DETACHABLE REMOTELY-ADJUSTABLE EXTENSION MIRROR SYSTEM

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Appl. No.: 10/355,417
Filed: Jan. 31, 2003

ABSTRACT
Motion from an inboard reflective surface of a remotely-adjustable original-equipment side-view mirror unit is coupled to a detachable extension mirror unit to provide a motor vehicle driver a remotely-adjustable extended rearward view around a wide trailer or similar object blocking the original inboard rearward view from the original equipment mirror unit.
DETACHABLE REMOTELY-ADJUSTABLE EXTENSION MIRROR SYSTEM

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] Not Applicable

FEDERALLY-SPONSORED RESEARCH

[0002] Not Applicable

SEQUENCE LISTING OR PROGRAM

[0003] Not Applicable

BACKGROUND OF THE INVENTION:

[0004] 1. Field of Invention

[0005] This invention relates to exterior rearview mirror assemblies located on the side of a vehicle, particularly to the addition of a detachable extension mirror unit to extend rearward vision around wide objects blocking the driver's original rearward view. Wide objects blocking the driver's original rearward view could be campers or other wide loads mounted on a vehicle, trailers attached to the rear of the vehicle, or similar items that obstruct a driver's rearward view.

[0006] 2. Description of the Problem and Prior Art

[0007] Motor vehicles typically come equipped with mirror units secured to the driver's side and the passenger's side for viewing to the side and rear of the vehicle. These side-view mirror units protrude from the side of the vehicle and generally determine the overall width of the vehicle.

[0008] The side-view mirror units permanently mounted on a vehicle are designed not to protrude too far because it would be easier to hit something with the mirror unit while driving. Many of these side-view mirror units now include a housing around a remotely-adjustable reflective surface mounted on the exterior of the vehicle and a remote control input device mounted inside the vehicle. Having such a remote control system allows the driver to adjust both the driver's side and the passenger's side rearward views to accommodate different driver heights and driving positions without needing to reach out of the vehicle, leave his driving position, or use an assistant to adjust the mirrors. This remote adjustability is now common and popular.

[0009] People can use their vehicles to tow trailers or fifth wheelers that are wider than their vehicle. With pickup trucks one can also install a camper or carry a load that is wider than the truck body. When using a trailer, fifth wheeler, camper or similar object with this additional width, the normal exterior mirrors often become useless because the primary exterior rearward view is blocked by the trailer or similar wide object. In addition, the view through the interior rearview mirror is usually also blocked by the camper, fifth wheeler, trailer, or similar wide object leaving the driver with no rearward view at all. It is both dangerous and illegal in most places to drive without having a rearward view.

[0010] It is known to provide a separate extension mirror unit that attaches to a vehicle and extends further laterally from the vehicle than the original mirror unit so the driver of a vehicle can see rearwards around a wide object attached to the vehicle behind him, such as a truck camper or a trailer. For example, U.S. Pat. No. 4,105,296 to Tomlin discloses a extension mirror unit that provides an extended rearward view to solve the wide trailer problem. The extension mirror unit disclosed by Tomlin can be detached when not needed to return the overall width of the vehicle back to its original width. However, mirror units of this type do not provide remote adjustability. It would be complex and costly to add remote adjustability to this type of extension mirror unit.

[0011] It is known to provide temporary extension mirror units that: attach to permanently-installed side-view mirror units; extend the lateral viewing angle from the vehicle; and detach to return the vehicle to its original width when the extended view is not needed. U.S. Pat. No. 4,111,532 to Budish discloses a mirror unit that mounts over an existing exterior mirror unit to give an extended rearward view around wide objects. The extension mirror mounting configuration disclosed by Budish cannot provide remote adjustability because it is based on attachment elements that will not fit in the narrow gap between the remotely-adjustable reflective surface in the existing mirror and the stationary housing around this reflective surface in typical remotely-adjustable mirror units.

[0012] Similarly, U.S. Pat. No. 4,892,400 to Brookes, et al., U.S. Pat. No. 4,892,401 to Kittridge, et al., U.S. Pat. No. 4,921,340 to Dyer, U.S. Pat. No. 5,096,283 to Croteau, U.S. Pat. No. 5,870,236 to Barksdale disclose different types of temporary mirror units that attach to existing mirror units to provide an extended rearward view. However, when used with remotely-adjustable existing mirror units, these detachable extension mirror units are fixed to the stationary housing, not to the remotely-adjustable reflective surface and therefore do not provide remote adjustability of the extension reflective surface.

[0013] It is known to permanently attach a replacement reflective surface to an original reflective surface to repair the original reflective surface. In this case, if the original reflective surface was remotely adjustable, the replacement reflective surface will also become remotely-adjustable. However, this configuration does not extend rearward vision around wide objects. This idea can not be used to create an adjustable extension mirror because most modern side view mirror units have adjustable reflective surfaces located inside a stationary housing and separated from this housing by a narrow gap. Also, the repair of one reflective surface by another is designed to be permanent. Therefore, the attachment method used is permanent.

[0014] It is known to have a compound mirror assembly comprising multiple mirrors surfaces that move together. U.S. Pat. No. 4,907,871 to Hou discloses an exterior rearview mirror assembly containing three mirror elements that adjust together. U.S. Pat. No. 6,024,459 to Lewis, U.S. Pat. No. 6,116,743 to Hook and U.S. patent application Publication No. 2002/0072026 to Lynam et al disclose exterior rearview mirror assemblies containing two elements that adjust together. These compound mirror assemblies allow more than one mirror to be adjusted at once. Some of these configurations are also remotely adjustable.

[0015] It is known to have remotely-adjustable side view mirror units that can move laterally from a position close to the vehicle to a position further out from the vehicle when an extended rearward image is needed. In some cases, such
remotely-adjustable extension mirror systems even have remote control movement of the reflective surface from the inboard (non-towing) to an outboard (towing) position. For example, U.S. Pat. No. 4,558,930 to Dredgeek discloses such an extension mirror system.

However, U.S. Pat. No. 4,907,871, U.S. Pat. No. 6,024,459, U.S. Pat. No. 6,116,743, U.S. Pat. No. 4,558,930, and U.S. patent application Publication No. 2002/0072026 all disclose mirror units that are used as or substitute for original equipment mirror assemblies and are subsequently permanently attached. In the automotive aftermarket, replacing an original equipment mirror assembly is quite difficult and typically involves taking off the interior door panel. If the extension mirror unit is to be remotely-controlled, a new remote control input device compatible with the rest of the extension mirror unit must typically also be installed in the vehicle. Consequently, people who did not buy specialized “towing mirrors” when they purchased their vehicle prefer add-on mirrors that can be attached in a simple way to their existing side view mirrors. Many motor vehicle buyers who anticipate that they may need extension mirrors still prefer to use detachable extension mirrors because these are generally significantly less expensive than the incremental cost of buying an original equipment or dealer-installed “towing mirror” that can be manually or automatically moved from an inboard to an extended position.

To summarize, it is not known to have a system:

- (a) with a mirror unit that provides an extended rearward view to see around a wide trailer or similar object;
- (b) that is easily attached and detached when not needed to reduce the overall width of the vehicle; and
- (c) that uses the remote adjustability elements of an existing remotely-adjustable exterior rearview mirror unit permanently attached to a motor vehicle;
- (d) to adjust the extension mirror unit;
- whereby providing a low cost, remotely adjustable, end-user installable solution to the “towing mirror” problem.

In addition, add-on extension mirrors can fall off and get lost or damaged during operation as a result of high wind loads or poor installation. It is not known to have a secondary attachment system as a backup, such as a safety cord, in case the primary extension mirror unit mounting fails.

SUMMARY OF THE INVENTION

This invention provides exterior rearview mirrors that give better visibility and more convenient adjustability (and therefore better safety) to drivers of automotive vehicles that are towing a trailer (fifth wheeler, boat, etc) or are carrying wide loads (as for truck campers, etc) by:

- (a) protruding further from the side of the vehicle than the original mirror units to see around obstacles,
- (b) using the remote adjustability controls of the original mirror unit,
- (c) being removable to allow the use of the original mirror unit when an extended image is not needed,
- (d) being quickly installable and removable with minimal or no tools,
- (e) offering the option of giving the driver a single large perfectly-adjusted mirror instead of several mirrors,
- (f) providing extra security for the auxiliary mirror by also attaching the vehicle or existing mirror housing with a safety cord, and
- (g) being manufactured for a fraction of the cost of other products that provide remote adjustability. These other products must replace some or all of the current remote controls and actuators.

The invention consists of an extension mirror unit for an existing remotely-adjustable side view mirror unit. The invention uses the remote control input device and the mirror actuator of the existing mirror unit to provide a remotely-adjusted extended rearward view. The extension mirror unit can be installed by a novice with no tools and detached by a novice using rudimentary tools such as a knife blade.

BRIEF DESCRIPTION OF THE DRAWINGS

In the accompanying drawings:

- FIG. 1 is a top view of a vehicle and a wide trailer;
- FIG. 2 is an exploded top view of a basic detachable remotely-adjustable extension mirror system (basic extension mirror system) consisting of a remotely-adjustable side-view mirror unit (side-view mirror unit) that has a first reflective surface and a preferred embodiment detachable extension mirror unit (preferred extension mirror unit);
- FIG. 3 is a top view of the basic extension mirror system;
- FIG. 4 is an exploded rear view, taken from the side of a motor vehicle, looking forwards, of the basic extension mirror system;
- FIG. 5 is a rear view of the basic extension mirror system;
- FIG. 6 is a top view of the basic extension mirror system showing the preferred extension mirror unit pivoted about the vertical axis through movement of the first reflective surface;
- FIG. 7 is a top view of the preferred embodiment detachable remotely-adjustable extension mirror system (preferred system) comprising the side-view mirror unit, the preferred extension mirror unit, an add-on wind deflector, and a safety cord.
- FIG. 8 is a rear view of the preferred system.
- FIG. 9 is an exploded rear view of an alternate embodiment detachable remotely-adjustable extension mirror system (alternate system) comprising the side-view mirror unit and an alternate embodiment detachable extension mirror unit (alternate extension mirror unit) incorporating an alternate movement offset element and a mirror gap attachment element;
FIG. 10 is a rear view of the alternate system;
FIG. 11 is a sectional view of the alternate system taken at section A-A from FIG. 10; and
FIG. 12 is a top view of the alternate system showing the alternate extension mirror unit pivoted about the vertical axis through movement of the first reflective surface.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

Referring to FIG. 1, a vehicle is shown at 100. A wide trailer, shown at 101, is attached to the rear of the vehicle 100. Remotely-adjustable side-view mirror units are shown at 102. The side-view mirror units 102 include reflective surfaces that provide primary exterior rearward views, shown at 98, to the driver of the vehicle. The primary exterior rearward views 98 are acceptable when the vehicle is not pulling a trailer wider than the vehicle because they allow the driver to see behind the side of the vehicle and because the right and left primary exterior rearward views 98 can converge at some point behind the vehicle.

Also referring to FIG. 1, the primary exterior rearward views 98 cannot show the sides of the wide trailer 101 or anything directly behind the wide trailer 101 because the wide trailer 101 is wider than the distance between the outermost portion of the reflective surfaces of the side-view mirror units 102.

Also referring to FIG. 1, non-obscuring extension reflective surfaces, shown at 40, have been located further from the side of the vehicle than the outermost portion of the reflective surfaces of the side-view mirror units 102. The non-obscuring extension reflective surfaces 40 provide extended rearviews, shown at 99, that include views of the sides of the trailer 101. Although there is still a blind spot directly behind the trailer, the width of this blind spot decreases the further one is behind the trailer. By locating the non-obscuring reflective surfaces out further from the side of the vehicle, the size of the blind spot decreases, but the distance between the non-obscuring reflective surfaces 40 and therefore, the effective width of the vehicle also increases.

Also referring to FIG. 1, the non-obscuring extension reflective surfaces 40, are called “non-obscuring” because the extension surfaces do not block the driver from seeing the primary exterior rearward views 98. Extended rearward views 99 can be provided by:

- fully-obscuring extension reflective surfaces, that block all the primary exterior rearwards view 98;
- partially-obscuring extension reflective surfaces, that block some of the primary exterior rearwards view 98; or
- non-obscuring extension reflective surfaces, block none of the primary exterior rearwards view 98.

The invention described here can have non-obscuring extension reflective surfaces 40, partially-obscuring extension reflective surfaces, or non-obscuring extension reflective surfaces. A full-obscuring extension reflective surface is shown as 30 in FIG. 5. Although a partially-obscuring reflective surface is not illustrated, the concept and implementation can be understood by anyone skilled in the art. The preferred embodiment uses a fully-obscuring extension reflective surface 30 in FIG. 5 because this is the configuration preferred by the inventor for solving his own “towing mirror problem.”

Referring to FIG. 2, the side-view mirror unit is shown at 102. The side-view mirror unit 102 includes a housing shown at 21. The housing 21 includes a base member shown at 22 for securing the side-view mirror unit 102 to the vehicle. The side-view mirror unit 102 also includes a remote input device, shown at 24, and an actuator, shown at 25. The remote input device 24 is external to the housing 21 and is typically mounted inside the motor vehicle within reach of the driver. The actuator 25, is typically mounted inside the housing 21. The actuator 25, typically imparts a pivoting motion to a mirror element having a reflective surface, shown as 20. This pivoting motion adjusts that projects the primary exterior rearward view shown as 98 in FIG. 1.

Referring to FIG. 1 and FIG. 2, the driver adjusts the original rearward view, 98 in FIG. 1, by interacting with the remote input device, 24 in FIG. 2, which transmits force, power, or signals via a transmission element, shown as 23, to the actuator 25 which pivots the first reflective surface, shown as 20.

Referring to FIG. 3 the preferred extension mirror unit 103 has been attached to the side-view mirror unit 102, making a basic detachable remotely-adjustable extension mirror system, shown at 110.

Also referring to FIG. 2, FIG. 3 and FIG. 4 a preferred embodiment detachable extension mirror unit is shown as 103. The preferred extension mirror unit 103 includes an obscuring extension reflective surface, shown as 30, made of a clear material including, but not limited to glass, polycarbonate, and acrylic, with a reflective coating on the side opposite the visible side of the obscuring extension reflective surface 30. The preferred extension mirror unit 103 also includes vacuum suction cups, shown at 31 that are connected to the non-visible side of the obscuring extension reflective surface 30 by means of adhesives, hook and loop fasteners (Velcro® made by Velcro Industries) or some equivalent. Although the attachment detail is not illustrated, it is capable of being understood by anyone skilled in the art. The connection between the vacuum suction cups 31 and the obscuring reflective surface 30 can be permanent or detachable, direct or indirect. This attachment can be made using a variety of different means of connection including, but not limited to, adhesives, fasteners, and various other mechanical elements or adapters between the vacuum suction cups 31 and the non-visible side of the reflective surface 30.

FIG. 6 shows typical motion of the reflective surface 20 and how this is coupled to the obscuring extension reflective surface 30 in the basic system 110. In this basic system, the vacuum suction cups 31 serve two functions:

- the vacuum suction cups 31 are detachable first attachment elements, providing a first method by which the extension reflective surface is attached to the first reflective surface 20; and
the vacuum suction cups 31 are movement offset elements that allow the first reflective surface 20 to go through its full range of motions and all potential positions without creating interference between the extension reflective surface 30 and any of the side-view mirror, especially the housing 21. In particular, it is important that any movement offset elements have enough height so the extension mirror surface will clear as it is moved.

Referring to FIG. 2 and FIG. 4, the first reflective surface 20 sits inside the space enclosed by the housing 21 for at least some possible positions in most side-view mirror units 102. The first reflective surface 20 is typically separated from the housing 21 by a narrow gap, called a mirror gap. Because by geometry, any extension reflective surface—whether it is obscuring, non-obscuring or partially obscuring—that provides an extended image, 99 in FIG. 1, must be located outside the envelope created by the potential positions of the first reflective surface 20, it is important that the first reflective surface 20 and any extension reflective surface are connected in a way that does not create interference with the housing for all ranges of motion of the basic system 110.

Referring to FIG. 4, in the first embodiment detachable extension mirror unit 103, vacuum suction cups 31 must also adhere to the first reflective surface 20 with a force great enough to support the preferred extension mirror unit 103. The preferred extension mirror unit 103 uses four vacuum suction cups made of polyvinyl chloride (PVC). It is possible to use a different number of suction cups to give the planar coupling required. It is possible to use suction cups made of other materials. It is also possible to make a frame that attaches the preferred extension unit to the original mirror unit or to the vehicle in a way that reduces the forces placed onto the first reflective surface 20 by the extension mirror unit 103 while still allowing the motion of the first reflective surface 20 to couple to and adjust the obscuring extension reflective surface 30 or a non-obscuring extension reflective surface 40 in FIG. 1.

Referring also to FIG. 4, installation of the preferred extension mirror unit 103 to the original mirror unit 102 is best accomplished by first cleaning the first reflective surface 20 with a mirror cleaner to ensure long-term adhesion of the vacuum suction cups 31. Installation needs to be performed accurately enough to give a good appearance and not to create interference with any part of the side-view mirror unit 102 or the vehicle. No tools or specialized expertise are required to install the extension mirror unit 103 onto the side-view mirror unit 102.

Referring to FIG. 4 and FIG. 6, detachment of the preferred extension mirror unit 103 from the side-view mirror unit 102 is accomplished by pivoting the first reflective surface 20 successively to positions where each vacuum suction cup 31 is accessible and then slipping a knife blade between the first reflective surface 20 and the lip of each vacuum suction cup 31.

Referring to FIG. 7 and FIG. 8, a preferred embodiment detachable remotely-adjustable extension mirror system is shown at 120. This preferred system 120 includes all of the elements of the basic system 110 described previously plus an add-on wind deflector, shown at 42 and a secondary or safety attachment element, shown at 43. The preferred embodiment uses a safety cord 43 to connect the preferred extension mirror unit, shown at 103 to the side-view mirror unit, shown at 102. The wind deflector 42:

reduces the wind forces on the extension mirror unit 103;

reduces the possibility that the extension mirror unit 103 is accidentally bumped; and

improves the appearance of the preferred system 120.

The safety cord 43 can be used as a backup in case the vacuum suction cup detachable spacing elements fail. Although the safety cord 43 is shown as connecting the preferred extension mirror unit 103 to the original mirror unit 102, the safety cord 43 can also be used to connect the preferred extension mirror unit 103 to some other part of the vehicle. The alternatives materials and mountings of this type of safety cord 43 are not critical and can be understood and implemented by anyone skilled in the art.

Referring to FIG. 9, FIG. 10, FIG. 11, and FIG. 12 an alternate embodiment detachable remotely-adjustable extension mirror system is shown at 130. The difference between the preferred system described previously is that the vacuum suction cups 31 in FIG. 2, FIG. 4, FIG. 5 and FIG. 6 have been replaced by mirror gap attachment elements 52 and alternate movement offset elements 53. Instead of using one type of element (vacuum suction cups) for both the attachment and the offset function, as was the case in the basic detachable remotely adjustable extension mirror system shown in FIG. 1, FIG. 2, FIG. 3, and FIG. 4, the alternate embodiment 130 separates these functions into two types of elements, mirror gap attachment elements 52 and alternate movement offset elements 53.

Referring to FIG. 9, FIG. 11, and FIG. 12 the mirror gap attachment element is shown at 52. In this embodiment, the mirror gap attachment elements 52 are made of a spring steel that has been formed into a “U-shape”. Because:

the gap between the first reflective surface 20 and the housing 21 is minimal in most modern original mirror units;

the first reflective surface 20 moves relative to the housing 21 in most modern original mirror units; and

a detachable system like the present invention should be designed to be usable with a variety of original mirror units,

the mirror gap attachment element 52 has been designed to be of the thinnest possible commercially-feasible material that gives a good clamping force on the edges of the first reflective surface 20 with minimal requirement for any retention on the side opposite the viewing side of the first reflective surface 20.

Also referring to FIG. 9, FIG. 11 and FIG. 12, the alternate movement offset element 53 establishes the necessary distance between the original reflective surface 20 and the obscuring extension reflective surface 30. Although the alternate movement offset elements 53 shown in this
embodiment are rectangular cross-section beams, these alternate movement offset elements 53 can be made in any of a variety of geometries out of any of a variety of materials using any of a variety of direct or indirect attachment methods to the obscuring reflective surface 30 so long as the alternate movement offset elements 53 accomplish the objective of resting on the original reflective surface 20 and have the height necessary to provide sufficient spacing between the obscuring reflective surface 30 and the first reflective surface 20 so that there is no interference between the obscuring reflective surface 30 and the housing 21 for all potential positions of the first reflective surface 20. It is possible to make a single element that combines the functions of the alternate spacing element 53 and the mirror gap attachment element 52.

[0077] Referring to FIG. 9, FIG. 10, FIG. 11 and FIG. 12, installation of the alternate extension mirror unit 104 to the side-view mirror unit 102 can be accomplished by pressing the alternate extension mirror unit over the original reflective surface 20. If there is any difficulty getting any of the legs of the mirror gap attachment elements 52 to seat properly, it is possible to move the first reflective surface 20 to a position where one can access the legs of the mirror gap attachment elements 52 to help seat them. Detachment of the alternate extension mirror 104 is accomplished by moving the first reflective surface 20 successively to positions where the each leg of each mirror gap attachment element 52 is accessible and then slipping a thin knife blade between the leg of the mirror gap attachment element 52 and the edge of the first reflective surface 20 while pulling the alternate extension mirror unit 104 away from the first reflective surface 20.

[0078] The invention has been described in an illustrative manner, and it is to be understood that the terminology, which has been used, is intended to be in the nature of words of description rather than of limitation. Many modifications and variations of the present invention are possible in light of the above teachings. It is, therefore, to be understood that within the scope of the appended claims, the invention may be practised other than as specifically described.

I claim:

1. A detachable remotely-adjustable extension mirror system for a motor vehicle comprising:
   a remotely-adjustable side-view mirror unit comprising
   a remote input device,
   a transmission element,
   an actuator,
   a first reflective surface, and
   a housing,
   wherein said transmission element is between said remote input device and said first reflective surface; and
   a detachable extension mirror unit comprising
   a movement offset element and
   an extension reflective surface,
   wherein said movement offset element is between said first reflective surface and said extension reflective surface.

2. A system according to claim 1 further comprising an add-on wind deflector whereby wind can be deflected from said extension reflective surface.

3. A system according to claim 1 wherein said movement offset element eliminates interference between said extension reflective surface and said side-view mirror unit for all potential positions of said first reflective surface.

4. A system according to claim 1 wherein said movement offset element comprises a vacuum suction cup.

5. A system according to claim 1 further comprising a mirror gap attachment element.

6. A system according to claim 5 wherein said mirror gap attachment element protrudes through the gap between housing and said first reflective surface to the non-visible side of said first reflective surface.

7. A system according to claim 1 wherein said extension reflective surface obscures said first reflective surface.

8. A system according to claim 1 further comprising a safety attachment element.

9. A system according to claim 6 wherein said safety attachment element comprises a cord between said extension reflective surface and said remotely-adjustable side-view mirror unit.

10. A detachable remotely adjustable extension mirror system for a motor vehicle comprising:
    a remotely-adjustable side-view mirror unit comprising
    a remote input device,
    a transmission element,
    an actuator,
    a first reflective surface, and
    a housing,
    wherein said transmission element is between said remote input device and said first reflective surface; an extension reflective surface; and
    a detachable vacuum suction cup first attachment element, wherein said detachable vacuum suction cup first attachment element is between said first reflective surface and said extension reflective surface.

11. A system according to claim 10 further comprising an add-on wind deflector whereby wind can be deflected from said extension reflective surface.

12. A system according to claim 10 wherein said detachable vacuum suction cup first attachment element comprises a movement offset element.

13. A system according to claim 12 wherein said movement offset element eliminates interference between said extension reflective surface and said side-view mirror unit for all potential positions of said first reflective surface.

14. A system according to claim 10 wherein said extension reflective surface obscures said first reflective surface.

15. A system according to claim 10 further comprising a safety attachment element whereby said safety attachment element prevents said detachable extension mirror unit from falling off said side-view mirror unit if said detachable vacuum suction cup first attachment element fails.

16. A system according to claim 15 wherein said safety attachment element comprises a cord between said extension reflective surface and said remotely-adjustable side-view mirror unit.
17. A detachable extension mirror system for a motor vehicle comprising:
   a side-view mirror unit comprising a first reflective surface and a housing;
   a detachable extension mirror unit comprising an extension reflective surface;
   a detachable first attachment element between said side-view mirror unit and said detachable extension mirror unit; and
   a safety attachment element whereby said safety attachment element prevents said detachable extension mirror unit from falling off said side-view mirror unit if said detachable first attachment element fails.

18. A system according to claim 17 further comprising an add-on wind deflector whereby wind can be deflected from said extension reflective surface.

19. A system according to claim 17 wherein said detachable first attachment element further comprises a movement offset element.

20. A system according to claim 19 wherein said movement offset element eliminates interference between said extension reflective surface and said side-view mirror unit for all potential positions of said first reflective surface.

21. A system according to claim 17 wherein said detachable first attachment element comprises a vacuum suction cup.

22. A system according to claim 17 wherein said detachable first attachment element comprises a mirror gap attachment element.

23. A system according to claim 22 wherein said mirror gap attachment element protrudes through the gap between housing and said first reflective surface to the non-visible side of said first reflective surface.

24. A system according to claim 17 wherein said extension reflective surface obscures said original reflective surface.

25. A system according to claim 17 wherein said safety attachment element comprises a cord between said extension reflective surface and said remotely-adjustable side-view mirror unit.

26. A system according to claim 17 wherein said side-view mirror unit is remotely-adjustable.

27. A detachable extension mirror system for a motor vehicle comprising:
   a side-view mirror unit comprising a first reflective surface and a housing and a detachable extension mirror unit comprising
   a fully-obscuring extension reflective surface and
   a movement offset element
   wherein said movement offset element is between said first reflective surface and said extension reflective surface.

28. A system according to claim 27 further comprising an add-on wind deflector whereby wind can be deflected from said extension reflective surface.

29. A system according to claim 27 wherein said movement offset element eliminates interference between said extension reflective surface and said side-view mirror unit for all potential positions of said first reflective surface.

30. A system according to claim 27 wherein said detachable first attachment element comprises a vacuum suction cup.

31. A system according to claim 27 wherein said detachable first attachment element comprises a mirror gap attachment element.

32. A system according to claim 31 wherein said mirror gap attachment element protrudes through the gap between housing and said first reflective surface to the non-visible side of said first reflective surface.

33. A system according to claim 27 further comprising a safety attachment element.

34. A system according to claim 33 wherein said safety attachment element comprises a cord between said fully-obscuring extension reflective surface and said remotely-adjustable side-view mirror unit.

35. A system according to claim 27 wherein said side-view mirror unit is remotely-adjustable.

36. A method of providing the driver of a motor vehicle with a remotely-adjustable extended rearward view comprising:
   interacting with a remote input device located inside the vehicle to create an input;
   transmitting said input to a mirror actuator;
   converting said input at said mirror actuator to a pivoting motion of a first reflective surface; and
   transferring said pivoting motion through a movement offset element to a detachable extension reflective surface.

37. The method of claim 36 further comprising the step of attaching an add-on wind deflector to a housing around said first reflective surface thereby deflecting wind from said extension reflective surface.

38. The method of claim 36 further comprising the step of making said movement offset element sufficiently thick to eliminate potential interference between said extension reflective surface and a housing around said first reflective surface for all potential positions of said first reflective surface.

39. The method of claim 36 further comprising the step of making said movement offset element from vacuum suction cups.

40. The method of claim 36 further comprising the step of detachably securing said first reflective surface to said extension reflective surface through a mirror gap attachment element.

41. The method of claim 40 further comprising the step of protruding part of said mirror gap attachment element through the gap between a housing around said first reflective surface and said first reflective surface to the non-visible side of said first reflective surface.

42. The method of claim 36 further comprising the step of obscuring said first reflective surface with said extension reflective surface.

43. The method of claim 36 further comprising the step of secondarily attaching said extension reflective surface to a part of said motor vehicle in case a primary attachment element fails.

44. The method of claim 43 further comprising the step of using a safety cord as said secondary attachment method.
45. A method of providing the driver of a motor vehicle with a remotely-adjustable extended rearward view comprising:
interacting with a remote input device located inside the vehicle to create an input;
transmitting said input to a mirror actuator;
converting said input at said mirror actuator to a pivoting motion of a first reflective surface; and
transferring said pivoting motion through a detachable vacuum suction cup first attachment element to a
extension reflective surface.
46. The method of claim 45 further comprising the step of
attaching an add-on wind deflector to a housing around said first reflective surface thereby deflecting wind from said
extension reflective surface.
47. The method of claim 45 further comprising the step of
using the vacuum suction cup first attachment elements as movement offset elements between said first reflective surface
and said extension reflective surface.
48. The method of claim 45 further comprising the step of
making said movement offset element sufficiently thick to eliminate potential interference between said extension
reflective surface and a housing around said first reflective surface for all potential positions of said first reflective surface.
49. The method of claim 45 further comprising the step of
obscuringly said first reflective surface with said extension reflective surface.
50. The method of claim 45 further comprising the step of
secondarily attaching said extension reflective surface to a part of said motor vehicle with a secondary attachment
element in case said vacuum cup first attachment element fails.
51. The method of claim 50 further comprising the step of
using a safety cord as said secondary attachment method.
52. A method of redundantly mounting a detachable extension mirror unit to a vehicle comprising:
attaching said detachable extension mirror unit to a side-view mirror unit with a first fastening method; and
secondarily attaching said detachable extension mirror unit to said side-view mirror unit using a safety attachment
element with a second fastening method substantially different from said first attachment method.
53. The method of claim 52 further comprising the step of
attaching said add-on wind deflector to a housing around said first reflective surface thereby deflecting wind from said
extension reflective surface.
54. The method of claim 52 further comprising the step of
using the vacuum suction cup first attachment elements as movement offset elements between said first reflective
surface and said extension reflective surface.
55. The method of claim 52 further comprising the step of
making said movement offset element sufficiently thick to eliminate potential interference between said extension
reflective surface and a housing around said first reflective surface for all potential positions of said first reflective surface.
56. The method of claim 52 further comprising the step of
making said movement offset element from vacuum suction
cups.
57. The method of claim 52 further comprising the step of
detachably securing said first reflective surface to said extension reflective surface through a mirror gap attachment element.
58. The method of claim 57 further comprising the step of
protruding part of said mirror gap attachment element through the gap between a housing around said first reflective
surface and said first reflective surface to the non-visible side of said first reflective surface.
59. The method of claim 52 further comprising the step of
obscuringly said first reflective surface with said extension reflective surface.
60. The method of claim 52 further comprising the step of
using a safety cord as said secondary attachment method.
61. The method of claim 52 further comprising the step of
remotely adjusting said secondary reflective surface by interacting with a remote input device located inside the
vehicle to create an input.
62. A method of providing the driver of a motor vehicle
with an extended rearward view comprising:
placing a movement offset element onto the visible side of
a first reflective surface that is part of a side-view mirror unit;
mounting a fully-obscuring reflective extension mirror onto said movement offset element; and
attaching said fully obscuring reflective surface and said
movement offset element to said side-view mirror unit with a primary attachment element.
63. The method of claim 62 further comprising the step of
attaching an add-on wind deflector to a housing around said first reflective surface thereby deflecting wind from said
extension reflective surface.
64. The method of claim 62 further comprising the step of
making said movement offset element sufficiently thick to eliminate potential interference between said extension
reflective surface and a housing around said first reflective surface for all potential positions of said first reflective surface.
65. The method of claim 62 further comprising the step of
making said movement offset element from vacuum suction
cups.
66. The method of claim 62 further comprising the step of
detachably securing said first reflective surface to said extension reflective surface through a mirror gap attachment element.
67. The method of claim 66 further comprising the step of
protruding part of said mirror gap attachment element through the gap between a housing around said first reflective
surface and said first reflective surface to the non-visible side of said first reflective surface.
68. The method of claim 62 further comprising the step of
secondarily attaching said extension reflective surface to a part of said motor vehicle with a secondary attachment
element in case said primary attachment method fails.
69. The method of claim 68 further comprising the step of
using a safety cord as said secondary attachment method.
70. The method of claim 52 further comprising the step of
remotely adjusting said secondary reflective surface by interacting with a remote input device located inside the vehicle to create an input.