

**United States Patent** [19]

[11] **Patent Number:** **5,710,728**

**Danielson et al.**

[45] **Date of Patent:** **Jan. 20, 1998**

[54] **PORTABLE WORK STATION-TYPE DATA COLLECTION SYSTEM**

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[75] **Inventors:** **Arvin D. Danielson, Solon; Darald R. Schultz, Cedar Rapids, both of Iowa; Dennis Silva, San Jose, Calif.; Darrell L. Boatwright, Cedar Rapids, Iowa; Rickey G. Austin, Lisbon, Iowa; Daniel E. Alt, Cedar Rapids, Iowa; Steve Darren Friend, Felton; Paul Beard, Milpitas, both of Calif.**

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[73] **Assignee:** **Norand Corporation, Cedar Rapids, Iowa**

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[21] **Appl. No.:** **488,406**

"Pen\*View™ Pen Based Computer", No. 960-170-205, Norand Corporation, 1992.

[22] **Filed:** **Jun. 7, 1995**

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**Related U.S. Application Data**

[63] Continuation-in-part of Ser. No. 389,830, Feb. 16, 1995, which is a continuation-in-part of Ser. No. 307,950, Sep. 16, 1994, abandoned, and Ser. No. 309,003, Sep. 19, 1994, said Ser. No. 389,830, is a continuation-in-part of Ser. No. 226,516, Apr. 12, 1994, Pat. No. 5,488,575, and Ser. No. 48,873, Apr. 16, 1993, abandoned, said Ser. No. 307,950, is a continuation-in-part of Ser. No. 226,516, and Ser. No. 48,873, Apr. 16, 1993, abandoned, said Ser. No. 309,003, is a continuation-in-part of Ser. No. 226,516, and Ser. No. 48,873, which is a continuation-in-part of Ser. No. 23,840, Feb. 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 728,667, Jul. 11, 1991, abandoned.

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*Attorney, Agent, or Firm*—Lathrop & Gage L.C.

[51] **Int. Cl.**<sup>6</sup> ..... **G06F 1/32**  
[52] **U.S. Cl.** ..... **364/707; 395/750; 361/683**  
[58] **Field of Search** ..... **364/707, 708.1; 395/750; 361/683**

[57] **ABSTRACT**

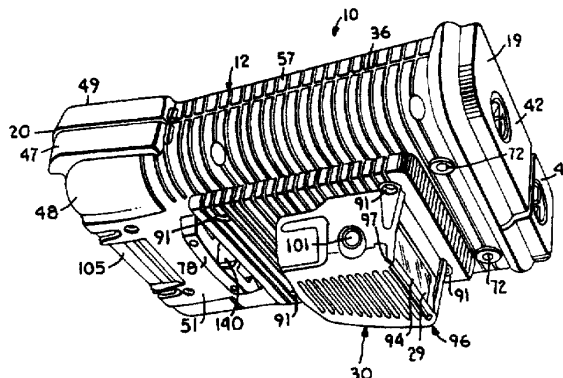
A portable data collection terminal system has a housing having a display screen with coincident graphic data input and a keyboard on the frontal side thereof. An accessory pod, having a width less than the width of the display screen and a handgrip extension adapted to hold a selected accessory device, such as a laser scanner, is disposed on the housing, opposite said frontal side. The accessory pod has one or two activation, diaphragm-type switches disposed in a pod wall disposed transversely to the handgrip extension and extending outwardly from, opposite the frontal side, the housing. The switch or switches are connected in parallel, if more than one, and are disposed near an end of the pod wall such that they are operable by either a user's thumb or finger.

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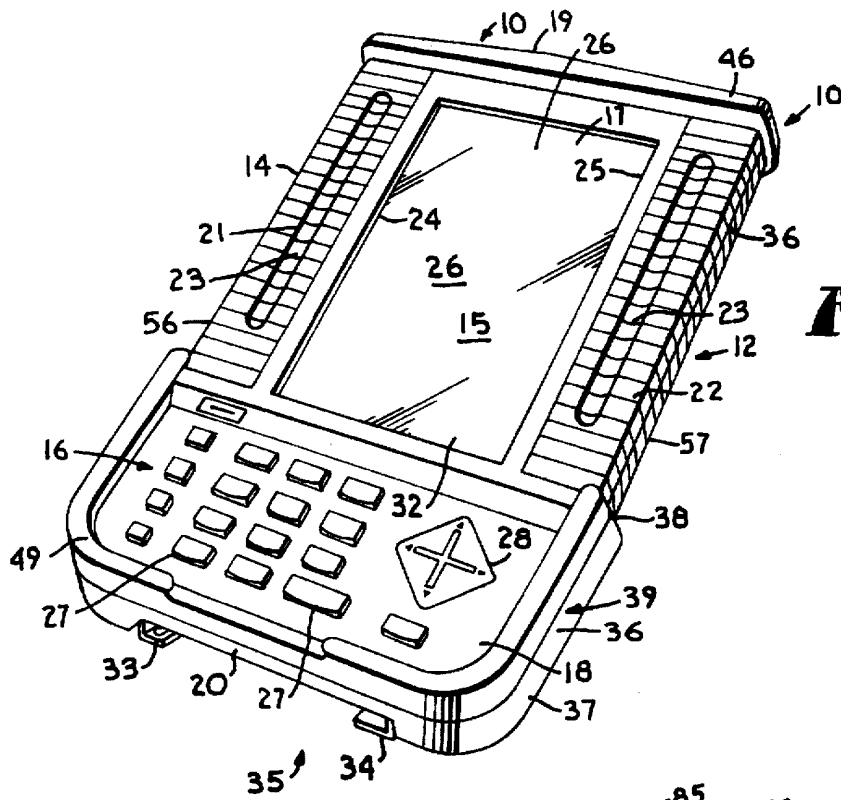
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**45 Claims, 16 Drawing Sheets**

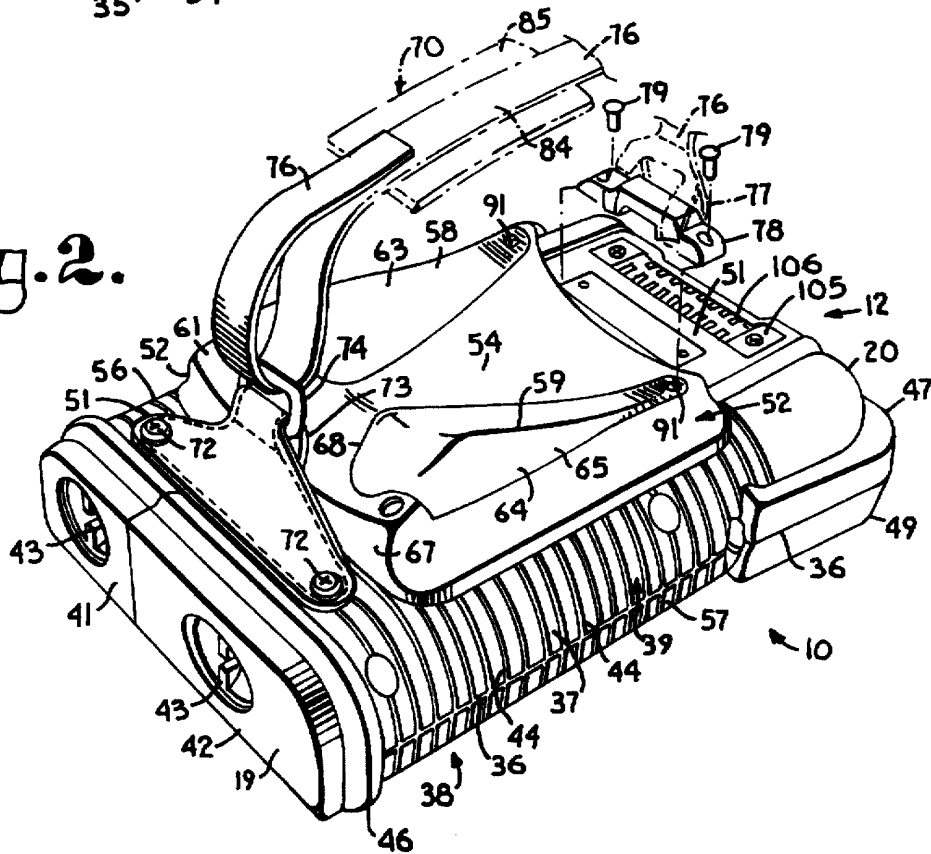


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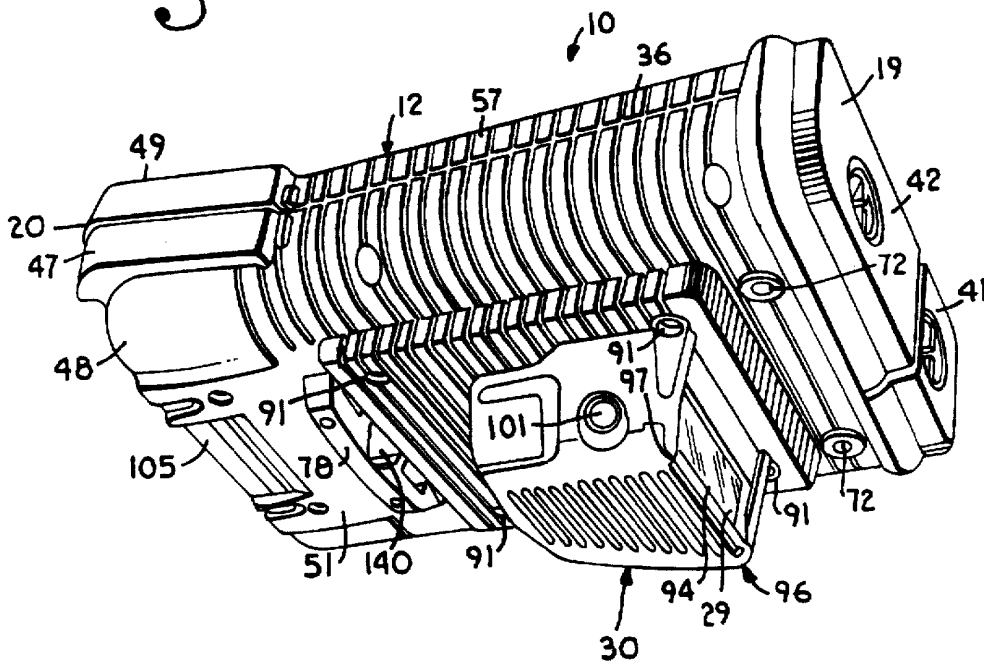


**Fig. 1.**

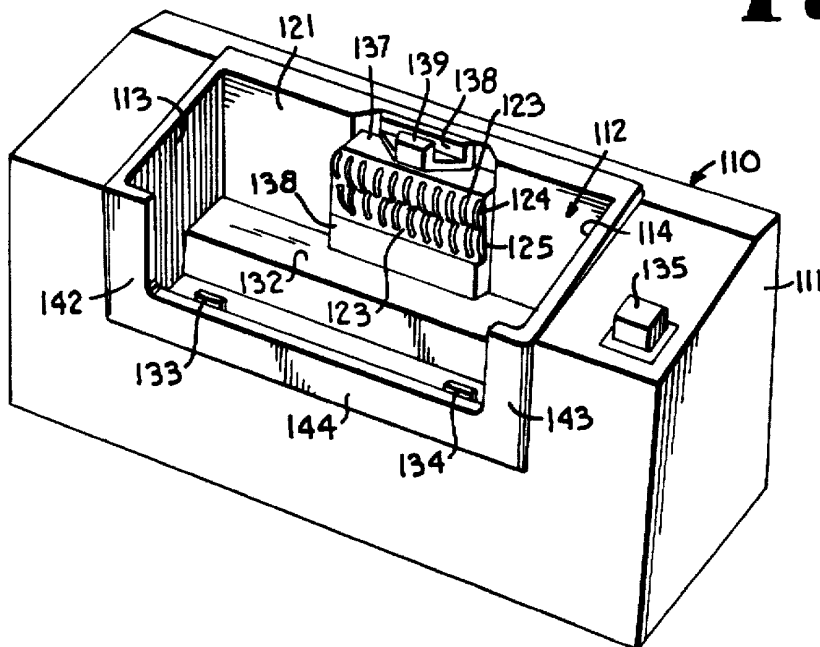
**Fig. 2.**



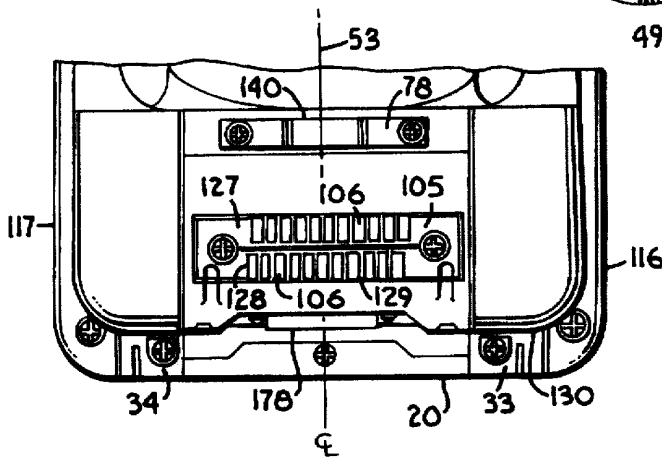
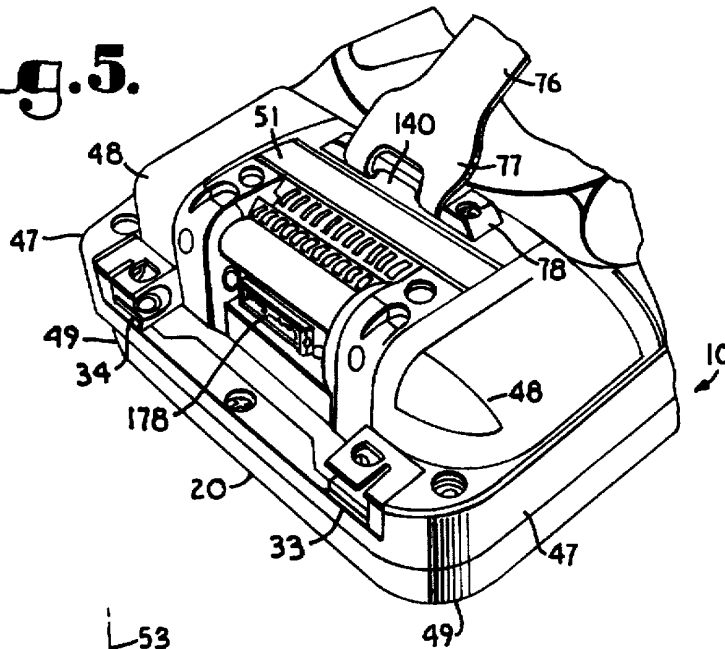
**Fig. 3.**



**Fig. 4.**

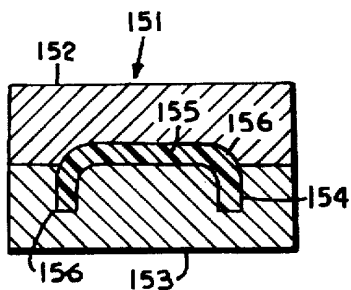


**Fig. 5.**

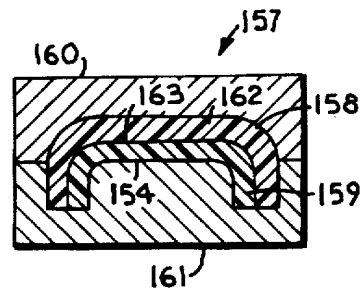


**Fig. 6.**

**Fig. 7.**



**Fig. 8.**



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