an internally located isolation transformer 52.” Cummings, col. 3 ll. 42-45. |

| | |
|---|---|
| | Cummings does not explicitly state the path includes the center tap of the isolation transformer. However, Bloch, in a related field of endeavor, teaches:<br><br>Data information flow between the control unit and the terminal and power feed from the control unit to the terminal is accomplished via a phantom pair circuit arrangement in which the control unit circuitry is connected to the two center taps of the transformers terminating the two pair of conductors at the control unit. Connections to the center tap connections of the transformers terminating the two conductor pairs at the terminal complete the phantom pair circuit. A d.c. voltage source is connected at the control unit to the phantom pair circuit arrangement. The d.c. voltage is applied to the phantom circuit arrangement, and is sensed and regulated by a voltage regulator in the terminal connected in series at the terminal end of the phantom pair. Bloch, col. 3 11. 9-23 (emphasis added); see also, id., FIG. 1. |

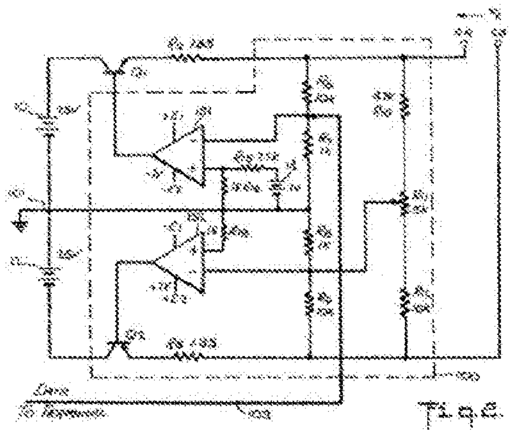
It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman (citing the Graham factors and reasons under KSR), and further stating:

Cummings and [Bloch] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

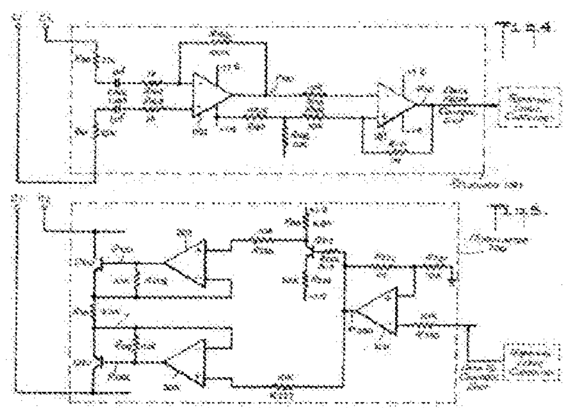
| **Claim 51:** | **Prior Art:** |
|---|---|
| 51. The piece of Ethernet data terminal equipment according to claim 50 wherein impedance within the at least one path is between 10 k Ohms and 15 k Ohms. | The reasons for rejecting claim 31, from which claim 51 depends, are provided above. Claim 51 requires the impedance be between 10k and 15k Ohms.<br><br>The impedance is not quantified in the specification; the range between 10 k Ohms and 15 k Ohms is found only in the claims. There are some “10k” resistors illustrated in FIG. 8, but no indication as to |

whether the various components illustrated therein provide a path with an impedance between 10 k Ohms and 15 k Ohms. ‘012 patent, FIG. 8.

Bloch also teaches paths with 10k resistors similar to those provided in the figures of the ‘012 patent:



Bloch, FIG. 2.



Bloch, FIGS. 4-5.

It would be well within the skills of one of ordinary skill in the relevant art to use the same building blocks used in Bloch and the ‘012 patent to provide a path having an impedance between 10k Ohms and 15k Ohms, which may be one of the reasons why no explicit enabling discussion was required when the ‘012 patent claim was allowed.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the

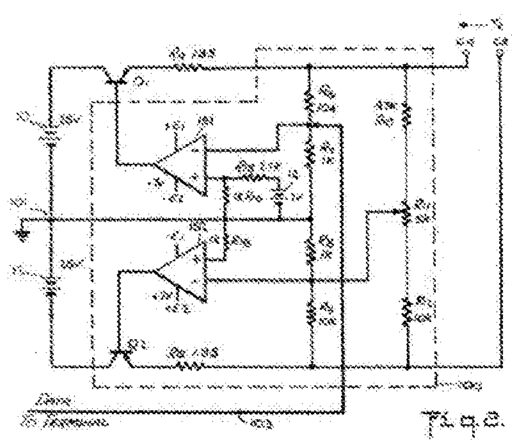
reasons set forth in the Final action, as noted above as to Cummings and Maman (citing the Graham factors and reasons under KSR), and further stating:

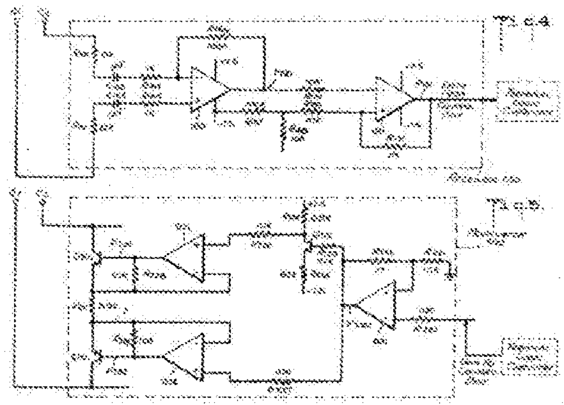
Cummings and [Bloch] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

| **Claim 53:** | **Prior Art:** |
| --- | --- |
| 53. The piece of Ethernet data terminal equipment according to claim 31 wherein the at least one path includes the center tap of at least one isolation transformer | The reasons for rejecting claim 31, from which claim 53 depends, are provided above. Claim 53 requires the path include a center tap of at least one isolation transformer.<br><br>Cummings teaches “Each pair of transmit wires 44 and 46 are internally coupled to an associated personal computer 12 via one winding 53 of an internally located isolation transformer 52.” Cummings, col. 3 ll. 42-45.<br><br>Cummings does not explicitly state the path includes the center tap of the isolation transformer. However, Bloch, in a related field of endeavor, teaches:<br><br>Data information flow between the control unit and the terminal and power feed from the control unit to the terminal is accomplished via a phantom pair circuit arrangement in which the control unit circuitry is connected to the two center taps of the transformers terminating the two pair of conductors at the control unit. Connections to the center tap connections of the transformers terminating the two conductor pairs at the terminal complete the phantom pair circuit. A d.c. voltage source is connected at the control unit to the phantom pair circuit arrangement. The d.c. voltage is applied to the phantom circuit arrangement, and is sensed and regulated by a voltage regulator in the terminal connected in series at the terminal end of the phantom pair. Bloch, col. 3 11. 9-23 (emphasis added); see also, id., FIG. 1. |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman (citing the Graham factors and reasons under KSR), and further stating:

Cummings and [Bloch] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

| **Claim 79:** | **Prior Art:** |
|---|---|
| 79. The method according to claim 67 wherein the arranging impedance within the at least one path comprises arranging impedance within the at least one path to be between 10 k Ohms and 15 k Ohms. | The reasons for rejecting claim 67, from which claim 79 depends, are provided above. Claim 79 requires the impedance be between 10k and 15k Ohms.<br><br>The impedance is not quantified in the specification; the range between 10 k Ohms and 15 k Ohms is found only in the claims. There are some "10k" resistors illustrated in FIG. 8, but no indication as to whether the various components illustrated therein provide a path with an impedance between 10 k Ohms and 15 k Ohms. '012 patent, FIG. 8.<br><br>Bloch also teaches paths with 10k resistors similar to those provided in the figures of the '012 patent:<br><br><br>Bloch, FIG. 2. |

| | |
|---|---|
| | <br>Bloch, FIGS. 4-5<br><br>It would be well within the skills of one of ordinary skill in the relevant art to use the same building blocks used in Bloch and the ‘012 patent to provide a path having an impedance between 10k Ohms and 15k Ohms, which may be one of the reasons why no explicit enabling discussion was required when the ‘012 patent claim was allowed. |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman (citing the Graham factors and reasons under KSR), and further stating:

Cummings and [Bloch] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

| **Claim 97:** | **Prior Art:** |
|---|---|
| 97. The method according to claim 67 wherein the at least one path includes the center tap of at least one isolation transformer. | The reasons for rejecting claim 67, from which claim 97 depends, are provided above. Claim 97 requires an isolation transformer.<br><br>Cummings teaches “Each pair of transmit wires 44 and 46 are internally coupled to an associated personal computer 12 via one winding 53 of an internally located isolation transformer 52.” Cummings, col. 3 ll. 42-45. |

| | |
|---|---|
| | Cummings does not explicitly state the path includes the center tap of the isolation transformer. However, Bloch, in a related field of endeavor, teaches:<br><br>Data information flow between the control unit and the terminal and power feed from the control unit to the terminal is accomplished via a phantom pair circuit arrangement in which the control unit circuitry is connected to the two center taps of the transformers terminating the two pair of conductors at the control unit. Connections to the center tap connections of the transformers terminating the two conductor pairs at the terminal complete the phantom pair circuit. A d.c. voltage source is connected at the control unit to the phantom pair circuit arrangement. The d.c. voltage is applied to the phantom circuit arrangement, and is sensed and regulated by a voltage regulator in the terminal connected in series at the terminal end of the phantom pair. Bloch, col. 3 11. 9-23 (emphasis added); see also, id., FIG. 1. |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman (citing the Graham factors and reasons under KSR), and further stating:

Cummings and [Bloch] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

**REJ 18)** Claims 74, 75 and 81-86 are rejected under pre-AIA 35 USC 103(a) as being obvious over Cummings in view of Maman and Libby[1].

**LIBBY:**

Libby is provided for the purpose of illustrating continuously variable impedance.

Libby teaches:

> I have taken a pair of discrete elements, such as resistances 14 and 18 and operated them as a single impedance element which is effectively continuously variable from the value of one of the discrete elements to the value of the other discrete element. This has been done by alternatively, periodically switching the discrete elements in connection with the same terminals in the circuit at a rate substantially greater than the operative frequency of the circuit. The particular effective value of such a continuously variable impedance element is dependent upon the relative connection or on times of each discrete impedance element. Libby, col. 5 ll. 29-32; FIG. 2.

The technique can be applied to an electrical circuit to create a path with a continuously variable impedance.

As to claims **74, 75 and 81-86**, the unmodified rejection from the Final rejection is as follows:

| **Claim 74:** | **Prior Art:** |
|---|---|
| 74. The method according to claim 67 wherein the arranging impedance within the at least one path comprises arranging impedance within the at least one path to be variable. | The reasons for rejecting claim 67, from which claim 74 depends, are provided above. Claim 74 requires the impedance be variable.<br><br>Cummings claims “said respective pairs of data communication lines are associated with different ones of the associated pieces of equipment,” “supplying a low DC current signal to each current loop so as to achieve continuous current flow through each current loop while each of said associated pieces of equipment is physically connected to said network via the data |

[1] In the initial rejection, this was listed as in view of Sutterlin. This was a typographical error, as the rejection was clearly under the grounds of Cummings, Maman and Libby.

| | |
|---|---|
| | communication lines," and sensing "DC current signal in each of said current loops so as to detect a change in current flow indicative of disconnection of one of said pieces of associated equipment." If a device is disconnected, causing current to drop to 0, impedance also drops to 0 and is, therefore, variable.<br><br>The '012 patent does not describe precisely how impedance is arranged within the path to be variable. The only use of the term "variable" is with reference to a variable current source. See, '012 patent, col. 7 ll. 51-54. However, a broadest reasonable interpretation of "arranging impedance within the at least one path to be variable" includes providing an input variable impedance.<br>Libby teaches:<br><br>I have taken a pair of discrete elements, such as resistances 14 and 18 and operated them as a single impedance element which is effectively continuously variable from the value of one of the discrete elements to the value of the other discrete element. This has been done by alternatively, periodically switching the discrete elements in connection with the same terminals in the circuit at a rate substantially greater than the operative frequency of the circuit. The particular effective value of such a continuously variable impedance element is dependent upon the relative connection or on times of each discrete impedance element. Libby, col. 5 ll. 29-32; FIG. 2.<br><br>Thus, to arrange impedance in the path of Cummings to be variable, one could simply periodically switch elements at a rate substantially greater than the operative frequency of the circuit as taught by Libby. Note: This would not only have the effect of making the impedance variable, but also continuously variable. |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the

reasons set forth in the Final action, as noted above as to Cummings and Maman (citing the Graham factors and reasons under KSR), and further stating:

Libby uses continuously variable impedance. Cummings and [Libby] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

| **Claim 75:** | **Prior Art:** |
|---|---|
| 75. The method according to claim 67 wherein the arranging impedance within the at least one path comprises arranging impedance within the at least one path to be continuously variable. | The reasons for rejecting claim 67, from which claim 75 depends, are provided above. Claim 75 requires the impedance be variable.<br><br>Cummings claims “said respective pairs of data communication lines are associated with different ones of the associated pieces of equipment,” “supplying a low DC current signal to each current loop so as to achieve continuous current flow through each current loop while each of said associated pieces of equipment is physically connected to said network via the data communication lines,” and sensing “DC current signal in each of said current loops so as to detect a change in current flow indicative of disconnection of one of said pieces of associated equipment.” If a device is disconnected, causing current to drop to 0, impedance also drops to 0 and is, therefore, variable.<br><br>The ‘012 patent does not describe precisely how impedance is arranged within the path to be variable. The only use of the term “variable” is with reference to a variable current source. See, ‘012 patent, col. 7 ll. 51-54. However, a broadest reasonable interpretation of “arranging impedance within the at least one path to be variable” includes providing an input variable impedance.<br>Libby teaches:<br><br>I have taken a pair of discrete elements, such as resistances 14 and 18 and operated them as a single |

| | |
|---|---|
| | impedance element which is effectively continuously variable from the value of one of the discrete elements to the value of the other discrete element. This has been done by alternatively, periodically switching the discrete elements in connection with the same terminals in the circuit at a rate substantially greater than the operative frequency of the circuit. The particular effective value of such a continuously variable impedance element is dependent upon the relative connection or on times of each discrete impedance element. Libby, col. 5 ll. 29-32; FIG. 2.<br><br>Thus, to arrange impedance in the path of Cummings to be variable, one could simply periodically switch elements at a rate substantially greater than the operative frequency of the circuit as taught by Libby. Note: This would not only have the effect of making the impedance variable, but also continuously variable. |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman (citing the Graham factors and reasons under KSR), and further stating:

Libby uses continuously variable impedance. Cummings and [Libby] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

| **Claim 81:** | **Prior Art:** |
|---|---|
| 81. The method according to claim 67 wherein the arranging impedance within the at least one path comprises arranging impedance within the at least one path to have a first impedance followed by a second impedance. | The reasons for rejecting claim 67, from which claim 81 depends, are provided above. Claim 81 requires the impedance be variable.<br><br>Cummings actually claims “said respective pairs of data communication lines are associated with different ones of the associated pieces of equipment,” “supplying a low DC current signal to |

| | |
|---|---|
| | each current loop so as to achieve continuous current flow through each current loop while each of said associated pieces of equipment is physically connected to said network via the data communication lines," and sensing "DC current signal in each of said current loops so as to detect a change in current flow indicative of disconnection of one of said pieces of associated equipment." If a device is disconnected, causing current to drop to 0, impedance also drops to 0 and, therefore, a first impedance follows a second impedance.<br><br>Libby teaches:<br><br>I have taken a pair of discrete elements, such as resistances 14 and 18 and operated them as a single impedance element which is effectively continuously variable from the value of one of the discrete elements to the value of the other discrete element. This has been done by alternatively, periodically switching the discrete elements in connection with the same terminals in the circuit at a rate substantially greater than the operative frequency of the circuit. The particular effective value of such a continuously variable impedance element is dependent upon the relative connection or on times of each discrete impedance element. Libby, col. 5 11. 29-32; FIG. 2.<br><br>Thus, to arrange impedance in the path of Cummings to be continuously variable, one could simply periodically switch elements at a rate substantially greater than the operative frequency of the circuit as taught by Libby. |
| **Claim 82:** | **Prior Art:** |
| 82. The method according to claim 67 wherein the arranging impedance within the at least one path comprises arranging impedance within the at least one path to have a first impedance for a first condition applied to the specific contacts | The reasons for rejecting claim 67, from which claim 82 depends, are provided above. Claim 82 requires the impedance be variable.<br><br>Cummings actually claims "said respective pairs of data communication lines are associated with different ones ofthe associated pieces of equipment," "supplying a low DC current signal to each current |

| | |
|---|---|
| followed by a second impedance for a second condition applied to the specific contacts. | loop so as to achieve continuous current flow through each current loop while each of said associated pieces of equipment is physically connected to said network via the data communication lines," and sensing "DC current signal in each of said current loops so as to detect a change in current flow indicative of disconnection of one of said pieces of associated equipment." If a device is disconnected, causing current to drop to 0, impedance also drops to 0 and, therefore, a first impedance (associated with a connected condition) follows a second impedance (associated with a disconnected condition).<br><br>Libby teaches:<br><br>I have taken a pair of discrete elements, such as resistances 14 and 18 and operated them as a single impedance element which is effectively continuously variable from the value of one of the discrete elements to the value of the other discrete element. This has been done by alternatively, periodically switching the discrete elements in connection with the same terminals in the circuit at a rate substantially greater than the operative frequency of the circuit. The particular effective value of such a continuously variable impedance element is dependent upon the relative connection or on times of each discrete impedance element. Libby, col. 5 11. 29-32; FIG. 2.<br><br>Thus, to arrange impedance in the path of Cummings to be continuously variable, one could simply periodically switch elements at a rate substantially greater than the operative frequency of the circuit as taught by Libby. |
| **Claim 83:** | **Prior Art:** |
| 83. The method according to claim 82 wherein the first and second conditions applied to the specific contacts are voltage conditions. | The reasons for rejecting claim 82, from which claim 83 depends, are provided above. Claim 83 requires applying voltage conditions to the contacts to impact the conditions [impedance].<br><br>Cummings teaches "The network security system 24 |

| | |
|---|---|
| | includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d." Cummings, col. 3 11. 53-56.<br><br>Maman teaches associating distinguishing information about the data terminal equipment to impedance within a corresponding path. Maman, col. 2 ll. 31-45 ("first and second status conductors adapted to exhibit a first impedance value between the individual status conductors corresponding to the first state of the cable when the electrical equipment is connected to the equipment and a second impedance value between the individual status conductors corresponding to the second state of the cable when the electrical equipment is disconnected from the cable"); see also, id., FIG. 3.<br><br>The function of voltage across the selected contacts is not defined in the '012 patent specification; the function is found only in the claims. However, the function is Ohm's Law: V = IR rewritten for circuits with reactive elements as V = IZ, where Z (impedance) replaces R (resistance). There is no alternative but for impedance to be a function of voltage across the selected contacts in accordance with the two century old law. This function is inherent in any of the electrical engineering references included. |
| **Claim 84:** | **Prior Art:** |
| 84. The method according to claim 83 wherein the voltage conditions are DC voltage conditions. | The reasons for rejecting claim 83, from which claim 84 depends, are provided above. Claim 84 requires applying DC voltage conditions to the contacts to impact the conditions [impedance].<br><br>Cummings teaches "The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d." Cummings, col. 3 ll. 53-56. |
| **Claim 85:** | **Prior Art:** |
| 85. The method according to | The reasons for rejecting claim 82, from which claim |

| | |
|---|---|
| claim 82 wherein the first and second conditions applied to the specific contacts are current conditions. | 85 depends, are provided above. Claim 85 requires applying current conditions to the contacts to impact the conditions [impedance]. As discussed above, Cummings understands the relationship between current and impedance. Cummings also teaches “detection of a current flow discontinuity further energizes the appropriate light emitting diodes 44a through 44d associated with the disconnected personal computer 12.” Current flow discontinuity is a current condition. |
| **Claim 86:** | **Prior Art:** |
| 86. The method according to claim 83 wherein the current conditions are DC current conditions. | The reasons for rejecting claim 85, from which claim 86 depends, are provided above. Claim 86 requires applying DC current conditions to the contacts to impact the conditions [impedance]<br><br>Cummings teaches “The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d.” Cummings, col. 3 ll. 53-56 |

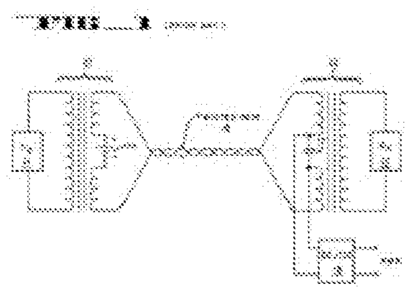
It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman (citing the Graham factors and reasons under KSR), and further stating:

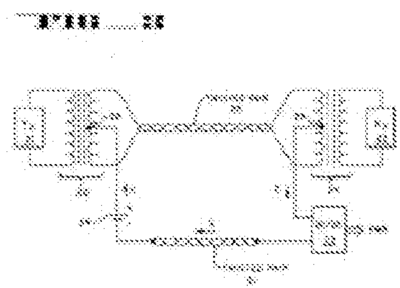
Libby uses continuously variable impedance. Cummings and [Libby] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

**REJ 19)** Claim 90 is rejected under pre-AIA 35 USC 103(a) as being obvious over Cummings in view of Maman and Sutterlin.

**SUTTERLIN:**

Sutterlin is provided for the purpose of illustrating an energy storage device (battery) in a power/communication path, along with teaching a path on which both power and data are provided. For example:

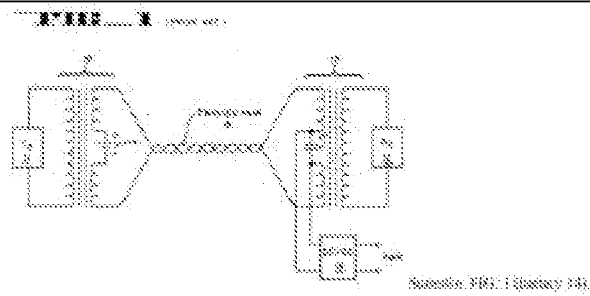
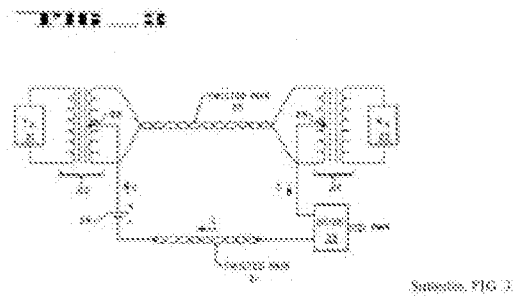




Sutterlin is in the same area of endeavor of the ‘012 patent, which is a communication circuit with combined power feed and data transmission.

As to **claim 90**, the unmodified rejection from the Final rejection is as follows:

| **Claim 90:** | **Prior Art:** |
|---|---|
| 90. The method according to claim 67 wherein the coupling at least one path across the specific contacts comprises coupling an energy storage device across the specific contacts. | The reasons for rejecting claim 67, from which claim 90 depends, are provided above. Claim 90 requires an energy storage device.<br><br>Cummings does not explicitly teach an energy storage device. However, Sutterlin, in a related field of endeavor, does: |

| | |
|---|---|
| |   Although the claim does not specify how the energy storage device is utilized, Sutterlin appears to use the energy storage device (a battery 14) in precisely the manner that would be expected for a system providing power and data over a single path and, in any case, the energy storage device taught by Sutterlin is on the path as claimed. |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman (citing the Graham factors and reasons under KSR), and further stating:

Sutterlin uses an energy storing device in a circuit. Cummings and [Sutterlin] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

**REJ 20)** Claims 115, 116 and 122-127 are rejected under pre-AIA 35 USC 103(a) as being obvious over Cummings in view of Maman, PCNet and Libby.

As to **claims 115, 116 and 122-127**, the unmodified rejection from the Final rejection is as follows:

| **Claim 115:** | **Prior Art:** |
|---|---|
| 115. The piece of terminal equipment according to claim 108 wherein the impedance within the at least one path is arranged to be variable. | The reasons for rejecting claim 108, from which claim 115 depends, are provided above. Claim 115 requires variable impedance.<br><br>Cummings claims "said respective pairs of data communication lines are associated with different ones of the associated pieces of equipment," "supplying a low DC current signal to each current loop so as to achieve continuous current flow through each current loop while each of said associated pieces of equipment is physically connected to said network via the data communication lines," and sensing "DC current signal in each of said current loops so as to detect a change in current flow indicative of disconnection of one of said pieces of associated equipment." If a device is disconnected, causing current to drop to 0, impedance also drops to 0 and is, therefore, variable.<br><br>The '012 patent does not describe precisely how impedance is arranged within the path to be variable. The only use of the term "variable" is with reference to a variable current source. See, '012 patent, col. 7 ll. 51-54. However, a broadest reasonable interpretation of "arranging impedance within the at least one path to be variable" includes providing an input variable impedance.<br>Libby teaches:<br><br>I have taken a pair of discrete elements, such as resistances 14 and 18 and operated them as a single impedance element which is effectively continuously variable from the value of one of the discrete elements to the value of the other discrete element. |

| | |
|---|---|
| | This has been done by alternatively, periodically switching the discrete elements in connection with the same terminals in the circuit at a rate substantially greater than the operative frequency of the circuit. The particular effective value of such a continuously variable impedance element is dependent upon the relative connection or on times of each discrete impedance element. Libby, col. 5 ll. 29-32; FIG. 2.<br><br>Thus, to arrange impedance in the path of Cummings to be variable, one could simply periodically switch elements at a rate substantially greater than the operative frequency of the circuit as taught by Libby. Note: This would not only have the effect of making the impedance variable, but also continuously variable. |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman and PCNet (citing the Graham factors and reasons under KSR), and further stating:

Libby uses continuously variable impedance. Cummings and [Libby] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

| **Claim 116:** | **Prior Art:** |
|---|---|
| 116. The piece of terminal equipment according to claim 108 wherein the impedance within the at least one path is arranged to be continuously variable. | The reasons for rejecting claim 108, from which claim 116 depends, are provided above. Claim 116 requires continuously variable impedance.<br><br>Cummings claims “said respective pairs of data communication lines are associated with different ones ofthe associated pieces of equipment,” “supplying a low DC current signal to each current loop so as to achieve continuous current flow through each current loop while each of said associated pieces of equipment is physically |

| | |
|---|---|
| | connected to said network via the data communication lines," and sensing "DC current signal in each of said current loops so as to detect a change in current flow indicative of disconnection of one of said pieces of associated equipment." If a device is disconnected, causing current to drop to 0, impedance also drops to 0 and is, therefore, variable. Because the current is constant while the computer is connected, the impedance is continuously variable.<br><br>The '012 patent does not describe precisely how impedance is arranged within the path to be variable. The only use of the term "variable" is with reference to a variable current source. See, '012 patent, col. 7 11. 51-54. (There is no mention at all of "continuously variable" impedance.) However, a broadest reasonable interpretation of "arranging impedance within the at least one path to be continuously variable" includes providing an input variable impedance and an output variable impedance used to create a continuously variable bandwidth of a filter.<br><br>Libby teaches:<br><br>I have taken a pair of discrete elements, such as resistances 14 and 18 and operated them as a single impedance element which is effectively continuously variable from the value of one of the discrete elements to the value of the other discrete element. This has been done by alternatively, periodically switching the discrete elements in connection with the same terminals in the circuit at a rate substantially greater than the operative frequency of the circuit. The particular effective value of such a continuously variable impedance element is dependent upon the relative connection or on times of each discrete impedance element. Libby, col. 5 ll. 29-32; FIG. 2.<br><br>Thus, to arrange impedance in the path of Cummings to be continuously variable, one could simply periodically switch elements at a rate |

| | |
|---|---|
| | substantially greater than the operative frequency of the circuit as taught by Libby. |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman and PCNet (citing the Graham factors and reasons under KSR), and further stating:

Libby uses continuously variable impedance. Cummings and [Libby] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

| **Claim 122:** | **Prior Art:** |
|---|---|
| 122. The piece of terminal equipment according to claim 108 wherein the impedance within the at least one path is arranged to have a first impedance followed by a second impedance. | The reasons for rejecting claim 108, from which claim 122 depends, are provided above. Claim 122 requires a first impedance followed by a second impedance.<br><br>Cummings actually claims “said respective pairs of data communication lines are associated with different ones of the associated pieces of equipment,” “supplying a low DC current signal to each current loop so as to achieve continuous current flow through each current loop while each of said associated pieces of equipment is physically connected to said network via the data communication lines,” and sensing “DC current signal in each of said current loops so as to detect a change in current flow indicative of disconnection of one of said pieces of associated equipment.” If a device is disconnected, causing current to drop to 0, impedance also drops to 0 and, therefore, a first impedance follows a second impedance.<br><br>Libby teaches:<br><br>I have taken a pair of discrete elements, such as resistances 14 and 18 and operated them as a single impedance element which is effectively continuously |

| | |
|---|---|
| | variable from the value of one of the discrete elements to the value of the other discrete element. This has been done by alternatively, periodically switching the discrete elements in connection with the same terminals in the circuit at a rate substantially greater than the operative frequency of the circuit. The particular effective value of such a continuously variable impedance element is dependent upon the relative connection or on times of each discrete impedance element. Libby, col. 5 11. 29-32; FIG. 2.<br><br>Thus, to arrange impedance in the path of Cummings to be continuously variable, one could simply periodically switch elements at a rate substantially greater than the operative frequency of the circuit as taught by Libby. |
| **Claim 123:** | **Prior Art:** |
| 123. The piece of terminal equipment according to claim 108 wherein the impedance within the at least one path is arranged to have a first impedance for a first condition applied to the specific contacts followed by a second impedance for second condition applied to the specific contacts. | The reasons for rejecting claim 108, from which claim 123 depends, are provided above. Claim 123 requires first and second impedances for first and second conditions.<br><br>Cummings actually claims “said respective pairs of data communication lines are associated with different ones ofthe associated pieces of equipment,” “supplying a low DC current signal to each current loop so as to achieve continuous current flow through each current loop while each of said associated pieces of equipment is physically connected to said network via the data communication lines,” and sensing “DC current signal in each of said current loops so as to detect a change in current flow indicative of disconnection of one of said pieces of associated equipment.” If a device is disconnected, causing current to drop to 0, impedance also drops to 0 and, therefore, a first impedance (associated with a connected condition) follows a second impedance (associated with a disconnected condition).<br><br>Libby teaches: |

| | |
|---|---|
| | I have taken a pair of discrete elements, such as resistances 14 and 18 and operated them as a single impedance element which is effectively continuously variable from the value of one of the discrete elements to the value of the other discrete element. This has been done by alternatively, periodically switching the discrete elements in connection with the same terminals in the circuit at a rate substantially greater than the operative frequency of the circuit. The particular effective value of such a continuously variable impedance element is dependent upon the relative connection or on times of each discrete impedance element. Libby, col. 5 11. 29-32; FIG. 2.<br><br>Thus, to arrange impedance in the path of Cummings to be continuously variable, one could simply periodically switch elements at a rate substantially greater than the operative frequency of the circuit as taught by Libby. |
| **Claim 124:** | **Prior Art:** |
| 124. The piece of terminal equipment according to claim 123 wherein the first and second conditions applied to the specific contacts are voltage conditions. | The reasons for rejecting claim 123, from which claim 124 depends, are provided above. Claim 124 requires voltage conditions.<br><br>Cummings teaches “The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d.” Cummings, col. 3 11. 53-56.<br><br>PCnet describes power requirements of the PC Ethernet interface adapter card as “3.25 W maximum, 5 V DC, at 25°C (with NSC 10/100 PHY)” PCnet, 4-4, 4.6 POWER REQUIREMENTS.<br><br>Maman teaches associating distinguishing information about the data terminal equipment to impedance within a corresponding path. Maman, col. 2 ll. 31-45 (“first and second status conductors adapted to exhibit a first impedance value between the individual status conductors corresponding to the first state of the cable when the electrical equipment |

| | |
|---|---|
| | is connected to the equipment and a second impedance value between the individual status conductors corresponding to the second state of the cable when the electrical equipment is disconnected from the cable”); see also, id., FIG. 3.<br><br>The function of voltage across the selected contacts is not defined in the ‘012 patent specification; the function is found only in the claims. However, the function is Ohm’s Law: V = IR rewritten for circuits with reactive elements as V = IZ, where Z (impedance) replaces R (resistance). There is no alternative but for impedance to be a function of voltage across the selected contacts in accordance with the two century old law. This function is inherent in any of the electrical engineering references included. |
| **Claim 125:** | **Prior Art:** |
| 125. The piece of terminal equipment according to claim 124 wherein the voltage conditions are DC voltage conditions. | The reasons for rejecting claim 124, from which claim 125 depends, are provided above. Claim 125 requires DC voltage conditions.<br><br>Cummings teaches “The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d.” Cummings, col. 3 ll. 53-56.<br><br>PCnet describes power requirements of the PC Ethernet interface adapter card as “3.25 W maximum, 5 V DC, at 25°C (with NSC 10/100 PHY)” PCnet, 4-4, 4.6 POWER REQUIREMENTS. |
| **Claim 126:** | **Prior Art:** |
| 126. The piece of terminal equipment according to claim 123 wherein the first and second conditions applied to the specific contacts are current conditions. | The reasons for rejecting claim 123, from which claim 126 depends, are provided above. Claim 126 requires current conditions.<br>As discussed above, Cummings understands the relationship between current and impedance. Cummings also teaches “detection of a current flow discontinuity further energizes the appropriate light emitting diodes 44a through 44d associated with the disconnected personal computer 12.” Current flow |

| | |
|---|---|
| | discontinuity is a current condition. |
| **Claim 127:** | **Prior Art:** |
| 127. The piece of terminal equipment according to claim 126 wherein the current conditions are DC current conditions. | The reasons for rejecting claim 126, from which claim 127 depends, are provided above. Claim 127 requires current conditions be DC current conditions.<br><br>Cummings teaches "The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d." Cummings, col. 3 ll. 53-56.<br><br>PCnet describes power requirements of the PC Ethernet interface adapter card as "3.25 W maximum, 5 V DC, at 25°C (with NSC 10/100 PHY)" PCnet, 4-4, 4.6 POWER REQUIREMENTS. |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman and PCNet (citing the Graham factors and reasons under KSR), and further stating:

Libby uses continuously variable impedance. Cummings and [Libby] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

**REJ 21)** Claims 118 and 119 are rejected under pre-AIA 35 USC 103(a) as being obvious over Cummings in view of Maman, PCNet and Johnson.

As to **claims 118 and 119**, the unmodified rejection from the Final rejection is as follows:

| **Claims 118 and 119:** | **Prior Art:** |
|---|---|
| 118. The piece of terminal equipment according to claim 108 wherein the impedance within the at least one path is arranged to have at least one predetermined duration.<br><br>119. The piece of terminal equipment according to claim 118 wherein the predetermined duration is between 17 and 833 microseconds. | The reasons for rejecting claim 108, from which claim 118 depends, are provided above. Claim 118 requires impedance have a predetermined duration.<br><br>The ‘012 patent explicitly mentions a duration of 833 microseconds: “By way of a specific example, the high frequency information in the embodiment of FIGS. 4-8 operates in the range of about 10 Mb/s while the encoded signal sent from remote module 16a to central module 15a operates in the range of about 1200 bits per second. In other words, the altered current flow has changes and each change is at least 833 microseconds in duration (1/1200=0.000833 seconds).” ‘012 patent, col. 12 ll. 32-38. Thus, the ‘012 patent has associated periodicity with Baud rate.<br><br>Any DTE connected to a network will have a baud rate associated with the path. 1200 baud rate corresponds to 833 microsecond duration/bit, 19200 baud rate corresponds to 52 microsecond duration/bit, and 58800 baud corresponds to 17 microsecond duration/bit. These values are predetermined based upon baud rate and are mathematically mandated for conventional networks.<br><br>Johnson provides the mandated computations in tabular form, which eliminates the need for an inherency analysis of the claim using Cummings alone: |

| BAUD RATE | SINGLE BIT TIMER VALUE |
|---|---|
| 1200 baud | 832 microseconds |
| 2400 baud | 416 microseconds |
| 4800 baud | 208 microseconds |
| 9600 baud | 104 microseconds |
| 19200 baud | 52 microseconds |

Johnson, col. 3 ll. 15-2

It may be noted Johnson apparently computed timer value at 19200 baud (1/19200=0.000052 seconds), then doubled the value at each 14 baud to 1200 baud, whereas had Johnson actually made the computation by hand, would have listed the single bit timer value as 833 microseconds at 1200 baud. Nevertheless, Johnson illustrates the same calculations to establish signal duration.

Johnson recognizes the applicability of the baud rate analysis in networked devices: “The barcode printer then determines the lowest stored timer value and correlates the lowest stored timer value with a baud rate value that represents the baud rate of communications from the host computer.” Johnson, col. 1 ll. 50-53.

Cummings is in the field of networked devices, making the baud rate and associated durations specified in Johnson applicable to the durations of signals on the paths. Moreover, the duration of signals would be the predetermined durations mandated by the baud rate.

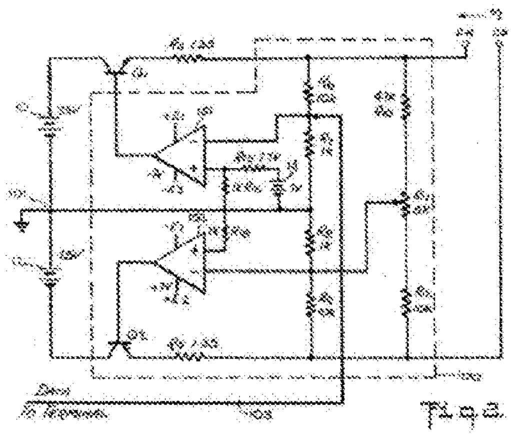
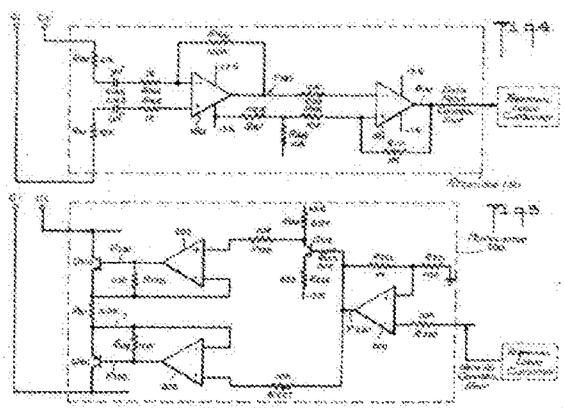
It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman and PCNet (citing the Graham factors and reasons under KSR), and further stating:

Cummings and PCnet both describe Ethernet networks. Moreover, AAPA illustrates pinouts for connectors that are identical to those illustrated by PCnet and Cummings appears to have language extremely similar to that of the ‘012 patent. (Cummings and the ‘012 patent are co-owned.) Johnson is used to show the correlation between signal duration and baud rate, which is applicable at least to Ethernet network connections.

**REJ 22)** Claims 120 and 138 are rejected under pre-AIA 35 USC 103(a) as being obvious over Cummings in view of Maman, PCNet and Bloch.

As to **claims 120 and 138**, the unmodified rejection from the Final rejection is as follows:

| **Claim 120:** | **Prior Art:** |
|---|---|
| 120. The piece of terminal equipment according to claim 108 wherein the impedance within the at least one path is arranged be between 10 k Ohms and 15 k Ohms. | The reasons for rejecting claim 108, from which claim 120 depends, are provided above. Claim 120 requires impedance is between 10 k Ohms and 15 k Ohms.<br><br>The impedance is not quantified in the specification; the range between 10 k Ohms and 15 k Ohms is found only in the claims. There are some “10k” resistors illustrated in FIG. 8, but no indication as to whether the various components illustrated therein provide a path with an impedance between 10 k Ohms and 15 k Ohms. ‘012 patent, FIG. 8.<br><br>Bloch also teaches paths with 10k resistors similar to those provided in the figures of the ‘012 patent: |

| | |
|---|---|
| |  Bloch, FIG. 2.  Bloch, FIGS. 4-5. It would be well within the skills of one of ordinary skill in the relevant art to use the same building blocks used in Bloch and the ‘012 patent to provide a path having an impedance between 10k Ohms and 15k Ohms, which may be one of the reasons why no explicit enabling discussion was required when the ‘012 patent claim was allowed. |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman and PCNet (citing the Graham factors and reasons under KSR), and further stating:

Cummings and [Bloch] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

| Claim 138: | Prior Art: |
|---|---|
| 138. The piece of terminal equipment according to claim 108 wherein the at least one path includes the center tap of at least one isolation transformer | The reasons for rejecting claim 108, from which claim 138 depends, are provided above. Claim 138 requires the path includes a center tap of an isolation transformer.<br>Cummings teaches “Each pair of transmit wires 44 and 46 are internally coupled to an associated personal computer 12 via one winding 53 of an internally located isolation transformer 52.” Cummings, col. 3 ll. 42-45.<br><br>Cummings does not explicitly state the path includes the center tap of the isolation transformer. However, Bloch, in a related field of endeavor, teaches:<br><br>Data information flow between the control unit and the terminal and power feed from the control unit to the terminal is accomplished via a phantom pair circuit arrangement in which the control unit circuitry is connected to the two center taps of the transformers terminating the two pair of conductors at the control unit. Connections to the center tap connections of the transformers terminating the two conductor pairs at the terminal complete the phantom pair circuit. A d.c. voltage source is connected at the control unit to the phantom pair circuit arrangement. The d.c. voltage is applied to the phantom circuit arrangement, and is sensed and regulated by a voltage regulator in the terminal connected in series at the terminal end of the phantom pair. Bloch, col. 3 11. 9-23 (emphasis added); see also, id., FIG. 1. |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman and PCNet (citing the Graham factors and reasons under KSR), and further stating:

Cummings and [Bloch] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

**REJ 23)** Claim 130 is rejected under pre-AIA 35 USC 103(a) as being obvious over Cummings in view of Maman, PCNet and Annunziata.

As to **claim 130**, the unmodified rejection from the Final rejection is as follows:

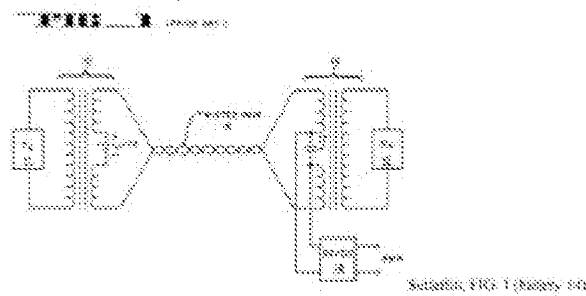
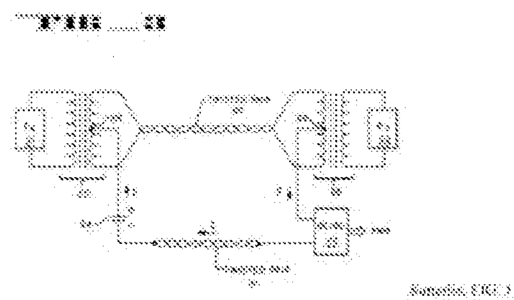
| **Claim 130:** | **Prior Art:** |
|---|---|
| 130. The piece of terminal equipment according to claim 108 wherein a zener diode is coupled across the specific contacts. | The reasons for rejecting claim 108, from which claim 130 depends, are provided above. Claim 130 requires a Zener diode coupled across the contacts.<br><br>Cummings does not explicitly teach a Zener diode. However, Annunziata, in a related field of endeavor, does. Although the claim does not specify how the Zener diodes are utilized, Annunziata appears to use the Zener diodes in precisely the manner that would be expected for a theft prevention system that senses impedance across a path and, in any case, the Zener diodes taught by Annunziata are on the paths as claimed. |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman and PCNet (citing the Graham factors and reasons under KSR), and further stating:

Annunziata uses Zener diodes in a circuit. Cummings and [Annunziata] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

**REJ 24)** Claim 131 is rejected under pre-AIA 35 USC 103(a) as being obvious over Cummings in view of Maman, PCNet and Sutterlin.

As to **claim 131**, the unmodified rejection from the Final rejection is as follows:

| **Claim 131:** | **Prior Art:** |
|---|---|
| 131. The piece of terminal equipment according to claim 108 wherein an energy storage device is coupled across the specific contacts. | The reasons for rejecting claim 108, from which claim 131 depends, are provided above. Claim 131 requires an energy storage device on the path.<br><br>Cummings does not explicitly teach an energy storage device. However, Sutterlin, in a related field of endeavor, does:<br><br><br>Although the claim does not specify how the energy storage device is utilized, Sutterlin appears to use the energy storage device (a battery 14) in precisely the manner that would be expected for a system providing power and data over a single path and, in any case, the energy storage device taught by Sutterlin is on the path as claimed. |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the

reasons set forth in the Final action, as noted above as to Cummings and Maman and PCNet (citing the Graham factors and reasons under KSR), and further stating:

Sutterlin uses an energy storing device in a circuit. Cummings and [Sutterlin] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

***CUMMINGS/MAMAN/PCNET***

**REJ 25)** Claims 1-11, 13-19, 22, 24-41, 43-49, 52, 54-73, 76, 80-88, 91-96, 98-104, 106, 108-114, 117, 121, 128-129, 132-137, 139-145 and 147 are rejected under pre-AIA 35 USC 103(a) as being obvious over Cummings in view of Maman and PCNet.

As to claims **1-11, 13-19, 22, 24-41, 43-49, 52, 54-73, 76, 80-88, 91-96, 98-104, 106, 108-114, 117, 121, 128-129, 132-137, 139-145 and 147**, the unmodified rejection from the Final rejection is as follows:

| **Claim 1** | **Prior Art** |
|---|---|
| 1. A method for adapting a piece of Ethernet data terminal equipment, the piece of Ethernet data terminal equipment having an Ethernet connector, the method comprising: | Cummings teaches Ethernet. See, e.g., Cummings, col. 3 ll. 18-19.<br><br>Maman teaches a method for adapting a piece of data terminal equipment (such as a computer), the data terminal equipment having a connector. See, Maman, FIG. 1.<br><br>Maman does not explicitly teach Ethernet, but IEEE 802.3i, which is AAPA, is part of the IEEE 802.3 (Ethernet) Standards.<br><br>PCnet describes how to use an Ethernet interface board. PCnet, 3-1. PCnet also illustrates data terminal equipment ("DTE") for use in an Ethernet network. PCnet, 3-1. |
| selecting contacts of the | Cummings teaches "In accordance with conventional |

| | |
|---|---|
| Ethernet connector comprising a plurality of contacts, the selected contacts comprising at least one of the plurality of contacts of the Ethernet connector and at least another one of the plurality of contacts of the Ethernet connector; coupling at least one path across the selected contacts of the Ethernet connector; and | wiring approaches, data communication link 14 generally includes a plurality of pairs of transmit wires 44 and 46 as well as a plurality of pairs of receive wires (not shown) connected to each of personal computers 12a through 12d." Cummings, col. 3 ll. 37-42. See also, Cummings, col. 4 ll. 20-24 ("Transmit wires 44a through 44d and 46a through 46d are existing wires found within data communication link 14 that are selectively tapped as pairs in accordance with the present invention to provide current loops 50a through 50d").<br><br>PCnet discloses that each DTE with an installed PCnet board can connect to an Ethernet network using the on-board 8-Pin RJ-45 jack for 10BASE-T connection. PCnet, 3-1 ("8-Pin RJ-45 Jack"). |
| associating distinguishing information about the piece of Ethernet data terminal equipment to impedance within the at least one path. | Cummings actually claims "said respective pairs of data communication lines are associated with different ones of the associated pieces of equipment," "supplying a low DC current signal to each current loop so as to achieve continuous current flow through<br>each current loop while each of said associated pieces of equipment is physically connected to said network via the data communication lines," and sensing "DC current signal in each of said current loops so as to detect a change in current flow indicative of disconnection of one of said pieces of associated equipment." Cummings, claim 14; see also claims 1 and 9 for similar language.<br><br>Maman teaches associating distinguishing information about the data terminal equipment to impedance within a corresponding path. Maman, col. 2 ll. 31-45 ("first and second status conductors adapted to exhibit a first impedance value between the individual status conductors corresponding to the first state of the cable when the electrical equipment is connected to the equipment and a second impedance value between the individual status conductors corresponding to the second state of the cable when the electrical equipment is disconnected from the cable"); see also, *id.*, FIG. 3. |

Cummings teaches the use of Ethernet to couple equipment, such as computers, to a network via data communication lines. Cummings controls voltage to create current. The control of current using voltage demonstrates an understanding of Ohm's Law, which, assuming active elements, can be characterized as V = IZ, where V is voltage, I is current, and Z is impedance. Because Cummings knows Ohm's Law, the voltage across the path, and the current through the path, Cummings also knows the impedance and can associate distinguishing information about the equipment to impedance within the path. For example, when current drops to 0 because the path is interrupted, impedance also drops to 0. It may be noted that even if there are no active elements, impedance includes resistance and, therefore, a path without active elements can also be defined using V = IZ (as opposed to V = IR).

To the extent it is determined a person of ordinary skill in the art of electronics does not know Ohm's Law, Cummings can be combined with Manan, which explicitly teaches associating distinguishing information about the data terminal equipment to impedance within a corresponding path.

The 802.3i standard specifies a cable with certain characteristics, such as 8 contacts that can be allocated into contact pairs. With specific reference to the claim language, "selecting contacts" involves picking one contact pair of the various possible permutations. The "selected contacts" therefore comprise at least one of the plurality of contacts of the Ethernet connector and at least another one of the plurality of contacts of the Ethernet connector (i.e., the pair). A path is coupled across contact pairs, and specifically across the "selected contacts." IEEE 802.3i does not explicitly teach associating distinguishing information about the piece of equipment to impedance within the path. However, Maman, in a related field of endeavor, teaches associating distinguishing information about a piece of data terminal equipment (which in the context of IEEE 802.3i would be Ethernet data terminal equipment) to impedance within a path.

Please note the reasons for combining from the Final Action, as follows:

Cummings measures and detects fluctuations in electrical conditions on a network path to determine connectivity state of data terminal equipment, explicitly in an Ethernet network. PCnet describes state-of-the-art Ethernet equipment with specific reference to cables that are AAPA. Maman describes a connectivity detection system that explicitly mentions impedance.

The differences between Cummings and the ‘012 patent are quite small. The patents are co-owned and Cummings explicitly mentions Ethernet. The ‘012 patent goes into more detail regarding various components of Ethernet systems, all of which were known, as is discussed in more detail later, but still simply describes a connectivity state detection system as was described by Cummings.

Cummings and PCnet both describe Ethernet networks. Moreover, AAPA illustrates pinouts for connectors that are identical to those illustrated by PCnet and Cummings appears to have language extremely similar to that of the ‘012 patent. (Cummings and the ‘012 patent are co-owned.)

PCnet discloses that each DTE with an installed PCnet board can connect to an Ethernet network using the on-board 8-Pin RJ-45 jack for 10BASE-T connection. PCnet, 3-1 ("8-Pin RJ-45 Jack"). Thus, PCnet corroborates and subsumes AAPA.

Note also the Graham Inquiries and rationale under KSR in the Final action, as follows:

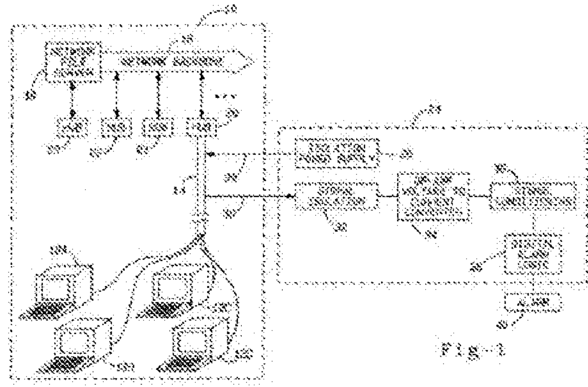
The scope and content of the prior art includes Ohm's law, V = IR, which expresses the relationship between voltage, current, and resistance, and which can be rewritten to take into account reactive elements to which AC voltage or current is applied as V = IZ, where Z represents impedance. The level of skill of an ordinary person of skill in the art should include at least the level of skill of college-level electrical engineering (and specifically Ohm's Law) and inventors of the abovementioned patents. The level of skill of an ordinary person of skill in the art should also include at least the level of creativity to apply well-known electrical engineering principles across standards, such as IEEE 802.3 standards for Ethernet networks (as provided in AAPA), and to utilize well known circuit components in standard ways.

The Examination Guidelines for Determining Obviousness Under 35 U.S.C. 103 in view of the Supreme Court Decision in KSR International Co. v. Teleflex Inc., 72 FR 57526 (Oct. 10, 2007), 1324 Off. Gaz. Pat. Office 23 (Nov. 6, 2007) (2007 KSR Guidelines) have been incorporated into the MPEP. See MPEP 2141 (8th ed. 2001 (Rev. 6, Sept. 2007). The Examination Guidelines Update: Developments in the Obviousness Inquiry After KSR v. Teleflex, which became effective September 1, 2010, highlights case law developments on obviousness under 35 U.S.C. 103 since the 2007

decision by the United States Supreme Court in KSR Int'l Co. v. Teleflex Inc. Guidelines state that the teaching-suggestion-motivation test is one possible approach to support an obviousness determination. Six other rationales identified in the Guidelines include: (1) combining prior art elements according to known methods to yield predictable results; (2) simple substitution of one known element for another to obtain predictable results; (3) use of a known technique to improve similar devices, methods, or products in the same way; (4) applying a known technique to a known device, method, or product ready for improvement to yield predictable results; (5) obvious to try—choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success; and (6) known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art.

Therefore it would have been obvious to combine the references.

| **Claim 2:** | **Prior Art:** |
|---|---|
| 2. The method according to claim 1 wherein the piece of Ethernet data terminal equipment is a personal computer. | The reasons for rejecting claim 1, from which claim 2 depends, are provided above. Claim 2 requires the Ethernet data terminal equipment be a personal computer.<br><br>Cummings teaches Ethernet. See, e.g., Cummings, col. 3 11. 18-19. Cummings also illustrates computers 12A-12D (data terminal equipment) in FIG. 1: |

| | |
|---|---|
| | <br>Cummings, FIG. 1.<br><br>PCnet teaches: “The PCnet™-FAST board is an advanced PC network interface adapter card targeted for the Ethernet-PCI adapter card market.” PCnet 1-1, 1.1 Introduction. The acronym “PC” stands for “personal computer” when used in this context |
| **Claim 3:** | **Prior Art:** |
| 3. The method according to claim 1 wherein the associating distinguishing information about the piece of Ethernet data terminal equipment to impedance within the at least one path comprises associating identifying information about the piece of Ethernet data terminal equipment to impedance within the at least one path. | The reasons for rejecting claim 1, from which claim 3 depends, are provided above. Claim 3 requires associating identifying information about the equipment to impedance.<br><br>As discussed above, Cummings understands the relationship between current and impedance. Cummings also teaches “detection of a current flow discontinuity further energizes the appropriate light emitting diodes 44a through 44d associated with the disconnected personal computer 12.” Thus, Cummings teaches associating identifying information about a computer to impedance.<br><br>Maman teaches “the connecting cable 1 is adapted such that when the equipment 2 is disconnected from the cable 1, as when the equipment 2 is removed from female connector 4 or the cable 1 is cut, the cable changes from a first or closed to second or open state, causing the device 3 to generate an alarm signal which contains a unique address identifying the device 3.” Because Maman knows a unique address identifying the device and which is associated with the impedance, Maman |

| | |
|---|---|
| | teaches associating identifying information about the equipment to impedance. |
| **Claim 4:** | **Prior Art:** |
| 4. The method according to claim 1 wherein the Ethernet connector comprising the plurality of contacts is an RJ45 jack comprising the contact 1 through the contact 8. | The reasons for rejecting claim 1, from which claim 4 depends, are provided above. Claim 4 requires an RJ45 jack comprising 8 contacts.<br><br>PCnet illustrates the use of an 8-Pin RJ-45 jack in an Ethernet context. See, e.g., 3-1 (“8-Pin RJ- 45 jack”). |
| **Claim 5:** | **Prior Art:** |
| 5. The method according to claim 1 wherein the impedance within the at least one path is part of a detection protocol. | The reasons for rejecting claim 1, from which claim 5 depends, are provided above. Claim 5 requires the impedance is part of a detection protocol.<br><br>Cummings also teaches a theft detection protocol. Cummings, col. 1 11. 8-12 (“This invention relates generally to theft protection security systems and, more particularly, to a network security system for detecting the unauthorized removal of remotely located electronic equipment from a network.”) |
| **Claims 6 and 16:** | **Prior Art:** |
| 6. The method according to claim 1 wherein the piece of Ethernet data terminal | The reasons for rejecting claim 1, from which claims 6 and 16 depend, are provided above. Claims 6 and 16 require BaseT Ethernet data terminal equipment. |

| | |
|---|---|
| equipment is a piece of BaseT Ethernet data terminal equipment.<br><br>16. The method according to claim 1 wherein the piece of Ethernet data terminal equipment is a piece of BaseT Ethernet data terminal equipment. | (Claims 6 and 16 are identical.)<br><br>BaseT is not described in the '012 patent; the designation "BaseT" is found only in the claims. However, 10BASE-T, for example, is described in 802.3i. A piece of Ethernet data terminal equipment (such as an Ethernet-capable computer) would presumably be a "BaseT Ethernet data terminal equipment" if it used 10BASE-T.<br><br>Using broadest reasonable interpretation of the term "BaseT," Cummings teaches "BaseT." See, e.g., col. 3 ll. 35-37.<br><br>Using a broadest reasonable interpretation of the term "BaseT," PCnet teaches BaseT: "A Data Terminal Equipment (DTE) system with the installed PCnet-FAST board can connect to an Ethernet network using the on-board RJ-45 jack for either 10BASE-T or 100BASE-TX connection." PCnet, 3-1, 3.2 10/100BASE-T PHYSICAL CONNECTIONS. |
| **Claim 7:** | **Prior Art:** |
| 7. The method according to claim 1 wherein the at least one of the plurality of contacts of the Ethernet connector comprises two of the plurality of contacts of the Ethernet connector. | The reasons for rejecting claim 1, from which claim 7 depends, are provided above. Claim 7 requires selecting a third contact.<br><br>Because the "selecting" of the contacts is simply for creating paths by coupling the path across the selected contacts, AAPA illustrates the limitations of the claim by virtue of having two assigned paths, TD-/TD+ and RD-/RD+, as well as four other unassigned contacts that could also be used to create paths.<br><br>AAPA illustrates contacts 1, 2 and 3, 6, which are respectively associated with a first path (TD+, TD-) and a second path (RD-, RD+). Thus, the two of the plurality of contacts includes at least contact 1 or 2 and contact 3 or 6.<br><br>PCnet illustrates the same pinout as AAPA: |

Table 4-2 RJ-45 Pinout

| Pin Number | Color Code | Function |
|---|---|---|
| Pin 1 | white/orange band | TX+ |
| Pin 2 | orange/white band | TX- |
| Pin 3 | white/green band | RX+ |
| Pin 6 | green/white band | RX- |
| Pin 4 | blue/white band | Not Used |
| Pin 5 | white/blue band | Not Used |
| Pin 7 | solid orange | Not Used |
| Pin 8 | solid gray | Not Used |

The color code may vary from one cable manufacturer to another. Make sure that the TX+ and the TX- wires are twisted as a pair and the RX+ and the RX- wires are twisted as another pair. For 100-Mbps operation, category 5 wire must be used for proper 100BASE-TX operation.

| **Claim 8:** | **Prior Art:** |
|---|---|
| 8. The method according to claim 1 wherein the at least another one of the plurality of contacts of the Ethernet connector comprises two of the plurality of contacts of the Ethernet connector. | The reasons for rejecting claim 1, from which claim 8 depends, are provided above. Claim 8 requires selecting a third contact.<br><br>AAPA illustrates contacts 1, 2 and 3, 6, which are respectively associated with a first path (TD+, TD-) and a second path (RD-, RD+). Thus, the two of the plurality of contacts includes at least contact 1 or 2 and contact 3 or 6.<br><br>PCnet illustrates the same pinout as AAPA: |

Table 4-2 RJ-45 Pinout

| Pin Number | Color Code | Function |
|---|---|---|
| Pin 1 | white/orange band | TX+ |
| Pin 2 | orange/white band | TX- |
| Pin 3 | white/green band | RX+ |
| Pin 6 | green/white band | RX- |
| Pin 4 | blue/white band | Not Used |
| Pin 5 | white/blue band | Not Used |
| Pin 7 | solid orange | Not Used |
| Pin 8 | solid gray | Not Used |

The color code may vary from one cable manufacturer to another. Make sure that the TX+ and the TX- wires are twisted as a pair and the RX+ and the RX- wires are twisted as another pair. For 100-Mbps operation, category 5 wire must be used for proper 100BASE-TX operation.

| **Claim 9:** | **Prior Art:** |
|---|---|
| 9. The method according to claim 1 wherein the Ethernet connector is an RJ45 jack comprising the contact 1 through the contact 8, the at least one of the plurality of contacts of the Ethernet connector comprises | The reasons for rejecting claim 1, from which claim 9 depends, are provided above. Claim 9 requires selecting contacts 3 and 6.<br><br>As was illustrated in AAPA, contacts 3 and 6 correspond to RD- and RD+: |

two of the plurality of contacts of the Ethernet connector and the two of the plurality of contacts comprise the contact 3 and the contact 6.

| CONTACT | SIGNAL |
|---|---|
| 1 | TD+ |
| 2 | TD- |
| 3 | RD+ |
| 4 | Not used by 10BASE-T |
| 5 | Not used by 10BASE-T |
| 6 | RD- |
| 7 | Not used by 10BASE-T |
| 8 | Not used by 10BASE-T |

'012 patent file history, 2011-12-06 Applicant Arguments/Remarks Made in an Amendment, p. 27.

PCnet illustrates the same pinout as AAPA as an "RJ-45 Pinout":

Table 4-2 RJ-45 Pinout

| Pin Number | Color Code | Function |
|---|---|---|
| Pin 1 | white/orange band | TX+ |
| Pin 2 | orange/white band | TX- |
| Pin 3 | white/green band | RX+ |
| Pin 6 | green/white band | RX- |
| Pin 4 | blue/white band | Not Used |
| Pin 5 | white/blue band | Not Used |
| Pin 7 | solid orange | Not Used |
| Pin 8 | solid gray | Not Used |

The color code may vary from one cable manufacturer to another. Make sure that the TX+ and the TX- wires are twisted as a pair and the RX+ and the RX- wires are twisted as the other pair. For 100-Mbps operation, category 5 wire must be used for proper 100BASE-TX operation.

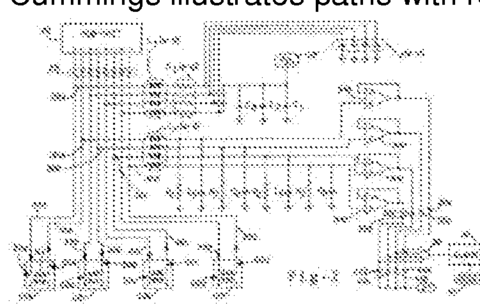
Cummings teaches: "Transmit wires 44a through 44d and 46a through 46d are existing wires found within data communication link 14 that are selectively tapped as pairs in accordance with the present invention to provide current loops 50a through 50d." Cummings, col. 4 ll. 20-24.

**Claim 10:** | **Prior Art:**

10. The method according to claim 1 wherein the coupling at least one path across the selected contacts comprises coupling at least one path having at least one resistor.

The reasons for rejecting claim 1, from which claim 10 depends, are provided above. Claim 10 requires a resistor in the path.

Cummings illustrates paths with resistors:



Cummings, FIG. 2.

Manan illustrates a "Resistance Measuring Device

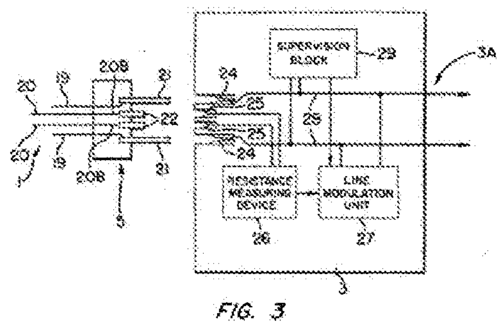
<table>
<tr><td></td><td>26” that measures resistance on the path:<br>

FIG. 3, Maman.</td></tr>
<tr><td>Claim 11:</td><td>Prior Art:</td></tr>
<tr><td>11. The method according to claim 1 wherein the coupling at least one path across the selected contacts comprises coupling two paths across the selected contacts.</td><td>The reasons for rejecting claim 1, from which claim 11 depends, are provided above. Claim 11 requires coupling two paths across the selected contacts.<br><br>Because Cummings teaches a combined communication and power path (see, e.g., Cummings, FIG. 1), Cummings teaches coupling two paths across the selected contacts.<br><br>AAPA illustrates contacts 1, 2 and 3, 6, which are respectively associated with a first path (TD+, TD-) and a second path (RD-, RD+).<br><br>PCnet illustrates the same pinout as AAPA:<br>Table 5-5 RJ-45 Pinout
<table>
<tr><th>Pin Number</th><th>Color Code</th><th>Function</th></tr>
<tr><td>Pin 1</td><td>white/orange band</td><td>TX+</td></tr>
<tr><td>Pin 2</td><td>orange/white band</td><td>TX-</td></tr>
<tr><td>Pin 3</td><td>white/green band</td><td>RX+</td></tr>
<tr><td>Pin 6</td><td>green/white band</td><td>RX-</td></tr>
<tr><td>Pin 4</td><td>blue/white band</td><td>Not Used</td></tr>
<tr><td>Pin 5</td><td>white/blue band</td><td>Not Used</td></tr>
<tr><td>Pin 7</td><td>solid orange</td><td>Not Used</td></tr>
<tr><td>Pin 8</td><td>solid gray</td><td>Not Used</td></tr>
</table>
The color code may vary from one cable manufacturer to another. Make sure that the TX+ and the TX- wires are twisted as a pair and the RX+ and the RX- wires are twisted as an other pair. For 100 Mbps operation, category 5 wire must be used for proper 100BASE-TX operation.</td></tr>
<tr><td>Claim 13:</td><td>Prior Art:</td></tr>
<tr><td>13. The method according to claim 1 wherein the coupling at</td><td>The reasons for rejecting claim 1, from which claim 13 depends, are provided above. Claim 13 requires</td></tr>
</table>

| | |
|---|---|
| least one path across the selected contacts comprises coupling at least one path having a controller across the selected contacts. | a controller to be on the path.<br><br>A controller is not described in the '012 patent; the word "controller" is found only in the claims. As such, it is not entirely clear what is meant by the term. However, a broadest reasonable interpretation of the claim language is embodied in the "network security system 24" of Cummings. Cummings, col. 2 11. 65-68 ("a network security system 24 is provided therein for achieving theft protection of electronic computer equipment associated with a computer network 10").<br><br>PCnet explicitly discloses coupling at least one path having a controller across the selected contacts: "The Auto-Poll™ feature of the PCnet-FAST controller determines that the Mil port is used for the network connection." PCnet, 3-1, 3.2 10/100BASE-T PHYSICAL CONNECTIONS, para. 2. |
| **Claims 14 and 17:** | **Prior Art:** |
| 14. The method according to claim 1 wherein the Ethernet connector is an RJ45 jack comprising the contact 1 through the contact 8 and the piece of Ethernet data terminal equipment is a piece of BaseT Ethernet terminal data equipment.<br><br>17. The method according to claim 1 wherein the Ethernet connector is an RJ45 jack comprising the contact 1 through the contact 8 and the piece of Ethernet data terminal equipment is a piece of BaseT Ethernet data terminal equipment. | The reasons for rejecting claim 1, from which claims 14 and 17 depend, are provided above. Claims 14 and 17 require 8 contacts and BaseT Ethernet terminal data equipment, which is essentially a combination of claims 4 and 6. (Claims 14 and 17 are identical.)<br><br>BaseT is not described in the '012 patent; the designation "BaseT" is found only in the claims. However, 10BASE-T, for example, is described in 802.3i. A piece of Ethernet data terminal equipment (such as an Ethernet-capable computer) would presumably be a "BaseT Ethernet data terminal equipment" ifit used 10BASE-T.<br><br>Using the broadest reasonable interpretation of the term "BaseT," Cummings teaches "BaseT." See, e.g., Cummings, col. 3 11. 35-37.<br><br>PCnet teaches both RJ-45 jacks (see, e.g., PCnet, 2-1, Figure 2-1 Board Diagram ("RJ-45") and "BaseT" (see, e.g., PCnet, 2-2, Table 2-1 Auto-Negotiation Capabilities ("10BASE-T, Half Duplex"). |

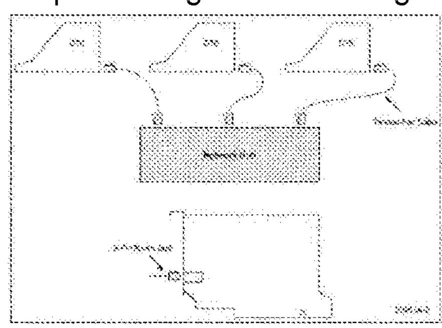
| Claim 15: | Prior Art: |
|---|---|
| 15. The method according to claim 1 wherein the Ethernet connector is an RJ45 jack comprising the contact 1 through the contact 8 and the associating distinguishing information about the piece of Ethernet data terminal equipment to impedance within the at least one path comprises associating identifying information about the piece of Ethernet data terminal equipment to impedance within the at least one path. | The reasons for rejecting claim 1, from which claim 15 depends, are provided above. Claim 15 requires 8 contacts and associating identifying information about the equipment to impedance, which is essentially a combination of claims 3 and 4.<br><br>As discussed above, Cummings understands the relationship between current and impedance. Cummings also teaches “detection of a current flow discontinuity further energizes the appropriate light emitting diodes 44a through 44d associated with the disconnected personal computer 12.” Thus, Cummings teaches associating identifying information about a computer to impedance.<br><br>Maman teaches “the connecting cable 1 is adapted such that when the equipment 2 is disconnected from the cable 1, as when the equipment 2 is removed from female connector 4 or the cable 1 is cut, the cable changes from a first or closed to second or open state, causing the device 3 to generate an alarm signal which contains a unique address identifying the device 3.” Because Maman knows a unique address identifying the device and which is associated with the impedance, Maman teaches associating identifying information about the equipment to impedance.<br><br>Cummings and Maman do not explicitly disclose RJ-45 jacks. However, PCnet, in a related field of endeavor, illustrates the use of an 8-Pin RJ-45 jack in an Ethernet context. See, e.g., 3-1 (“8-Pin RJ-45 jack”). |
| **Claim 18:** | **Prior Art:** |
| 18. The method according to claim 1 wherein the associating distinguishing information about the piece of Ethernet data terminal equipment to impedance within the at least one path comprises associating | The reasons for rejecting claim 1, from which claim 18 depends, are provided above. Claim 18 requires associating distinguishing information related to an electrical aspect of the equipment to impedance. As discussed above, Cummings understands the relationship between current and impedance. Cummings also teaches “detection of a current flow |

| | |
|---|---|
| distinguishing information related to an electrical aspect of the piece of Ethernet data terminal equipment to impedance within the at least one path. | discontinuity further energizes the appropriate light emitting diodes 44a through 44d associated with the disconnected personal computer 12." Thus, Cummings teaches associating distinguishing information related to an electrical aspect, e.g., whether the computer is electrically connected to the network, to impedance. Maman teaches "the connecting cable 1 is adapted such that when the equipment 2 is disconnected from the cable 1, as when the equipment 2 is removed from female connector 4 or the cable 1 is cut, the cable changes from a first or closed to second or open state, causing the device 3 to generate an alarm signal which contains a unique address identifying the device 3." Because Maman knows a unique address identifying the device and which is associated with the impedance, Maman teaches associating distinguishing information related to an electrical aspect, e.g., whether the equipment is electrically connected to the network, to impedance. |
| **Claim 19:** | **Prior Art:** |
| 19. The method according to claim 1 wherein the associating distinguishing information about the piece of Ethernet data terminal equipment to impedance within the at least one path comprises associating distinguishing information related to a physical aspect of the piece of Ethernet data terminal equipment to impedance within the at least one path. | The reasons for rejecting claim 1, from which claim 19 depends, are provided above. Claim 19 requires associating distinguishing information related to a physical aspect of the equipment to impedance.<br><br>As discussed above, Cummings understands the relationship between current and impedance. Cummings also teaches "detection of a current flow discontinuity further energizes the appropriate light emitting diodes 44a through 44d associated with the disconnected personal computer 12." Thus, Cummings teaches associating distinguishing information related to a physical aspect, e.g., whether the computer is physically connected to a network, to impedance.<br><br>Maman teaches "the connecting cable 1 is adapted such that when the equipment 2 is disconnected from the cable 1, as when the equipment 2 is removed from female connector 4 or the cable 1 is cut, the cable changes from a first or closed to second or open state, causing the device 3 to |

| | |
|---|---|
| | generate an alarm signal which contains a unique address identifying the device 3." Because Maman knows a unique address identifying the device and which is associated with the impedance, Maman teaches associating distinguishing information related to a physical aspect, e.g., whether the equipment is physically connected to a network, to impedance. |
| **Claim 22:** | **Prior Art:** |
| 22. The method according to claim 1 wherein the impedance within the at least one path is a function of voltage across the selected contacts. | The reasons for rejecting claim 1, from which claim 22 depends, are provided above. Claim 22 requires impedance be a function of voltage across the selected contacts.<br><br>Cummings teaches "The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d." Cummings, col. 3 ll. 53-56.<br><br>PCnet describes power requirements of the PC Ethernet interface adapter card as "3.25 W maximum, 5 V DC, at 25°C (with NSC 10/100 PHY)" PCnet, 4-4, 4.6 POWER REQUIREMENTS.<br><br>Maman teaches associating distinguishing information about the data terminal equipment to impedance within a corresponding path. Maman, col. 2 ll. 31-45 ("first and second status conductors adapted to exhibit a first impedance value between the individual status conductors corresponding to the first state of the cable when the electrical equipment is connected to the equipment and a second impedance value between the individual status conductors corresponding to the second state of the cable when the electrical equipment is disconnected from the cable"); see also, id., FIG. 3.<br><br>The function of voltage across the selected contacts is not defined in the '012 patent specification; the function is found only in the claims. However, the function is Ohm's Law: V = IR rewritten for circuits with reactive elements as V = IZ, where Z |

| | |
|---|---|
| | (impedance) replaces R (resistance). There is no alternative but for impedance to be a function of voltage across the selected contacts in accordance with the two century old law. This function is inherent in any of the electrical engineering references included. |
| **Claim 24:** | **Prior Art:** |
| 24. The method according to claim 1 further comprising physically connecting the adapted piece of Ethernet data terminal equipment to a network. | The reasons for rejecting claim 1, from which claim 24 depends, are provided above. Claim 24 requires connecting the equipment to a network.<br><br>Cummings teaches: “FIG. 3 illustrates the connection of the network security system 24 to an existing computer network 10.” Cummings, col. 5 ll. 34-35.<br><br>PCnet teaches: “A Data Terminal Equipment (DTE) system with the installed PCnet-EHYTboard can connect to an Ethernet network using the on-board RJ-45 jack for either 10BASE-T or 100BASE-TX connection.” PCnet, 3-1, 3.2 10/100BASE-T PHYSICAL CONNECTIONS. |
| **Claim 25 and 29:** | **Prior Art:** |
| 25. The method according to claim 1 wherein the selected contacts are the same contacts used for normal network communication.<br><br>29. The method according to any one of claims 1 through 24 and claim 27 wherein the selected contacts are at least some of the same contacts used for normal network communication. | The reasons for rejecting claim 1, from which claim 25 depends, are provided above. The reasons for rejecting claims 1-24, from which claim 29 depends, are provided above. Claims 25 and 29 require contacts are used for normal network communication.<br><br>Cummings illustrates a path that includes both communication and power. See, Cummings, FIG. 1 (data communication link 14).<br><br>PCnet teaches: “A Data Terminal Equipment (DTE) system with the installed PCnet-EHYTboard can connect to an Ethernet network using the on-board RJ-45 jack for either 10BASE-T or 100BASE-TX connection.” PCnet, 3-1, 3.2 10/100BASE-T PHYSICAL CONNECTIONS. Because 10BASE-T is “normal network communication,” the contacts for the RJ-45 jack are used for normal network communication. |

| Claim 26 and 30: | Prior Art: |
|---|---|
| 26. The method according to claim 25 wherein the normal network communication is BaseT Ethernet communication.<br><br>30. The method according to claim 29 wherein the normal network communication is BaseT Ethernet communication. | The reasons for rejecting claim 25, from which claim 26 depends, are provided above. The reasons for rejecting claim 29, from which claim 30 depends, are provided above. Claims 26 and<br>29 require the normal network communication of claim 25 is BaseT Ethernet communication.<br><br>BaseT is not described in the '012 patent; the designation "BaseT" is found only in the claims. However, 10BASE-T, for example, is described in 802.3i. A piece of Ethernet data terminal equipment (such as an Ethernet-capable computer) would presumably be a "BaseT Ethernet data terminal equipment" if it used 10BASE-T.<br><br>Using broadest reasonable interpretation of the term "BaseT," Cummings teaches "BaseT." See, e.g., col. 3 ll. 35-37.<br><br>Using a broadest reasonable interpretation of the term "BaseT," PCnet teaches BaseT: "A Data Terminal Equipment (DTE) system with the installed PCnet-FAST board can connect to an Ethernet network using the on-board RJ-45 jack for either 10BASE-T or 100BASE-TX connection." PCnet, 3-1, 3.2 10/100BASE-T PHYSICAL CONNECTIONS. |
| **Claim 27 and 28:** | **Prior Art:** |

| | |
|---|---|
| 27. The method according to claim 1 wherein the at least one path coupled across the selected contacts is formed through the piece of Ethernet data terminal equipment.<br><br>28. The method according to any one of claims 1 through 26 wherein the at least one path coupled across the selected contacts is formed through the piece of Ethernet data terminal equipment. | The reasons for rejecting claim 1, from which claim 27 depends, are provided above. The reasons for rejecting claims 1-26, from which claim 28 depends, are provided above. Claims 27 and 28 require the path be formed through the Ethernet data terminal equipment.<br><br>Cummings teaches: “The low current power signal flows through an internal path provided by existing circuitry in personal computer 12a.” Cummings, col. 4 ll. 27-30.<br><br>PCnet illustrates an 8-Pin RJ-45 Jack that illustrates the path being formed through a DTE:<br><br>PCnet, Figure 3-1. |
| **Claim 31:** | **Prior Art:** |
| 31. An adapted piece of Ethernet data terminal equipment comprising: | Cummings teaches Ethernet. See, e.g., Cummings, col. 3 ll. 18-19.<br><br>Maman teaches adapted data terminal equipment (such as a computer). See, Maman, FIG. 1. Maman does not explicitly teach Ethernet, but IEEE 802.3i, which is AAPA, is part of the IEEE 802.3 (Ethernet) Standards.<br><br>PCnet describes how to use an Ethernet interface board. PCnet, 3-1). PCnet also illustrates data terminal equipment (“DTE”) for use in an Ethernet network. PCnet, 3-1. |
| an Ethernet connector comprising a plurality of contacts; and<br><br>at least one path coupled across | Cummings teaches “In accordance with conventional wiring approaches, data communication link 14 generally includes a plurality of pairs of transmit wires 44 and 46 as well as a plurality of pairs of receive wires (not shown) connected to each of |

| | |
|---|---|
| selected contacts, the selected contacts comprising at least one of the plurality of contacts of the Ethernet connector and at least another one of the plurality of contacts of the Ethernet connector, | personal computers 12a through 12d." Cummings, col. 3 ll. 37-42. See also, Cummings, col. 4 ll. 20-24 ("Transmit wires 44a through 44d and 46a through 46d are existing wires found within data communication link 14 that are selectively tapped as pairs in accordance with the present invention to provide current loops 50a through 50d.").<br><br>PCnet discloses that each DTE with an installed PCnet board can connect to an Ethernet network using the on-board 8-Pin RJ-45 jack for 10BASET connection. PCnet, 3-1 ("8-Pin RJ-45 Jack"). |
| wherein distinguishing information about the piece of Ethernet data terminal equipment is associated to impedance within the at least one path. | Cummings actually claims "said respective pairs of data communication lines are associated with different ones of the associated pieces of equipment," "supplying a low DC current signal to each current loop so as to achieve continuous current flow through each current loop while each of said associated pieces of equipment is physically connected to said network via the data communication lines," and sensing "DC current signal in each of said current loops so as to detect a change in current flow indicative of disconnection of one of said pieces of associated equipment." Cummings, claim 14; see also claims 1 and 9 for similar language.<br><br>Maman teaches associating distinguishing information about the data terminal equipment to impedance within a corresponding path. Maman, col. 2 ll. 31-45 ("first and second status conductors adapted to exhibit a first impedance value between the individual status conductors corresponding to the first state of the cable when the electrical equipment is connected to the equipment and a second impedance value between the individual status conductors corresponding to the second state of the cable when the electrical equipment is disconnected from the cable"); see also, id., FIG. 3. |

Cummings teaches the use of Ethernet to couple equipment, such as computers, to a network via data communication lines. Cummings controls voltage to create current. The control of current using voltage demonstrates an understanding of Ohm's

Law, which, assuming active elements, can be characterized as V = IZ, where V is voltage, I is current, and Z is impedance. Because Cummings knows Ohm's Law, the voltage across the path, and the current through the path, Cummings also knows the impedance and can associate distinguishing information about the equipment to impedance within the path. For example, when current drops to 0 because the path is interrupted, impedance also drops to 0. It may be noted that even if there are no active elements, impedance includes resistance and, therefore, a path without active elements can also be defined using V = IZ (as opposed to V = IR).

To the extent it is determined a person of ordinary skill in the art of electronics does not know Ohm's Law, Cummings can be combined with Manan, which explicitly teaches associating distinguishing information about the data terminal equipment to impedance within a corresponding path.

The 802.3i standard specifies a cable with certain characteristics, such as 8 contacts that can be allocated into contact pairs. With specific reference to the claim language, "selecting contacts" involves picking one contact pair of the various possible permutations. The "selected contacts" therefore comprise at least one of the plurality of contacts of the Ethernet connector and at least another one of the plurality of contacts of the Ethernet connector (i.e., the pair). A path is coupled across contact pairs, and specifically across the "selected contacts." IEEE 802.3i does not explicitly teach associating distinguishing information about the piece of equipment to impedance within the path. However, Maman, in a related field of endeavor, teaches associating distinguishing information about a piece of data terminal equipment (which in the context of IEEE 802.3i would be Ethernet data terminal equipment) to impedance within a path.

Please note the reasons for combining from the Final Action, as follows:

Cummings measures and detects fluctuations in electrical conditions on a network path to determine connectivity state of data terminal equipment, explicitly in an Ethernet network. PCnet describes state-of-the-art Ethernet equipment with specific reference to cables that are AAPA. Maman describes a connectivity detection system that explicitly mentions impedance.

The differences between Cummings and the ‘012 patent are quite small. The patents are co-owned and Cummings explicitly mentions Ethernet. The ‘012 patent goes into more detail regarding various components of Ethernet systems, all of which were known, as is discussed in more detail later, but still simply describes a connectivity state detection system as was described by Cummings.

Cummings and PCnet both describe Ethernet networks. Moreover, AAPA illustrates pinouts for connectors that are identical to those illustrated by PCnet and Cummings appears to have language extremely similar to that of the ‘012 patent. (Cummings and the ‘012 patent are co-owned.)

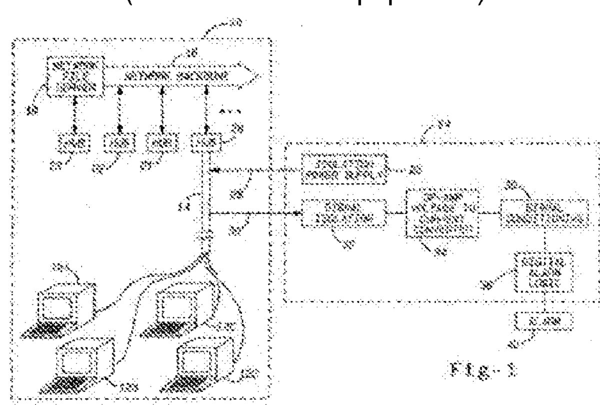
PCnet discloses that each DTE with an installed PCnet board can connect to an Ethernet network using the on-board 8-Pin RJ-45 jack for 10BASE-T connection. PCnet, 3-1 (“8-Pin RJ-45 Jack”). Thus, PCnet corroborates and subsumes AAPA.

Note also the Graham Inquiries and rationale under KSR in the Final action, as follows:

The scope and content of the prior art includes Ohm's law, V = IR, which expresses the relationship between voltage, current, and resistance, and which can be rewritten to take into account reactive elements to which AC voltage or current is applied as V = IZ, where Z represents impedance. The level of skill of an ordinary person of skill in the art should include at least the level of skill of college-level electrical engineering (and specifically Ohm's Law) and inventors of the abovementioned patents. The level of skill of an ordinary person of skill in the art should also include at least the level of creativity to apply well-known electrical engineering principles across standards, such as IEEE 802.3 standards for Ethernet networks (as provided in AAPA), and to utilize well known circuit components in standard ways.

The Examination Guidelines for Determining Obviousness Under 35 U.S.C. 103 in view of the Supreme Court Decision in KSR International Co. v. Teleflex Inc., 72 FR 57526 (Oct. 10, 2007), 1324 Off. Gaz. Pat. Office 23 (Nov. 6, 2007) (2007 KSR Guidelines) have been incorporated into the MPEP. See MPEP 2141 (8th ed. 2001 (Rev. 6, Sept. 2007). The Examination Guidelines Update: Developments in the Obviousness Inquiry After KSR v. Teleflex, which became effective September 1, 2010, highlights case law developments on obviousness under 35 U.S.C. 103 since the 2007 decision by the United States Supreme Court in KSR Int'l Co. v. Teleflex Inc. Guidelines state that the teaching-suggestion-motivation test is one possible approach to support an obviousness determination. Six other rationales identified in the Guidelines include: (1) combining prior art elements according to known methods to yield predictable results; (2) simple substitution of one known element for another to obtain predictable results; (3) use of a known technique to improve similar devices, methods, or products in the same way; (4) applying a known technique to a known device, method, or product ready for improvement to yield predictable results; (5) obvious to try—choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success; and (6) known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art.

Therefore it would have been obvious to combine the references.

| **Claim 32:** | **Prior Art:** |
|---|---|
| 32. The piece of Ethernet data terminal equipment according to claim 31 wherein the piece of Ethernet data terminal equipment is a personal computer. | The reasons for rejecting claim 31, from which claim 32 depends, are provided above. Claim 32 requires the Ethernet data terminal equipment be a personal computer.<br><br>Cummings teaches Ethernet. See, e.g., Cummings, col. 3 ll. 18-19. Cummings also illustrates computers 12A-12D (data terminal equipment) in FIG. 1:<br><br>Cummings, FIG.<br>PCnet teaches: "The PCnet™-FAST board is an advanced PC network interface adapter card targeted for the Ethernet-PCI adapter card market." PCnet 1-1, 1.1 Introduction. The acronym "PC" stands for "personal computer" when used in this context. |

| **Claim 33:** | **Prior Art:** |
|---|---|
| 33. The piece of Ethernet data terminal equipment according to claim 31 wherein the distinguishing information about the piece of Ethernet data terminal equipment associated to impedance within the at least one path comprises identifying information about the piece of Ethernet data terminal equipment. | The reasons for rejecting claim 31, from which claim 33 depends, are provided above. Claim 33 requires associating identifying information about the equipment to impedance. As discussed above, Cummings understands the relationship between current and impedance. Cummings also teaches “detection of a current flow discontinuity further energizes the appropriate light emitting diodes 44a through 44d associated with the disconnected personal computer 12.” Thus, Cummings teaches associating identifying information about a computer to impedance.<br><br>Maman teaches “the connecting cable 1 is adapted such that when the equipment 2 is disconnected from the cable 1, as when the equipment 2 is removed from female connector 4 or the cable 1 is cut, the cable changes from a first or closed to second or open state, causing the device 3 to generate an alarm signal which contains a unique address identifying the device 3.” Because Maman knows a unique address identifying the device and which is associated with the impedance, Maman teaches associating identifying information about the equipment to impedance. |
| **Claim 34:** | **Prior Art:** |
| 34. The piece of Ethernet data terminal equipment according to claim 31 wherein the Ethernet connector is an RJ45 jack and the plurality of contacts comprises the contact 1 through the contact 8 of the RJ45 jack. | The reasons for rejecting claim 31, from which claim 34 depends, are provided above. Claim 34 requires an RJ45 jack comprising 8 contacts.<br><br>PCnet illustrates the use of an 8-Pin RJ-45 jack in an Ethernet context. See, e.g., 3-1 (“8-Pin RJ- 45 jack”). |
| **Claim 35:** | **Prior Art:** |
| 35. The piece of Ethernet data terminal equipment according to claim 31 wherein the impedance within the at least one path is part of a detection protocol. | The reasons for rejecting claim 31, from which claim 35 depends, are provided above. Claim 35 requires the impedance is part of a detection protocol.<br><br>Cummings also teaches a theft detection protocol. Cummings, col. 1 ll. 8-12 (“This invention relates |

| | |
|---|---|
| | generally to theft protection security systems and, more particularly, to a network security system for detecting the unauthorized removal of remotely located electronic equipment from a network.”) |
| **Claims 36 and 46:** | **Prior Art:** |
| 36. The piece of Ethernet data terminal equipment according to claim 31 wherein the piece of Ethernet data terminal equipment is a piece of BaseT Ethernet data terminal equipment.<br><br>46. The piece of Ethernet data terminal equipment according to claim 31 wherein the piece of Ethernet data terminal equipment is a piece of BaseT Ethernet data terminal equipment | The reasons for rejecting claim 31, from which claims 36 and 46 depend, are provided above. Claims 36 and 46 require BaseT Ethernet data terminal equipment. (Claims 36 and 46 are identical.)<br><br>BaseT is not described in the ‘012 patent; the designation “BaseT” is found only in the claims. However, 10BASE-T, for example, is described in 802.3i. A piece of Ethernet data terminal equipment (such as an Ethernet-capable computer) would presumably be a “BaseT Ethernet data terminal equipment” if it used 10BASE-T.<br><br>Using broadest reasonable interpretation of the term “BaseT,” Cummings teaches “BaseT.” See, e.g., col. 3 ll. 35-37.<br><br>Using a broadest reasonable interpretation of the term “BaseT,” PCnet teaches BaseT: “A Data Terminal Equipment (DTE) system with the installed PCnet-FAST board can connect to an Ethernet network using the on-board RJ-45 jack for either 10BASE-T or 100BASE-TX connection.” PCnet, 3-1, 3.2 10/100BASE-T PHYSICAL CONNECTIONS. |
| **Claims 37 and 38:** | **Prior Art:** |
| 37. The piece of Ethernet data terminal equipment according to claim 31 wherein the at least one of the plurality of contacts of the Ethernet connector comprises two of the plurality of contacts of the Ethernet connector.<br><br>38. The piece of Ethernet data terminal equipment according to claim 31 wherein the at least another one of the plurality of | The reasons for rejecting claim 31, from which claim 37 depends, are provided above. Claim 37 requires selecting a third contact.<br><br>Because the “selecting” of the contacts is simply for creating paths by coupling the path across the selected contacts, AAPA illustrates the limitations of the claim by virtue of having two assigned paths, TD-/TD+ and RD-/RD+, as well as four other unassigned contacts that could also be used to create paths. |

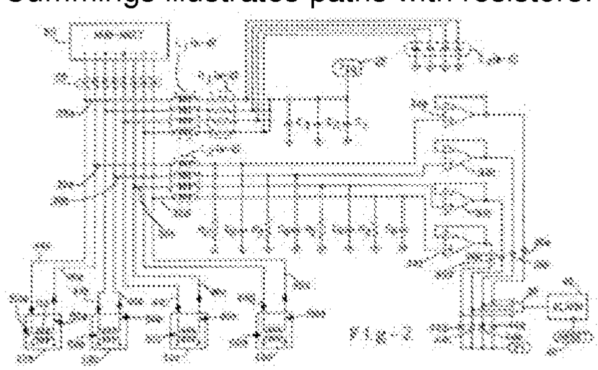
<table>
<tr><td>contacts of the Ethernet connector comprises two of the plurality of contacts of the Ethernet connector.</td><td>AAPA illustrates contacts 1, 2 and 3, 6, which are respectively associated with a first path (TD+, TD-) and a second path (RD-, RD+). Thus, the two of the plurality of contacts includes at least contact 1 or 2 and contact 3 or 6.<br><br>PCnet illustrates the same pinout as AAPA:<br><br>Table 4-2 RJ-45 Pinout<br><table><tr><th>Pin Number</th><th>Color Code</th><th>Function</th></tr><tr><td>Pin 1</td><td>white/orange band</td><td>TX+</td></tr><tr><td>Pin 2</td><td>orange/white band</td><td>TX-</td></tr><tr><td>Pin 3</td><td>white/green band</td><td>RX+</td></tr><tr><td>Pin 6</td><td>green/white band</td><td>RX-</td></tr><tr><td>Pin 4</td><td>blue/white band</td><td>Not Used</td></tr><tr><td>Pin 5</td><td>white/blue band</td><td>Not Used</td></tr><tr><td>Pin 7</td><td>solid orange</td><td>Not Used</td></tr><tr><td>Pin 8</td><td>solid gray</td><td>Not Used</td></tr></table>The color code may vary from one cable manufacturer to another. Make sure that the TX+ and the TX- wires are twisted as a pair and the RX+ and the RX- wires are twisted as another pair. For 100-Mbps operation, category 5 wire must be used for proper 100BASE-TX operation.</td></tr>
<tr><td>Claim 39:</td><td>Prior Art:</td></tr>
<tr><td>39. The piece of Ethernet data terminal equipment according to claim 31 wherein the Ethernet connector is an RJ45 jack comprising the contact 1 through the contact 8, the at least one of the plurality of contacts of the Ethernet connector comprises two of the plurality of contacts of the Ethernet connector and the two of the plurality of contacts comprise the contact 3 and the contact 6.</td><td>The reasons for rejecting claim 31, from which claim 39 depends, are provided above. Claim 39 requires selecting contacts 3 and 6. As was illustrated in AAPA, contacts 3 and 6 correspond to RD- and RD+:<br><br><table><tr><th>CONTACT</th><th>MDI SIGNAL</th></tr><tr><td>1</td><td>TD+</td></tr><tr><td>2</td><td>TD-</td></tr><tr><td>3</td><td>RD+</td></tr><tr><td>4</td><td>Not used by 10BASE-T</td></tr><tr><td>5</td><td>Not used by 10BASE-T</td></tr><tr><td>6</td><td>RD-</td></tr><tr><td>7</td><td>Not used by 10BASE-T</td></tr><tr><td>8</td><td>Not used by 10BASE-T</td></tr></table>’012 patent file history, 2011-12-06 Applicant Arguments/Remarks Made in an Amendment, p. 27.<br><br>PCnet illustrates the same pinout as AAPA:</td></tr>
</table>

Table 4-2 RJ-45 Pinout

| Pin Number | Color Code | Function |
|---|---|---|
| Pin 1 | white/orange band | TX+ |
| Pin 2 | orange/white band | TX- |
| Pin 3 | white/green band | RX+ |
| Pin 6 | green/white band | RX- |
| Pin 4 | blue/white band | Not Used |
| Pin 5 | white/blue band | Not Used |
| Pin 7 | solid orange | Not Used |
| Pin 8 | solid gray | Not Used |

The color code may vary from one cable manufacturer to another. Make sure that the TX+ and the TX- wires are twisted as a pair and the RX+ and the RX- wires are twisted as another pair. For 100-Mbps operation, category 5 wire must be used for proper 100BASE-TX operation.

Cummings teaches: “Transmit wires 44a through 44d and 46a through 46d are existing wires found within data communication link 14 that are selectively tapped as pairs in accordance with the present invention to provide current loops 50a through 50d.” Cummings, col. 4 ll. 20-24.

| Claim 40: | Prior Art: |
|---|---|
| 40. The piece of Ethernet data terminal equipment according to claim 31 wherein the at least one path comprises at least one resistor. | The reasons for rejecting claim 31, from which claim 40 depends, are provided above. Claim 40 requires a resistor in the path.<br><br>Cummings illustrates paths with resistors:<br><br>Cummings, FIG. 2<br><br>Manan illustrates a “Resistance Measuring Device 26” that measures resistance on the path: |

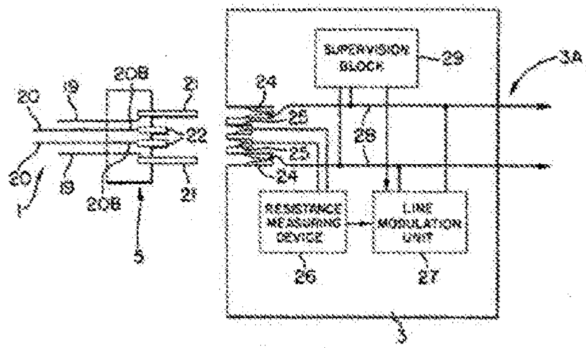



*FIG. 3*

FIG. 3, Maman.

| Claim 41: | Prior Art: |
|---|---|
| 41. The piece of Ethernet data terminal equipment according to claim 31 wherein the at least one path comprises two paths. | The reasons for rejecting claim 31, from which claim 41 depends, are provided above. Claim 41 requires coupling two paths across the selected contacts.<br><br>Because Cummings teaches a combined communication and power path (see, e.g., Cummings, FIG. 1), Cummings teaches coupling two paths across the selected contacts.<br><br>AAPA illustrates contacts 1, 2 and 3, 6, which are respectively associated with a first path (TD+, TD-) and a second path (RD-, RD+).<br><br>PCnet illustrates the same pinout as AAPA: |

Table 4-2 RJ-45 Pinout

| Pin Number | Color Code | Function |
|---|---|---|
| Pin 1 | white/orange band | TX+ |
| Pin 2 | orange/white band | TX- |
| Pin 3 | white/green band | RX+ |
| Pin 6 | green/white band | RX- |
| Pin 4 | blue/white band | Not Used |
| Pin 5 | white/blue band | Not Used |
| Pin 7 | solid orange | Not Used |
| Pin 8 | solid gray | Not Used |

The color code may vary from one cable manufacturer to another. Make sure that the TX+ and the TX- wires are twisted as a pair and the RX+ and the RX- wires are twisted as another pair. For 100 Mbps operation, category 5 wire must be used for proper 100BASE-TX operation.

Thus, PCnet teaches two paths (TX and RX) in addition to or as an alternative to the combined communication and power path of Cummings.

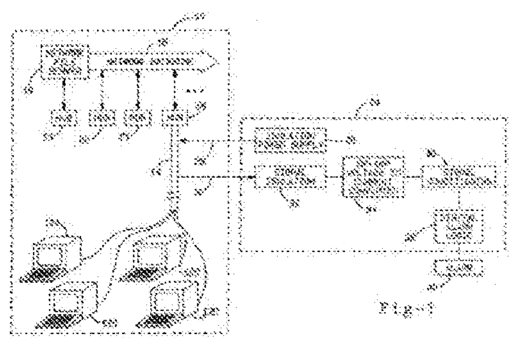
| **Claim 43:** | **Prior Art:** |
|---|---|
| 43. The piece of Ethernet data terminal equipment according to claim 31 wherein the at least one path comprises a controller. | The reasons for rejecting claim 31, from which claim 43 depends, are provided above. Claim 43 requires a controller to be on the path.<br><br>A controller is not described in the '012 patent; the word "controller" is found only in the claims. As such, it is not entirely clear what is meant by the term. However, a broadest reasonable interpretation of the claim language is embodied in the "network security system 24" of Cummings. Cummings, col. 2 ll. 65-68 ("a network security system 24 is provided therein for achieving theft protection of electronic computer equipment associated with a computer network 10").<br><br>PCnet explicitly discloses coupling at least one path having a controller across the selected contacts: "The Auto-Poll™ feature of the PCnet-FAST controller determines that the MII port is used for the network connection." PCnet, 3-1, 3.2 10/100BASE-T PHYSICAL CONNECTIONS, para. 2. |
| **Claims 44 and 47:** | **Prior Art:** |
| 44. The method according to claim 1 wherein the Ethernet connector is an RJ45 jack comprising the contact 1 through the contact 8 and the piece of Ethernet data terminal equipment is a piece of BaseT Ethernet terminal data equipment.<br><br>47. The method according to claim 1 wherein the Ethernet connector is an RJ45 jack comprising the contact 1 through the contact 8 and the piece of Ethernet data terminal equipment is a piece of BaseT Ethernet terminal data equipment | The reasons for rejecting claim 31, from which claims 44 and 47 depend, are provided above. Claims 44 and 47 require 8 contacts and BaseT Ethernet terminal data equipment, which is essentially a combination of claims 34 and 36. (Claims 44 and 47 are identical.)<br><br>BaseT is not described in the '012 patent; the designation "BaseT" is found only in the claims. However, 10BASE-T, for example, is described in 802.3i. A piece of Ethernet data terminal equipment (such as an Ethernet-capable computer) would presumably be a "BaseT Ethernet data terminal equipment" if it used 10BASE-T.<br><br>Using the broadest reasonable interpretation of the term "BaseT," Cummings teaches "BaseT." See, e.g., Cummings, col. 3 11. 35-37. |

| | |
|---|---|
| | PCnet teaches both RJ-45 jacks (see, e.g., PCnet, 2-1, Figure 2-1 Board Diagram ("RJ-45") and "BaseT" (see, e.g., PCnet, 2-2, Table 2-1 Auto-Negotiation Capabilities ("10BASE-T, Half Duplex"). |
| **Claim 45:** | **Prior Art:** |
| 45. The piece of Ethernet data terminal equipment according to claim 31 wherein the Ethernet connector is an RJ45 jack comprising the contact 1 through the contact 8 and the distinguishing information about the piece of Ethernet data terminal equipment associated to impedance within the at least one path comprises identifying information about the piece of Ethernet data terminal equipment. | The reasons for rejecting claim 31, from which claim 45 depends, are provided above. Claim 45 requires 8 contacts and associating identifying information about the equipment to impedance, which is essentially a combination of claims 33 and 34.<br><br>As discussed above, Cummings understands the relationship between current and impedance. Cummings also teaches "detection of a current flow discontinuity further energizes the appropriate light emitting diodes 44a through 44d associated with the disconnected personal computer 12." Thus, Cummings teaches associating identifying information about a computer to impedance.<br><br>Maman teaches "the connecting cable 1 is adapted such that when the equipment 2 is disconnected from the cable 1, as when the equipment 2 is removed from female connector 4 or the cable 1 .is cut, the cable changes from a first or closed to second or open state, causing the device 3 to generate an alarm signal which contains a unique address identifying the device 3." Because Maman knows a unique address identifying the device and which is associated with the impedance, Maman teaches associating identifying information about the equipment to impedance.<br><br>Cummings and Maman do not explicitly disclose RJ-45 jacks. However, PCnet, in a related field of endeavor, illustrates the use of an 8-Pin RJ-45 jack in an Ethernet context. See, e.g., 3-1 ("8- Pin RJ-45 jack"). |
| **Claim 48:** | **Prior Art:** |
| 48. The piece of Ethernet data terminal equipment according to | The reasons for rejecting claim 31, from which claim 48 depends, are provided above. Claim 48 requires |

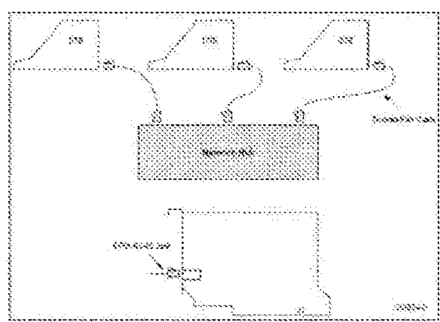
| | |
|---|---|
| claim 31 wherein the distinguishing information is related to an electrical aspect of the piece of Ethernet data terminal equipment | associating distinguishing information related to an electrical aspect of the equipment to impedance.<br><br>As discussed above, Cummings understands the relationship between current and impedance. Cummings also teaches "detection of a current flow discontinuity further energizes the appropriate light emitting diodes 44a through 44d associated with the disconnected personal computer 12." Thus, Cummings teaches distinguishing information is related to an electrical aspect, e.g., whether the computer is electrically connected to the network, to impedance.<br><br>Maman teaches "the connecting cable 1 is adapted such that when the equipment 2 is disconnected from the cable 1, as when the equipment 2 is removed from female connector 4 or the cable 1 is cut, the cable changes from a first or closed to second or open state, causing the device 3 to generate an alarm signal which contains a unique address identifying the device 3." Because Maman knows a unique address identifying the device and which is associated with the impedance, Maman teaches associating distinguishing information is related to an electrical aspect, e.g., whether the equipment is electrically connected to the network, to impedance. |

| **Claim 49:** | **Prior Art:** |
|---|---|
| 49. The piece of Ethernet data terminal equipment according to claim 31 wherein the distinguishing information is related to a physical aspect of the piece of Ethernet data terminal equipment | The reasons for rejecting claim 31, from which claim 49 depends, are provided above. Claim 49 requires associating distinguishing information related to a physical aspect of the equipment to impedance.<br><br>As discussed above, Cummings understands the relationship between current and impedance. Cummings also teaches "detection of a current flow discontinuity further energizes the appropriate light emitting diodes 44a through 44d associated with the disconnected personal computer 12." Thus, Cummings teaches distinguishing information is |

| | |
|---|---|
| | related to an electrical aspect, e.g., whether the computer is physically connected to the network, to impedance.<br><br>Maman teaches "the connecting cable 1 is adapted such that when the equipment 2 is disconnected from the cable 1, as when the equipment 2 is removed from female connector 4 or the cable 1 is cut, the cable changes from a first or closed to second or open state, causing the device 3 to generate an alarm signal which contains a unique address identifying the device 3." Because Maman knows a unique address identifying the device and which is associated with the impedance, Maman teaches associating distinguishing information is related to an electrical aspect, e.g., whether the equipment is physically connected to the network, to impedance. |
| **Claim 52:** | **Prior Art:** |
| 52. The piece of Ethernet data terminal equipment according to claim 31 wherein the impedance within the at least one path is a function of voltage across the selected contacts. | The reasons for rejecting claim 31, from which claim 52 depends, are provided above. Claim 52 requires impedance be a function of voltage across the selected contacts.<br><br>Cummings teaches "The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d." Cummings, col. 3 ll. 53-56.<br><br>PCnet describes power requirements of the PC Ethernet interface adapter card as "3.25 W maximum, 5 V DC, at 25°C (with NSC 10/100 PHY)" PCnet, 4-4, 4.6 POWER REQUIREMENTS.<br><br>Maman teaches associating distinguishing information about the data terminal equipment to impedance within a corresponding path. Maman, col. 2 ll. 31-45 ("first and second status conductors adapted to exhibit a first impedance value between the individual status conductors corresponding to the first state of the cable when the electrical equipment is connected to the equipment and a |

| | |
|---|---|
| | second impedance value between the individual status conductors corresponding to the second state of the cable when the electrical equipment is disconnected from the cable"); see also, id., FIG. 3. The function of voltage across the selected contacts is not defined in the '012 patent specification; the function is found only in the claims. However, the function is Ohm's Law: V = IR rewritten for circuits with reactive elements as V = IZ, where Z (impedance) replaces R (resistance). There is no alternative but for impedance to be a function of voltage across the selected contacts in accordance with the two century old law. This function is inherent in any of the electrical engineering references included. |
| **Claim 54:** | **Prior Art:** |
| 54. The piece of Ethernet data terminal equipment according to claim 31 wherein the adapted piece of Ethernet data terminal equipment is physically connected to a network. | The reasons for rejecting claim 31, from which claim 54 depends, are provided above. Claim 54 requires connecting the equipment to a network.<br><br>Cummings illustrates computers 12A-12D physically connected to a network in FIG. 1:<br><br><br>Cummings, FIG. 1<br><br>PCnet teaches: "A Data Terminal Equipment (DTE) system with the installed PCnet-EHYTboard can connect to an Ethernet network using the on-board RJ-45 jack for either 10BASE-T or 100BASE-TX connection" PCnet, 3-1, 3.2 10/100BASE-T PHYSICAL CONNECTIONS. |
| **Claim 55 and 59:** | **Prior Art:** |
| 55. The piece of Ethernet data terminal equipment according to | The reasons for rejecting claim 31, from which claim 55 depends, are provided above. The reasons for |

| | |
|---|---|
| claim 31 wherein the selected contacts are the same contacts used for normal network communication.<br><br>59. The piece of Ethernet data terminal equipment according to any one of claims 31 through 54 and claim 57 wherein the selected contacts are at least some of the same contacts used for normal network communication. | rejecting claims 31-54 and 57, from which claim 59 depends, are provided above. Claims 55 and 59 require contacts are used for normal network communication. Note: Claim 59 includes additional language "at least some of," but claim construction is similar for "are the same contacts" and "are at least some of the same contacts."<br><br>Cummings illustrates a path that includes both communication and power. See, Cummings, FIG. 1 (data communication link 14).<br><br>PCnet teaches: "A Data Terminal Equipment (DTE) system with the installed PCnet-EHYTboard can connect to an Ethernet network using the on-board RJ-45 jack for either 10BASE-T or 100BASE-TX connection." PCnet, 3-1, 3.2 10/100BASE-T PHYSICAL CONNECTIONS. Because 10BASE-T is "normal network communication," the contacts of the RJ-45 jack are used for normal network communication |
| **Claim 56 and 60:** | **Prior Art:** |
| 56. The piece of Ethernet data terminal equipment according to claim 55 wherein the normal network communication is BaseT Ethernet communication.<br><br>60. The piece of Ethernet data terminal equipment according to claim 59 wherein the normal network communication is BaseT Ethernet communication. | The reasons for rejecting claim 55, from which claim 56 depends, are provided above. The reasons for rejecting claim 59, from which claim 60 depends, are provided above. Claims 56 and 60 require the normal network communication of claim 55 is BaseT Ethernet communication.<br><br>BaseT is not described in the '012 patent; the designation "BaseT" is found only in the claims. However, 10BASE-T, for example, is described in 802.3i. A piece of Ethernet data terminal equipment (such as an Ethernet-capable computer) would presumably be a "BaseT Ethernet data terminal equipment" if it used 10BASE-T.<br><br>Using broadest reasonable interpretation of the term "BaseT," Cummings teaches "BaseT." See, e.g., col. 3 ll. 35-37.<br><br>Using a broadest reasonable interpretation of the term "BaseT," PCnet teaches BaseT: "A Data |

| | |
|---|---|
| | Terminal Equipment (DTE) system with the installed PCnet-FAST board can connect to an Ethernet network using the on-board RJ-45 jack for either 10BASE-T or 100BASE-TX connection ” PCnet, 3-1, 3.2 10/100BASE-T PHYSICAL CONNECTIONS. |
| **Claim 57 and 58:** | **Prior Art:** |
| 57. The piece of Ethernet data terminal equipment according to claim 31 wherein the at least one path coupled across the selected contacts is formed through the piece of Ethernet data terminal equipment.<br><br>58. The piece of Ethernet data terminal equipment according to any one of claims 31 through 56 wherein the at least one path coupled across the selected contacts is formed through the piece of Ethernet data terminal equipment. | The reasons for rejecting claim 31, from which claim 57 depends, are provided above. The reasons for rejecting claims 31-56, from which claim 58 depends, are provided above. Claims 57 and 58 require the path be formed through the Ethernet data terminal equipment.<br><br>Cummings teaches: “The low current power signal flows through an internal path provided by existing circuitry in personal computer 12a.” Cummings, col. 4 ll. 27-30.<br><br>PCnet illustrates an 8-Pin RJ-45 Jack that illustrates the path being formed through a DTE:<br><br><br>PCnet, Figure 3-1 |
| **Claim 61:** | **Prior Art:** |
| 61. The method according to claim 1 wherein the piece of Ethernet data terminal equipment is powered-on. | The reasons for rejecting claim 1, from which claim 61 depends, are provided above. Claim 61 requires the equipment is powered-on.<br><br>Cummings teaches a computer (data terminal equipment), which is powered-on during operation.<br><br>PCnet teaches: “Configuration of the I/O base address and the interrupt channel is automatic upon power up, without any hardware jumpers.” PCnet, 3-1, 3.1 BOARD CONFIGURATION. |

| **Claim 62:** | **Prior Art:** |
|---|---|
| 62. The method according to any one of claims 1 through 27 and claim 61 wherein the at least one path permits use of the selected contacts for Ethernet communication. | The reasons for rejecting claims 1-27 and 61, from which claim 62 depends, are provided above. Claim 62 requires the path permits Ethernet communication.<br><br>Cummings illustrates a path, which can be an Ethernet path that includes both communication and power. See, Cummings, FIG. 1 (data communication link 14).<br><br>PCnet illustrates the use of an 8-Pin RJ-45 jack in an Ethernet context. See, e.g., 3-1 ("8-Pin RJ- 45 jack"). |
| **Claim 63:** | **Prior Art:** |
| 63. The method according to claim 62 wherein the selected contacts are used for Ethernet communication. | The reasons for rejecting claim 62, from which claim 63 depends, are provided above. Claim 63 requires the path that permits Ethernet communication is actually used for Ethernet communication.<br><br>Cummings illustrates a path, which can be an Ethernet path that includes both communication and power. See, Cummings, FIG. 1 (data communication link 14).<br><br>PCnet illustrates the use of an 8-Pin RJ-45 jack in an Ethernet context. See, e.g., 3-1 ("8-Pin RJ- 45 jack"). |
| **Claim 64:** | **Prior Art:** |
| 64. The method according to claim 31 wherein the piece of Ethernet data terminal equipment is powered-on. | The reasons for rejecting claim 31, from which claim 64 depends, are provided above. Claim 64 requires the equipment is powered-on.<br><br>Cummings teaches a computer (data terminal equipment), which is powered-on during operation.<br><br>PCnet teaches: "Configuration of the I/O base address and the interrupt channel is automatic upon power up, without any hardware jumpers." PCnet, 3-1, 3.1 BOARD CONFIGURATION. |

| **Claim 65:** | **Prior Art:** |
|---|---|
| 65. The method according to any one of claims 31 through 54 and claim 64 wherein the at least one path permits use of the selected contacts for Ethernet communication. | The reasons for rejecting claims 31-54 and 64, from which claim 65 depends, are provided above. Claim 65 requires the path permits Ethernet communication.<br><br>Cummings illustrates a path, which can be an Ethernet path that includes both communication and power. See, Cummings, FIG. 1 (data communication link 14).<br><br>PCnet illustrates the use of an 8-Pin RJ-45 jack in an Ethernet context. See, e.g., 3-1 (“8-Pin RJ- 45 jack”). |
| **Claim 66:** | **Prior Art:** |
| 66. The method according to claim 65 wherein the selected contacts are used for Ethernet communication. | The reasons for rejecting claim 65, from which claim 66 depends, are provided above. Claim 66 requires the path that permits Ethernet communication is actually used for Ethernet communication.<br><br>Cummings illustrates a path, which can be an Ethernet path that includes both communication and power. See, Cummings, FIG. 1 (data communication link 14).<br><br>PCnet illustrates the use of an 8-Pin RJ-45 jack in an Ethernet context. See, e.g., 3-1 (“8-Pin RJ- 45 jack”). |
| **Claim 67:** | **Prior Art:** |
| 67. A method for adapting a piece of terminal equipment, the piece of terminal equipment having an Ethernet connector, the method comprising: | Cummings teaches Ethernet. See, e.g., Cummings, col. 3 ll. 18-19. Maman teaches a method for adapting a piece of data terminal equipment (such as a computer), the data terminal equipment having a connector. See, Maman, FIG. 1. Maman does not explicitly teach Ethernet, but IEEE 802.3i, which is AAPA, is part of the IEEE 802.3 (Ethernet) Standards.<br><br>PCnet describes how to use an Ethernet interface board. PCnet, 3-1). PCnet also illustrates data terminal equipment (“DTE”) for use in an Ethernet |

| | |
|---|---|
| | network. PCnet, 3-1. |
| coupling at least one path across specific contacts of the Ethernet connector, the at least one path permits use of the specific contacts for Ethernet communication, the Ethernet connector comprising the contact 1 through the contact 8, the specific contacts of the Ethernet connector comprising at least one of the contacts of the Ethernet connector and at least another one of the contacts of the Ethernet connector; and | Cummings teaches "In accordance with conventional wiring approaches, data communication link 14 generally includes a plurality of pairs of transmit wires 44 and 46 as well as a plurality of pairs of receive wires (not shown) connected to each of personal computers 12a through 12d." Cummings, col. 3 ll. 37-42. See also, Cummings, col. 4 ll. 20-24 ("Transmit wires 44a through 44d and 46a through 46d are existing wires found within data communication link 14 that are selectively tapped as pairs in accordance with the present invention to provide current loops 50a through 50d").<br><br>PCnet discloses that each DTE with an installed PCnet board can connect to an Ethernet network using the on-board 8-Pin RJ-45 jack for 10BASE-T connection. PCnet, 3-1 ("8-Pin RJ-45 Jack"). |
| arranging impedance within the at least one path to distinguish the piece of terminal equipment. | Cummings actually claims "said respective pairs of data communication lines are associated with different ones ofthe associated pieces of equipment," "supplying a low DC current signal to each current loop so as to achieve continuous current flow through each current loop while each of said associated pieces of equipment is physically connected to said network via the data communication lines," and sensing "DC current signal in each of said current loops so as to detect a change in current flow indicative of disconnection of one of said pieces of associated equipment." Cummings, claim 14; see also claims 1 and 9 for similar language.<br><br>Maman teaches arranging impedance to distinguish the data terminal equipment. Maman, col. 2 ll. 31-45 ("first and second status conductors adapted to exhibit a first impedance value between the individual status conductors corresponding to the first state of the cable when the electrical equipment is connected to the equipment and a second impedance value between the individual status conductors corresponding to the second state of the cable when the electrical equipment is disconnected |

| | |
|---|---|
| | from the cable"); see also, id., FIG. 3. |

Cummings teaches the use of Ethernet to couple equipment, such as computers, to a network via data communication lines. Cummings controls voltage to create current. The control of current using voltage demonstrates an understanding of Ohm's Law, which, assuming active elements, can be characterized as V = IZ, where V is voltage, I is current, and Z is impedance. Because Cummings knows Ohm's Law, the voltage across the path, and the current through the path, Cummings also knows the impedance and can associate distinguishing information about the equipment to impedance within the path. For example, when current drops to 0 because the path is interrupted, impedance also drops to 0. It may be noted that even if there are no active elements, impedance includes resistance and, therefore, a path without active elements can also be defined using V = IZ (as opposed to V = IR).

To the extent it is determined a person of ordinary skill in the art of electronics does not know Ohm's Law, Cummings can be combined with Manan, which explicitly teaches associating distinguishing information about the data terminal equipment to impedance within a corresponding path.

The 802.3i standard specifies a cable with certain characteristics, such as 8 contacts that can be allocated into contact pairs. With specific reference to the claim language, "selecting contacts" involves picking one contact pair of the various possible permutations. The "selected contacts" therefore comprise at least one of the plurality of contacts of the Ethernet connector and at least another one of the plurality of contacts of the Ethernet connector (i.e., the pair). A path is coupled across contact pairs, and specifically across the "selected contacts." IEEE 802.3i does not explicitly teach associating distinguishing information about the piece of equipment to impedance within the path. However, Maman, in a related field of endeavor, teaches associating distinguishing information about a piece of data terminal equipment (which in the context of IEEE 802.3i would be Ethernet data terminal equipment) to impedance within a path.

Please note the reasons for combining from the Final Action, as follows:

Cummings measures and detects fluctuations in electrical conditions on a network path to determine connectivity state of data terminal equipment, explicitly in an Ethernet network. PCnet describes state-of-the-art Ethernet equipment with specific reference to cables that are AAPA. Maman describes a connectivity detection system that explicitly mentions impedance.

The differences between Cummings and the ‘012 patent are quite small. The patents are co-owned and Cummings explicitly mentions Ethernet. The ‘012 patent goes into more detail regarding various components of Ethernet systems, all of which were known, as is discussed in more detail later, but still simply describes a connectivity state detection system as was described by Cummings.

Cummings and PCnet both describe Ethernet networks. Moreover, AAPA illustrates pinouts for connectors that are identical to those illustrated by PCnet and Cummings appears to have language extremely similar to that of the ‘012 patent. (Cummings and the ‘012 patent are co-owned.)

PCnet discloses that each DTE with an installed PCnet board can connect to an Ethernet network using the on-board 8-Pin RJ-45 jack for 10BASE-T connection. PCnet, 3-1 ("8-Pin RJ-45 Jack"). Thus, PCnet corroborates and subsumes AAPA.

Note also the Graham Inquiries and rationale under KSR in the Final action, as follows:

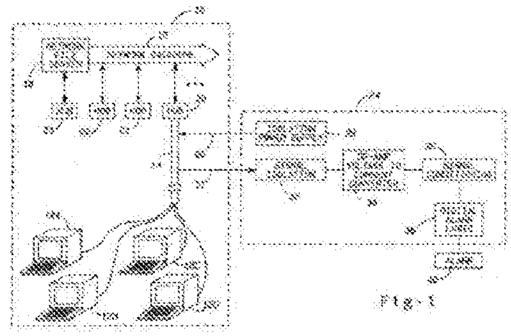
The scope and content of the prior art includes Ohm's law, V = IR, which expresses the relationship between voltage, current, and resistance, and which can be rewritten to take into account reactive elements to which AC voltage or current is applied as V = IZ, where Z represents impedance. The level of skill of an ordinary person of skill in the art should include at least the level of skill of college-level electrical engineering (and specifically Ohm's Law) and inventors of the abovementioned patents. The level of skill of an ordinary person of skill in the art should also include at least the level of creativity to apply well-known electrical engineering principles across standards, such as IEEE 802.3 standards for Ethernet networks (as provided in AAPA), and to utilize well known circuit components in standard ways.

The Examination Guidelines for Determining Obviousness Under 35 U.S.C. 103 in view of the Supreme Court Decision in KSR International Co. v. Teleflex Inc., 72 FR 57526 (Oct. 10, 2007), 1324 Off. Gaz. Pat. Office 23 (Nov. 6, 2007) (2007 KSR Guidelines) have been incorporated into the MPEP. See MPEP 2141 (8th ed. 2001 (Rev. 6, Sept. 2007). The Examination Guidelines Update: Developments in the Obviousness Inquiry After KSR v. Teleflex, which became effective September 1, 2010, highlights case law developments on obviousness under 35 U.S.C. 103 since the 2007

decision by the United States Supreme Court in KSR Int'l Co. v. Teleflex Inc. Guidelines state that the teaching-suggestion-motivation test is one possible approach to support an obviousness determination. Six other rationales identified in the Guidelines include: (1) combining prior art elements according to known methods to yield predictable results; (2) simple substitution of one known element for another to obtain predictable results; (3) use of a known technique to improve similar devices, methods, or products in the same way; (4) applying a known technique to a known device, method, or product ready for improvement to yield predictable results; (5) obvious to try—choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success; and (6) known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art.

Therefore it would have been obvious to combine the references.

| **Claim 68:** | **Prior Art:** |
|---|---|
| 68. The method according to claim 67 wherein the piece of Ethernet data terminal equipment is a personal computer. | The reasons for rejecting claim 67, from which claim 68 depends, are provided above. Claim 68 requires the Ethernet data terminal equipment be a personal computer.<br><br>Cummings teaches Ethernet. See, e.g., Cummings, col. 3 ll. 18-19. Cummings also illustrates computers 12A-12D (data terminal equipment) in FIG. 1: |

| | |
|---|---|
| |  Cummings, FIG. 1. PCnet teaches: “The PCnet™-FAST board is an advanced PC network interface adapter card targeted for the Ethernet-PCI adapter card market.” PCnet 1-1, 1.1 Introduction. The acronym “PC” stands for “personal computer” when used in this context. |
| **Claim 69:** | **Prior Art:** |
| 69. The method according to claim 67 wherein the arranging impedance within the at least one path to distinguish the piece of terminal equipment comprises arranging impedance within the at least one path to uniquely distinguish the piece of terminal equipment. | The reasons for rejecting claim 67, from which claim 69 depends, are provided above. Claim 69 requires uniquely distinguishing the piece of terminal equipment.<br><br>As discussed above, Cummings understands the relationship between current and impedance. As discussed above, Cummings understands the relationship between current and impedance. Cummings also teaches “detection of a current flow discontinuity further energizes the appropriate light emitting diodes 44a through 44d associated with the disconnected personal computer 12.” Thus, Cummings teaches uniquely distinguishing a computer.<br><br>Maman teaches “the connecting cable 1 is adapted such that when the equipment 2 is disconnected from the cable 1, as when the equipment 2 is removed from female connector 4 or the cable 1 is cut, the cable changes from a first or closed to second or open state, causing the device 3 to generate an alarm signal which contains a unique address identifying the device 3.” Because Maman knows a unique address identifying the device and |

| | |
|---|---|
| | which is associated with the impedance, Maman teaches uniquely distinguishing equipment. |
| **Claim 70:** | **Prior Art:** |
| 70. The method according to claim 67 wherein the arranging impedance within the at least one path to distinguish the piece of terminal equipment comprises arranging impedance within the at least one path to identify the piece of terminal equipment. | The reasons for rejecting claim 67, from which claim 70 depends, are provided above. Claim 70 requires identifying the equipment.<br><br>As discussed above, Cummings understands the relationship between current and impedance. As discussed above, Cummings understands the relationship between current and impedance. Cummings also teaches “detection of a current flow discontinuity further energizes the appropriate light emitting diodes 44a through 44d associated with the disconnected personal computer 12.” Thus, Cummings teaches identifying a computer.<br><br>Maman teaches “the connecting cable 1 is adapted such that when the equipment 2 is disconnected from the cable 1, as when the equipment 2 is removed from female connector 4 or the cable 1 is cut, the cable changes from a first or closed to second or open state, causing the device 3 to generate an alarm signal which contains a unique address identifying the device 3.” Because Maman knows a unique address identifying the device and which is associated with the impedance, Maman teaches identifying equipment. |
| **Claim 71:** | **Prior Art:** |
| 71. The method according to claim 67 wherein the arranging impedance within the at least one path to distinguish the piece of terminal equipment comprises arranging impedance within the at least one path to uniquely identify the piece of terminal equipment. | The reasons for rejecting claim 67, from which claim 71 depends, are provided above. Claim 71 requires uniquely identifying the equipment.<br><br>As discussed above, Cummings understands the relationship between current and impedance. As discussed above, Cummings understands the relationship between current and impedance. Cummings also teaches “detection of a current flow discontinuity further energizes the appropriate light emitting diodes 44a through 44d associated with the disconnected personal computer 12.” Thus, Cummings teaches uniquely identifying a computer. |

| | |
|---|---|
| | Maman teaches “the connecting cable 1 is adapted such that when the equipment 2 is disconnected from the cable 1, as when the equipment 2 is removed from female connector 4 or the cable 1 is cut, the cable changes from a first or closed to second or open state, causing the device 3 to generate an alarm signal which contains a unique address identifying the device 3.” Because Maman knows a unique address identifying the device and which is associated with the impedance, Maman teaches uniquely identifying equipment. |
| **Claim 72:** | **Prior Art:** |
| 72. The method according to claim 67 wherein the piece of terminal equipment has a particular electrical aspect and the arranging impedance within the at least one path to distinguish the piece of terminal equipment comprises arranging impedance within the at least one path to distinguish that the piece of terminal equipment has the particular electrical aspect. | The reasons for rejecting claim 67, from which claim 72 depends, are provided above. Claim 72 requires [determining] equipment has a particular electrical aspect. It may be noted the claim requires “to distinguish that the piece of terminal equipment has the particular electrical aspect.” This does not make any sense, so the quoted claim language is interpreted to mean “to [determine] that the piece of terminal equipment has the particular electrical aspect.”<br><br>As discussed above, Cummings understands the relationship between current and impedance. Cummings also teaches “detection of a current flow discontinuity further energizes the appropriate light emitting diodes 44a through 44d associated with the disconnected personal computer 12.” Thus, Cummings teaches distinguishing that the computer has an electrical aspect, e.g., whether the computer is electrically connected to the network. Maman teaches “the connecting cable 1 is adapted such that when the equipment 2 is disconnected from the cable 1, as when the equipment 2 is removed from female connector 4 or the cable 1 is cut, the cable changes from a first or closed to second or open state, causing the device 3 to generate an alarm signal which contains a unique address identifying the device 3.” Because Maman knows a unique address identifying the device and which is associated with the impedance, |

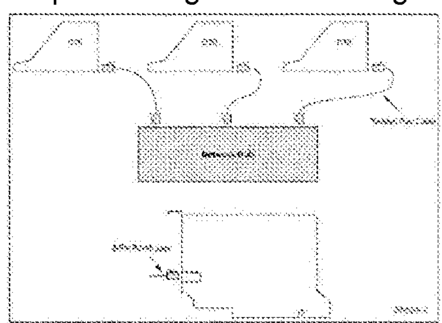
| | |
|---|---|
| | Maman teaches distinguishing the equipment has an electrical aspect, e.g., whether the equipment is electrically connected to the network. |
| **Claim 73:** | **Prior Art:** |
| 73. The method according to claim 67 wherein the arranging impedance within the at least one path comprises arranging impedance within the at least one path to be part of a detection protocol. | The reasons for rejecting claim 67, from which claim 73 depends, are provided above. Claim 73 requires the impedance is part of a detection protocol. Cummings also teaches a theft detection protocol. Cummings, col. 1 ll. 8-12 ("This invention relates generally to theft protection security systems and, more particularly, to a network security system for detecting the unauthorized removal of remotely located electronic equipment from a network.") |
| **Claim 76:** | **Prior Art:** |
| 76. The method according to claim 67 wherein the arranging impedance within the at least one path comprises arranging the impedance within the at least one path to draw DC current. | The reasons for rejecting claim 67, from which claim 76 depends, are provided above. Claim 76 requires drawing DC current.<br><br>Cummings teaches "The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d." Cummings, col. 3 ll. 53-56. A DC power signal means DC current is drawn.<br><br>PCnet describes power requirements of the PC Ethernet interface adapter card as "3.25 W maximum, 5 V DC, at 25°C (with NSC 10/100 PHY)" PCnet, 4-4, 4.6 POWER REQUIREMENTS. It is well understood that DC voltage draws DC current. |
| **Claim 80:** | **Prior Art:** |
| 80. The method according to claim 67 wherein the arranging impedance within the at least one path comprises arranging impedance within the at least one path to be a function of voltage across the selected contacts. | The reasons for rejecting claim 67, from which claim 80 depends, are provided above. Claim 80 requires impedance be a function of voltage across the selected contacts.<br><br>The function of voltage across the selected contacts is not defined in the '012 patent specification; the function is found only in the claims. However, the function is Ohm's Law: V = IR rewritten for circuits |

| | |
|---|---|
| | with reactive elements as V = IZ, where Z (impedance) replaces R (resistance). There is no alternative but for impedance to be a function of voltage across the selected contacts in accordance with the two century old law. This function is inherent in any of the electrical engineering references included. |
| **Claim 81:** | **Prior Art:** |
| 81. The method according to claim 67 wherein the arranging impedance within the at least one path comprises arranging impedance within the at least one path to have a first impedance followed by a second impedance. | The reasons for rejecting claim 67, from which claim 81 depends, are provided above. Claim 81 requires the impedance be variable.<br><br>Cummings actually claims “said respective pairs of data communication lines are associated with different ones of the associated pieces of equipment,” “supplying a low DC current signal to each current loop so as to achieve continuous current flow through each current loop while each of said associated pieces of equipment is physically connected to said network via the data communication lines,” and sensing “DC current signal in each of said current loops so as to detect a change in current flow indicative of disconnection of one of said pieces of associated equipment.” If a device is disconnected, causing current to drop to 0, impedance also drops to 0 and, therefore, a first impedance follows a second impedance. |
| **Claim 82:** | **Prior Art:** |
| 82. The method according to claim 67 wherein the arranging impedance within the at least one path comprises arranging impedance within the at least one path to have a first impedance for a first condition applied to the specific contacts followed by a second impedance for a second condition applied to the specific contacts. | The reasons for rejecting claim 67, from which claim 82 depends, are provided above. Claim 82 requires the impedance be variable.<br><br>Cummings actually claims “said respective pairs of data communication lines are associated with different ones of the associated pieces of equipment,” “supplying a low DC current signal to each current loop so as to achieve continuous current flow through each current loop while each of said associated pieces of equipment is physically connected to said network via the data communication lines,” and sensing “DC current signal in each of said current loops so as to detect a |

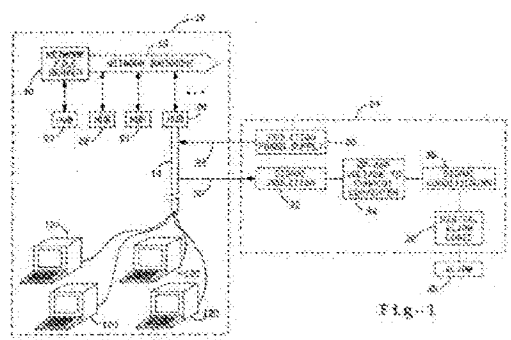
| | |
|---|---|
| | change in current flow indicative of disconnection of one of said pieces of associated equipment.” If a device is disconnected, causing current to drop to 0, impedance also drops to 0 and, therefore, a first impedance (associated with a connected condition) follows a second impedance (associated with a disconnected condition). |
| **Claim 83:** | **Prior Art:** |
| 83. The method according to claim 82 wherein the first and second conditions applied to the specific contacts are voltage conditions. | The reasons for rejecting claim 82, from which claim 83 depends, are provided above. Claim 83 requires applying voltage conditions to the contacts to impact the conditions [impedance].<br><br>Cummings teaches “The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d.” Cummings, col. 3 ll. 53-56.<br><br>PCnet describes power requirements of the PC Ethernet interface adapter card as “3.25 W maximum, 5 V DC, at 25°C (with NSC 10/100 PHY)” PCnet, 4-4, 4.6 POWER REQUIREMENTS.<br><br>Maman teaches associating distinguishing information about the data terminal equipment to impedance within a corresponding path. Maman, col. 2 ll. 31-45 (“first and second status conductors adapted to exhibit a first impedance value between the individual status conductors corresponding to the first state of the cable when the electrical equipment is connected to the equipment and a second impedance value between the individual status conductors corresponding to the second state of the cable when the electrical equipment is disconnected from the cable”); see also, id., FIG. 3.<br><br>The function of voltage across the selected contacts is not defined in the ‘012 patent specification; the function is found only in the claims. However, the function is Ohm’s Law: V = IR rewritten for circuits with reactive elements as V = IZ, where Z (impedance) replaces R (resistance). There is no |

| | |
|---|---|
| | alternative but for impedance to be a function of voltage across the selected contacts in accordance with the two century old law. This function is inherent in any of the electrical engineering references included. |
| **Claim 84:** | **Prior Art:** |
| 84. The method according to claim 83 wherein the voltage conditions are DC voltage conditions. | The reasons for rejecting claim 83, from which claim 84 depends, are provided above. Claim 84 requires applying DC voltage conditions to the contacts to impact the conditions [impedance].<br><br>Cummings teaches "The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d." Cummings, col. 3 ll. 53-56.<br><br>PCnet describes power requirements of the PC Ethernet interface adapter card as "3.25 W maximum, 5 V DC, at 25°C (with NSC 10/100 PHY)" PCnet, 4-4, 4.6 POWER REQUIREMENTS. |
| **Claim 85:** | **Prior Art:** |
| 85. The method according to claim 82 wherein the first and second conditions applied to the specific contacts are current conditions. | The reasons for rejecting claim 82, from which claim 85 depends, are provided above. Claim 85 requires applying current conditions to the contacts to impact the conditions [impedance]. As discussed above, Cummings understands the relationship between current and impedance. Cummings also teaches "detection of a current flow discontinuity further energizes the appropriate light emitting diodes 44a through 44d associated with the disconnected personal computer 12." Current flow discontinuity is a current condition. |
| **Claim 86:** | **Prior Art:** |
| 86. The method according to claim 83 wherein the current conditions are DC current conditions. | The reasons for rejecting claim 85, from which claim 86 depends, are provided above. Claim 86 requires applying DC current conditions to the contacts to impact the conditions [impedance]<br><br>Cummings teaches "The network security system 24 includes an isolation power supply 26 which supplies |

| | |
|---|---|
| | a continuous direct current (DC) power signal to each of current loops 50a through 50d." Cummings, col. 3 ll. 53-56.<br><br>PCnet describes power requirements of the PC Ethernet interface adapter card as "3.25 W maximum, 5 V DC, at 25°C (with NSC 10/100 PHY)" PCnet, 4-4, 4.6 POWER REQUIREMENTS. |
| **Claim 87:** | **Prior Art:** |
| 87. The method according to claim 67 wherein the piece of terminal equipment is powered-on. | The reasons for rejecting claim 67, from which claim 87 depends, are provided above.<br><br>Claim 87 requires the equipment is powered-on. Cummings teaches a computer (data terminal equipment), which is powered-on during operation.<br><br>PCnet teaches: "Configuration of the I/O base address and the interrupt channel is automatic upon power up, without any hardware jumpers." PCnet, 3-1, 3.1 BOARD CONFIGURATION. |
| **Claim 88:** | **Prior Art:** |
| 88. The method according to claim 67 wherein the coupling at least one path across the specific contacts comprises coupling a controller across the specific contacts. | The reasons for rejecting claim 67, from which claim 88 depends, are provided above. Claim 88 requires a controller to be on the path.<br><br>A controller is not described in the '012 patent; the word "controller" is found only in the claims. As such, it is not entirely clear what is meant by the term. However, a broadest reasonable interpretation of the claim language is embodied in the "network security system 24" of Cummings. Cummings, col. 2 ll. 65-68 ("a network security system 24 is provided therein for achieving theft protection of electronic computer equipment associated with a computer network 10").<br><br>PCnet explicitly discloses coupling at least one path having a controller across the selected contacts: "The Auto-Poll™ feature of the PCnet-FAST controller determines that the MiI port is used for the network connection." PCnet, 3-1, 3.2 10/100BASE-T PHYSICAL CONNECTIONS, para. 2 |

| **Claim 91:** | **Prior Art:** |
| --- | --- |
| 91. The method according to claim 67 wherein the coupling at least one path across the specific contacts comprises coupling the at least one path internal to the piece of terminal equipment. | The reasons for rejecting claim 67, from which claim 91 depends, are provided above. Claim 91 requires the path be internal to the piece of terminal equipment.<br><br>Cummings teaches: “The low current power signal flows through an internal path provided by existing circuitry in personal computer 12a.” Cummings, col. 4 ll. 27-30.<br><br>PCnet illustrates an 8-Pin RJ-45 Jack that illustrates the path being formed through a DTE:<br><br>PCnet, Figure 3-1. |
| **Claim 92:** | **Prior Art:** |
| 92. The method according to claim 67 wherein the Ethernet connector is an RJ45 jack comprising the contact 1 through the contact 8. | The reasons for rejecting claim 67, from which claim 92 depends, are provided above. Claim 92 requires an RJ45 jack comprising 8 contacts<br><br>PCnet illustrates the use of an 8-Pin RJ-45 jack in an Ethernet context. See, e.g., 3-1 (“8-Pin RJ- 45 jack”). |
| **Claim 93:** | **Prior Art:** |
| 93. The method according to any one of claim 67 wherein the specific contacts are used for Ethernet communication. | The reasons for rejecting claim 67, from which claim 93 depends, are provided above. Claim 93 requires the path is for Ethernet communication.<br><br>Cummings illustrates a path, which can be an Ethernet path that includes both communication and power. See, Cummings, FIG. 1 (data communication link 14).<br><br>PCnet illustrates the use of an 8-Pin RJ-45 jack in an Ethernet context. See, e.g., 3-1 (“8-Pin RJ- 45 jack”) |

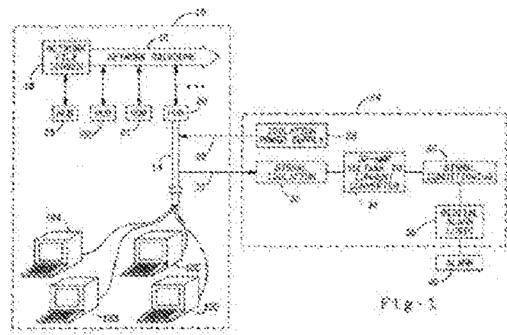
| Claim 94: | Prior Art: |
|---|---|
| 94. The method according to any one of claim 67 wherein the specific contacts are used for Ethernet communication and at least some of the specific contacts are actually carrying Ethernet signals. | The reasons for rejecting claim 67, from which claim 94 depends, are provided above. Claim 94 requires the path is for Ethernet communication and the path is active.<br><br>Cummings illustrates a path, which can be an Ethernet path, that includes both communication and power. See, Cummings, FIG. 1 (data communication link 14).<br><br>PCnet illustrates the use of an 8-Pin RJ-45 jack in an Ethernet context. See, e.g., 3-1 (“8-Pin RJ- 45 jack”) |
| **Claim 95:** | **Prior Art:** |
| 95. The method according to any one of claim 67 wherein the specific contacts are used for Ethernet communication and at least some ofthe specific contacts are actually carrying DC current. | The reasons for rejecting claim 67, from which claim 95 depends, are provided above. Claim 95 requires the path is for Ethernet communication along with DC current.<br><br>Cummings illustrates a path, which can be an Ethernet path, that includes both communication and power. See, Cummings, FIG. 1 (data communication link 14). Cummings teaches “The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d.” Cummings, col. 3 ll. 53-56. A DC power signal means DC current is drawn.<br><br>PCnet describes power requirements of the PC Ethernet interface adapter card as “3.25 W maximum, 5 V DC, at 25°C (with NSC 10/100 PHY)” PCnet, 4-4, 4.6 POWER REQUIREMENTS. It is well understood that DC voltage draws DC current. |
| **Claim 96:** | **Prior Art:** |
| 96. The method according to claim 67 wherein the specific contacts are used for Ethernet communication and at least some of the specific contacts are actually carrying Ethernet | The reasons for rejecting claim 67, from which claim 96 depends, are provided above. Claim 96 requires Ethernet and DC current.<br><br>Cummings illustrates a path, which can be an Ethernet path, that includes both communication and |

| | |
|---|---|
| signals and DC current. | power. See, Cummings, FIG. 1 (data communication link 14). Cummings teaches “The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d.” Cummings, col. 3 ll. 53-56. A DC power signal means DC current is drawn.<br><br>PCnet describes power requirements of the PC Ethernet interface adapter card as “3.25 W maximum, 5 V DC, at 25°C (with NSC 10/100 PHY)” PCnet, 4-4, 4.6 POWER REQUIREMENTS. It is well understood that DC voltage draws DC current. |
| **Claim 98:** | **Prior Art:** |
| 98. The method according to claim 67 further comprising physically connecting the adapted piece of terminal equipment to a network. | The reasons for rejecting claim 67, from which claim 98 depends, are provided above. Claim 98 requires physically connecting the equipment to a network.<br><br>Cummings illustrates computers 12A-12D physically connected to a network in FIG. 1:<br><br>Cummings, FIG. 1.<br>PCnet teaches: “A Data Terminal Equipment (DTE) system with the installed PCnet-FASTboard can connect to an Ethernet network using the on-board RJ-45 jack for either 10BASE-T or 100BASE-TX connection.” PCnet, 3-1, 3.2 10/100BASE-T PHYSICAL CONNECTIONS. |
| **Claim 99:** | **Prior Art:** |
| 99. The method according to claim 67 further comprising at least one electrical condition applied to the specific contacts. | The reasons for rejecting claim 67, from which claim 99 depends, are provided above. Claim 99 requires an electrical condition be applied to the contacts.<br><br>Cummings teaches “The network security system 24 |

| | |
|---|---|
| | includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d." Cummings, col. 3 ll. 53-56.<br><br>PCnet describes power requirements of the PC Ethernet interface adapter card as "3.25 W maximum, 5 V DC, at 25°C (with NSC 10/100 PHY)" PCnet, 4-4, 4.6 POWER REQUIREMENTS.<br><br>Maman teaches associating distinguishing information about the data terminal equipment to impedance within a corresponding path. Maman, col. 2 ll. 31-45 ("first and second status conductors adapted to exhibit a first impedance value between the individual status conductors corresponding to the first state of the cable when the electrical equipment is connected to the equipment and a second impedance value between the individual status conductors corresponding to the second state of the cable when the electrical equipment is disconnected from the cable"); see also, id., FIG. 3. |
| **Claim 100:** | **Prior Art:** |
| 100. The method according to claim 99 wherein the at least one electrical condition comprises a voltage applied across the specific contacts. | The reasons for rejecting claim 69, from which claim 100 depends, are provided above. Claim 100 requires a voltage be applied across the contacts.<br><br>Cummings teaches "The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d." Cummings, col. 3 ll. 53-56.<br><br>PCnet describes power requirements of the PC Ethernet interface adapter card as "3.25 W maximum, 5 V DC, at 25°C (with NSC 10/100 PHY)" PCnet, 4-4, 4.6 POWER REQUIREMENTS.<br><br>Maman teaches associating distinguishing information about the data terminal equipment to impedance within a corresponding path. Maman, col. 2 ll. 31-45 ("first and second status conductors adapted to exhibit a first impedance value between |

| | |
|---|---|
| | the individual status conductors corresponding to the first state of the cable when the electrical equipment is connected to the equipment and a second impedance value between the individual status conductors corresponding to the second state of the cable when the electrical equipment is disconnected from the cable"); see also, id., FIG. 3.<br><br>The function of voltage across the selected contacts is not defined in the '012 patent specification; the function is found only in the claims. However, the function is Ohm's Law: V = IR rewritten for circuits with reactive elements as V = IZ, where Z (impedance) replaces R (resistance). There is no alternative but for impedance to be a function of voltage across the selected contacts in accordance with the two century old law. This function is inherent in any of the electrical engineering references included. |
| **Claim 101:** | **Prior Art:** |
| 101. The method according to claim 100 wherein the voltage is a DC voltage. | The reasons for rejecting claim 100, from which claim 101 depends, are provided above. Claim 101 requires DC voltage.<br><br>Cummings teaches "The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d." Cummings, col. 3 11. 53-56.<br><br>PCnet describes power requirements of the PC Ethernet interface adapter card as "3.25 W maximum, 5 V DC, at 25°C (with NSC 10/100 PHY)." PCnet, 4-4, 4.6 POWER REQUIREMENTS. |
| **Claim 102:** | **Prior Art:** |
| 102. The method according to claim 99 wherein the at least one electrical condition comprises a current applied to the specific contacts | The reasons for rejecting claim 102, from which claim 103 depends, are provided above. Claim 103 requires a DC current be applied to the contacts.<br><br>Cummings teaches "The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to |

| | |
|---|---|
| | each of current loops 50a through 50d." Cummings, col. 3 11. 53-56. |
| **Claim 103:** | **Prior Art:** |
| 103. The method according to claim 102 wherein the current is a DC current | The reasons for rejecting claim 102, from which claim 103 depends, are provided above. Claim 103 requires a DC current be applied to the contacts.<br><br>Cummings teaches "The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d." Cummings, col. 3 11. 53-56.<br><br>PCnet describes power requirements of the PC Ethernet interface adapter card as "3.25 W maximum, 5 V DC, at 25°C (with NSC 10/100 PHY)" PCnet, 4-4, 4.6 POWER REQUIREMENTS. |
| **Claim 104:** | **Prior Art:** |
| 104. The method according to claim 67 wherein Ethernet communication is BaseT Ethernet communication. | The reasons for rejecting claim 67, from which claim 104 depends, are provided above. Claim 104 requires BaseT Ethernet communication.<br><br>BaseT is not described in the '012 patent; the designation "BaseT" is found only in the claims. However, 10BASE-T, for example, is described in 802.3i. A piece of Ethernet data terminal equipment (such as an Ethernet-capable computer) would presumably be a "BaseT Ethernet data terminal equipment" if it used 10BASE-T.<br><br>Using broadest reasonable interpretation of the term "BaseT," Cummings teaches "BaseT." See, e.g., col. 3 ll. 35-37.<br><br>Using a broadest reasonable interpretation of the term "BaseT," PCnet teaches BaseT: "A Data Terminal Equipment (DTE) system with the installed PCnet-FAST board can connect to an Ethernet network using the on-board RJ-45 jack for either 10BASE-T or 100BASE-TX connection." PCnet, 3-1, 3.2 10/100BASE-T PHYSICAL CONNECTIONS. |

| **Claim 106:** | **Prior Art:** |
|---|---|
| 106. The method according to any one of claims 67 through 104 wherein the piece of terminal equipment is a piece of Ethernet data terminal equipment. | The reasons for rejecting claim 67, from which claim 106 depends, are provided above. Claim 106 requires Ethernet data terminal equipment.<br><br>Cummings teaches Ethernet. See, e.g., Cummings, col. 3 11. 18-19. Cummings also illustrates computers 12A-12D (data terminal equipment) in FIG. 1:<br><br>Cummings, FIG. 1<br>PCnet teaches: “The PCnet™-FAST board is an advanced PC network interface adapter card targeted for the Ethernet-PCI adapter card market.” PCnet 1-1, 1.1 Introduction. The acronym “PC” stands for “personal computer” when used in this context |

As to **claims 108-145 and 147**, said claims stand rejected under this ground above in REJ 14, and the rejection here of these claims under this same ground essentially repeats the one above. Please see REJ 14 above for the rejections of claims 108-148 under Cummings in view of Maman and PCNet.

**REJ 26)** Claims 12, 42, 89 and 130 are rejected under pre-AIA 35 USC 103(a) as being obvious over Cummings in view of Maman, PCNet and Annunziata.

As to **claims 12, 42, 89 and 130**, the unmodified rejection from the Final rejection is as follows:

| **Claim 12:** | **Prior Art:** |
|---|---|
| 12. The method according to claim 1 wherein the coupling at least one path across the selected contacts comprises coupling two paths across the selected contacts, at least one of the two paths having a zener diode. | The reasons for rejecting claim 1, from which claim 12 depends, are provided above. Claim 12 requires a Zener diode.<br><br>Cummings does not explicitly teach a Zener diode. However, Annunziata, in a related field of endeavor, does. See Annunziata, col. 1 ll. 34-57 ("zener diode"). Although the claim does not specify how the Zener diodes are utilized, Annunziata appears to use the Zener diodes in precisely the manner that would be expected for a theft prevention system that senses impedance across a path and, in any case, the Zener diodes taught by Annunziata are on the paths as claimed. |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman and PCNet (citing the Graham factors and reasons under KSR), and further stating:

Annunziata uses Zener diodes in a circuit. Cummings and [Annunziata] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

| **Claim 42:** | **Prior Art:** |
|---|---|
| 42. The piece of Ethernet data terminal equipment according to claim 41 wherein one of the two paths comprises a zener diode. | The reasons for rejecting claims 31 and 41, from which claim 42 depends, are provided above. Claim 42 requires a Zener diode.<br><br>Cummings does not explicitly teach a Zener diode. |

| | |
|---|---|
| | However, Annunziata, in a related field of endeavor, does. See Annunziata, col. 1 ll. 34-57 (“zener diode”). Although the claim does not specify how the Zener diodes are utilized, Annunziata appears to use the Zener diodes in precisely the manner that would be expected for a theft prevention system that senses impedance across a path and, in any case, the Zener diodes taught by Annunziata are on the paths as claimed. |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman and PCNet (citing the Graham factors and reasons under KSR), and further stating:

Annunziata uses Zener diodes in a circuit. Cummings and [Annunziata] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

| **Claim 89:** | **Prior Art:** |
|---|---|
| 89. The method according to claim 67 wherein the coupling at least one path across the specific contacts comprises coupling a zener diode across the specific contacts. | The reasons for rejecting claim 67, from which claim 89 depends, are provided above. Claim 89 requires a Zener diode.<br><br>Cummings does not explicitly teach a Zener diode. However, Annunziata, in a related field of endeavor, does. See Annunziata, col. 1 ll. 34-57 (“zener diode”). Although the claim does not specify how the Zener diodes are utilized, Annunziata appears to use the Zener diodes in precisely the manner that would be expected for a theft prevention system that senses impedance across a path and, in any case, the Zener diodes taught by Annunziata are on the paths as claimed. |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the

reasons set forth in the Final action, as noted above as to Cummings and Maman and PCNet (citing the Graham factors and reasons under KSR), and further stating:

Annunziata uses Zener diodes in a circuit. Cummings and [Annunziata] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

| **Claim 130:** | **Prior Art:** |
|---|---|
| 130. The piece of terminal equipment according to claim 108 wherein a zener diode is coupled across the specific contacts. | The reasons for rejecting claim 108, from which claim 130 depends, are provided above. Claim 130 requires a Zener diode coupled across the contacts.<br><br>Cummings does not explicitly teach a Zener diode. However, Annunziata, in a related field of endeavor, does. See Annunziata, col. 1 ll. 34-57 (“zener diode”). Although the claim does not specify how the Zener diodes are utilized, Annunziata appears to use the Zener diodes in precisely the manner that would be expected for a theft prevention system that senses impedance across a path and, in any case, the Zener diodes taught by Annunziata are on the paths as claimed. |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman and PCNet (citing the Graham factors and reasons under KSR), and further stating:

Annunziata uses Zener diodes in a circuit. Cummings and [Annunziata] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

**REJ 27)** Claims 20, 50, 77, 78, 118 and 119 are rejected under pre-AIA 35 USC 103(a) as being obvious over Cummings in view of Maman, PCNet and Johnson.

As to **claims 20, 50, 77, 78, 118 and 119**, the unmodified rejection from the Final rejection is as follows:

| **Claim 20:** | **Prior Art:** |
|---|---|
| 20. The method according to claim 1 wherein the associating distinguishing information about the piece of Ethernet data terminal equipment to impedance within the at least one path comprises associating distinguishing information about the piece of Ethernet data terminal equipment to impedance within the at least one path having at least one predetermined duration. | The reasons for rejecting claim 1, from which claim 20 depends, are provided above. Claim 20 requires the impedance have at least one predetermined duration.<br><br>The '012 patent explicitly mentions a duration of 833 microseconds: "By way of a specific example, the high frequency information in the embodiment of FIGS. 4-8 operates in the range of about 10 Mb/s while the encoded signal sent from remote module 16a to central module 15a operates in the range of about 1200 bits per second. In other words, the altered current flow has changes and each change is at least 833 microseconds in duration (1/1200=0.000833 seconds)." '012 patent, col. 12 ll. 32-38. Thus, the '012 patent has associated periodicity with Baud rate.<br><br>Any DTE connected to a network will have a baud rate associated with the path. 1200 baud rate corresponds to 833 microsecond duration/bit, 19200 baud rate corresponds to 52 microsecond duration/bit, and 58800 baud corresponds to 17 microsecond duration/bit. These values are predetermined based upon baud rate and are mathematically mandated for conventional networks.<br><br>Johnson provides the mandated computations in tabular form, which eliminates the need for an inherency analysis of the claim using Cummings alone: |

| BAUD RATE | SINGLE BIT TIMER VALUE |
|---|---|
| 1200 baud | 832 microseconds |
| 2400 baud | 416 microseconds |
| 4800 baud | 208 microseconds |
| 9600 baud | 104 microseconds |
| 19200 baud | 52 microseconds |

Johnson, col. 3 ll. 15-23

It may be noted Johnson apparently computed timer value at 19200 baud (1/19200=0.000052 seconds), then doubled the value at each 14 baud to 1200 baud, whereas had Johnson actually made the computation by hand, would have listed the single bit timer value as 833 microseconds at 1200 baud. Nevertheless, Johnson illustrates the same calculations to establish signal duration.

Johnson recognizes the applicability of the baud rate analysis in networked devices: "The barcode printer then determines the lowest stored timer value and correlates the lowest stored timer value with a baud rate value that represents the baud rate of communications from the host computer." Johnson, col. 1 ll. 50-53.

Cummings is in the field of networked devices, making the baud rate and associated durations specified in Johnson applicable to the durations of signals on the paths. Moreover, the duration of signals would be the predetermined durations mandated by the baud rate.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman and PCNet (citing the Graham factors and reasons under KSR), and further stating:

Cummings … describe[s] Ethernet networks. Moreover, AAPA illustrates pinouts for connectors that are identical to those illustrated by … Cummings appears to have language extremely similar to that of the '012 patent. (Cummings and the '012 patent

are co-owned.) Johnson is used to show the correlation between signal duration and baud rate, which is applicable at least to Ethernet network connections.

| **Claim 50:** | **Prior Art:** |
|---|---|
| 50. The piece of Ethernet data terminal equipment according to claim 31 wherein the distinguishing information about the piece of Ethernet data terminal equipment associated to impedance within the at least one path comprises distinguishing information about the piece of Ethernet data terminal equipment associated to impedance within the at least one path having a predetermined time duration. | The reasons for rejecting claim 31, from which claim 50 depends, are provided above. Claim 50 requires the impedance have at least one predetermined duration.<br><br>The ‘012 patent explicitly mentions a duration of 833 microseconds: “By way of a specific example, the high frequency information in the embodiment of FIGS. 4-8 operates in the range of about 10 Mb/s while the encoded signal sent from remote module 16a to central module 15a operates in the range of about 1200 bits per second. In other words, the altered current flow has changes and each change is at least 833 microseconds in duration (1/1200=0.000833 seconds).” ‘012 patent, col. 12 ll. 32-38. Thus, the ‘012 patent has associated periodicity with Baud rate.<br><br>Any DTE connected to a network will have a baud rate associated with the path. 1200 baud rate corresponds to 833 microsecond duration/bit, 19200 baud rate corresponds to 52 microsecond duration/bit, and 58800 baud corresponds to 17 microsecond duration/bit. These values are predetermined based upon baud rate and are mathematically mandated for conventional networks.<br><br>Johnson provides the mandated computations in tabular form, which eliminates the need for an inherency analysis of the claim using Cummings alone: |

| BAUD RATE | SINGLE BIT TIMER VALUE |
|---|---|
| 1200 baud | 832 microseconds |
| 2400 baud | 416 microseconds |
| 4800 baud | 208 microseconds |
| 9600 baud | 104 microseconds |
| 19200 baud | 52 microseconds |

Johnson, col. 3 ll. 15-2

It may be noted Johnson apparently computed timer value at 19200 baud (1/19200=0.000052 seconds), then doubled the value at each 14 baud to 1200 baud, whereas had Johnson actually made the computation by hand, would have listed the single bit timer value as 833 microseconds at 1200 baud. Nevertheless, Johnson illustrates the same calculations to establish signal duration.

Johnson recognizes the applicability of the baud rate analysis in networked devices: “The barcode printer then determines the lowest stored timer value and correlates the lowest stored timer value with a baud rate value that represents the baud rate of communications from the host computer.” Johnson, col. 1 ll. 50-53.

Cummings is in the field of networked devices, making the baud rate and associated durations specified in Johnson applicable to the durations of signals on the paths. Moreover, the duration of signals would be the predetermined durations mandated by the baud rate.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman and PCNet (citing the Graham factors and reasons under KSR), and further stating:

Cummings … describe[s] Ethernet networks. Moreover, AAPA illustrates pinouts for connectors that are identical to those illustrated by … Cummings appears to have language extremely similar to that of the ‘012 patent. (Cummings and the ‘012 patent

are co-owned.) Johnson is used to show the correlation between signal duration and baud rate, which is applicable at least to Ethernet network connections.

| **Claims 77 and 78:** | **Prior Art:** |
|---|---|
| 77. The method according to claim 67 wherein the arranging impedance within the at least one path comprises arranging the impedance within at least one path to have at least one predetermined duration.<br><br>78. The method according to claim 77 wherein the predetermined duration is between 17 and 833 microseconds. | The reasons for rejecting claim 67, from which claim 77 depends, are provided above. Claim 77 requires the impedance have at least one predetermined duration.<br><br>The ‘012 patent explicitly mentions a duration of 833 microseconds: “By way of a specific example, the high frequency information in the embodiment of FIGS. 4-8 operates in the range of about 10 Mb/s while the encoded signal sent from remote module 16a to central module 15a operates in the range of about 1200 bits per second. In other words, the altered current flow has changes and each change is at least 833 microseconds in duration (1/1200=0.000833 seconds).” ‘012 patent, col. 12 ll. 32-38. Thus, the ‘012 patent has associated periodicity with Baud rate.<br><br>Any DTE connected to a network will have a baud rate associated with the path. 1200 baud rate corresponds to 833 microsecond duration/bit, 19200 baud rate corresponds to 52 microsecond duration/bit, and 58800 baud corresponds to 17 microsecond duration/bit. These values are predetermined based upon baud rate and are mathematically mandated for conventional networks.<br><br>Johnson provides the mandated computations in tabular form, which eliminates the need for an inherency analysis of the claim using Cummings alone: |

| BAUD RATE | SINGLE BIT TIMER VALUE |
|---|---|
| 1200 baud | 832 microseconds |
| 2400 baud | 416 microseconds |
| 4800 baud | 208 microseconds |
| 9600 baud | 104 microseconds |
| 19200 baud | 52 microseconds |

Johnson, col. 3 ll. 15-2

It may be noted Johnson apparently computed timer value at 19200 baud (1/19200=0.000052 seconds), then doubled the value at each 14 baud to 1200 baud, whereas had Johnson actually made the computation by hand, would have listed the single bit timer value as 833 microseconds at 1200 baud. Nevertheless, Johnson illustrates the same calculations to establish signal duration.

Johnson recognizes the applicability of the baud rate analysis in networked devices: “The barcode printer then determines the lowest stored timer value and correlates the lowest stored timer value with a baud rate value that represents the baud rate of communications from the host computer.” Johnson, col. 1 ll. 50-53.

Cummings is in the field of networked devices, making the baud rate and associated durations specified in Johnson applicable to the durations of signals on the paths. Moreover, the duration of signals would be the predetermined durations mandated by the baud rate.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman and PCNet (citing the Graham factors and reasons under KSR), and further stating:

Cummings … describe[s] Ethernet networks. Moreover, AAPA illustrates pinouts for connectors that are identical to those illustrated by … Cummings appears to have language extremely similar to that of the ‘012 patent. (Cummings and the ‘012 patent

are co-owned.) Johnson is used to show the correlation between signal duration and baud rate, which is applicable at least to Ethernet network connections.

<table>
<tr><th>Claims 118 and 119:</th><th>Prior Art:</th></tr>
<tr><td>118. The piece of terminal equipment according to claim 108 wherein the impedance within the at least one path is arranged to have at least one predetermined duration.<br><br>119. The piece of terminal equipment according to claim 118 wherein the predetermined duration is between 17 and 833 microseconds.</td><td>The reasons for rejecting claim 108, from which claim 118 depends, are provided above. Claim 118 requires impedance have a predetermined duration. The ‘012 patent explicitly mentions a duration of 833 microseconds: “By way of a specific example, the high frequency information in the embodiment of FIGS. 4-8 operates in the range of about 10 Mb/s while the encoded signal sent from remote module 16a to central module 15a operates in the range of about 1200 bits per second. In other words, the altered current flow has changes and each change is at least 833 microseconds in duration (1/1200=0.000833 seconds).” ‘012 patent, col. 12 ll. 32-38. Thus, the ‘012 patent has associated periodicity with Baud rate.<br><br>Any DTE connected to a network will have a baud rate associated with the path. 1200 baud rate corresponds to 833 microsecond duration/bit, 19200 baud rate corresponds to 52 microsecond duration/bit, and 58800 baud corresponds to 17 microsecond duration/bit. These values are predetermined based upon baud rate and are mathematically mandated for conventional networks.<br><br>Johnson provides the mandated computations in tabular form, which eliminates the need for an inherency analysis of the claim using Cummings alone:<br><br><table><tr><th>BAUD RATE</th><th>SINGLE BIT TIMER VALUE</th></tr><tr><td>1200 baud</td><td>833 microseconds</td></tr><tr><td>2400 baud</td><td>416 microseconds</td></tr><tr><td>4800 baud</td><td>208 microseconds</td></tr><tr><td>9600 baud</td><td>104 microseconds</td></tr><tr><td>19200 baud</td><td>52 microseconds</td></tr></table>Johnson, col. 3 ll. 15-23<br><br>It may be noted Johnson apparently computed timer value at 19200 baud (1/19200=0.000052 seconds),</td></tr>
</table>

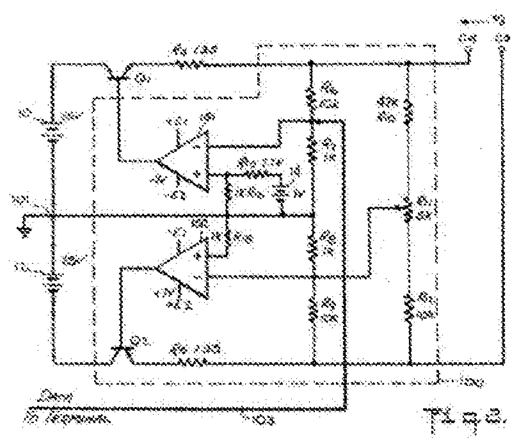
| | |
|---|---|
| | then doubled the value at each 14 baud to 1200 baud, whereas had Johnson actually made the computation by hand, would have listed the single bit timer value as 833 microseconds at 1200 baud. Nevertheless, Johnson illustrates the same calculations to establish signal duration.<br><br>Johnson recognizes the applicability of the baud rate analysis in networked devices: “The barcode printer then determines the lowest stored timer value and correlates the lowest stored timer value with a baud rate value that represents the baud rate of communications from the host computer.” Johnson, col. 1 ll. 50-53.<br><br>Cummings is in the field of networked devices, making the baud rate and associated durations specified in Johnson applicable to the durations of signals on the paths. Moreover, the duration of signals would be the predetermined durations mandated by the baud rate. |

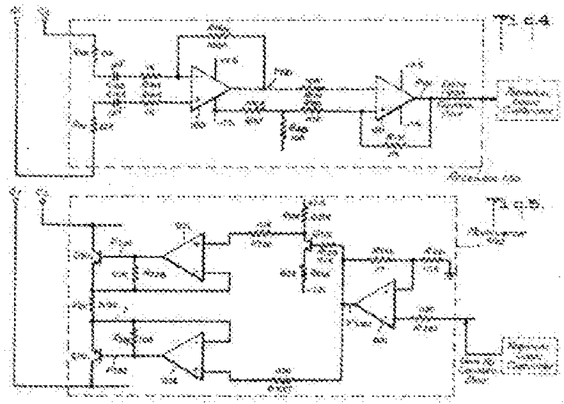
It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman and PCNet (citing the Graham factors and reasons under KSR), and further stating:

Cummings … describe[s] Ethernet networks. Moreover, AAPA illustrates pinouts for connectors that are identical to those illustrated by … Cummings appears to have language extremely similar to that of the ‘012 patent. (Cummings and the ‘012 patent are co-owned.) Johnson is used to show the correlation between signal duration and baud rate, which is applicable at least to Ethernet network connections.

**REJ 28)** Claims 21, 23, 51, 53, 79, 97, 120 and 138 are rejected under pre-AIA 35 USC 103(a) as being obvious over Cummings in view of Maman, PCNet and Bloch.

As to **claims 21, 23, 51, 53, 79, 97, 120 and 138**, the unmodified rejection from the Final rejection is as follows:

| **Claim 21:** | **Prior Art:** |
|---|---|
| 21. The method according to claim 20 wherein the impedance within the at least one path is between 10 k Ohms and 15 k Ohms. | The reasons for rejecting claim 1, from which claim 21 depends, are provided above. Claim 21 requires the impedance be between 10k and 15k Ohms.<br><br>The impedance is not quantified in the specification; the range between 10 k Ohms and 15 k Ohms is found only in the claims. There are some “10k” resistors illustrated in FIG. 8, but no indication as to whether the various components illustrated therein provide a path with an impedance between 10 k Ohms and 15 k Ohms. ‘012 patent, FIG. 8.<br><br>Bloch also teaches paths with 10k resistors similar to those provided in the figures of the ‘012 patent:<br><br>Bloch, FIG. 2 |

| | |
|---|---|
| |  Bloch, FIGS. 4-5 <br><br> It would be well within the skills of one of ordinary skill in the relevant art to use the same building blocks used in Bloch and the ‘012 patent to provide a path having an impedance between 10k Ohms and 15k Ohms, which may be one of the reasons why no explicit enabling discussion was required when the ‘012 patent claim was allowed. |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman and PCNet (citing the Graham factors and reasons under KSR), and further stating:

Cummings and [Bloch] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

| **Claim 23:** | **Prior Art:** |
|---|---|
| 23. The method according to claim 1 wherein the at least one path includes the center tap of at least one isolation transformer. | The reasons for rejecting claim 1, from which claim 23 depends, are provided above. Claim 23 requires the path include a center tap of at least one isolation transformer. <br><br> Cummings teaches “Each pair of transmit wires 44 and 46 are internally coupled to an associated personal computer 12 via one winding 53 of an internally located isolation transformer 52.” Cummings, col. 3 ll. 42-45. |

| | |
|---|---|
| | Cummings does not explicitly state the path includes the center tap of the isolation transformer. However, Bloch, in a related field of endeavor, teaches:<br><br>Data information flow between the control unit and the terminal and power feed from the control unit to the terminal is accomplished via a phantom pair circuit arrangement in which the control unit circuitry is connected to the two center taps of the transformers terminating the two pair of conductors at the control unit. Connections to the center tap connections of the transformers terminating the two conductor pairs at the terminal complete the phantom pair circuit. A d.c. voltage source is connected at the control unit to the phantom pair circuit arrangement. The d.c. voltage is applied to the phantom circuit arrangement, and is sensed and regulated by a voltage regulator in the terminal connected in series at the terminal end of the phantom pair. Bloch, col. 3 11. 9-23 (emphasis added); see also, id., FIG. 1. |

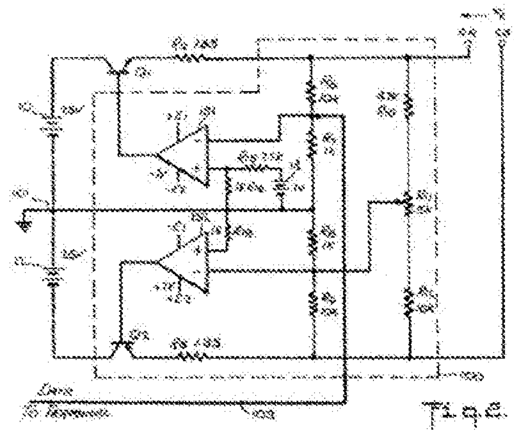
It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman and PCNet (citing the Graham factors and reasons under KSR), and further stating:

Cummings and [Bloch] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

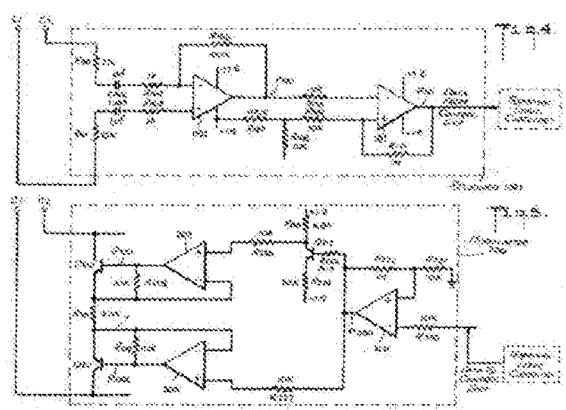
| **Claim 51:** | **Prior Art:** |
|---|---|
| 51. The piece of Ethernet data terminal equipment according to claim 50 wherein impedance within the at least one path is between 10 k Ohms and 15 k Ohms. | The reasons for rejecting claim 31, from which claim 51 depends, are provided above. Claim 51 requires the impedance be between 10k and 15k Ohms.<br><br>The impedance is not quantified in the specification; the range between 10 k Ohms and 15 k Ohms is found only in the claims. There are some “10k” resistors illustrated in FIG. 8, but no indication as to |

whether the various components illustrated therein provide a path with an impedance between 10 k Ohms and 15 k Ohms. ‘012 patent, FIG. 8.

Bloch also teaches paths with 10k resistors similar to those provided in the figures of the ‘012 patent:



Bloch, FIG. 2.



Bloch, FIGS. 4-5.

It would be well within the skills of one of ordinary skill in the relevant art to use the same building blocks used in Bloch and the ‘012 patent to provide a path having an impedance between 10k Ohms and 15k Ohms, which may be one of the reasons why no explicit enabling discussion was required when the ‘012 patent claim was allowed.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the

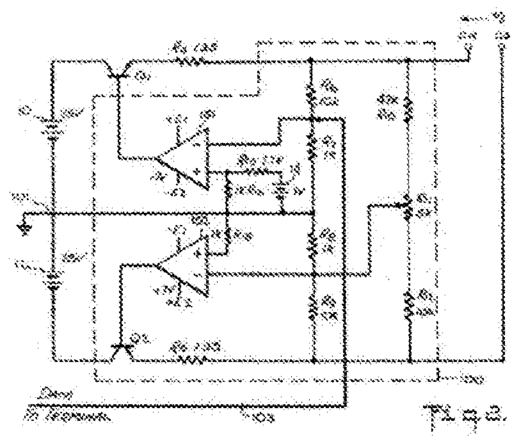
reasons set forth in the Final action, as noted above as to Cummings and Maman and PCNet (citing the Graham factors and reasons under KSR), and further stating:

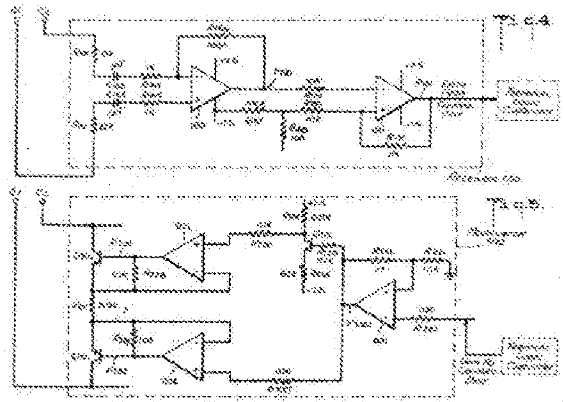
Cummings and [Bloch] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

| **Claim 53:** | **Prior Art:** |
| --- | --- |
| 53. The piece of Ethernet data terminal equipment according to claim 31 wherein the at least one path includes the center tap of at least one isolation transformer | The reasons for rejecting claim 31, from which claim 53 depends, are provided above. Claim 53 requires the path include a center tap of at least one isolation transformer.<br><br>Cummings teaches “Each pair of transmit wires 44 and 46 are internally coupled to an associated personal computer 12 via one winding 53 of an internally located isolation transformer 52.” Cummings, col. 3 ll. 42-45.<br><br>Cummings does not explicitly state the path includes the center tap of the isolation transformer. However, Bloch, in a related field of endeavor, teaches:<br><br>Data information flow between the control unit and the terminal and power feed from the control unit to the terminal is accomplished via a phantom pair circuit arrangement in which the control unit circuitry is connected to the two center taps of the transformers terminating the two pair of conductors at the control unit. Connections to the center tap connections of the transformers terminating the two conductor pairs at the terminal complete the phantom pair circuit. A d.c. voltage source is connected at the control unit to the phantom pair circuit arrangement. The d.c. voltage is applied to the phantom circuit arrangement, and is sensed and regulated by a voltage regulator in the terminal connected in series at the terminal end of the phantom pair. Bloch, col. 3 11. 9-23 (emphasis added); see also, id., FIG. 1. |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman and PCNet (citing the Graham factors and reasons under KSR), and further stating:

Cummings and [Bloch] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

| **Claim 79:** | **Prior Art:** |
| --- | --- |
| 79. The method according to claim 67 wherein the arranging impedance within the at least one path comprises arranging impedance within the at least one path to be between 10 k Ohms and 15 k Ohms. | The reasons for rejecting claim 67, from which claim 79 depends, are provided above. Claim 79 requires the impedance be between 10k and 15k Ohms.<br><br>The impedance is not quantified in the specification; the range between 10 k Ohms and 15 k Ohms is found only in the claims. There are some "10k" resistors illustrated in FIG. 8, but no indication as to whether the various components illustrated therein provide a path with an impedance between 10 k Ohms and 15 k Ohms. '012 patent, FIG. 8.<br><br>Bloch also teaches paths with 10k resistors similar to those provided in the figures of the '012 patent:<br><br><br>Bloch, FIG. 2 |

| | |
|---|---|
| |  Bloch, FIGS. 4-5<br><br>It would be well within the skills of one of ordinary skill in the relevant art to use the same building blocks used in Bloch and the ‘012 patent to provide a path having an impedance between 10k Ohms and 15k Ohms, which may be one of the reasons why no explicit enabling discussion was required when the ‘012 patent claim was allowed. |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman and PCNet (citing the Graham factors and reasons under KSR), and further stating:

Cummings and [Bloch] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

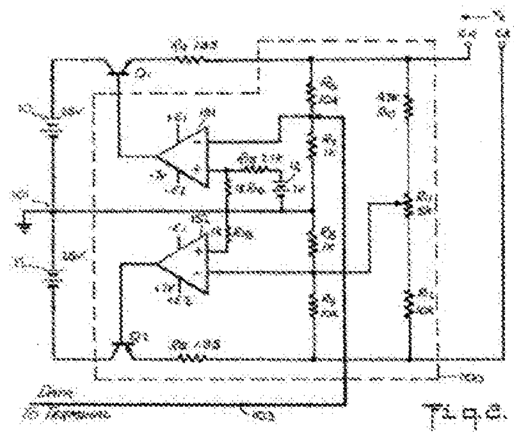
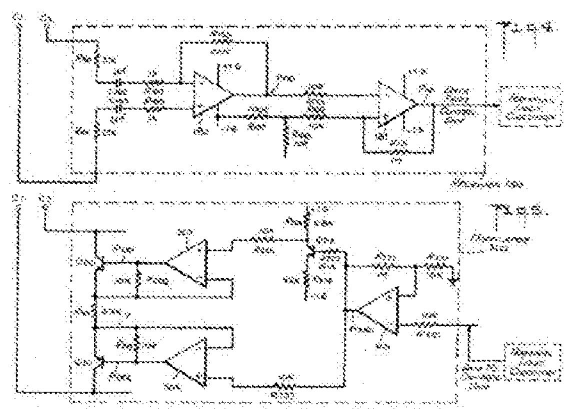
| **Claim 97:** | **Prior Art:** |
|---|---|
| 97. The method according to claim 67 wherein the at least one path includes the center tap of at least one isolation transformer. | The reasons for rejecting claim 67, from which claim 97 depends, are provided above. Claim 97 requires an isolation transformer.<br><br>Cummings teaches “Each pair of transmit wires 44 and 46 are internally coupled to an associated personal computer 12 via one winding 53 of an internally located isolation transformer 52.” Cummings, col. 3 ll. 42-45. |

| | |
|---|---|
| | Cummings does not explicitly state the path includes the center tap of the isolation transformer. However, Bloch, in a related field of endeavor, teaches:<br><br>Data information flow between the control unit and the terminal and power feed from the control unit to the terminal is accomplished via a phantom pair circuit arrangement in which the control unit circuitry is connected to the two center taps of the transformers terminating the two pair of conductors at the control unit. Connections to the center tap connections of the transformers terminating the two conductor pairs at the terminal complete the phantom pair circuit. A d.c. voltage source is connected at the control unit to the phantom pair circuit arrangement. The d.c. voltage is applied to the phantom circuit arrangement, and is sensed and regulated by a voltage regulator in the terminal connected in series at the terminal end of the phantom pair. Bloch, col. 3 11. 9-23 (emphasis added); see also, id., FIG. 1. |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman and PCNet (citing the Graham factors and reasons under KSR), and further stating:

Cummings and [Bloch] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

| **Claim 120:** | **Prior Art:** |
|---|---|
| 120. The piece of terminal equipment according to claim 108 wherein the impedance within the at least one path is arranged be between 10 k Ohms and 15 k Ohms. | The reasons for rejecting claim 67, from which claim 79 depends, are provided above. Claim 79 requires the impedance be between 10k and 15k Ohms.<br><br>The impedance is not quantified in the specification; the range between 10 k Ohms and 15 k Ohms is found only in the claims. There are some “10k” resistors illustrated in FIG. 8, but no indication as to whether the various components illustrated therein |

| | |
|---|---|
| | provide a path with an impedance between 10 k Ohms and 15 k Ohms. ‘012 patent, FIG. 8.<br><br>Bloch also teaches paths with 10k resistors similar to those provided in the figures of the ‘012 patent:<br><br><br>Bloch, FIG. 2.<br><br><br>Bloch, FIGS. 4-5.<br><br>It would be well within the skills of one of ordinary skill in the relevant art to use the same building blocks used in Bloch and the ‘012 patent to provide a path having an impedance between 10k Ohms and 15k Ohms, which may be one of the reasons why no explicit enabling discussion was required when the ‘012 patent claim was allowed. |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the

reasons set forth in the Final action, as noted above as to Cummings and Maman and PCNet (citing the Graham factors and reasons under KSR), and further stating:

Cummings and [Bloch] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

| **Claim 138:** | **Prior Art:** |
|---|---|
| 138. The piece of terminal equipment according to claim 108 wherein the at least one path includes the center tap of at least one isolation transformer. | The reasons for rejecting claim 67, from which claim 97 depends, are provided above. Claim 97 requires an isolation transformer.<br><br>Cummings teaches “Each pair of transmit wires 44 and 46 are internally coupled to an associated personal computer 12 via one winding 53 of an internally located isolation transformer 52.” Cummings, col. 3 ll. 42-45.<br><br>Cummings does not explicitly state the path includes the center tap of the isolation transformer. However, Bloch, in a related field of endeavor, teaches:<br><br>Data information flow between the control unit and the terminal and power feed from the control unit to the terminal is accomplished via a phantom pair circuit arrangement in which the control unit circuitry is connected to the two center taps of the transformers terminating the two pair of conductors at the control unit. Connections to the center tap connections of the transformers terminating the two conductor pairs at the terminal complete the phantom pair circuit. A d.c. voltage source is connected at the control unit to the phantom pair circuit arrangement. The d.c. voltage is applied to the phantom circuit arrangement, and is sensed and regulated by a voltage regulator in the terminal connected in series at the terminal end of the phantom pair. Bloch, col. 3 11. 9-23 (emphasis added); see also, id., FIG. 1. |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman and PCNet (citing the Graham factors and reasons under KSR), and further stating:

Cummings and [Bloch] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

**REJ 29)** Claims 74, 75, 81-86, 115, 116 and 122-127 are rejected under pre-AIA 35 USC 103(a) as being obvious over Cummings in view of Maman, PCNet and Libby.

As to **claims 74, 75, 81-86, 115, 116 and 122-127**, the unmodified rejection from the Final rejection is as follows:

| **Claim 74:** | **Prior Art:** |
|---|---|
| 74. The method according to claim 67 wherein the arranging impedance within the at least one path comprises arranging impedance within the at least one path to be variable. | The reasons for rejecting claim 67, from which claim 74 depends, are provided above. Claim 74 requires the impedance be variable.<br><br>Cummings claims “said respective pairs of data communication lines are associated with different ones of the associated pieces of equipment,” “supplying a low DC current signal to each current loop so as to achieve continuous current flow through each current loop while each of said associated pieces of equipment is physically connected to said network via the data communication lines,” and sensing “DC current signal in each of said current loops so as to detect a change in current flow indicative of disconnection of one of said pieces of associated equipment.” If a device is disconnected, causing current to drop to 0, impedance also drops to 0 and is, therefore, variable.<br><br>The ‘012 patent does not describe precisely how |

| | |
|---|---|
| | impedance is arranged within the path to be variable. The only use of the term “variable” is with reference to a variable current source. See, ‘012 patent, col. 7 ll. 51-54. However, a broadest reasonable interpretation of “arranging impedance within the at least one path to be variable” includes providing an input variable impedance.<br>Libby teaches:<br><br>I have taken a pair of discrete elements, such as resistances 14 and 18 and operated them as a single impedance element which is effectively continuously variable from the value of one of the discrete elements to the value of the other discrete element. This has been done by alternatively, periodically switching the discrete elements in connection with the same terminals in the circuit at a rate substantially greater than the operative frequency of the circuit. The particular effective value of such a continuously variable impedance element is dependent upon the relative connection or on times of each discrete impedance element. Libby, col. 5 ll. 29-32; FIG. 2.<br><br>Thus, to arrange impedance in the path of Cummings to be variable, one could simply periodically switch elements at a rate substantially greater than the operative frequency of the circuit as taught by Libby. Note: This would not only have the effect of making the impedance variable, but also continuously variable. |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman and PCNet (citing the Graham factors and reasons under KSR), and further stating:

Libby uses continuously variable impedance. Cummings and [Libby] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

| Claim 75: | Prior Art: |
|---|---|
| 75. The method according to claim 67 wherein the arranging impedance within the at least one path comprises arranging impedance within the at least one path to be continuously variable. | The reasons for rejecting claim 67, from which claim 75 depends, are provided above. Claim 75 requires the impedance be variable.<br><br>Cummings claims “said respective pairs of data communication lines are associated with different ones of the associated pieces of equipment,” “supplying a low DC current signal to each current loop so as to achieve continuous current flow through each current loop while each of said associated pieces of equipment is physically connected to said network via the data communication lines,” and sensing “DC current signal in each of said current loops so as to detect a change in current flow indicative of disconnection of one of said pieces of associated equipment.” If a device is disconnected, causing current to drop to 0, impedance also drops to 0 and is, therefore, variable.<br><br>The ‘012 patent does not describe precisely how impedance is arranged within the path to be variable. The only use of the term “variable” is with reference to a variable current source. See, ‘012 patent, col. 7 ll. 51-54. However, a broadest reasonable interpretation of “arranging impedance within the at least one path to be variable” includes providing an input variable impedance.<br>Libby teaches:<br><br>I have taken a pair of discrete elements, such as resistances 14 and 18 and operated them as a single impedance element which is effectively continuously variable from the value of one of the discrete elements to the value of the other discrete element. This has been done by alternatively, periodically switching the discrete elements in connection with the same terminals in the circuit at a rate substantially greater than the operative frequency of the circuit. The particular effective value of such a continuously variable impedance element is dependent upon the relative connection or on times |

| | |
|---|---|
| | of each discrete impedance element. Libby, col. 5 ll. 29-32; FIG. 2.<br><br>Thus, to arrange impedance in the path of Cummings to be variable, one could simply periodically switch elements at a rate substantially greater than the operative frequency of the circuit as taught by Libby. Note: This would not only have the effect of making the impedance variable, but also continuously variable. |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman and PCNet (citing the Graham factors and reasons under KSR), and further stating:

Libby uses continuously variable impedance. Cummings and [Libby] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

| **Claim 81:** | **Prior Art:** |
|---|---|
| 81. The method according to claim 67 wherein the arranging impedance within the at least one path comprises arranging impedance within the at least one path to have a first impedance followed by a second impedance. | The reasons for rejecting claim 67, from which claim 81 depends, are provided above. Claim 81 requires the impedance be variable.<br><br>Cummings actually claims "said respective pairs of data communication lines are associated with different ones of the associated pieces of equipment," "supplying a low DC current signal to each current loop so as to achieve continuous current flow through each current loop while each of said associated pieces of equipment is physically connected to said network via the data communication lines," and sensing "DC current signal in each of said current loops so as to detect a change in current flow indicative of disconnection of one of said pieces of associated equipment." If a device is disconnected, causing current to drop to 0, impedance also drops to 0 and, therefore, a first |

| | |
|---|---|
| | impedance follows a second impedance.<br><br>Libby teaches:<br><br>I have taken a pair of discrete elements, such as resistances 14 and 18 and operated them as a single impedance element which is effectively continuously variable from the value of one of the discrete elements to the value of the other discrete element. This has been done by alternatively, periodically switching the discrete elements in connection with the same terminals in the circuit at a rate substantially greater than the operative frequency of the circuit. The particular effective value of such a continuously variable impedance element is dependent upon the relative connection or on times of each discrete impedance element. Libby, col. 5 11. 29-32; FIG. 2.<br><br>Thus, to arrange impedance in the path of Cummings to be continuously variable, one could simply periodically switch elements at a rate substantially greater than the operative frequency of the circuit as taught by Libby. |
| **Claim 82:** | **Prior Art:** |
| 82. The method according to claim 67 wherein the arranging impedance within the at least one path comprises arranging impedance within the at least one path to have a first impedance for a first condition applied to the specific contacts followed by a second impedance for a second condition applied to the specific contacts. | The reasons for rejecting claim 67, from which claim 82 depends, are provided above. Claim 82 requires the impedance be variable.<br><br>Cummings actually claims "said respective pairs of data communication lines are associated with different ones of the associated pieces of equipment," "supplying a low DC current signal to each current loop so as to achieve continuous current flow through each current loop while each of said associated pieces of equipment is physically connected to said network via the data communication lines," and sensing "DC current signal in each of said current loops so as to detect a change in current flow indicative of disconnection of one of said pieces of associated equipment." If a device is disconnected, causing current to drop to 0, impedance also drops to 0 and, therefore, a first |

| | |
|---|---|
| | impedance (associated with a connected condition) follows a second impedance (associated with a disconnected condition).<br><br>Libby teaches:<br><br>I have taken a pair of discrete elements, such as resistances 14 and 18 and operated them as a single impedance element which is effectively continuously variable from the value of one of the discrete elements to the value of the other discrete element. This has been done by alternatively, periodically switching the discrete elements in connection with the same terminals in the circuit at a rate substantially greater than the operative frequency of the circuit. The particular effective value of such a continuously variable impedance element is dependent upon the relative connection or on times of each discrete impedance element. Libby, col. 5 11. 29-32; FIG. 2.<br><br>Thus, to arrange impedance in the path of Cummings to be continuously variable, one could simply periodically switch elements at a rate substantially greater than the operative frequency of the circuit as taught by Libby. |
| **Claim 83:** | **Prior Art:** |
| 83. The method according to claim 82 wherein the first and second conditions applied to the specific contacts are voltage conditions. | The reasons for rejecting claim 82, from which claim 83 depends, are provided above. Claim 83 requires applying voltage conditions to the contacts to impact the conditions [impedance].<br><br>Cummings teaches "The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d." Cummings, col. 3 ll. 53-56.<br><br>PCnet describes power requirements of the PC Ethernet interface adapter card as "3.25 W maximum, 5 V DC, at 25°C (with NSC 10/100 PHY)" PCnet, 4-4, 4.6 POWER REQUIREMENTS. |

| | |
|---|---|
| | Maman teaches associating distinguishing information about the data terminal equipment to impedance within a corresponding path. Maman, col. 2 ll. 31-45 (“first and second status conductors adapted to exhibit a first impedance value between the individual status conductors corresponding to the first state of the cable when the electrical equipment is connected to the equipment and a second impedance value between the individual status conductors corresponding to the second state of the cable when the electrical equipment is disconnected from the cable”); see also, id., FIG. 3.<br><br>The function of voltage across the selected contacts is not defined in the ‘012 patent specification; the function is found only in the claims. However, the function is Ohm’s Law: V = IR rewritten for circuits with reactive elements as V = IZ, where Z (impedance) replaces R (resistance). There is no alternative but for impedance to be a function of voltage across the selected contacts in accordance with the two century old law. This function is inherent in any of the electrical engineering references included. |
| **Claim 84:** | **Prior Art:** |
| 84. The method according to claim 83 wherein the voltage conditions are DC voltage conditions. | The reasons for rejecting claim 83, from which claim 84 depends, are provided above. Claim 84 requires applying DC voltage conditions to the contacts to impact the conditions [impedance].<br><br>Cummings teaches “The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d.” Cummings, col. 3 ll. 53-56.<br><br>PCnet describes power requirements of the PC Ethernet interface adapter card as “3.25 W maximum, 5 V DC, at 25°C (with NSC 10/100 PHY)” PCnet, 4-4, 4.6 POWER REQUIREMENTS. |
| **Claim 85:** | **Prior Art:** |
| 85. The method according to | The reasons for rejecting claim 82, from which claim |

| | |
|---|---|
| claim 82 wherein the first and second conditions applied to the specific contacts are current conditions. | 85 depends, are provided above. Claim 85 requires applying current conditions to the contacts to impact the conditions [impedance]. As discussed above, Cummings understands the relationship between current and impedance. Cummings also teaches “detection of a current flow discontinuity further energizes the appropriate light emitting diodes 44a through 44d associated with the disconnected personal computer 12.” Current flow discontinuity is a current condition. |
| **Claim 86:** | **Prior Art:** |
| 86. The method according to claim 83 wherein the current conditions are DC current conditions. | The reasons for rejecting claim 85, from which claim 86 depends, are provided above. Claim 86 requires applying DC current conditions to the contacts to impact the conditions [impedance]<br><br>Cummings teaches “The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d.” Cummings, col. 3 ll. 53-56.<br><br>PCnet describes power requirements of the PC Ethernet interface adapter card as “3.25 W maximum, 5 V DC, at 25°C (with NSC 10/100 PHY)” PCnet, 4-4, 4.6 POWER REQUIREMENTS. |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman and PCNet (citing the Graham factors and reasons under KSR), and further stating:

Libby uses continuously variable impedance. Cummings and [Libby] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

| | |
|---|---|
| **Claim 115:** | **Prior Art:** |
| 115. The piece of terminal | The reasons for rejecting claim 108, from which |

| | |
|---|---|
| equipment according to claim 108 wherein the impedance within the at least one path is arranged to be variable. | claim 115 depends, are provided above. Claim 115 requires variable impedance.<br><br>Cummings claims "said respective pairs of data communication lines are associated with different ones of the associated pieces of equipment," "supplying a low DC current signal to each current loop so as to achieve continuous current flow through each current loop while each of said associated pieces of equipment is physically connected to said network via the data communication lines," and sensing "DC current signal in each of said current loops so as to detect a change in current flow indicative of disconnection of one of said pieces of associated equipment." If a device is disconnected, causing current to drop to 0, impedance also drops to 0 and is, therefore, variable.<br><br>The '012 patent does not describe precisely how impedance is arranged within the path to be variable. The only use of the term "variable" is with reference to a variable current source. See, '012 patent, col. 7 ll. 51-54. However, a broadest reasonable interpretation of "arranging impedance within the at least one path to be variable" includes providing an input variable impedance.<br>Libby teaches:<br><br>I have taken a pair of discrete elements, such as resistances 14 and 18 and operated them as a single impedance element which is effectively continuously variable from the value of one of the discrete elements to the value of the other discrete element. This has been done by alternatively, periodically switching the discrete elements in connection with the same terminals in the circuit at a rate substantially greater than the operative frequency of the circuit. The particular effective value of such a continuously variable impedance element is dependent upon the relative connection or on times of each discrete impedance element. Libby, col. 5 ll. 29-32; FIG. 2. |

| | |
|---|---|
| | Thus, to arrange impedance in the path of Cummings to be variable, one could simply periodically switch elements at a rate substantially greater than the operative frequency of the circuit as taught by Libby. Note: This would not only have the effect of making the impedance variable, but also continuously variable. |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman and PCNet (citing the Graham factors and reasons under KSR), and further stating:

Libby uses continuously variable impedance. Cummings and [Libby] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

| **Claim 116:** | **Prior Art:** |
|---|---|
| 116. The piece of terminal equipment according to claim 108 wherein the impedance within the at least one path is arranged to be continuously variable. | The reasons for rejecting claim 108, from which claim 116 depends, are provided above. Claim 116 requires continuously variable impedance.<br><br>Cummings claims “said respective pairs of data communication lines are associated with different ones of the associated pieces of equipment,” “supplying a low DC current signal to each current loop so as to achieve continuous current flow through each current loop while each of said associated pieces of equipment is physically connected to said network via the data communication lines,” and sensing “DC current signal in each of said current loops so as to detect a change in current flow indicative of disconnection of one of said pieces of associated equipment.” If a device is disconnected, causing current to drop to 0, impedance also drops to 0 and is, therefore, variable. Because the current is constant while the computer is connected, the impedance is continuously variable. |

| | |
|---|---|
| | The '012 patent does not describe precisely how impedance is arranged within the path to be variable. The only use of the term "variable" is with reference to a variable current source. See, '012 patent, col. 7 11. 51-54. (There is no mention at all of "continuously variable" impedance.) However, a broadest reasonable interpretation of "arranging impedance within the at least one path to be continuously variable" includes providing an input variable impedance and an output variable impedance used to create a continuously variable bandwidth of a filter.<br><br>Libby teaches:<br><br>I have taken a pair of discrete elements, such as resistances 14 and 18 and operated them as a single impedance element which is effectively continuously variable from the value of one of the discrete elements to the value of the other discrete element. This has been done by alternatively, periodically switching the discrete elements in connection with the same terminals in the circuit at a rate substantially greater than the operative frequency of the circuit. The particular effective value of such a continuously variable impedance element is dependent upon the relative connection or on times of each discrete impedance element. Libby, col. 5 ll. 29-32; FIG. 2.<br><br>Thus, to arrange impedance in the path of Cummings to be continuously variable, one could simply periodically switch elements at a rate substantially greater than the operative frequency of the circuit as taught by Libby. |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman and PCNet (citing the Graham factors and reasons under KSR), and further stating:

Libby uses continuously variable impedance. Cummings and [Libby] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

| **Claim 122:** | **Prior Art:** |
| --- | --- |
| 122. The piece of terminal equipment according to claim 108 wherein the impedance within the at least one path is arranged to have a first impedance followed by a second impedance. | The reasons for rejecting claim 108, from which claim 122 depends, are provided above. Claim 122 requires a first impedance followed by a second impedance.<br><br>Cummings actually claims “said respective pairs of data communication lines are associated with different ones of the associated pieces of equipment,” “supplying a low DC current signal to each current loop so as to achieve continuous current flow through each current loop while each of said associated pieces of equipment is physically connected to said network via the data communication lines,” and sensing “DC current signal in each of said current loops so as to detect a change in current flow indicative of disconnection of one of said pieces of associated equipment.” If a device is disconnected, causing current to drop to 0, impedance also drops to 0 and, therefore, a first impedance follows a second impedance.<br><br>Libby teaches:<br><br>I have taken a pair of discrete elements, such as resistances 14 and 18 and operated them as a single impedance element which is effectively continuously variable from the value of one of the discrete elements to the value of the other discrete element. This has been done by alternatively, periodically switching the discrete elements in connection with the same terminals in the circuit at a rate substantially greater than the operative frequency of the circuit. The particular effective value of such a continuously variable impedance element is dependent upon the relative connection or on times of each discrete impedance element. Libby, col. 5 |

| | |
|---|---|
| | ll. 29-32; FIG. 2.<br><br>Thus, to arrange impedance in the path of Cummings to be continuously variable, one could simply periodically switch elements at a rate substantially greater than the operative frequency of the circuit as taught by Libby. |
| **Claim 123:** | **Prior Art:** |
| 123. The piece of terminal equipment according to claim 108 wherein the impedance within the at least one path is arranged to have a first impedance for a first condition applied to the specific contacts followed by a second impedance for second condition applied to the specific contacts. | The reasons for rejecting claim 108, from which claim 123 depends, are provided above. Claim 123 requires first and second impedances for first and second conditions.<br><br>Cummings actually claims "said respective pairs of data communication lines are associated with different ones of the associated pieces of equipment," "supplying a low DC current signal to each current loop so as to achieve continuous current flow through each current loop while each of said associated pieces of equipment is physically connected to said network via the data communication lines," and sensing "DC current signal in each of said current loops so as to detect a change in current flow indicative of disconnection of one of said pieces of associated equipment." If a device is disconnected, causing current to drop to 0, impedance also drops to 0 and, therefore, a first impedance (associated with a connected condition) follows a second impedance (associated with a disconnected condition).<br><br>Libby teaches:<br><br>I have taken a pair of discrete elements, such as resistances 14 and 18 and operated them as a single impedance element which is effectively continuously variable from the value of one of the discrete elements to the value of the other discrete element. This has been done by alternatively, periodically switching the discrete elements in connection with the same terminals in the circuit at a rate substantially greater than the operative frequency of the circuit. The particular effective value of such a |

| | |
|---|---|
| | continuously variable impedance element is dependent upon the relative connection or on times of each discrete impedance element. Libby, col. 5 11. 29-32; FIG. 2.<br><br>Thus, to arrange impedance in the path of Cummings to be continuously variable, one could simply periodically switch elements at a rate substantially greater than the operative frequency of the circuit as taught by Libby. |
| **Claim 124:** | **Prior Art:** |
| 124. The piece of terminal equipment according to claim 123 wherein the first and second conditions applied to the specific contacts are voltage conditions. | The reasons for rejecting claim 123, from which claim 124 depends, are provided above. Claim 124 requires voltage conditions.<br><br>Cummings teaches "The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d." Cummings, col. 3 11. 53-56.<br><br>PCnet describes power requirements of the PC Ethernet interface adapter card as "3.25 W maximum, 5 V DC, at 25°C (with NSC 10/100 PHY)" PCnet, 4-4, 4.6 POWER REQUIREMENTS.<br><br>Maman teaches associating distinguishing information about the data terminal equipment to impedance within a corresponding path. Maman, col. 2 ll. 31-45 ("first and second status conductors adapted to exhibit a first impedance value between the individual status conductors corresponding to the first state of the cable when the electrical equipment is connected to the equipment and a second impedance value between the individual status conductors corresponding to the second state of the cable when the electrical equipment is disconnected from the cable"); see also, id., FIG. 3.<br><br>The function of voltage across the selected contacts is not defined in the '012 patent specification; the function is found only in the claims. However, the function is Ohm's Law: V = IR rewritten for circuits |

| | |
|---|---|
| | with reactive elements as V = IZ, where Z (impedance) replaces R (resistance). There is no alternative but for impedance to be a function of voltage across the selected contacts in accordance with the two century old law. This function is inherent in any of the electrical engineering references included. |
| **Claim 125:** | **Prior Art:** |
| 125. The piece of terminal equipment according to claim 124 wherein the voltage conditions are DC voltage conditions. | The reasons for rejecting claim 124, from which claim 125 depends, are provided above. Claim 125 requires DC voltage conditions.<br><br>Cummings teaches “The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to each of current loops 50a through 50d.” Cummings, col. 3 ll. 53-56.<br><br>PCnet describes power requirements of the PC Ethernet interface adapter card as “3.25 W maximum, 5 V DC, at 25°C (with NSC 10/100 PHY)” PCnet, 4-4, 4.6 POWER REQUIREMENTS. |
| **Claim 126:** | **Prior Art:** |
| 126. The piece of terminal equipment according to claim 123 wherein the first and second conditions applied to the specific contacts are current conditions. | The reasons for rejecting claim 123, from which claim 126 depends, are provided above. Claim 126 requires current conditions.<br>As discussed above, Cummings understands the relationship between current and impedance. Cummings also teaches “detection of a current flow discontinuity further energizes the appropriate light emitting diodes 44a through 44d associated with the disconnected personal computer 12.” Current flow discontinuity is a current condition. |
| **Claim 127:** | **Prior Art:** |
| 127. The piece of terminal equipment according to claim 126 wherein the current conditions are DC current conditions. | The reasons for rejecting claim 126, from which claim 127 depends, are provided above. Claim 127 requires current conditions be DC current conditions.<br><br>Cummings teaches “The network security system 24 includes an isolation power supply 26 which supplies a continuous direct current (DC) power signal to |

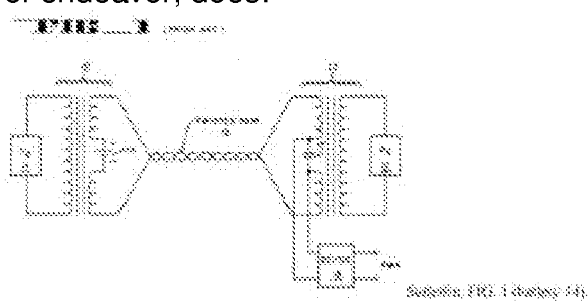
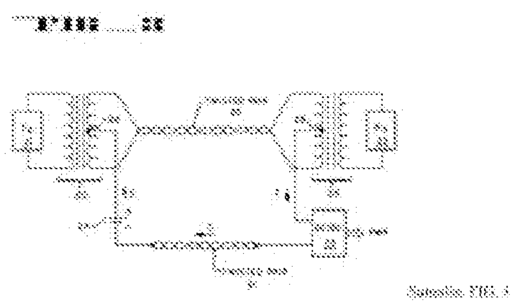
| | |
|---|---|
| | each of current loops 50a through 50d." Cummings, col. 3 ll. 53-56.<br><br>PCnet describes power requirements of the PC Ethernet interface adapter card as "3.25 W maximum, 5 V DC, at 25°C (with NSC 10/100 PHY)" PCnet, 4-4, 4.6 POWER REQUIREMENTS. |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman and PCNet (citing the Graham factors and reasons under KSR), and further stating:

Libby uses continuously variable impedance. Cummings and [Libby] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

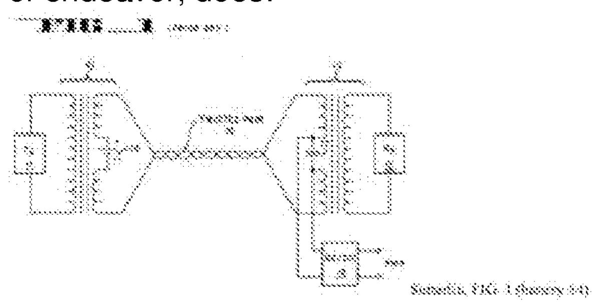
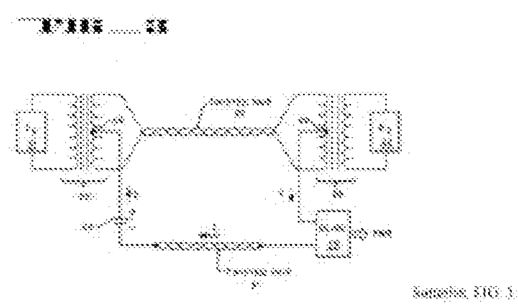
**REJ 30)** Claims 90 and 131 are rejected under pre-AIA 35 USC 103(a) as being obvious over Cummings in view of Maman, PCNet and Sutterlin.

As to **claims 90 and 131**, the unmodified rejection from the Final rejection is as follows:

| **Claim 90:** | **Prior Art:** |
| --- | --- |
| 90. The method according to claim 67 wherein the coupling at least one path across the specific contacts comprises coupling an energy storage device across the specific contacts. | The reasons for rejecting claim 67, from which claim 90 depends, are provided above. Claim 90 requires an energy storage device.<br><br>Cummings does not explicitly teach an energy storage device. However, Sutterlin, in a related field of endeavor, does:<br><br><br>Although the claim does not specify how the energy storage device is utilized, Sutterlin appears to use the energy storage device (a battery 14) in precisely the manner that would be expected for a system providing power and data over a single path and, in any case, the energy storage device taught by Sutterlin is on the path as claimed. |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman and PCNet (citing the Graham factors and reasons under KSR), and further stating:

Sutterlin uses an energy storing device in a circuit. Cummings and [Sutterlin] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

| **Claim 131:** | **Prior Art:** |
|---|---|
| 131. The piece of terminal equipment according to claim 108 wherein an energy storage device is coupled across the specific contacts | The reasons for rejecting claim 108, from which claim 131 depends, are provided above. Claim 131 requires an energy storage device on the path.<br><br>Cummings does not explicitly teach an energy storage device. However, Sutterlin, in a related field of endeavor, does:<br><br><br>Although the claim does not specify how the energy storage device is utilized, Sutterlin appears to use the energy storage device (a battery 14) in precisely |

| | |
|---|---|
| | the manner that would be expected for a system providing power and data over a single path and, in any case, the energy storage device taught by Sutterlin is on the path as claimed. |

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the references to obtain the claimed invention at least for the reasons set forth in the Final action, as noted above as to Cummings and Maman and PCNet (citing the Graham factors and reasons under KSR), and further stating:

Sutterlin uses an energy storing device in a circuit. Cummings and [Sutterlin] utilize circuits with similar elements that would be expected to maintain their functions if implemented in other circuits.

**WITHDRAWN REJECTIONS**

The following grounds of rejection are not presented for review on appeal because they have been withdrawn by the examiner.

**REJ 14)** Claims 105, 107, 146 and 148 are rejected under pre-AIA 35 USC 103(a) as being obvious over Cummings in view of Maman and PCNet.

**REJ 25)** Claims 105, 107, 146 and 148 are rejected under pre-AIA 35 USC 103(a) as being obvious over Cummings in view of Maman and PCNet.

The Examiner withdraws the rejection as to claims 105, 107, 146 and 148 for the reasons set forth by Appellant's in pp.100-104 of the Brief, discussed in more detail below.

**(2) Response to Argument**

Appellant provides numerous arguments in her Brief which are addressed below.

## BACKGROUND

The instant Patent is towards a security system for an Ethernet network. Generally, electronic equipment connected to the network is managed and tracked using signaling means along existing twisted-pair network cable in order to distinguish devices and detect if it is removed, and later if reconnected. ‘012 Patent at col. 4 l. 40-col. 6 l. 47.

Claim 1 is representative:

> 1. A method for adapting a piece of Ethernet data terminal equipment, the piece of Ethernet data terminal equipment having an Ethernet connector, the method comprising:
>
> selecting contacts of the Ethernet connector comprising a plurality of contacts, the selected contacts comprising at least one of the plurality of contacts of the Ethernet connector and at least another one of the plurality of contacts of the Ethernet connector;
>
> coupling at least one path across the selected contacts of the Ethernet connector; and
>
> associating distinguishing information about the piece of Ethernet data terminal equipment to impedance within the at least one path.

The ’012 patent relates generally to a communication system “provided for generating and monitoring data over a pre-existing wiring or cables that connect pieces of networked computer equipment to a network.” *Id.* at col. 3 ll. 19–22. The ’012 patent discloses central module 15 and remote module 16 system for achieving identification of electronic computer equipment associated with computer network 17. *Id.* at col. 4 ll. 44–

47. "[C]entral module 15 monitors remote module circuitry 16 that may be permanently attached to remote[] located electronic workstations such as personal computers 3A through 3D." *Id.* at col. 4 ll. 53–56.

Figure 3 of the '012 patent is reproduced below:

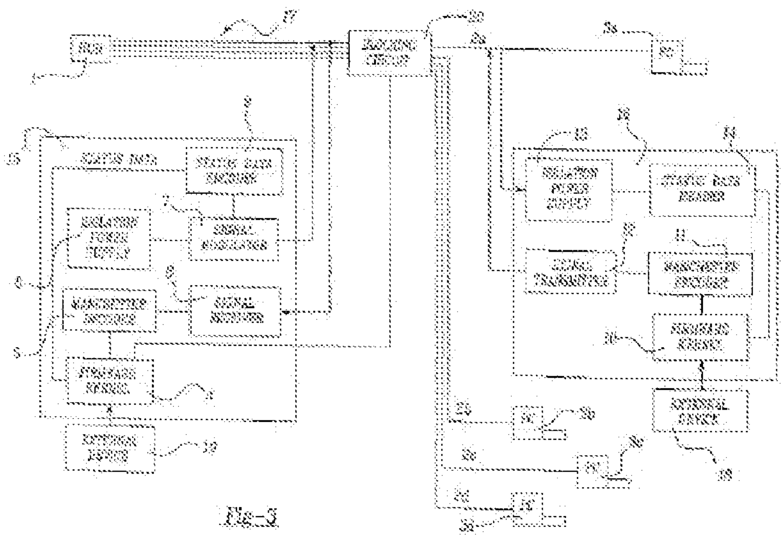


Figure 3 is a block diagram illustrating one embodiment of the invention. *Id.* at col. 3 ll. 52–53. As shown in Figure 3 of the '012 patent above, "[r]emotely located personal computers 3A through 3D are each connected to the computer network 17 so as to provide widespread remote user access to the computer network 17." *Id.* at col. 5 ll. 1–3. Data communication links, 2A through 2D, connects each of the respective personal computers 3A through 3D to a hub 1. *Id.* at col. 5 ll. 4–6. Each data communication link, which can be a multi-wire cable, transmits and receives information between the personal computers and other communication devices on the network. *Id.* at col. 5 ll. 6–13. "Each pair of transmit wires and each pair of receive wires thereby form a current loop through one of the personal computers 3A through 3D." *Id.* at col. 5 ll. 28-32.

The central module 15 includes isolation power supply 8 to supply continuous direct current (DC) to each of the current loops 2A through 2D. *Id.* at col. 5 ll. 33–35. A signal modulator 7 alters the voltage received from power supply 8 based upon status data received from encoder 9. *Id.* at ll. 53–56. The encoder receives its status data from the firmware kernel 4. *Id.* at col. 5 ll. 56–57. Status information and power is provided to the remote module 16 by a signal modulator 7 over either the transmit lines or the receive lines. *Id.* at col. 5 ll. 58–61.

At the remote module 16, "information such as confirmation of the status information or additional data" about an external device 18, such as the computer 3A, is provided to the remote module 16. *Id.* at col. 6 ll. 19–24. Firmware kernel 10 provides a preprogrammed unique identification number for the external device "to Manchester encoder 11 in order to reliably traverse the data communication link or cable 2A," and the "Manchester encoder then passes this encoded number to signal transmitter 12 which sends the encoded number across the data communication link 2A by altering the total current draw of the remote module 16." *Id.* at col. 6 ll. 7–13.

The information developed at the remote module 16 about an external device is sent to the signal receiver 6 of "the central module 15, decoded by Manchester decoder 5, and passed on to the firmware kernel 4." *Id.* at col. 6 ll. 25–28. In tracking an asset, i.e., the external device, the firmware kernel may now pass this received information on to another computer, i.e., external device 19, which is responsible for asset tracking. *Id.* at col. 6 ll. 28–30.

It is noted again that the patent background envisions a separate remote module 16, and also in an alternate embodiment the remote module 16 may be a card that is attached to the side of, or inserted into the asset, namely the PC. *Id.* at col. 4 ll. 53–56, cited above. In all three cases element 16 is connected to asset 3a via an Ethernet patch cable. FIGS 13, 14.

There are four independent claims at issue here. Claims 1 and 67 are method claims, of which claim 1 is illustrative:

> 1. A method for adapting a piece of Ethernet data terminal equipment, the piece of Ethernet data terminal equipment having an Ethernet connector, the method comprising:
> selecting contacts of the Ethernet connector comprising a plurality of contacts, the selected contacts comprising at least one of the plurality of contacts of the Ethernet connector and at least another one of the plurality of contacts of the Ethernet connector;
> coupling at least one path across the selected contacts of the Ethernet connector; and
> associating distinguishing information about the piece of Ethernet data terminal equipment to impedance within the at least one path.

Claims 31 and 108 are product claims, of which claim 31 is illustrative:

> 31. An adapted piece of Ethernet data terminal equipment comprising: an Ethernet connector comprising a plurality of contacts; and
> at least one path coupled across selected contacts, the selected contacts comprising at least one of the plurality of contacts of the Ethernet connector and at least another one of the plurality of contacts of the Ethernet connector,
> wherein distinguishing information about the piece of Ethernet data terminal equipment is associated to impedance within the at least one path.

To start, it is noted that a number of Appellant’s arguments, both towards the proper interpretation of the claims as well as the application of the prior art references thereto, are towards the idea that a number of features of the claims must occur within the claimed "Ethernet data terminal equipment". See e.g. Brief at 27. The Examiner notes below arguments towards specific claim terms, which address this assertion as it is central to the Appellant’s arguments. The Examiner argues here that Appellant’s overall construction of the independent claims is not a proper construction of the claims, and the rejection as well as the previous Office actions make this clear.

## CLAIM INTERPRETATION

37 CFR 1.555(b) states:

> A prima facie case of unpatentability of a claim pending in a reexamination proceeding is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

Note also MPEP 2111 states:

> During patent examination, the pending claims must be "given their broadest reasonable interpretation consistent with the specification." *In re Hyatt*, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000). Applicant always has the opportunity to amend the claims during prosecution, and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. *In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969).

Further:

> See also *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997) (The court held that the PTO is not required, in the course of prosecution, to interpret claims in applications in the same manner as a court would interpret claims in an infringement suit. Rather, the "PTO applies to verbiage of the proposed claims the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in applicant's specification.").

Such a "broadest reasonable interpretation consistent with the specification" is further required in Reexamination proceedings as well. Note 2258(1)(G) states:

> Original patent claims will be examined only on the basis of prior art patents or printed publications applied under the appropriate parts of 35 U.S.C. 102 and 103. See MPEP § 2217. During reexamination, claims are given the broadest reasonable interpretation consistent with the specification and limitations in the specification are not read into the claims (In re Yamamoto, 740 F.2d 1569, 222 USPQ 934 (Fed. Cir. 1984)).

Thus, the "'broadest reasonable construction' rule applies to reexaminations as well as initial examinations", where "construing claims broadly during prosecution is not unfair to the applicant...because the applicant has the opportunity to amend the claims to obtain more precise claim coverage." In re American Academy of Science Tech

Center, 70 USPQ2d 1827, 1830, 367 F3d 1359, 1364 (Fed. Cir. 2004).[2] "[I]t is important that the district court and the PTO can consider different evidence....[a]ccordingly, different results between the two forums may be entirely reasonable....[a]nd, if the district court determines a patent is not invalid, the PTO should continue its reexamination because, of course, the two forums have different standards of proof for determining invalidity. Ethicon Inc. v. Quigg, 849 F.2d 1422, 1428-9, 7 USPQ2d 1152, 1157 (Fed. Cir. 1988).

Thus, the Office is required by statute, case law, and the MPEP to utilize the “broadest reasonable interpretation consistent with the specification” standard during reexamination proceedings. Under this standard, absent any special definitions, claim terms or phrases carry their ordinary and customary meaning, as would be understood by one of ordinary skill in the art, in the context of the entire disclosure. *In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

Appellant identifies nine terms for construction here. Brief at 22-24. Appellant also cites to District Court constructions in the ‘012 court proceeding(s) among the nine terms. The Examiner agrees with the interpretation of terms such as “BaseT”, “protocol”,

---

[2] "Finally, American Academy points to an inconsistency between the Board’s construction of the term “user computer” and that of the district court in American Academy’s litigation against Novell. In the district court litigation, the court construed “user computer” to refer to a computer that serves one user at a time. However, the Board is required to use a different standard for construing claims than that used by district courts. It has been held that it is error for the Board to “appl[y] the mode of claim interpretation that is used by courts in litigation, when interpreting the claims of issued patents in connection with determinations of infringement and validity.” In re Zletz, 893 F.2d 319, 321 (Fed. Cir. 1989); accord In re Morris, 127 F.3d 1048, 1054 (Fed. Cir. 1997) (“It would be inconsistent with the role assigned to the PTO in issuing a patent to require it to interpret claims in the same manner as judges who, post-issuance, operate under the assumption the patent is valid.”). Instead, as we explained above, the PTO is obligated to give claims their broadest reasonable interpretation during examination. Under that standard, it was proper for the Board to construe “user computer” to encompass the mainframes and minicomputers of the cited prior art." Id.

and "impedance" as to this proceeding, but notes specific differences between Appellant's asserted construction as to other terms discussed below.

**"Distinguishing information"**

Appellant states that the term "distinguishing information" in e.g. claims 1, 31, 67 and 108 should be interpreted as "distinguishing information about the piece of Ethernet data terminal equipment is associated to impedance within the at least one path", citing the Board's Decision instituting Inter Partes Review ("Decision") in the '012 Patent IPR2016-01389 at 9-10. Appellant further asserts that the term "distinguishing information about the piece of Ethernet terminal equipment" should be interpreted as "information to distinguish the piece of Ethernet data terminal equipment from at least one other piece of Ethernet data terminal equipment", citing the District Court's interpretation of the claim limitation in e.g. claim 31. Brief at 23.

It is noted first, as to the latter, as noted above, barring a final holding of invalidity the broadest reasonable interpretation of the claims is holding here, and the Board found that its construction was not consistent with the finding of the District Court, noting that the term "distinguishing information" includes distinguishing information about an attribute of the device that differentiates it from *another device generally*, and not that the another device is necessarily another piece of Ethernet data terminal equipment. Decision at 9-10. It is noted that Appellant has not shown any recitation in the independent claims regarding another piece of Ethernet data terminal equipment or a network at all. Thus another piece of Ethernet data terminal equipment is not read into the claims.

Further, "distinguishing information" is not read as identifying the device in any way. It is noted here that claims dependent on independent claims 1, 31, 67 and 108 further recite “identifying information”. See e.g. ‘012 Patent claims 3, 33, 71, and 110, as well as claims 15, 45, 70, 111 and 112. Thus, in accordance with the doctrine of claim differentiation, Appellant intended for the term “distinguishing information” to refer to more general information than the more specific “identifying information.” *Free Motion Fitness, Inc. v. Cybex Int’l, Inc.*, 423 F.3d 1343, 1351 (Fed. Cir. 2005) (“The difference in meaning and scope between claims is presumed to be significant [t]o the extent that the absence of such difference in meaning and scope would make a claim superfluous.”). This is further supported by the fact that Appellant, in filing a Request for Certificate of Correction in the ‘012 Patent, stated specifically that the term “identifying” was added to the claims for the purpose of differentiating it from mere "distinguishing" information. See the 5/31/2013 Request for Certificate of Correction in the '012 Patent at 1[3].

As to the former, the Board also found that the term “distinguishing information about the piece of Ethernet data terminal equipment is associated to impedance within the at least one path” in claim 31 to mean “distinguishing information about the piece of

[3] Stating “[b]y way of the Examiner’s Amendment dated February 2, 2012, the original independent Claim 425 (now Claim 1) and independent Claim 455 (now Claim 31) were amended to include “distinguishing” information, which was previously claimed in connection to several dependent claims. As a result, these dependent claims had to be amended to properly recite “distinguishing information” for antecedent basis purposes and newly recite “identifying information” for claim differentiation purposes.”

Ethernet data terminal equipment, including information that differentiates it from another device, wherein the information is *capable of being* associated to impedance within the at least one path." *Id.* at 10 (emphasis added). It is noted that the mere *capability* of being associated is sufficient to read on the claim as claim 31 (and also thus claim 108) is a product claim and thus no actual step of measuring or actual association is required. See the Board's Decision instituting Inter Partes Review in the '012 Patent IPR2016-01425 at 10.

It is noted that with respect to the method claims 1 and 67 an actual step of associating is required. However, as such are method claims, the association step is not limited to the piece of data terminal equipment, as the claim does not require such, as discussed below.

**"Ethernet data terminal equipment"**

Appellant asserts that the term "Ethernet data terminal equipment" should be constructed solely as a "device at which Ethernet data transmission can originate or terminate" and not include any "other ancillary Ethernet system componentry". First, it is noted that "Ethernet data terminal equipment" only exists in the claims. In point of fact, it did not exist in the original filed disclosure, including the originally-filed claims, and was added to the claims in an amendment received 3/25/2011, two and a half years after filing. The term does not exist currently in the '012 Patent specification. The '012 patent describes, for example, that "information such as confirmation of the status information or additional data about an external device 18, such as the computer 3A" is provided to the remote module 16. ‘012 Patent at col. 6 ll. 19–24. While the claim uses the term “Ethernet data terminal equipment,” it is clear that the distinguishing information limitation relates more generally to an external device that is implemented with a computer network employing twisted pair wiring such as Ethernet. *Id.* at col. 5 ll. 14–18.

This is supported by the fact that the ‘012 Patent background teaches elements 15 and 16 which are separate from the PC 3a which Appellant asserts would be the Ethernet data terminal equipment (as it is what would be the origin or termination of Ethernet data). It is understood that FIG 14 shows an alternate embodiment of the invention where element 16 is a card inserted into a PC, however, it is noted further that dependent claims require that the Ethernet data terminal equipment be a PC; see e.g. claims 2, 32, 68 and 109. Thus Appellant intended for the term “Ethernet data terminal equipment” to refer to a more general device than the more specific “PC”. *Free Motion Fitness, Inc.,* cited above. And yet a PC is the only embodiment in the '012 Patent where the claimed path and associating elements may exist *within* the data terminal equipment as Appellant defines it here and further argues below. Given that the independent claims are broader than this PC embodiment, again it is clear that the distinguishing information and path limitations relate more generally to an external device or devices that is/are implemented with a computer network employing twisted pair wiring such as Ethernet such as central module 15 or separate element 16. The ‘012 patent further states that the secondary device (element 15) may perform steps of determining distinguishing information as to the DTE as well. '012 Patent at FIG 10 and col. 9 l. 54-col. 10 l. 30.

It is noted that FIG 2 shows an element 16 that is physically mounted to the side of the PC, yet element 16 is not in this case *within* or a part of the data terminal equipment; it is merely attached and still connected by removable wiring to the PC. This merely means that in that embodiment Appellant envisioned physically attaching what he himself argues is an ancillary piece of network equipment to a piece of terminal equipment, which would not make the ‘ancillary’ equipment any less ‘ancillary’ to the DTE or a part of the data terminal equipment itself.

Appellant is on one side arguing that Ethernet data terminal equipment is strictly limited to a PC or other device which on its own is the origin and destination of Ethernet data communications and that any other piece of in-between Ethernet network equipment connected thereto by a cable is “ancillary” and cannot be considered to be DTE, and yet on the other side is arguing that the functions of an ancillary element must be read as part of the claimed DTE, and that merely bolting said “ancillary” element to the side of the PC or other device now makes it a part of the claimed DTE.

If the Examiner took her internet router, which is connected to her computer by Ethernet cabling and which Appellant would consider an “ancillary piece of network equipment”, and glued it to the top of her laptop computer, it would not necessarily now make her router a piece of data terminal equipment, nor would its actions now be defined as occurring *within* a computer. The only recitation in the patent of the claimed elements being *within* a piece of DTE is the embodiment of FIG 14, which is clearly limited to a PC.

Even assuming for the sake of argument that, as argued by Appellant, attaching such an ancillary piece of network equipment to the side of a PC made it part of the data terminal equipment itself, which it does not, such an interpretation would **not** be consistent with the claims. Dependent claims. 27, 57, 91 and 132, for example, all require the claimed path to be formed *inside* the DTE. Thus, in accordance with the doctrine of claim differentiation, Appellant intended for the path in the independent claim to not be limited to the inside of the DTE and that it may be at least in part external to it. *Free Motion Fitness, Inc*, cited above. To interpret the claim term “Ethernet data terminal equipment” in the narrow manner argued here by Appellant would be inconsistent with both the patent background and also the claims themselves, which require that at least a portion of the path claimed in the independent claims be outside of the DTE.

Appellant also asserts that “the impedance is physically added to and made part of the Ethernet terminal equipment". Rather, the impedance within the claimed path is merely an intrinsic electrical quality of the path, and no step of providing any impedance specific to any piece of DTE is read into the claim.

**“Path coupled across”**

The Examiner agrees with the construction of "path coupled across" as merely "path permitting energy transfer", but wishes to note here that the term “path coupled across” appears in the claims, but nowhere else in the ’012 patent. The Examiner notes that the patent background does not specify any particular signal path corresponding to the claim language; in fact, the patent background does not specify any particular communication path at all, only speaking of a “return path for current from PC 3a [which] is the pair of receive data lines" in col. 7 ll. 34-35, describing the connection between element 16 and element 15, not element 16 which Patent Owner appears to assert here is her claimed DTE. Nor does the patent background specifically disclose an Ethernet connector or contacts, much less a path connected across such. Because of this, the claimed “path connected across” is read broadly.

Appellant’s arguments towards this claim term primarily revolve around the assertion that the claimed path is within the claimed DTE. However, as argued above, the steps of method claims 1 and 67 are not read as limited to within the DTE device, and thus any path that is connected to contacts of the connector of an Ethernet DTE is sufficient to read on the claim. Further, the path claimed in all four of the independent claims is not read as being restricted to within the DTE itself for the reasons set forth above as to “Ethernet data terminal equipment”.

Thus the path of independent claims 1 and 31 is not read as being necessarily limited to within the DTE. Cummings, as noted below, teaches this embodiment, including in this case at least a portion of the path within the PC, as the other side of the isolation transformer (the side which connects to the computer Ethernet receptacle) is inside the computer and thus at least a portion of the communication path over either pairs of transmit or receive wires to a network device external to the computer does in fact exist inside the computer in a standard Ethernet configuration, and a portion of the path outside of the DTE (wiring 44, 46).

That being said, the computer side of an internal isolation transformer such as that well-known in the art of Ethernet connectors as disclosed by the prior art references (Cummings) in this proceeding also reads on such a path and is specifically within the DTE device itself.

Further, as noted above with regard to “Ethernet data terminal equipment”, the DTE of claim 1 is broader than the PC of FIG 14, and thus while the connection over two pins via an isolation transformer within a PC reads on the claimed path, a path from a PC to a network element via twisted-pair wiring reads on the claim term based on the patent background. This is as well consistent with the Examiner's arguments above as well as the rejection under appeal, and is also consistent with the Board’s reading of the claim term “path coupled across” in the various Inter Partes Reviews noted above. See e.g. the Decision in IPR2016-01425 at 28, which notes that a legacy PC which is able to connect to a network using standard twisted-pair connectors known in the art meets the claimed path coupled across contacts.

Appellant further asserts that references towards discontinuity detection do not meet the claim term. This is not persuasive, as the claim does not differentiate from such a teaching. First, the claim does not require multiple impedance values be associated with the claimed path, and so the combined invention associating an impedance level with continuity (i.e. the asset is connected) meets the claim even if the path may be disconnected later. Second, the claim does not require the path be unbreakable; given the DTE claimed is not limited to a path within it as noted above, and that Appellant argues the claimed DTE is element 3a, then the fact that the patent background discloses element 16 connected to DTE 3a via a patch cable which is itself disconnectable means Appellant's own claimed invention has this same feature, i.e. the ability to be disconnected at the DTE end. FIG 13. Even in the embodiment of FIG 14, where the path is inside the DTE, it is still disconnectable to the DTE Ethernet connector by patch cable. FIG 14. If DTE 3a were disconnected from element 16 via the patch cable as in FIGS 13 or 14, then the path in element 16 is no longer coupled across the Ethernet connector contacts of element 3a, which means that, assuming her arguments against Cummings are correct, her own invention in her patent background does not support the claim as it is also disconnectable in a similar manner. Further note that element 16 not described as necessarily being mounted to the DTE, only optionally, and also comprises a separate element 16 connected by patch cable to DTE Ethernet connector. Third, even if the claim required a path that may not be broken, the internal loop of Cummings is at least a part of the path and exists even if the asset is disconnected.

Maman clearly teaches using impedance to determine continuity, wherein impedance is associated with the path under observation. Appellant asserts that a disconnected line would no longer be the claimed path, however the claim does not exclude a disconnection. One of ordinary skill in the art, as noted in the rejection, would associate resistance/impedance with the presence or absence of voltage on the path; coupled with the teachings of Maman, one of ordinary skill would have understood the measurement of impedance was a common and workable method for detecting the continuity of Cummings.

**“Adapted piece of Ethernet data terminal equipment”**

First, it is noted that “adapted” only exists in the claims. In point of fact, it did not exist in the original filed disclosure, including the originally-filed claims. The term does not exist in the '012 Patent specification except in the title, where the term as added during prosecution in an examiner’s amendment at issue of the claims on 2/2/2012, and the term was added to the claims in an amendment received 3/25/2011, two and a half years after filing. Thus the patent background does not use the term "adapted" as to any piece of equipment, much less specifically Ethernet data terminal equipment.

It is noted that in the above-referenced Inter Partes Review IPR2016-01425, the Board found that an unmodified legacy PC that is connected via twisted-pair wiring to an external user interface connector or external port configurator device reads on the claim term ”adapted piece of Ethernet data terminal equipment”. Decision in IPR2016-01425 at 17 and at 28. The Examiner has determined in the rejection here that merely using a piece of legacy equipment such as a general PC in an Ethernet network that provides an additional signal for purposes such as in the instant invention (such as the Cummings reference above) is sufficient to read on an "adapted" piece of data terminal equipment.

This is further supported by the above construction of “Ethernet data terminal equipment”, as such is broader than the embodiment of FIG 14 of the '012 Patent and thus includes a mere PC connected to additional means.

Further, as stated above, the patent background teaches not only a DTE device 16, but also a network element 15 which communicates therewith and determines if the

DTE element is removed from the system. Element 15 may be read as associating distinguishing information of the DTE. This means that "adapting" a piece of DTE for use in this system includes more than merely effecting the DTE itself, as other network elements are a critical part of the invention according to the instant patent. That is to say, Patent Owner himself teaches that elements other than DTE element 16 that communicate therewith are part and parcel of "adapting" the DTE 16 to operate in the network to perform the step of associating distinguishing information about the DTE. Lastly, note that the term "adapt" is only used in the *claims* as to a piece of equipment; in the entirety of the specification, the term "adapt" or similar is used three times, and only to note that the invention is adapted for use in a preexisting network or communications link. Nowhere in the patent background is the term "adapt" or similar used to describe "adapting" or modifying a piece of network equipment.

**ELEMENTS AS PART OF THE TERMINAL EQUIPMENT**

Appellant makes further arguments in her Brief that the steps claimed in method claim 1 are limited to the Ethernet data terminal equipment. See e.g. Brief at 27. These arguments are addressed in part above as to the term "Ethernet data terminal equipment" and "path coupled across", and are further found not persuasive, as the claims do not recite any language that limits the steps claimed to any piece of equipment, much less the DTE in the claim preamble. Appellant has shown no support in her patent of a piece of data terminal equipment which may on its own perform a step of selecting contacts of an Ethernet connector, nor of deliberately coupling a path across the contacts itself; rather, in Appellant's invention, the contacts described and the path are predetermined as shown in FIG 8, and there is no actual description of any step of selecting contacts, much less in the DTE, nor is there any described step of coupling a path performed by the DTE except inasmuch as the manner in which the circuit is designed in the first place. In fact, none of the terms "select", "selects", "selected" or "selecting" exist in the patent background with respect to any contacts in an Ethernet connector. It is also noted that the '012 patent specification does not limit the path claimed to DTE. As noted above, element 16 exists in various embodiments outside of the PC DTE, the secondary device ("ancillary" element 15) may perform steps of determining distinguishing information as to the DTE as well ('012 Patent at FIG 10 and col. 9 l. 54-col. 10 l. 30.), and the claim language requires a broader reading of the independent claims than asserted here by Appellant. Thus, lacking sufficient claim language deliberately limiting the steps of e.g. method claim 1 to the preamble DTE, the broadest reasonable interpretation of the claim in light of the specification includes the steps of the claimed method being performed outside of the DTE as well as within.

As to product claims 31 and 108, it is noted that the claim limitations "wherein distinguishing information…is associated to impedance" (claim 31) and "impedance within the at least one path arranged to distinguish…" (claim 108) are not read as being performed by the claimed Ethernet data terminal equipment, rather they are merely read as associations that may be performed anywhere in the overall network. If, assuming for the sake of argument that the associations are performed by the Ethernet data terminal equipment, such would make claims 31 and 108 single claims which claim both an apparatus and method steps of using the apparatus, making the claims ambiguous. MPEP 2173.05(II), citing *In re Katz Interactive Call Processing Patent Litigation*, 639 F.3d 1303, 97 USPQ2d 1737 (Fed. Cir. 2011). While *Katz* was towards indefiniteness of the claim which is beyond the scope of reexamination, it is the Examiner's job in interpreting the claims in a reexamination proceeding to do so with an eye towards minimizing ambiguity.

It is further noted that, while features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997) (The absence of a disclosure in a prior art reference relating to function did not defeat the Board's finding of anticipation of claimed apparatus because the limitations at issue were found to be inherent in the prior art reference); see also *In re Swinehart*, 439 F.2d 210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971); *In re Danly*, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). "[A]pparatus claims cover what a device is, not what a device does." *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990) (emphasis in original). A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987) (The preamble of claim 1 recited that the apparatus was "for mixing flowing developer material" and the body of the claim recited "means for mixing ..., said mixing means being stationary and completely submerged in the developer material". The claim was rejected over a reference which taught all the structural limitations of the claim for the intended use of mixing flowing developer. However, the mixer was only partially submerged in the developer material. The Board held that the amount of submersion is immaterial to the structure of the mixer and thus the claim was properly rejected.).

This is supported by the Board's finding noted above that claim 31 (and also thus claim 108) is a product claim and thus no actual step of measuring or actual association is required. See the Board's Decision instituting Inter Partes Review in the '012 Patent IPR2016-01425 at 10, cited above.

**REASONS FOR COMBINING**

Appellant asserts that the rejection did not establish sufficient reasons for combining the references. Appellant first argues that the Request cited "merely ten words" as to combining Cummings and Maman. Brief at 48. The Examiner disagrees, notes here that Request states the following specifically as to the related teachings of the two references:

> Cummings measures and detects fluctuations in electrical conditions on a network path to determine connectivity state of data terminal equipment, explicitly in an Ethernet network. …. Maman describes a connectivity detection system that explicitly mentions impedance.
>
> …
>
> The level of skill of an ordinary person of skill in the art should also include at least the level of creativity to apply well-known electrical engineering

> principles across standards, such as IEEE 802.3 standards for Ethernet networks (as provided in AAPA), and to utilize well known circuit components in standard ways.
>
> …
>
> Cummings and Maman both describe theft prevention using impedance detection.
>
> …
>
> To the extent it is determined a person of ordinary skill in the art of electronics does not know Ohm's Law, Cummings can be combined with Maman, which explicitly teaches associating distinguishing information about the data terminal equipment to impedance within a corresponding path.
>
> …
>
> However, Maman, in a related field of endeavor, teaches associating distinguishing information about a piece of data terminal equipment (which in the context of IEEE 802.3i would be Ethernet data terminal equipment) to impedance within a path.

Request at 26-27 and 30. It is noted that the above portions of the Request were referenced in the rejection under appeal[4], and that this portion of the Request further cited numerous rationales to establish obviousness as well as specifically resolving the Graham inquiries. These clearly rise above the level of 'conclusory statements'.

When "no prior art reference contains an express suggestion to combine references, then the level of ordinary skill will often predetermine whether an implicit suggestion exists." *Dystar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patric Co.,*

---

[4] Appellant on p. 49 of the Brief asserts that the Examiner first pointed to p. 30 of the Request in an interview of 5/3/2017, however this is incorrect. Both the Non-Final and Final rejections pointed to p. 30 of the Request. Non-Final action at 5, Final action at 5.

464 F.3d 1356, 1360, 80 USPQ2d 1641, 1645. The inquiry in such a situation would be "whether the ordinary artisan possesses knowledge and skills rendering him capable of combining the prior art references." *Id.* This is clearly established here.

Next, Patent Owner argues that there would have been no reasonable expectation of success in combining the two references, render it unsatisfactory, and change the principles of operation. Brief at 51-56. The Examiner disagrees, noting that Cummings teaches the majority of the claims here, including adapting a piece of Ethernet data terminal equipment for use in a security system. Cummings discloses sensing the presence or absence of current to determine distinguishing information. Given that impedance is a generally used metric for determining if an electrical signal path is connected, and given that Maman discloses using impedance to distinguish computing devices further in security system, one of ordinary skill would clearly have found such a small modification based on common knowledge and a method of detection in common use to have had a more than reasonable expectation of success. The portion of Cummings cited, such as portions of element 24 in FIG 1, are similar to those of Maman's FIG 3. Both disclose a network device for monitoring. In Cummings alarm logic 38 detects the presence or absence of a signal which itself corresponds to high or low impedance, whereas in Maman a specific resistance (impedance) measuring device 26 determines the presence or absence of a connection. Maman does so over two contacts. Clearly, one of ordinary skill in the art at the time of the invention would have understood the simple principle of detecting impedance over a pair of contacts to distinguish a connection, as taught by Maman, could apply to doing so over an Ethernet connection as taught by Cummings.

Appellant continues to argue that since Maman does not disclose BaseT wiring it is not combinable with Cummings. However, one of ordinary skill in the art would have clearly understood that resistance/impedance is a quality intrinsic to an electrical path whether it be a power system or a data line, and that merely using a path's impedance for the purposes of detecting continuity is not an idea that is only applicable to a power system. Appellant's argument assumes a level of skill in the art which is far below that of a skilled artisan established in the rejection (rejection above establishing Graham factors). "A person of ordinary skill in the art is also a person of ordinary creativity, not an automaton." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 421, 82 USPQ2d 1385, 1397 (2007). "[I]n many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle." *Id.* at 420, 82 USPQ2d 1397. Office personnel may also take into account "the inferences and creative steps that a person of ordinary skill in the art would employ." *Id.* at 418, 82 USPQ2d at 1396. The "hypothetical 'person having ordinary skill in the art' to which the claimed subject matter pertains would, of necessity have the capability of understanding the scientific and engineering principles applicable to the pertinent art." *Ex parte Hiyamizu*, 10 USPQ2d 1393, 1394 (Bd. Pat. App. & Inter. 1988). A mere difference in wire types as argued by Appellant would not have kept a skilled artisan from utilizing impedance as a means of detecting continuity in Cummings.

**CUMMINGS/MAMAN/PCNet**

First, Appellant argues against the combination of Cummings in view of Maman, and Cummings in view of Maman and PCNet on pp. 57-64 of the Brief as to claim 31[5].

As to **claim 31**, Appellant makes numerous arguments as to the combination, incorporating much of her arguments above as to claim terms, the rebuttals of which are noted by the Examiner below.

As to the argument that the references do not in combination teach Ethernet data terminal equipment, note the Examiner's rebuttal above as to the term's proper construction and the teaching of the references. The computer of Cummings is clearly Ethernet data terminal equipment, and is "adapted" as claimed for the reasons set forth above.

As to the propriety of the combination of references and the workability of the combination, note the Examiner's rebuttal above as to the combination being proper and sufficiently laid out.

As to Appellant's arguments towards a connector, Cummings clearly comprises an Ethernet connector. Cummings is 10BaseT Ethernet and uses therefore a female receptacle. Cummings at Abstract and at col. 3 ll. 11-30. Note pp. 4-6 of the Request, as to the IEEE802.3i standard, showing specifically male plugs and female receptacles for 10BaseT Ethernet, specifically citing Appellant in her Arguments of 12/6/2011 in the instant Patent:

[5] Appealed REJ 13, 14, and 25.

Applicant thus submits that one having ordinary skill in the art recognizes that the term "contact" is synonymous with contacts, as that term is used in the industry and industry standards. For example, according to IEEE Std. 802.3i (1990), an MDI Connector is defined as having 8 "contacts". Specifically, IEEE Std. 802.3i (1990) states:

**14.5.1 MDI Connectors.** Eight-pin connectors meeting the requirements of Section 3 and Figures 1–5 of ISO 8877 [16] shall be used as the mechanical interface to the twisted-pair link segment. The plug connector shall be used on the twisted-pair link segment and the jack on the MAU. These connectors are depicted (for informational use only) in *Figs 14-20* and *14-21*. The following table shows the assignment of signals to connector contacts.

| CONTACT | MDI SIGNAL |
|---|---|
| 1 | TD+ |
| 2 | TD− |
| 3 | RD+ |
| 4 | Not used by 10BASE-T |
| 5 | Not used by 10BASE-T |
| 6 | RD− |
| 7 | Not used by 10BASE-T |
| 8 | Not used by 10BASE-T |

**14.5.2 Crossover Function.** A crossover function shall be implemented in every twisted-pair link. The crossover function connects the transmitter of one MAU to the receiver of the MAU at the other end of the twisted-pair link. Crossover functions may be implemented internally to a MAU or elsewhere in the twisted-pair link. For MAUs that do not implement the crossover function, the signal names of 14.5.1 refer to their own internal circuits. For MAUs that do implement the crossover function, the signal names refer to the remote MAU of the twisted-pair link. Additionally, the MDI connector for a MAU that

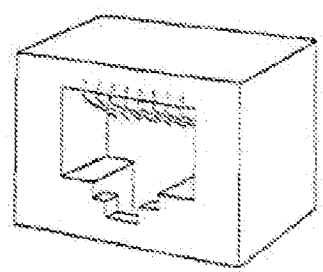


**Fig 14-20**
**MAU MDI Connector**

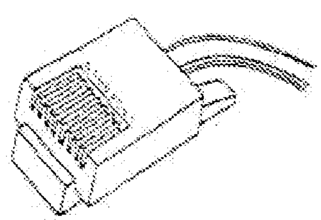


**Fig 14-21**
**Twisted-Pair Link Segment Connector**

> From the above, it should be appreciated that one skilled in the art commonly uses the term "contacts" to denote the numbered components of MDI connectors. Moreover, it should be immediately recognized that the Twisted-Pair Link Segment Connector of FIG. 14-21 of IEEE Std. 802.3i is synonymous to the normal network wire connector 38 described in the present application and illustrated in FIGS. 11 and 13-15 of the present application. Likewise, it should be recognized that the MAU MDI Connector of FIG. 14-20 of IEEE Std. 802.3i is synonymous to the normal input receptacle 48 described in the present application and illustrated in FIG. 14 of the present application. These references clearly illustrate that the industry, even as early as 1990, dearly understood that a network connector comprises a plurality of contacts.

12/6/2011 Arguments at 26-28.

By Appellant's own admission Ethernet requires the use of a female receptacle MDI connector shown; as her own assertion above states, the MDI disclosed "shall be used as the mechanical interface to the twisted pair link segment" in a 10BaseT Ethernet wiring system. Given that Cummings teaches 10BaseT Ethernet, Appellant thus admits that Cummings comprises a female receptacle in the DTE with appropriate contacts according to the above. Note that Cummings further teaches an internal isolation transformer, which is standard as well and connected to the receptacle to allow the DTE to induce data signals onto the internal wires that connect to the interior side of the receptacle. PCNet shows how the male jack plug fits in a female receptacle on FIG 3-1.

As to the claimed path, note the Examiner's arguments above as to the claim term. The path claimed is not claimed as residing within the DTE in its entirety as noted above, and in spite of this, the wiring in Cummings from the MDI receptacle to the internal isolation transformer bridging TX+/TX- or RX+/RX- contacts is within the DTE in its entirety. As to Appellant's assertions regarding the interview of 5/3/2017, the Examiner's arguments as to the wiring reading on the claim was merely noting the broadness of the claim and noting that, as noted above, the twisted-pair wiring path reads on the claim as much as the internal wiring of Cummings.

As to "distinguishing information", again note it is only necessary that distinguishing information be capable of being associated with regard to claim 31 as noted above. Appellant asserts that disconnection note the Examiner's arguments above as to such.

Appellant makes similar arguments as to **claims 1** (pp. 65-71), **67** (pp. 72-78), and **108** (pp. 78-84) as above, and the Examiner notes further the differences between the scope of the method claims and product claims is shown above as to Appellant's arguments regarding the method steps being restricted to the DTE claimed.

As to dependent claims, including those under additional grounds of rejection (pp. 85-104 of the Brief), please note below.

As to claims **3, 15, 16, 17, 45, 46, 47, 70, 71, 111 and 112** (pp. 84-89), requiring identifying information, Cummings teaches identifying individual DTE elements to the exclusion of others. Cummings at col. 6 ll. 1-23. This clearly reads on associating identifying information with the impedance, as the information identifying each individual DTE is associated with the characteristics of its communication path. Appellant asserts that her claim encompasses communicating with asserts that are powered down and that the identifying information can include a name, permanently identify assets, and allow tracking of location. Brief at 87-88. It is noted that the features upon which applicant relies are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

As to claims **5, 35, 73 and 114** (pp. 89-90), requiring a detection protocol, it is first noted that the instant patent specification does not describe any detection protocol, or even utilize the word “protocol” whatsoever. The term only exists in the claims. Second, Cummings discloses detection in a Ethernet system, wherein data signals are in Ethernet format in an Ethernet network, thus the entire detection system operates as part of a protocol i.e. a detection protocol.

As to claims **7-9 and 37-39** (pp. 90-93, 96-97), requiring two contacts (claims 9 and 39 specifying contacts 3 and 6), Cummings discloses the use of both TX+/TX- bridging as well as RX+/RX- bridging. Cummings at col. 3 ll. 45-52 “[h]owever, the same approach could be implemented with the pairs of receive wires…”. Thus Cummings envisions utilizing two paths, each of which connects two contacts. In Cummings, the RX+/RX- contacts would be pins 3 and 6 (note PCNet describing pins for 10BaseT Ethernet as in Cummings. Note also the same shown by Appellant in IEEE 802.3i above).

As to claims **11 and 41** (p. 94), requiring two paths, see above, where Cummings describes two paths.

As to claims **22, 52, 80 and 121** (pp. 94-96), requiring impedance as a function of voltage, as demonstrated in the Request and rejection it was basic common knowledge at the time of the invention that voltage and impedance are related, and Maman discloses measuring impedance. Cummings further detects the presence of absence of a signal by voltage using operation transconductance amplifiers. Note Cummings at col. 4 ll. 61-66.

As to claims **27, 28, 57 and 58** (pp. 97-100), requiring a path formed through or inside the DTE, as noted above, Cummings teaches wiring internal to the computer. Cummings at col. 6 ll. 1-8.

As to claims **105, 107, 146 and 148** (pp. 100-104), requiring connections between contacts 1/2 and 3/6 (i.e. an intra-pair loop), the Examiner notes that the rejection is withdrawn above for the reasons set forth in her Remarks, that Cummings indeed fails to disclose a loop formed over at least one of the conductors of the first pair and at least one of the conductors of the second pair. Please see the Notice of Intent to Issue a Reexamination Certificate in control number 90/013,802 at 6. Please note also, however, that the claims at issue here are written in an ambiguous manner, requiring that “at least one” of a set of contacts include two contacts, i.e. that one contact can comprise two contacts.

As to claims **12, 42, 89 and 130** (pp. 104-106 and 117-119), Annunziata clearly discloses the use of a Zener diode in a continuity testing system. Annunziata at col. 1 ll. 34-57. It is also noted that Cummings discloses diodes in her detection system, see elements 36 and 44 in FIG 2. One of ordinary skill in the art, knowing how common and basic zener diodes are in circuit design, would have found it obvious to use such a simple and common element in a detection circuit. Annunziata does not disclose

Ethernet DTE, however the combination does as Cummings (and PCNet) teach Ethernet DTE. Annunziata is utilized merely to show the obvious nature of using a notoriously well-known circuit element in a detection circuit. Appellant's assertions one of ordinary skill in the art would not have thought a zener diode could be applicable in circuitry in Ethernet data terminal equipment assumes a level of skill far, far lower that the rejection sets forth as "ordinary".

As to claims **20, 50, 77, 78, 118 and 119** (pp. 107-108 and 113-115), claim 20 merely requires a predetermined duration. In fact, the claim is unclear as to what, exactly, the predetermined duration applies to; "associating distinguishing information about the piece of Ethernet DTE to impedance within the at least one path having at least one predetermined duration" does not specify. The rejection, however, does note that any Ethernet signal such as in Cummings will have a given data rate, and Johnson discloses well-known data rates along networks. Given the broad nature of the claim, one of ordinary skill in the art would have found the claim obvious noting that the data rate in Cummings proscribes a given duration of communication.

As to claims **21, 23, 51, 53, 79, 97, 120 and 138** (pp. 108-110 and 115-117), as noted in the rejection, the claim merely specifies an impedance of between 10 to 15k Ohms. The use of 10 to 15 k Ohm resistors was notoriously-well known in the art in circuit design as demonstrated in the rejection, as noted by the fact that Appellant's specification does not even mention specific impedance values except in the claims and in the FIGS, which only describes 10 k Ohm and 4.7 k Ohm resistors. No critical teaching exists as the resistor values in the specification. To that end, Bloch discloses the well-known nature of such in a communication circuit.

As to claims **74, 75, 81-86, and 90** (pp. 110-112), claim 74 for example requires the impedance be variable. As noted in the rejection, there is no teaching in the patent background as to specifically variable impedance in the invention. With that in mind, Libby discloses the use of varying impedance in a circuit, and given the lack of critical teaching in the ‘012 patent as to varying impedance, one of ordinary skill in the art would have found such a small modification to the combined invention of Cummings in view of Maman or Cummings in view of Maman and PCNet to have been obvious for the reasons set forth in the rejection. Note here that Appellant argues the Sutterlin reference instead, however, the rejection is towards Libby. As noted above, the rejection heading included a typo, however the rejection itself was clearly in view of and described the Libby reference.

As to claims **115, 116, and 122-127** (pp. 112-113) and as to claims 74, 75, 81-86, 115, 116 and 122-127 (pp. 122-123), such correspond to claims 74, 75 etc. discussed directly above with regard to Libby.

As to claims **90 and 131** (pp. 119-121), claim 90, for example, merely requires an energy storage device across contacts. First, it is noted that “energy storage device” is broad, and may encompass a mere capacitor or inductor; in which case the internal coil of the isolation transformer of Cummings meets the claim as the coil (an inductor) is an energy storage device. To the extent that the claimed "energy storage device" is to be read more specifically, Sutterlin discloses the use of a battery in a twisted-pair communication system similar to Cummings, in order to provide DC power along the twisted-pair data path between devices. Cummings discloses a power source for such, but does not specify an energy storage device, rather more generically a power source. One of ordinary skill in the art would have looked to other teachings to determine a power source to use in such a system and would have been led to Sutterlin's teaching of a power storage device. Both systems apply DC signals to a twisted-pair communication line and thus one of ordinary skill would have found the use of a power storage device obvious. Appellant disparages Sutterlin as not teaching a current loop, but such clearly exists in FIGS 1 and 3.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/CHARLES CRAVER/, Primary Examiner, AU 3992

Conferees: /Roland Foster/, Primary Examiner, AU 3992

/MICHAEL FUELLING/
Supervisory Patent Examiner, Art Unit 3992

**Requirement to pay appeal forwarding fee.** In order to avoid dismissal of the instant appeal in any application or ex parte reexamination proceeding, 37 CFR 41.45 requires payment of an appeal forwarding fee within the time permitted by 37 CFR 41.45(a), unless appellant had timely paid the fee for filing a brief required by 37 CFR 41.20(b) in effect on March 18, 2013.