

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SMR AUTOMOTIVE SYSTEMS USA, INC.,
Petitioner,

v.

MAGNA MIRRORS OF AMERICA, INC.,
Patent Owner.

Case IPR2018-00517
Patent No. 8,128,244

**DECLARATION OF MICHAEL NRANIAN IN SUPPORT OF PATENT
OWNER MAGNA MIRRORS OF AMERICA, INC.'S PRELIMINARY
RESPONSE**

TABLE OF CONTENTS

I.	INTRODUCTION AND QUALIFICATIONS	1
II.	SUMMARY OF MATERIALS REVIEWED AND CONSIDERED ..	7
III.	LEVEL OF ORDINARY SKILL IN THE ART	7
IV.	BACKGROUND LAW	11
V.	OPINIONS	12
A.	Disclosures of Lynam ‘026 That Appear in the ‘451 Patent	12
B.	Construction of “Generally Views Towards A Blind Spot”	15
C.	Construction of “Backing Plate”	21
D.	Henion ‘013 Discloses A Trailer Towing Mirror	26
E.	SMR Provides An Insufficient Motivation To Modify Henion ‘013	31
F.	Henion ‘013 And Platzer ‘956 Disclose Substantially Different Components	31

I. INTRODUCTION AND QUALIFICATIONS

1. I have been retained by patent owner Magna Mirrors of America, Inc. (“Magna”) to provide my opinion on certain matters regarding SMR Automotive Systems USA Inc. (“SMR”)’s Petition for *Inter Partes* Review of U.S. Patent No. 8,128,244 (“the ‘244 patent”).

2. All statements herein made of my own knowledge are true, and all statements herein based on information and belief are believed to be true. I am over 21 years of age and am competent to make this declaration.

3. At this stage, I have been asked to provide my opinions on certain discrete issues that are relevant to Magna’s Preliminary Patent Owner Response. I have not been asked to and do not opine regarding the ultimate issues addressed by SMR’s proposed grounds. The fact that I do not opine on any given issue in this declaration should not be construed as agreement with SMR’s positions. I reserve the right to provide additional opinions in the event that an IPR is instituted.

4. I am being compensated at the rate of \$350 per hour for time preparing this declaration. My compensation is not contingent on the outcome of this proceeding.

5. Although I have a law degree, and I am licensed to practice before the United States Patent and Trademark Office, I have not been asked to opine on any legal issues. I will not be giving any legal opinions throughout this declaration and

throughout my work on this matter. My opinions provided herein are based on my engineering, technical, scientific, and business education and experience.

6. My academic background is in engineering. I possess a Bachelor of Science in Electrical and Computer Engineering, a Master of Science in Electrical Engineering, a Bachelor of Science in Chemical Engineering and a Juris Doctor from Wayne State University. I also received a Master of Business Administration from the University of Michigan. I also am a licensed Professional Engineer, Certified Project Management Professional, as well as a Lean Six Sigma Black Belt certified through the American Society for Quality and the International Quality Federation.

7. I have extensive industry experience in the automotive industry for multiple companies. Specifically, I worked as a design engineer, senior project engineer, design analysis engineer, technical specialist, and engineering manager in the automotive industry from 1985 to 2007. This included experience at Ford, General Motors, and Allied Signal. I worked at Allied Signal from 1992 to 1993, General Motors from 1993 to 1995, and Ford Motor Company from 1985 to 1992, and from 1995 to 2007.

8. While at Ford, General Motors, and Allied Signal, I worked as a Product Design Engineer, a Senior Project Engineer, a Technical Specialist, a Design Analysis Engineer, and an Engineering Manager. My work included the

design and development of automotive safety systems and components for various different types of automotive applications. This included, among other things, testing and development of systems and components for active and passive safety.

9. Areas of my work included both active and passive sensing systems which can be used in the vehicle interior or exterior, including the design and development of sensing components and systems that incorporate electromagnetic wave sensing and visual perception (including, but not limited to, vision, camera, radar, lidar, infrared ultraviolet, night vision, mirrors, and other optical devices, including those containing lenses and mirrors) as well as acoustical sensing. Areas of my work also specifically included vision systems, occupant ergonomic evaluations, user and occupant audio and visual perception, visual interfaces and displays, infrared, vision, mirrors, lenses, camera, sonar, acoustic, radar, lidar, sensing and detection technologies and systems. I also worked on sensing systems for various automotive applications, including sensor fusion technologies, for image and object detection, discrimination, and identification and the appropriate status notifications to vehicle drivers and occupants, and visual perception techniques and methods.

10. My work specifically involved the testing and development of the aforementioned systems. This included both laboratory tests and technology

assessments, as well as testing in various real world driving situations and traffic events.

11. My responsibilities also included technology assessments and proper supplier and sourcing evaluation and selection, quoting and bidding, and the overall source selection for numerous technologies. For example, while at Allied Signal, I specifically prepared numerous extensive proposals and responses for many different domestic, European, Asian, and Pacific Rim requests for quotations (“RFQs”) in the hopes of winning awards as the Tier 1 supplier chosen for many original equipment manufacturer (“OEM”) programs. I was involved in both winning awards and non-winning awards on numerous programs for different OEMs. While at General Motors and Ford, I was an integral part of many cross-functional teams involved in the sourcing selection, request for information (“RFI”) and RFQ processes and evaluations, and ultimate evaluation and decision as to which suppliers were chosen for purchase order (“PO”) awards on numerous vehicle programs.

12. My responsibilities also included ensuring compliance with Federal Motor Vehicle Safety Standards (FMVSS), Economic Commission for Europe (“ECE”) regulations, Industry Standards, Corporate Standards, various international government regulations, and Due-Care Requirements. I also testified as a corporate representative and expert witness on behalf of Ford. In that role, I

have analyzed, verified, and testified regarding compliance with FMVSS requirements, including FMVSS 111.

13. My work over the years has also included analyses involving statistical information from the National Automotive Sampling System (NASS) and Fatality Analysis Reporting System (FARS) databases. My work also involved extensive inspection, investigation, and analysis of field events involving automotive safety systems. I am also certified in accident reconstruction through Northwestern University, and I have performed numerous real-world assessments of accident causation as part of my investigations. I have specifically assessed accidents involving lane change incidents.

14. I also conducted numerous system and component evaluations, laboratory tests, supplier and technology assessments, quality and reliability evaluations, as well as developed design validation plans and reports and failure modes and effects analyses to design and develop automotive safety, sensing, vision, and electrical electronic systems, including the integration of sensor fusion technologies. I also conducted numerous vehicle test track (I am qualified as a Ford Level II certified test track driver), rough road, obstacle, lane change, braking/stopping, maneuverability, on-road, off-road, as well as numerous crash and sled tests, for vehicular safety systems testing, development, design, prove-out, verification, and validation.

15. Subsequent to my employment at Ford, I worked as a Systems Engineer for Raytheon and General Dynamics, as well as a contractor and civilian employee for the U.S. Army. My work has included, among other things, sensor development and visual perception, including camera, optical systems, viewers, lenses, mirrors, and visual displays. I currently work at the Tank and Automotive Research, Development and Engineering Center (TARDEC) in Warren, Michigan, where I work on systems for military ground vehicle systems, which extensively involve the application of automotive technologies, including those related to automotive safety systems.

16. My current responsibilities include working with internal scientists, researchers and technical staff, as well as outside collaborators and universities, to develop technologies, innovation, and inventions for the protection of our soldiers and the enhancement of our soldiers' survivability in military vehicles. My responsibilities include and have included technologies involving camera and vision systems (including those involving mirrors and lenses), Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) systems, 360-degree surveillance, optical systems, visual perception and identification, interface displays, acoustic, ultrasonic, infrared, radar, night vision, and electromagnetic wave sensing, sensor fusion integration, algorithm, and pattern recognition development, sensor information discrimination and

identification, active and passive safety system development, and occupant injury mitigation.

17. I have been qualified to testify as an expert in over 20 cases involving automotive safety systems.

18. I understand that my *curriculum vitae*, which includes a more detailed summary of my background, experience, and publications, is being submitted concurrently.

II. SUMMARY OF MATERIALS REVIEWED AND CONSIDERED

19. The opinions contained in this Declaration are based on the documents I reviewed and my knowledge and professional judgment. In forming the opinions expressed in this Declaration, I reviewed SMR's Petition and all Exhibits thereto, as well as SMR's Petition and Exhibits in IPR2018-00491, IPR2018-00505, IPR2018-00506, IPR2018-00520, IPR2018-00533, IPR2018-00536, IPR2018-00541, IPR2018-00545.

20. My opinions are further guided by my understanding of the knowledge of a person of ordinary skill in the art (as further defined below) as of the claimed May 20, 2003 priority date of the '244 patent.

III. LEVEL OF ORDINARY SKILL IN THE ART

21. I understand that patent validity is assessed from the standpoint of a person of ordinary skill in the art (POSA) at the time of the invention.

22. I understand that SMR has asserted that a POSA at the relevant time would have had “a M.S. in Optics, Optical Engineering, or similar studies in a related field (e.g., Physics or Mechanical Engineering) with 2-3 years of experience in the optics/mechanical industry.” I disagree.

23. A POSA in the field of the ‘244 patent would necessarily have experience working in the automotive industry. The ‘244 patent claims are directed to “[a]n exterior sideview mirror system suitable for use on an automobile.” Ex. 1001, claim 1. According to the specification, the specific problem that the claimed invention solves is to “reduce[], if not eliminate[], an automobile’s blind spot.” *Id.*, 20:20-21. The specification explains that the claimed invention does so in a manner that is superior to prior art blind spot mirrors for several reasons. For example, first, it “provides a seamless rearvision function whereby the image of a side approaching/side overtaking other vehicle is substantially seamlessly maintained as the image of the overtaking or approaching vehicle transitions from being principally and substantially viewed by the driver of the vehicle ... in the plano reflective element to be seen in the auxiliary reflective element.” *Id.*, 20:28-36. Second, the claimed invention allows “a driver [to] simultaneously and similarly move the auxiliary element and the plano element so as to position their respective rearward fields of view, and to achieve this within the relatively restricted space available in a standard automobile-sized exterior

sideview mirror assembly.” *Id.*, 12:42-48. And third, the claimed invention “has manufacturing advantages, particularly for exterior sideview mirror assembly manufacturers who can procure a plano-multiradius reflective element assembly module from a mirror reflector supplier and then mount the plano-multiradius reflective element assembly module onto an actuator.” *Id.*, 15:13-19.

24. A mechanical engineer, optical engineer, or someone with an M.S. in optics who does not have experience in the automotive industry would not be familiar with the requirements necessary in order to provide an exterior automotive mirror that is useful and convenient to drivers without being distracting, that is desirable for automobile original equipment manufacturers (OEMs), and that complies with federal regulatory requirements. For example, the ‘244 patent specification discloses that the plano element should be of a size sufficient “to provide the driver of the automobile a view of a level road surface extending to the horizon from a line, perpendicular to a longitudinal plane tangent to the driver’s side of the automobile at the widest point, extending 8 feet out from the tangent plane 35 feet behind the driver’s eyes.” *Id.*, 12:48-13:5; *see also id.*, 15:20-46 (describing similar requirement). A POSA would recognize that this field of view is consistent with the requirements of FMVSS 111. Ex. 1040, 20. A person without experience in the automotive industry would not necessarily have the understanding and experience of designing, developing, and testing vehicle

components and systems to comply with this requirement and the other requirements of FMVSS, while also still meeting the stringent automotive industry standards and rigorous requirements for reliability, quality, durability, performance, manufacturing, and assembly. A person without experience in the automotive industry would also not necessarily understand that vehicle components and systems must also be designed and developed to meet due care requirements, beyond the minimal safety standards established by FMVSS regulations. This requires work in the automotive industry and an understanding of how automobiles are used in the real world.

25. For example, in applications specific to this patent, an engineer with experience in the automotive industry would understand the added complexities in designing automotive side-view mirror systems that safely provide the requisite information to the driver (such as whether a vehicle is in the blind spot) to maximize the ability of the driver to visually perceive and cognitively understand the information. An engineer with experience in the automotive industry would also understand the need to minimize driver confusion regarding objects appearing in the side view mirror and the need to minimize driver distraction and enable the driver to focus attention on the view forward of the vehicle. Engineers with experience in the automotive industry would recognize that the '244 patent alludes to these types of design considerations when it discusses, for example, that the

invention “provides a seamless rearvision function whereby the image of a side approaching/side overtaking other vehicle is substantially seamlessly maintained as the image of the overtaking or approaching vehicle transitions from being principally and substantially viewed by the driver of the vehicle ... in the plano reflective element to be seen in the auxiliary reflective element.” Ex. 1001, 20:28-36.

26. Based on the field that the ‘244 patent is directed to, the levels of education and experience of persons working in the field in the relevant time, the types of problems encountered in the field, and the sophistication of the technology, a POSA at the time of the ‘244 patent priority date would have had a M.S. in an engineering discipline relevant to automotive component design (e.g., electrical engineering, mechanical engineering, or optical engineering), as well as 2-3 years of experience in the automotive industry designing components for automobiles.

IV. BACKGROUND LAW

27. I have been informed that claims of unexpired patents in an IPR are given their broadest reasonable interpretation, when reading the claims in light of the specification and the teachings in the patent. I also have been informed that the broadest reasonable interpretation should account for how the claims themselves and the specification inform a POSA as to which ordinary definition the patentee

was using. I further have been informed that claims should not be construed so broadly that they are unreasonable under general claim construction principles.

V. OPINIONS

A. Disclosures of Lynam ‘026 That Appear in the ‘451 Patent

28. I understand that SMR asserts that each limitation of claims 1-26 of the ‘244 patent are disclosed by U.S. Patent App. Pub. No. 2002/0072026 (“Lynam ‘026”).

29. Lynam ‘026 is a published patent application that is a continuation-in-part of the application that issued as U.S. Pat. No. 6,522,451 (“the ‘451 patent”).

30. The majority of the material from Lynam ‘026 that SMR maps to the claims of the ‘244 patent also appears in the ‘451 patent. Exhibit 2012 is an annotated copy of Lynam ‘026, with the paragraphs that also appear in the ‘451 patent highlighted.

31. SMR’s mapping of the disclosures of Lynam ‘026 to the claim limitations of the ‘244 patent demonstrates that the ‘451 patent also fully discloses the claim limitations of the ‘244 patent as arranged in the ‘244 patent. For each limitation of claims 1-26 of the ‘244 patent, SMR relies on one or more paragraphs of Lynam ‘026 that also appear in the ‘451 patent, as shown in the chart below.

Limitation	Lynam '026 disclosure cited by SMR that also appears in the '451 patent	Pages of SMR Petition Where Limitation Is Discussed
Preamble, 1[a], [b], 23[a], [b], 25[a], [b]	¶¶ 41, 57, 59, 61, Figs. 1, 7	Petition, 37, 48, 49
1[d], 23[d], 25[d]	¶¶ 42-43, 45, 49, 58-59, 61, Figs. 3, 5A-5H, 6-8	Petition, 38, 48, 49
1[q], 23[q], 25[q]	¶¶ 43, 47, 48, 55	Petition, 38, 48, 49
1[e], [i], 23[e], [i], 25[e], [i]	¶¶ 42, 44, 45, 50-52, 59, 61, Figs. 3, 5A-5H, 6-8	Petition, 39-40, 48, 49
1[c], 23[c], 25[c]	¶ 41	Petition, 40, 48, 49
1[f], 23[f], 25[f]	¶¶ 42, 58, Figs. 3, 6	Petition, 40-41, 48, 49
1[h], [k], [l], [m], 23[h], [k], [l], [m], 25[h], [k], [l], [m]	¶¶ 42, 43, 45, 50-52, 59, 61, Figs. 3, 6	Petition, 41, 48, 49
1[j], 23[j], 25[j]	¶¶ 50-51, 53	Petition, 42, 48, 49

Limitation	Lynam '026 disclosure cited by SMR that also appears in the '451 patent	Pages of SMR Petition Where Limitation Is Discussed
1[g], [p], 23[g], [p], 25[g], [p]	¶¶ 3, 52, 58-59, 61	Petition, 42, 48, 49
1[n], 23[n], 25[n]	¶¶ 59, 61, Figs. 3, 6-7	Petition, 42, 48, 49
1[o], 23[o], 25[o]	¶¶ 52, 59, Fig. 6	Petition, 43, 48, 49
1[s]	¶ 48, Figs. 3, 6	Petition, 43
1[r], [t], [u], [v], [w], [x]	¶¶ 42, 50-53, 57-58, 59, 61 Figs. 3-4, 6-7	Petition, 43-44
2	¶ 59	Petition, 44
3-5	¶¶ 59, 61, Figs. 3, 6-7	Petition, 44
6	¶¶ 6, 43, 45, 47, 50, 55, 83	Petition, 44
7-9, 15, 16, 24[a]	¶¶ 5-6, 41-42, 43, 44-45, 47-61, 83	Petition, 45, 49
10, 19	¶¶ 43, 47, 55	Petition, 45
11, 24[b]	¶¶ 50, 53, Figs. 3, 6	Petition, 45, 49
12, 24[c]	¶¶ 42, 50-52, 59, 61, Figs. 3, 6, 7	Petition, 46, 49
13	¶ 54	Petition, 46
14, 24[d], [e]	¶¶ 46, 61	Petition, 46, 49
17	¶ 49	Petition, 46
18	¶ 59	Petition, 47

Limitation	Lynam ‘026 disclosure cited by SMR that also appears in the ‘451 patent	Pages of SMR Petition Where Limitation Is Discussed
20, 21, 22	¶¶ 5-6, 43, 45, 47, 48, 55, 59, 83	Petition, 47
23[r]	¶¶ 5-6, 45, 47, 55, Fig. 3	Petition, 48
23[s]	¶¶ 42, 50-52, 59, 61, Figs. 3, 6, 7	Petition, 48
25[r]	¶¶ 5-6, 45, 47, 55, 83	Petition, 49
25[s]	¶¶ 59, 61, Figs. 3, 6-7	Petition, 50
25[t], [u]	¶¶ 46, 61	Petition, 50
26	¶¶ 42, 43, 47, 48, 50-53, 55, 59, 61, Figs. 3, 6, 7	Petition, 50

32. I agree with SMR that each of the paragraphs of Lynam ‘026 cited above disclose the limitations of the ‘244 patent claims for which SMR cites those paragraphs. Because each of these paragraphs also appear in the ‘451 patent, the ‘451 patent discloses all of the limitations of claims 1-26 of the ‘244 patent.

B. Construction of “Generally Views Towards A Blind Spot”

33. I understand that claims 1, 23, and 25 of the ‘244 patent include the following limitation, which requires that the field of view of the auxiliary reflective element “generally views towards a blind spot”:

wherein, when said exterior sideview mirror assembly is attached to the side of the automobile, the field of view of said plano reflective element generally views

rearwardly of the equipped automobile and the field of view of said auxiliary reflective element generally views towards a blind spot in the side lane adjacent the side of the automobile to which said exterior sideview mirror assembly is attached, said blind spot being generally outside the rearward field of view of said plano reflective element when said plano reflective element is viewed by a driver of the equipped automobile when said exterior sideview mirror assembly is attached to the side of the automobile;

34. The broadest reasonable interpretation of “generally views towards a blind spot” to a POSA based on the claims and the specification of the ‘244 patent requires the principal axis of the field of view of the auxiliary reflective element to view into the blind spot. The specification discusses the direction that the reflective elements of the mirror assembly view by discussing where the principal axis of those reflective elements view. For example, when explaining that the field of view of the auxiliary reflective element may be angled and directed downwardly, it states that “the principal axis of the rearward field of view of the plano element is directed generally parallel to the road” and “the principal axis of the rearward field of view of the multiradius element is angled and directed generally downwardly.” Ex. 1001, 13:27-58. When explaining that the field of view of the auxiliary reflective element may be directed outwardly and

downwardly, the specification states “[w]ith the tilted orientation of reflective element 314, reflective element 314 provides a field of view with a principal axis that sweeps outwardly and downwardly with respect to the principal axis of the field of view of reflective element 312.” Ex. 1001, 19:13-17. In the field of optics, a “principal axis” is “a line passing through the center of the surface of a lens or spherical mirror.” Ex. 2013 at 1539. A POSA would therefore understand that the “principal axis” of a field of view, as discussed in the specification of the ‘244 patent, is a line drawn at the center of the field of view. A POSA would have understood that a reflective element’s field of view aims “towards” where its principal axis is pointed, because that is what the center of the field of view is directed at. A POSA would have understood from the language of claims 1, 23, and 25 that the field of view of the auxiliary reflective element need only view “generally” towards the blind spot, meaning that the principal axis could be pointed anywhere in the blind spot, rather than necessarily directly at the center of the blind spot.

35. A POSA reading claims 1, 23, and 25 of the ‘244 patent as of the priority date of the ‘244 patent would have understood that the “generally views towards a blind spot” limitation distinguishes the invention over prior art spotter mirrors that have a wide field of view but that do not have the field of view of an

auxiliary reflective element angled toward the blind spot. The contrast between these mirrors can be seen in the diagrams below:

Views generally towards a blind spot



Prior art



See Ex. 1001, 13:16-26, 19:37-57, Fig. 22 (depicting field of view according to the claimed invention).

36. In these diagrams, the field of view of a main plano reflective element is shown in blue, and the field of view of an auxiliary reflective element is shown in green. The diagram on the left depicts an auxiliary field of view that generally views towards the blind spot, as required by claims 1, 23, and 25 of the '244

patent. The diagram on the right depicts the field of view of a prior art spotter that is not angled to generally view towards the blind spot.

37. Because the prior art spotter (diagram on the right) is not aimed toward the blind spot, in order to see into the blind spot it must have a very wide field of view that extends further inward toward the side of the vehicle, as well as further outward past the field of view of the primary reflective element. The field of view of the auxiliary reflective element also fully overlaps with the field of view of the primary reflective element.

38. The excessively wide field of view of the prior art spotter is more difficult for drivers to use. In order for the auxiliary reflective element's field of view to be so wide, the radius of curvature of the auxiliary reflective element must be small, causing the image of a passing vehicle seen in the auxiliary reflective element to be small and distorted. Moreover, because the majority of the field of view of the auxiliary reflective element overlaps fully with the primary reflective element field of view or views further inward into the cabin of the equipped vehicle, it is more difficult for a driver to determine and distinguish at a glance that a vehicle is in the blind spot. Because of the excessively wide field of view of the prior art spotter, the driver cannot quickly determine at a glance that a vehicle visible in the auxiliary reflective element is actually in the blind spot, rather than being further rearward in the side lane. In contrast, for a mirror assembly

constructed according to claims 1, 23, and 25 of the ‘244 patent, a passing vehicle will initially appear prominently in the auxiliary reflective element, enabling the driver to quickly determine at a glance that the side lane is not clear and that it is not safe to change lanes. Moreover, angling as in the ‘244 patent avoids the need for the field of view of the auxiliary reflective element to be excessively large such that image size is so small and distance distortion is so great that the driver cannot safely make a lane change based on an instant glance at the auxiliary reflective element.

39. Moreover, because the auxiliary reflective element as claimed in the ‘244 patent is specifically and narrowly aimed towards the blind spot, the auxiliary reflective element can be made smaller while still providing a sufficiently-sized view of a passing vehicle present in the blind spot. This enables achieving a high ratio between the width of the plano reflective element and the width of the auxiliary reflective element while still meeting the ‘244 patent’s objective of “achiev[ing] this within the relatively restricted space available in a standard automobile-sized exterior sideview mirror assembly.” Ex. 1001, 12:45-48; *see also id.*, 8:5-13 (disclosing width ratios of “most preferably greater than 2.5 in order to provide a large, unit magnification plano element 150 as the principal rear viewing portion of plano-multiradius reflective element assembly 130 and

providing multiradius element 155 as a smaller, auxiliary, separate, wide-angle viewing portion”).

C. Construction of “Backing Plate”

40. I understand that claims 1, 23, and 25 of the ‘244 patent require a “backing plate,” which first appears in the following limitation:

said plano reflective element and said auxiliary reflective element supported at a backing plate element, said backing plate element mounting to said actuator such that movement of said backing plate element of said plano-auxiliary reflective element assembly by said actuator simultaneously and similarly moves said plano reflective element and said auxiliary reflective element;

41. Claims 1, 23, and 25 include a number of additional requirements for the “backing plate,” including that it has “a first support portion supporting said plano reflective element and a second support portion supporting said auxiliary reflective element,” that there is “an angling of said second support portion of said backing plate element ... to said first support portion of said backing plate element,” and that it “mount[s] to said actuator such that movement of said backing plate element ... by said actuator simultaneously and similarly moves said plano reflective element and said auxiliary reflective element.”

42. The broadest reasonable interpretation of “backing plate” to a POSA based on the claims and the specification of the ‘244 patent is “a rigid structure that supports the rear surfaces of the primary and auxiliary reflective elements.”

43. This interpretation is consistent with the ordinary meaning of “plate,” which is a “rigid body.” Ex. 2014, 1344. Two support structures connected by a flexible hinge or bellows would not be “rigid,” and therefore a POSA would have understood that such a structure is not a “backing plate.”

44. This interpretation is also consistent with the specification of the ‘244 patent, which states that the backing plate is a “rigid polymeric substrate capable of supporting plano element 50 and multiradius element 155” that has “a flat portion ... that corresponds to and is aligned with plano element 150” and “a curved portion ... that corresponds to and is aligned with multiradius element 155,” and that is “formed as a single element.” Ex. 1001, 8:21-34. This interpretation is also consistent with the “backing plate” depicted in Figures 11 and 14, which are reproduced below and which show the “backing plate” at number 160.

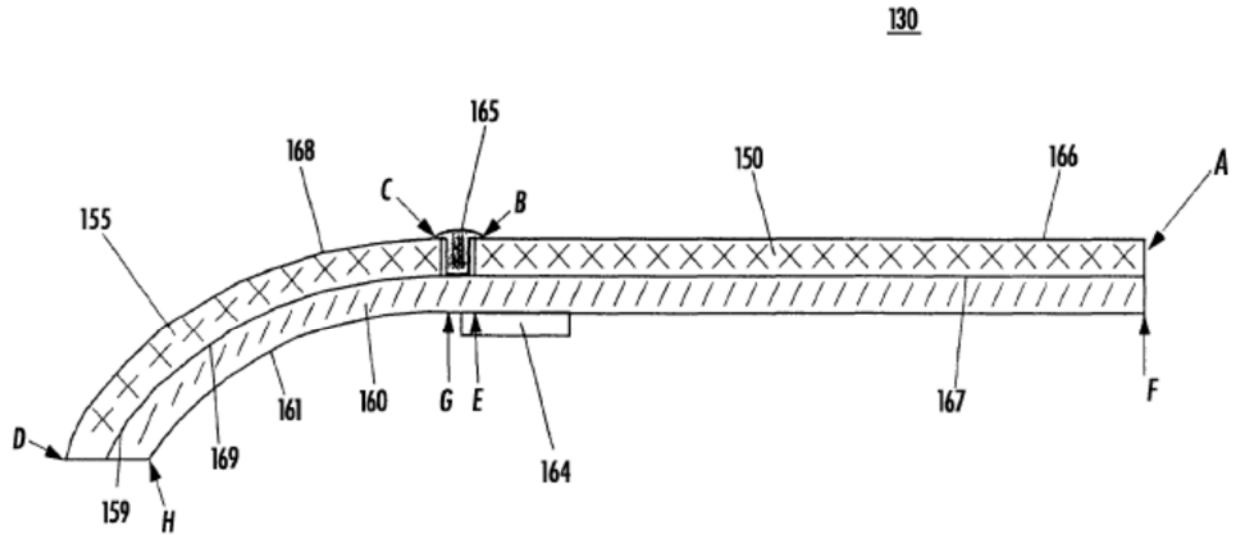


FIG. 11

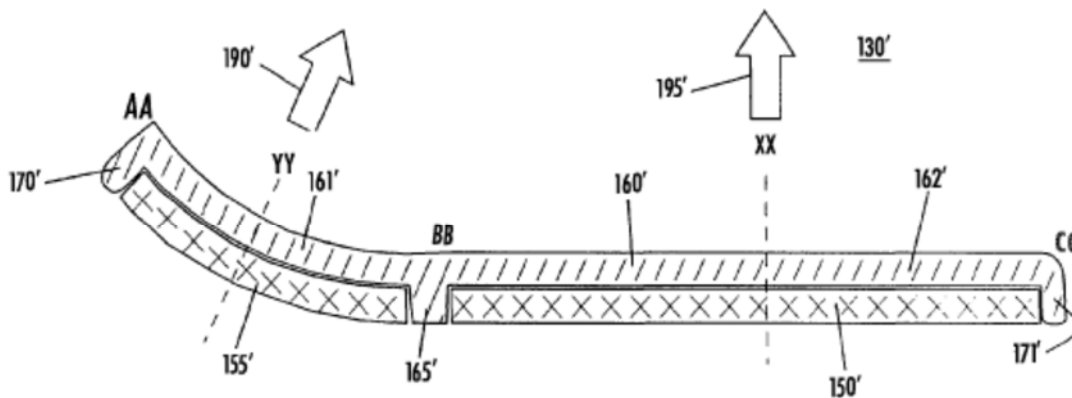


FIG. 14

45. This interpretation is also consistent with the description in the specification that the backing plate elements are at an angle or are angled relative to one another, rather than being adjustable with respect to one another. *See, e.g.*, Ex. 1001, 10:19-20 (“section AA to BB of backing plate element 160’ is angled to section BB to CC”), 10:27-28 (“the angling of section AA to BB to section BB to CC”), 14:24-25 (“portion AA to BB of backing plate element 160’ is generally

angled to portion BB to CC of backing plate 160’”) (all emphases added).

Similarly claims 1, 23, and 25 of the ‘244 patent require “an angling” on the backing plate. A rigid backing plate sets “the angling” of the reflective elements; a flexible, adjustable support structure does not have a set, specific angling.

46. Furthermore, in addition to what I have discussed above, a POSA would also understand that the backing plate claimed in the ‘244 patent provides manufacturing advantages, since the backing plate can be molded as a single component, with pre-set dimensions and surfaces configured to fit the placement of the plano reflective element and the auxiliary reflective element. The ‘244 patent specification also explains that this provides manufacturing benefits for the exterior sideview mirror manufacturers “who can procure a plano-multiradius reflective element assembly module from a mirror reflector supplier and then mount the plano-multiradius reflective element assembly module onto an actuator.” *Id.*, 15:13-19.

47. There is another embodiment that is disclosed in the specification of the ‘244 patent wherein the two reflective elements are “separately and independently mounted.” Ex. 1001, 21:8-10. In this embodiment, the auxiliary reflective element is fixedly mounted to the mirror casing, and only the primary reflective element is adjustable, which means that the angling between the two reflective elements is adjusted when the primary reflective element is repositioned.

See id. at 20:60-21:7. This embodiment is not claimed by the ‘244 patent because all of the claims of the ‘244 patent require that both reflective elements are mounted to a single “backing plate.” Because the ‘244 patent teaches providing for independent adjustability of the mirror elements by separately mounting them, a POSA would have understood that the “backing plate” of the claims of the ‘244 patent does not allow for independent adjustability of the reflective elements.

48. The rigid backing plate with a fixed angle between the primary and auxiliary reflective elements provides benefits for drivers. Because the backing plate provides a fixed angle, the angling is set by the manufacturer, and the driver does not need to worry about correctly adjusting the auxiliary reflective element, which introduces the potential for user error. The driver can adjust the plano reflective element into the desired position, and the auxiliary reflective element will automatically be adjusted in tandem, simultaneously and similarly as the plano reflective element (*see* Ex. 1001, 5:29-39), to have the auxiliary reflective element correctly view towards the blind spot. Thus, the ‘244 patent ensures that the auxiliary reflective element “generally views towards the blind spot” after the driver positions the plano reflective element to “generally view[] rearwardly,” without the need for trial and error and driver frustration. Ex. 1001, claims 1, 23, 25. This is one way that the claimed inventions of the ‘244 patent provide advantages and solve previously unsolved problems. A POSA would understand

that separately setting both the plano reflective element and the auxiliary reflective element in the proper position would be difficult and time consuming for many drivers. Therefore, a POSA would understand that adjusting the plano reflective element and the auxiliary reflective element in tandem (through the electrically-operable actuator attached to the single backing plate) saves time, is more efficient, mitigates the potential for user error, and therefore increases overall safety. *See* Ex. 1001, 12:38-48 (“The tandem mounting of a plano element of unit magnification and a separate auxiliary element onto a common, single backing plate element, and the mounting of this backing plate element onto an actuator of an exterior sideview mirror assembly so that a driver can simultaneously and similarly move the auxiliary element and the plano element so as to position their respective rearward fields of view, and to achieve this within the relatively restricted space available in a standard automobile-sized exterior sideview mirror assembly is an important element of this present invention.”).

D. Henion ‘013 Discloses A Trailer Towing Mirror

49. Larger vehicles such as pickup trucks and sport utility vehicles are often equipped with a towing hitch that can be used to tow a trailer, camper, boat, mobile home, horse carrier, or a similar object. The presence of the trailer presents additional difficulties for the driver, and specialized mirrors, commonly called

trailer towing mirrors, are used to address the particular challenge of towing a trailer.

50. Many towed objects block the view of the towing vehicle's inside rearview mirror. A driver towing such a trailer needs to rely solely on the side view mirrors when attempting to see if there are any obstacles behind the vehicle. The side view mirrors therefore need to provide a view around the trailer and need to have a clear view along the side of the trailer.

51. Having a clear view along the side of the trailer is particularly important when parking or backing up. The driver must rely on the side view mirrors to clearly see the sides of the trailer to avoid hitting objects (such as an adjacent parked car, the side of a loading dock, or the sides of a garage stall) when backing into a parking space.

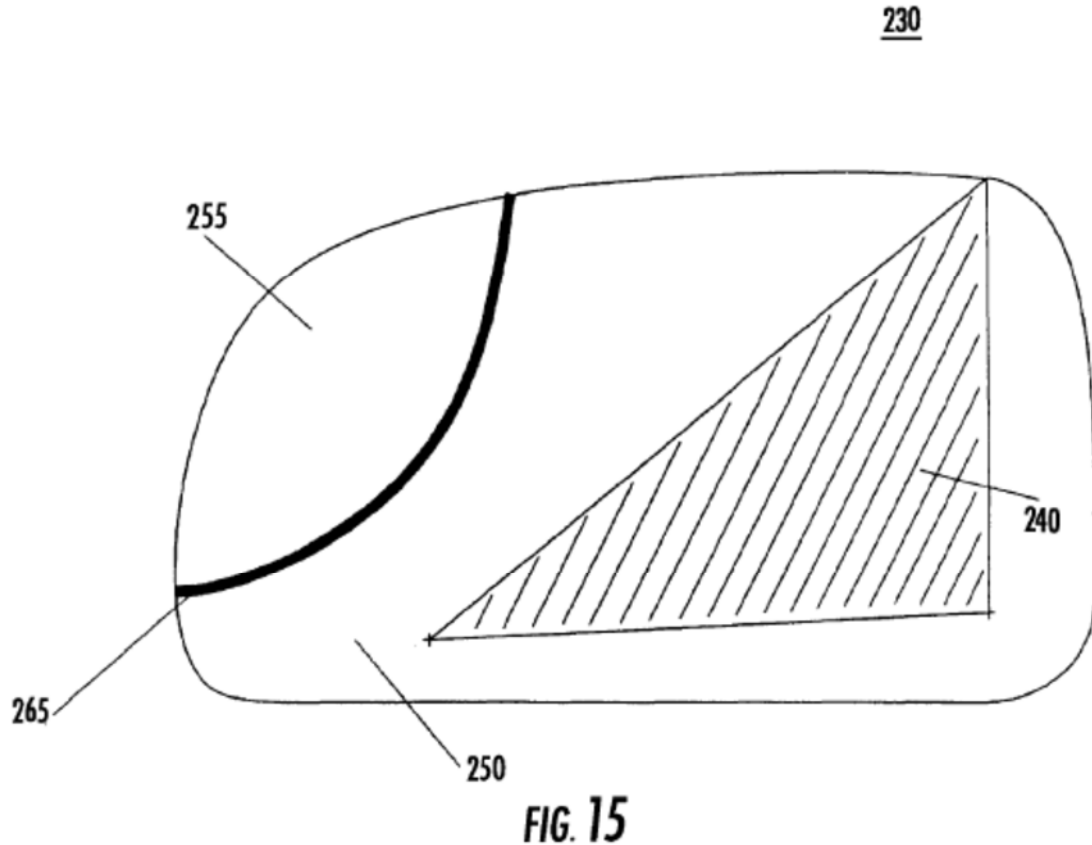
52. A trailer towing mirror that features a spotting mirror may be designed to give the spotting mirror a field of view that extends further skyward and further downward towards the road surface, so that the driver can see the top and bottom of the side of the trailer. The spotting mirror may be designed to provide a view of the side of the trailer so that the driver can position the field of view of the main plano mirror element further outward away from the side of the vehicle without losing sight of the side of the vehicle.

53. Because they are designed for larger vehicles such as trucks and SUVs, trailer towing mirrors are typically larger than a mirror on a smaller car. Cars typically have smaller mirrors than trucks and SUVs for styling reasons, because a smaller mirror is more aesthetically pleasing on a smaller vehicle than a large mirror. A smaller mirror also has aerodynamic benefits because its smaller front surface area creates less drag. This improves a vehicle's fuel efficiency.

54. A POSA would have understood that the primary reference SMR asserts for ground 2, WO 2001/44013 ("Henion '013") discloses a trailer towing mirror for at least two reasons. First, the inboard location of the spotter mirror is ideally suited for viewing along the side of the vehicle and along the side of the trailer being towed, not viewing into a blind spot. The '244 patent specification discusses this as a benefit of a spotting mirror that is positioned at the inboard edge of a mirror assembly. *See* Ex. 1001, 12:23-28 (inboard spotter configuration "allows the driver [to] view the side of the vehicle (something many drivers desire in order to have a frame of reference for their rearward field of view) while facilitating having a wide field of view for the plano portion"). An inboard lower spotter that views along the side of the vehicle will allow the driver to look to the location where he or she would expect to see along the side of the vehicle, the side of the mirror closest to the equipped vehicle. In contrast, if an inboard lower spotter were to be used to view the blind spot, there would be a discontinuity for

the driver when the view of the passing vehicle moves from the outboard edge of the main plano mirror to the inboard spotter as the passing vehicle moves forward in the adjacent lane and into the blind spot. This has the potential to cause driver confusion, which is dangerous. A driver often must rely on a momentary glance to determine the location of a vehicle in an adjacent lane while also maintaining cognitive and visual awareness of objects and vehicles in the direction of travel. If a driver takes longer to process information provided by the sideview mirror assembly because it is confusing, that risks distracting the driver from hazards that are present in the direction of travel. Rear-end collisions account for thousands of incidences of death and serious injury every year, and driver distraction or loss of focus on the view ahead are leading causes of rear end collisions.

55. Second, the inboard lower location of the auxiliary reflective element on a smaller mirror would conflict with the requirements of FMVSS. FMVSS 111 requires that a driver-side exterior mirror provides a unit magnification view of a level road surface extending to the horizon from a line, perpendicular to a longitudinal plane tangent to the driver's side of the automobile at the widest point, extending 8 feet out from the tangent plane 35 feet behind the driver's eyes. Ex. 1040, 20. This target that must be visible in the driver-side mirror is depicted in Fig. 15 of the '244 patent, which is reproduced below.



56. An auxiliary reflective element placed at the upper outboard portion of the mirror assembly does not interfere with the FMVSS 111 requirement, as shown in Fig. 15. However, an inboard lower auxiliary reflective element would interfere, unless the mirror was large enough to allow for extra space below the triangle-shaped region 240. A trailer towing mirror would typically be large enough to accommodate Henion '013's non-plano inboard lower auxiliary reflective element and still meet the FMVSS 111 requirement via the large plano (unit magnification) main reflective element. For this reason too, a POSA would therefore have understood that Henion '013 discloses a trailer towing mirror.

E. SMR Provides An Insufficient Motivation To Modify Henion ‘013.

57. SMR’s expert asserts that a POSA would have been motivated to modify Henion ‘013 to angle the mirror outwardly and downwardly “to cover the blind spot” and “to capture more of the area in which objects of interest or concern are most likely to appear.” Ex. 1002, ¶ 383. SMR’s expert does not address why a POSA would have purportedly angled the auxiliary mirror rather than increasing its field of view (by increasing its size, lowering its radius of curvature, or both) to achieve these same objectives.

58. Indeed, elsewhere in his declaration, SMR’s expert asserts that a POSA would have been motivated to increase the size of the auxiliary mirror “in the horizontal or vertical directions” in order to “increase coverage of the blind spot.” Ex. 1002, ¶ 263. SMR’s expert does not explain why a POSA who had already increased the size of the auxiliary mirror in Henion ‘013 to increase coverage of the blind spot would have been motivated to also angle the mirror.

F. Henion ‘013 And Platzer ‘956 Disclose Substantially Different Components.

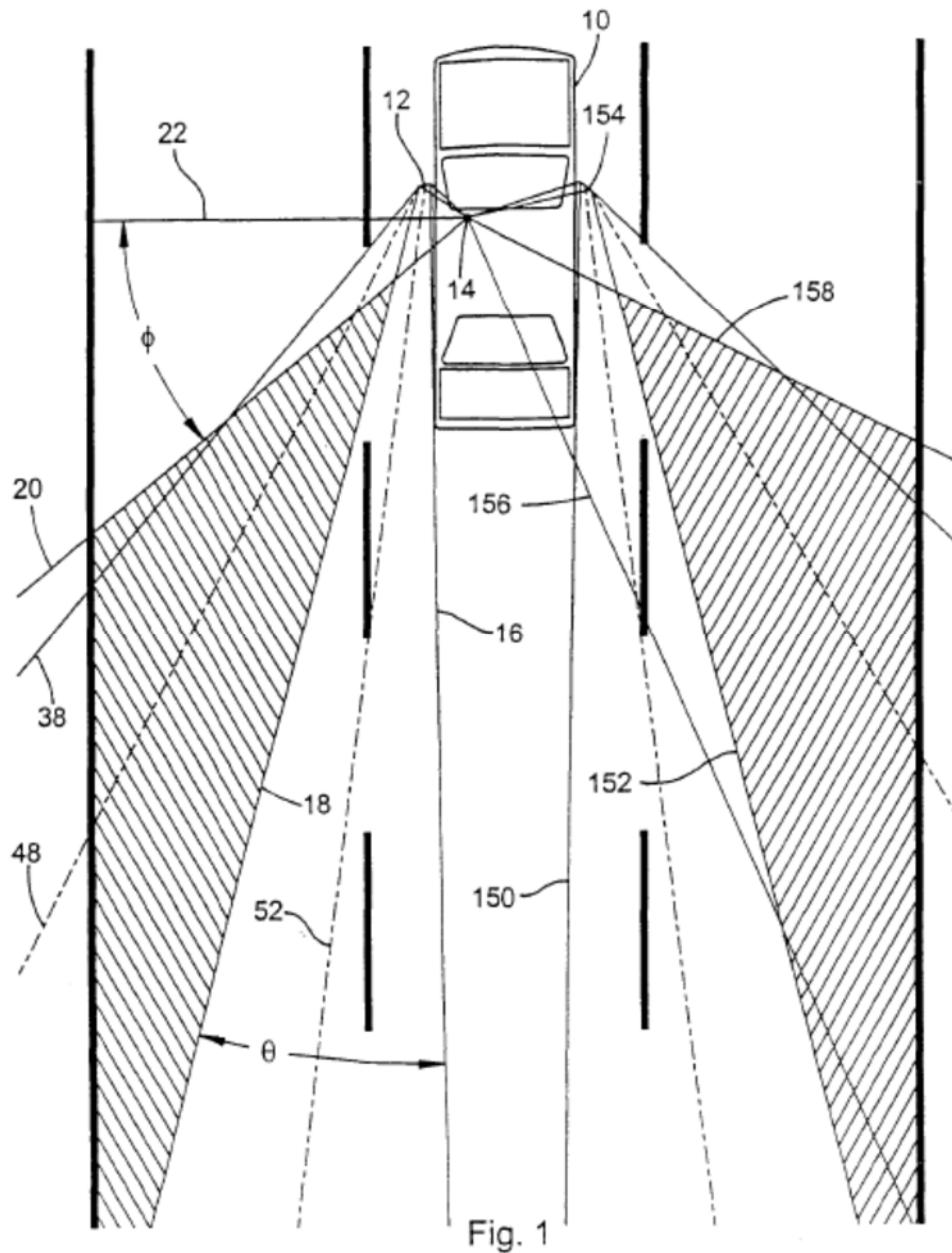
59. SMR contends that a POSA would have been motivated to combine Henion ‘013 with Platzer ‘956, predicated its argument on an assertion that they both “disclose the same major components.” Petition, 53-54. However, Henion ‘013 and Platzer ‘956 are structurally very different. Platzer ‘956’s auxiliary

reflective element is located in “the upper and outer quadrant of the rearview mirror,” (Ex. 1013, 15:16-17, while the Figs. 1-4 embodiments of Henion ‘013 that SMR relies on have a lower, inboard-located auxiliary mirror (Petition, 56-57). As discussed above, the location of the auxiliary reflective element in Henion ‘013 informs a POSA that Henion ‘013 discloses a trailer towing mirror. There is no motivation for a POSA to start with a trailer towing mirror to arrive at the claimed inventions of the ‘244 patent.

60. Moreover, the location of the auxiliary mirror affects the overall field of view provided by the mirror assembly. A mirror assembly with an inboard auxiliary mirror element, as depicted in Henion ‘013, is incapable of having the field of view as depicted in Fig. 1 of Platzer ‘956, which is what SMR relies on (see Petition, 74), because Fig. 1 depicts the field of view of an assembly with an outboard-located auxiliary mirror element. For example, Fig. 1 of Platzer ‘956, which is reproduced below, shows that the fields of view of the primary and auxiliary mirror elements do not overlap, which is only possible because the auxiliary mirror is located at the outboard edge of the main mirror. If an inboard auxiliary reflective element were similarly directed outward, then there would necessarily be some degree of overlap between the fields of view of the two mirror elements because the auxiliary field of view would begin at the inboard edge of the main plano mirror element and cross over the main plano mirror element’s field of

view as it extends further outward from the main mirror element's field of view.

Furthermore, such a mirror would be confusing and potentially dangerous, as discussed above in ¶ 54.



All statements made herein of my own knowledge are true, and all statements made on information and belief are believed to be true. Further, I am aware that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. § 1001. I declare under penalty of perjury that the foregoing is true and correct.

Date: April 26, 2018

By: Michael Nranian
Michael Nranian, P.E.

