Motherson Offered No Additional Expert Testimony

Mr. Nranian stated that "[g]iven the well-established understanding of 'yaw,' 'pitch,' and 'roll' in the automotive industry, [he] would expect an *explicit* re-orientation of these axes if the inventors of the '648 Patent intended such a re-orientation." (Ex. 2010 at 5.) But, "relative to the exterior portion of the equipped vehicle to which said exterior rearview mirror assembly is attached" ***is*** the explicit language that provides this reorientation of the axes. If "[t]he designation of the yaw, pitch, and roll designations are universal in the automotive context," (Ex. 2001, ¶120) as Mr. Nranian claims, then there would be no reason to include the "relative to" language other than to reorient the axes. And the specification of the '648 Patent plainly describes that reorientation.

Petitioner Reply at 14.

Attorney Argument Only, No Expert Testimony Rebutting The Testimony of Patent Owner's Expert, Nranian

Motherson's Reply Proposes A New Construction

Petitioner's Original Construction	Petitioner's Reply Construction	Patent Owner's Construction
roll: "a rotation about a main axis"	**roll:** "a rotation about a main axis *of the mirror assembly*"	**roll:** "a rotation about a vehicle's longitudinal axis"
yaw: "a rotation about a vertical axis perpendicular to the main axis"	**yaw:** "a rotation about a vertical axis perpendicular to the main axis *of the mirror assembly*"	**yaw:** "a rotation about a vehicle's vertical axis"
Paper No. 1 (Petition) at 6.	Paper No. 13 (Petitioner Reply) at 17.	

Motherson's New Construction Is Unsupported By Any Expert Testimony, And Is Contrary To The Claim Language

1. An exterior rearview mirror assembly configured for mounting at an exterior portion of a vehicle, said exterior rearview mirror assembly comprising:

a mirror head;

an exterior mirror reflective element fixedly attached at said mirror head;

an attachment portion configured for attachment at an exterior portion of a vehicle equipped with said exterior rearview mirror assembly;

a multi-axis adjustment mechanism comprising at least one electrically-operable actuator;

wherein said multi-axis adjustment mechanism is operable to move said mirror head, with said exterior mirror reflective element fixedly attached thereto, about multiple axes relative to said attachment portion; and

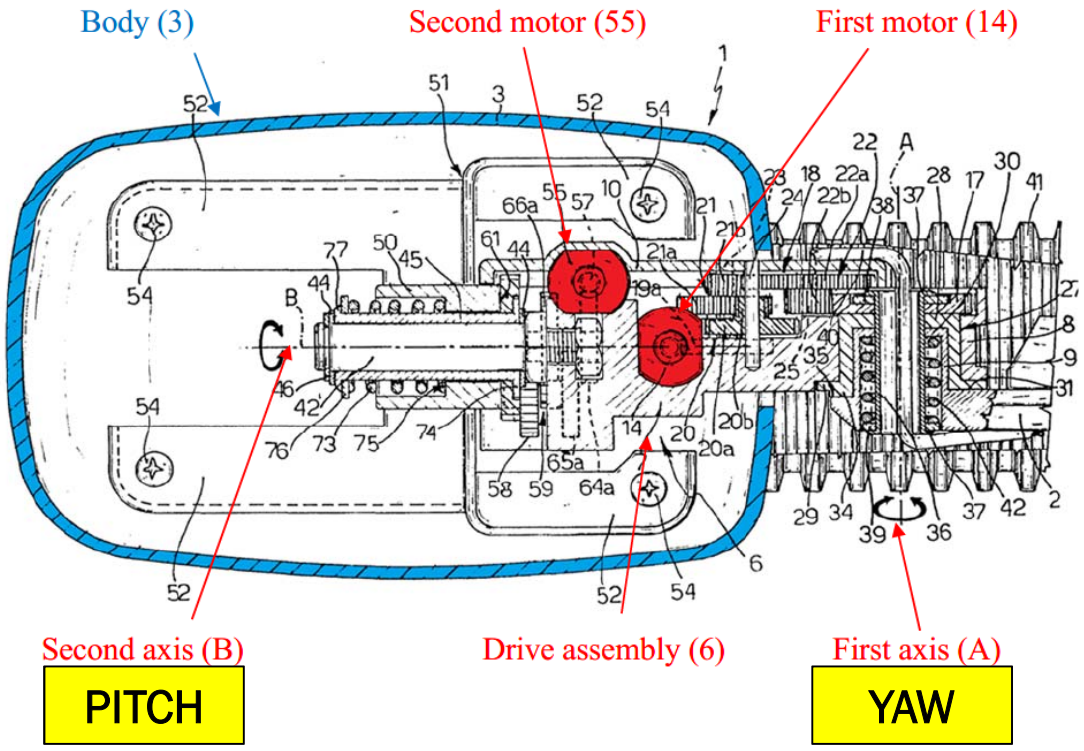
wherein said exterior mirror reflective element moves in tandem with movement of said mirror head relative to the exterior portion of the body of the equipped vehicle at which said exterior rearview mirror assembly is attached to adjust the rearward field of view of a driver of the equipped vehicle who views said exterior mirror reflective element when operating the equipped vehicle.

9. The exterior rearview mirror assembly of claim 1, wherein said multi-axis adjustment mechanism is operable for yaw and roll adjustment of said exterior mirror reflective element relative to the exterior portion of the equipped vehicle at which said exterior rearview mirror assembly is attached.

The '648 Patent's Three-Dimensional Adjustment Improves Over The Two-Dimensional Adjustment Of Lupo

"The actuators ... may otherwise provide multiple axes of adjustment of the attachment plate and mirror head (such as, for example, a ball actuator that may rotate or pivot the mounting arm or structure 740 in a three dimensional manner at the side of the vehicle). For example, the arm may be pivoted up/down and forward/rearward and any directions in between, and the arm may be rotated about its longitudinal axis to further adjust the arm and the attachment element and the reflective element relative to the side of the vehicle (thus providing independent and/or cooperative pitch, yaw and roll adjustment of the reflective element relative to the side of the vehicle)."

Ex. 1001 at 68:36–50.



Paper No. 1 (Petition) at 27 (showing Petitioner's marked up version of Lupo Figure 2)

Agenda

1. Bracket
2. Yaw, Pitch and Roll
3. Exterior Mirror Reflective Element Fixedly Attached At Said Mirror Head
4. Rounded
5. Cooperatively Operable Actuators
6. Tsuyama Obviousness

‘648 Patent, Claim 1

1. An exterior rearview mirror assembly configured for mounting at an exterior portion of a vehicle, said exterior rearview mirror assembly comprising:

a mirror head;

an exterior mirror reflective element fixedly attached at said mirror head;

an attachment portion configured for attachment at an exterior portion of a vehicle equipped with said exterior rearview mirror assembly;

a multi-axis adjustment mechanism comprising at least one electrically-operable actuator;

wherein said multi-axis adjustment mechanism is operable to move said mirror head, with said exterior mirror reflective element fixedly attached thereto, about multiple axes relative to said attachment portion; and

wherein said exterior mirror reflective element moves in tandem with movement of said mirror head relative to the exterior portion of the body of the equipped vehicle at which said exterior rearview mirror assembly is attached to adjust the rearward field of view of a driver of the equipped vehicle who views said exterior mirror reflective element when operating the equipped vehicle.

“Exterior Mirror Reflective Element Fixedly Attached At Said Mirror Head”

Petitioner’s Construction

none

Patent Owner’s Construction

Exterior mirror reflective element fixedly attached to a peripheral exterior surface portion of said mirror head

The ‘648 Distinguishes The Prior Art Based On Attachment “At” The Mirror Head

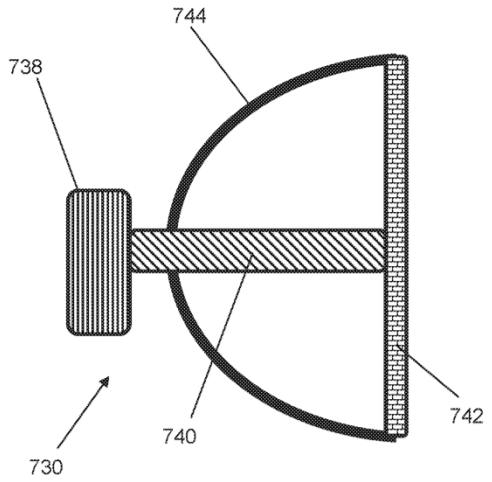


FIG. 68A

“Optionally, and desirably, **a mirror casing or shell 744 (FIG. 68A) may be readily attached at the mirror attachment element or bracket or to the mirror reflective element itself** in order to provide the desired or appropriate appearance or styling of the exterior rearview mirror at the side of the vehicle and to provide mechanical protection of the reflective element and the like from environmental exposure.”

Ex. 1001 at 68:62—69:1.

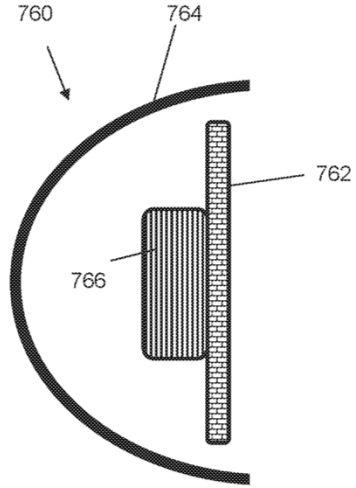


FIG. 68B

“A **typical known exterior mirror construction** 760 is shown in FIG. 68B, where the mirror reflective element 762 is disposed in or housed in a mirror casing 764 (and is inboard of the open end of the mirror casing and not attached thereto) and is adjustable relative to the mirror casing via a mirror actuator 766, which is also disposed in the mirror casing and occupies space behind the reflective element and within the cavity of the mirror casing.”

Ex. 1001 at 70:4—11.

The ‘648 Specification Further Supports Patent Owner’s Construction

“**The mirror reflective element** can be adhered or otherwise fixedly **attached at a surface or mounting portion of the mirror head**, and the mirror head can be any shape (such as generally flat or having a narrow or thin profile or the like) depending on the particular application of the mirror assembly and the vehicle manufacturer's design preferences.”

Ex. 1001 at 71:53—58.

“In the illustrated embodiment, the **reflective element is adhered at a rear attaching surface of the mirror head housing**, with the front perimeter edge regions of the reflective element being curved or rounded or beveled to provide a smooth or continuous transition between the generally planar front surface of the reflective element and the side walls or surfaces of the mirror housing.”

Ex. 1001 at 58:56—59:6.

The ‘648 Specification Further Supports Patent Owner’s Construction

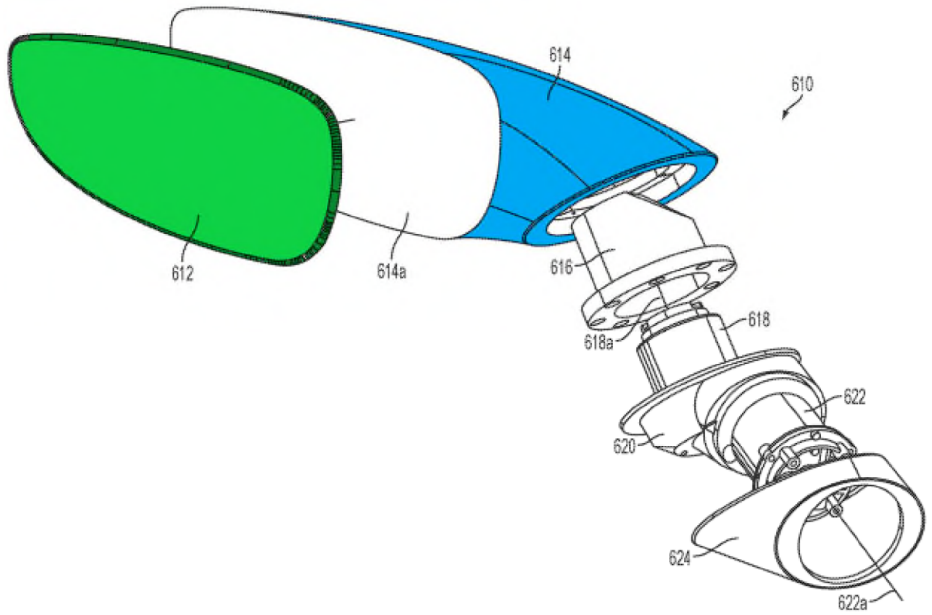


FIG. 56

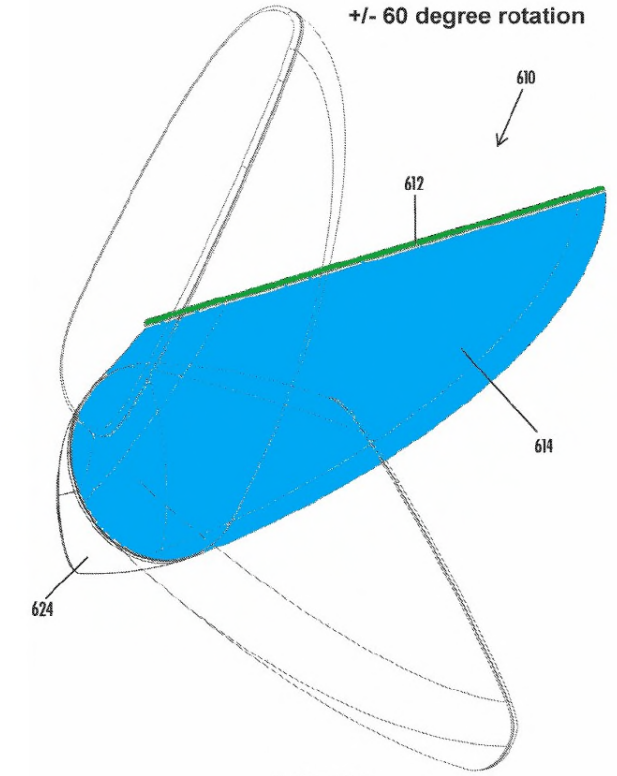


FIG. 58A

Clear Distinction Between Lupo And The ‘648

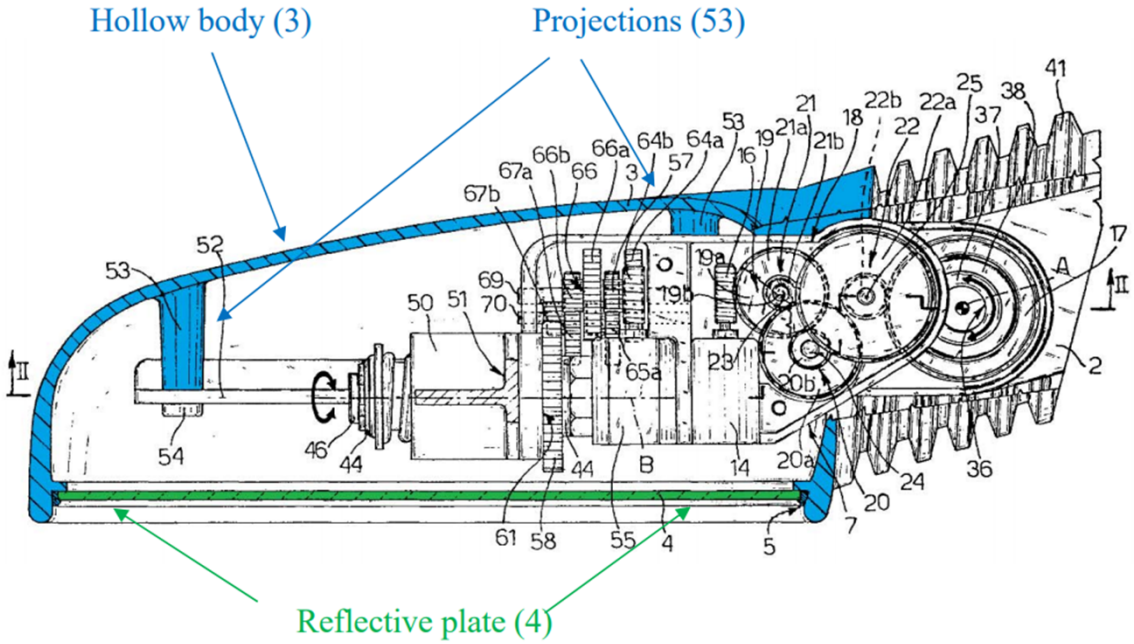


Figure 1 of Lupo (Petition at 20).

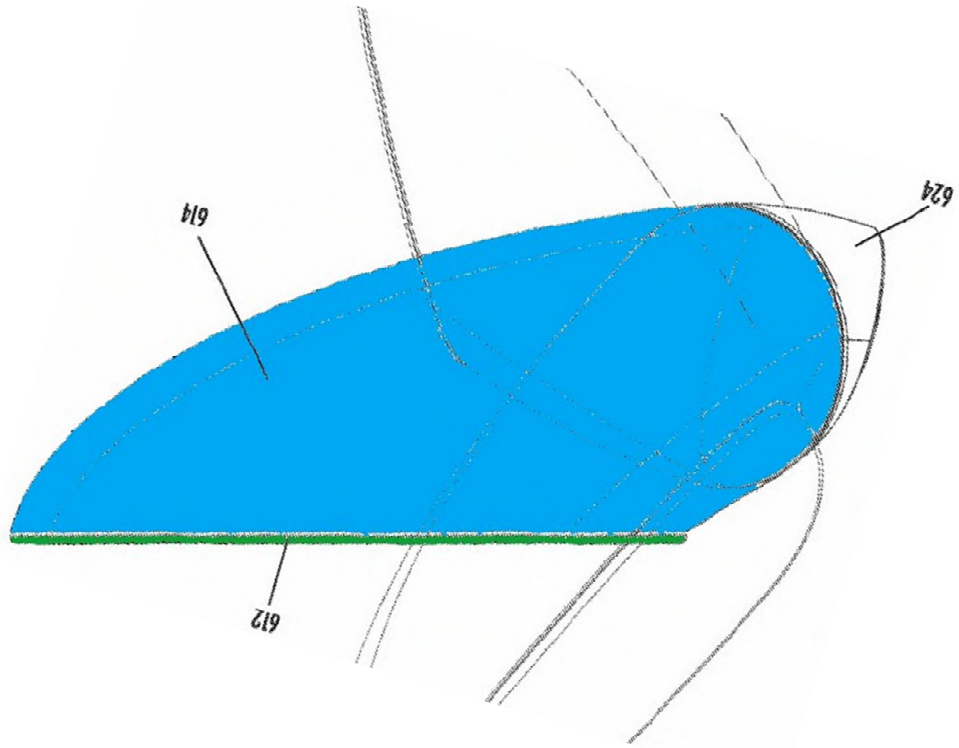


Figure 58A of the ‘648, colored, enlarged and rotated.

Agenda

1. Bracket
2. Yaw, Pitch and Roll
3. Exterior Mirror Reflective Element Fixedly Attached At Said Mirror Head
4. Rounded
5. Cooperatively Operable Actuators
6. Tsuyama Obviousness

“Rounded” In ‘648 Specification

“…with the front glass substrate of the electrochromic laminate element being constructed with its first surface/outermost perimeter edges slanted or beveled or **rounded** or the like…. **in order to obviate/avoid a sharp edge at the front or outermost perimeter surface** of the mirror reflective element and mirror assembly **that could potentially hurt/injure** an occupant of a vehicle…”

Ex. 1001 at 28:25—46.

“The front glass substrate of the mirror reflective element (behind which the sensing pads and sensing circuitry are disposed) typically may have a thickness of about 3.2 mm or thereabouts, such that **the perimeter edge portions** can have a full 2.8 mm radius of curvature to **meet the requirements of at least a 2.5 mm minimum radius of curvature.”**

Ex. 1001 at 9:38-42.

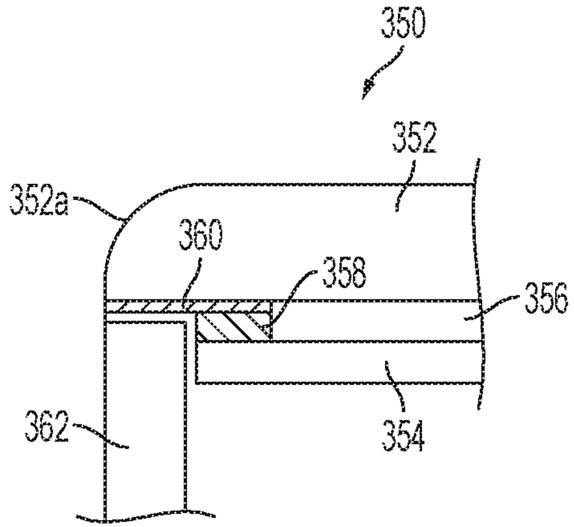


FIG. 30

"Rounded" In WO/2011/044312 (Incorporated By Reference)

"...it is desired to have **at least a 2.5 mm radius of curvature at the perimeter edges** of a mirror assembly (typically at a bezel of a conventional mirror assembly) **to meet the minimum safety standards** for head impact with the mirror, such as during a sudden stop or collision of the equipped vehicle."

Ex. 2011 at 8-9.

"If the reflecting surface projects beyond the protective housing, the radius of curvature on the edge of the projecting part **must be not less than 2.5 mm**..."

Ex. 2011 at 18.

"...the edge of the front substrate of the mirror having on its perimeter a **radius of curvature greater than or equal to 2.5 mm** (such as 3 mm or thereabouts) **at all points and in all directions, and thus the mirror assembly satisfies the requirements of ECE Regulation No. 46**..."

Ex. 2011 at 21.

“Rounded” in the ‘648 Requires a Minimum Radius of Curvature to Satisfy Safety Regulations

98. The **term “rounded” has a particular meaning to one of ordinary skill in the art in the context of the ’648 Patent**. That plain meaning is that the “outermost front perimeter edge” of the “exterior mirror reflective element” is exposed and has at least a 2.5 mm minimum radius of curvature.

103. Taken together, these passages indicate that **the requirement that the edge of the reflective element be “rounded” is a safety issue,** and that the reference to “meet the requirements” of a minimum radius of curvature is to the specific safety regulations discussed and identified elsewhere in the patent, including FMVSS 111 and ECE Regulation No. 46.

104. Further, one of skill in the art would understand that the patent’s reference to a **2.5 mm minimum radius of curvature is dictated by, and consistent, with the safety regulations**. Specifically, a 2.5 mm minimum radius of curvature is an express requirement of ECE Regulation No. 46. …

Ex. 2001, Nranian Decl. ¶¶ 98, 103, 104.

McCabe Does Not Disclose A "Rounded" Glass Edge To The Degree Required By The '648 Claims

17. There is a **fundamental difference between a glass edge that is finished by seaming as in McCabe and a glass edge that is rounded as set forth and claimed in the '648 patent**. Seaming an edge of a glass element is done to protect the person who is handling the cut glass during assembly/manufacture of the mirror element….

18. **In McCabe, the word rounded appears in the context of this type of finishing of cut glass for the purposes of safety handling** and avoiding unwanted chipping….

19. By contrast, the rounding disclosed in the '648 patent (and as claimed in claims 2, 16 and 33) is done because…an exposed sharp edge would be dangerous to a vehicle's occupants or to any one struck by or striking the exterior rearview mirror assembly in an accident. … **Edges that were finished to provide a measure of safety for purposes of handling and manufacture would not be considered sufficiently rounded to be safe to use as an exposed edge in a vehicle.** Thus, a person of ordinary skill in the art would not look to the seaming of McCabe to arrive at the rounding of the '648 patent, and even if one of skill in the art did make such a combination, it would not result in the rounding claimed in the '648 patent.

Ex. 2010, Nranian Supp. Decl. ¶¶ 17-19.

McCabe Does Not Disclose A "Rounded" Glass Edge To The Degree Required By The '648 Claims

22. Thus, even if one of skill in the art were to combine McCabe with Lupo, they would not arrive at the claimed invention. **The seamed glass edge of McCabe would be too sharp to be left exposed**, and would have to be protected by a bezel. Thus, Figure 29 of McCabe illustrates what one of skill in the art would arrive at if combining McCabe and Lupo. Figure 29 of McCabe, however, is fundamentally different than the rounded, exposed edge of the '648 patent, shown in Figure 30....

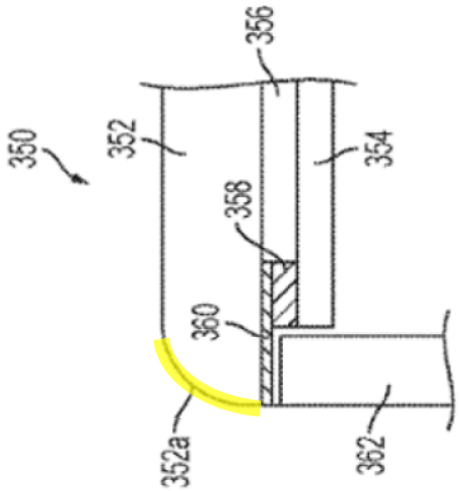


Fig. 30 '648 patent

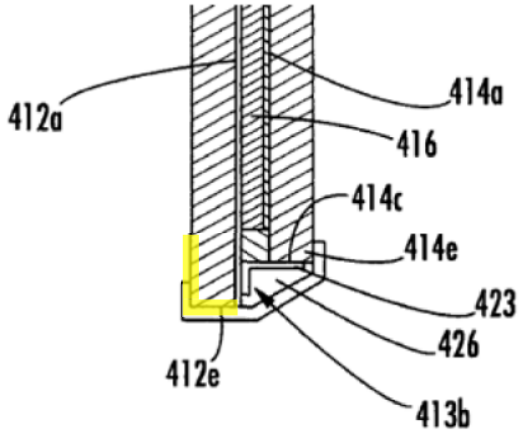


Fig. 29 McCabe

Ex. 2010, Nranian Supp. Decl. ¶ 22 (highlighting added).

Motherson's Reply Ignores The Material Difference Between the "Rounding" in McCabe and the "Rounding" in the '648 Claims

"McCabe shows that rounding the front perimeter edge…would prevent a sharp edge of the front substrate and **make the glass safer to handle**."

"Thus, rounding the front perimeter edge of the glass as described by McCabe…**provides additional safety to workers during manufacture**."

Petitioner Reply at 24.

Attorney Argument Only, No Expert Testimony Rebutting The Testimony of Patent Owner's Expert, Nranian

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1. Bracket
2. Yaw, Pitch and Roll
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4. Rounded
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6. Tsuyama Obviousness

No Evidence Of Express Or Inherent Anticipation

"We agree with Patent Owner that the '648 specification suggests cooperative operation includes operating at the same time."

Inst. Dec. at 25.

Inherency "requires that 'the missing descriptive matter [must be] necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill.'"

Continental Can Co. USA v. Monsanto Co., 948 F.2d 1264, 1268 (Fed. Cir. 1991)

Petitioner Made Impermissible Shift To A New Obviousness Theory In Reply, With No Expert Support

"Even if **Lupo does not explicitly describe the motors simultaneously operable**, this would be a simple, straightforward application that would have been obvious and easy for a POSA to implement."

Petitioner Reply at 22-23.

"All arguments for the relief requested in a motion must be made in the motion. **A reply may only respond to arguments raised in the corresponding opposition, patent owner preliminary response, patent owner response, or decision on institution.**"

37 C.F.R. § 42.23(b); *Intelligent Bio-Systems, Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1369 (Fed. Cir. 2016); 35 U.S.C. § 312(a)(3).

Attorney Argument Only, No Expert Testimony Supporting Brand New Obviousness Theory

Agenda

1. Bracket
2. Yaw, Pitch and Roll
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4. Rounded
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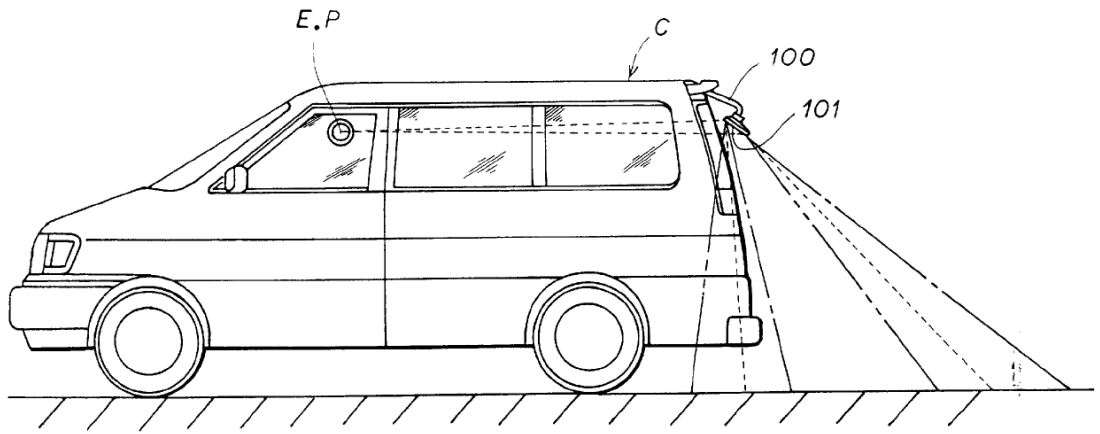
6. Tsuyama Obviousness

Tsuyama Discloses a "Rear-Under" Mirror, Not a Rearview Mirror

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

An embodiment of the remote-controlled mirror apparatus for vehicles according to the present invention will be described below with reference to FIG. **5** through FIG. **25**. This is an example of application to an electrically powered and remote-controlled rear under mirror apparatus for automobiles, being mounted on the rear top of a vehicle body C such as one-box car or recreational vehicle. In the

Ex. 1005 at 4:20-30.



Petitioner Argued Tsuyama Discloses Use As A Side Mirror, But Tsuyama Was Referring To Prior Art

Additionally, Tsuyama states that the remote-controlled mirror apparatus could be used as a "side mirror[]. . . attached to the vehicle body via a cylindrical support arm instead of the stay 100." (Ex. 1005, 1:30–34.) If the mirror apparatus 100 were attached on the side of the vehicle body, then the field of view lines would extend from the driver's eye point and be generally directed towards the rear of the vehicle. Thus, Tsuyama teaches an exterior rearview mirror assembly configured for mounting at an exterior portion of a vehicle. (Ex. 1002, ¶¶ 222-224.)

Petition at 49.

An example of the remote-controlled mirror apparatus for vehicles described above is disclosed in Japanese Patent Application Laid-open No. H8-26031. The remote-controlled mirror apparatus for vehicles disclosed in this publication is used as side mirrors for heavy duty vehicles such as truck and bus, and is attached to the vehicle body via a cylindrical support arm instead of the stay **100**.

Ex. 1005 at 1:28-34.

Petitioner Shifted To Impermissible, New Obviousness Theory In Reply, With No Expert Support

"Because a POSA would understand that Figure 1 could be used as a side mirror, a POSA would also understand that the similarly structured mirror in Figure 5 could also be used as a side mirror."

"Thus it would have been obvious for a POSA to move the remote-controlled mirror of Tsuyama to the side of the vehicle."

"Attaching the remote-controlled mirror apparatus of Tsuyama to the side of the vehicle would be well within the ability of a POSA."

Petitioner Reply at 29-30.

Attorney Argument Only, No Expert Testimony Supporting Brand New Obviousness Theory

Petitioner Attempts to Repurpose Testimony From McLellan Under New Obviousness Theory

"Mr. McClellan explained that a POSA would understand this disclosure of Tsuyama to mean that the 'mirror assembly could be used as a side mirror that is attachable by a cylindrical support arm instead of the stay.' **(Ex. 1002, ¶223.)**"

Petitioner Reply at 29-30.

223. The exterior rearview mirror assembly is shown below in Figure 2 as attachable to the rear of a vehicle and has a view range indicated by the dashed lines from the eye point of the driver. Ex. 1005, 1:54-60. Tsuyama also states that the mirror assembly could be used as a side mirror that is attachable by a cylindrical support arm instead of the stay. *Id.*, 1:28-34.

Ex. 1002 at ¶ 223.

An example of the remote-controlled mirror apparatus for vehicles described above is disclosed in Japanese Patent Application Laid-open No. H8-26031. The remote-controlled mirror apparatus for vehicles disclosed in this publication is used as side mirrors for heavy duty vehicles such as truck and bus, and is attached to the vehicle body via a cylindrical support arm instead of the stay **100**.

Ex. 1005 at 1:28-34.

Petitioner Abandoned Other Problematic Positions

Claim 5

"[I]t seems Petitioner relies on Tsuyama's stay as both the recited attachment portion (see Pet. 52) and a portion of the recited support structure (see id. at 60–61). Likewise, it appears that Petitioner contends that only the other alleged portion of the support structure (i.e., Tsuyama's mirror holder base 6) is adjustable about multiple degrees of freedom. See id. at 58–61. We agree with Patent Owner's concerns about this mapping (see Prelim. Resp. 60–61), and we invite the parties to address this issue further during the trial."

Institution Decision (Paper No. 7) at 43.

Claim 9

"Taking the recited frame of reference into account, we agree that Petitioner has not adequately shown the oblique axes to which Petitioner points would have been understood as 'roll' and 'yaw.'"

Id. at 45.