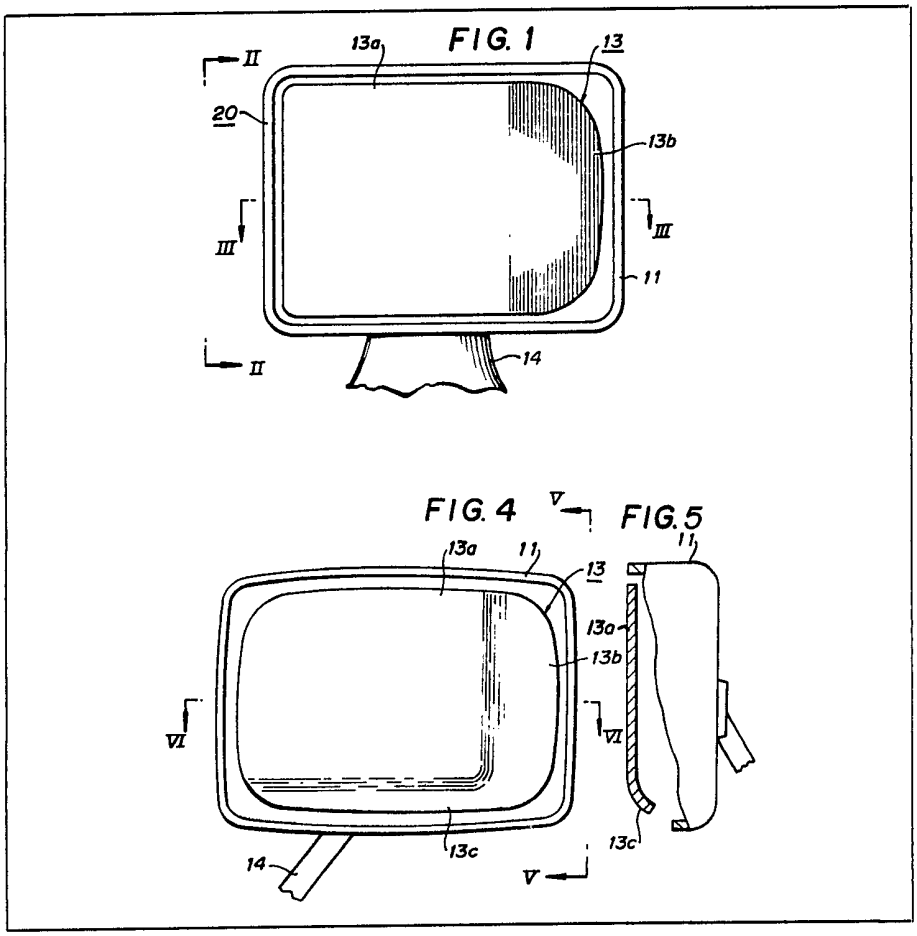
(12) UK Patent Application (19) GB (11) 2 092 534 A

(21) Application No 8136435
(22) Date of filing
3 Dec 1981
(30) Priority data
(31) 55/172575
(32) 3 Dec 1980
(33) Japan (JP)
(43) Application published
18 Aug 1982
(51) INT CL³ B60R 1/06
(52) Domestic classification
B7J 69
(56) Documents cited
GB 1279158
GB 1199344
GB 1180930
GB 1133005
GB 0895855
GB 0827336
GB A 2048189
(58) Field of search
B7J
(71) Applicant
Yoshikazu Hagiri
1169 Shibazakicho
Takasaki-shi
Gunma-ken 370
Japan
(72) Inventor
Yoshikazu Hagiri
(74) Agents
J F Williams and Co
34 Tavistock Street
London WC2E 7PB

(54) Rear-view mirror device for vehicles

(57) A rear-view mirror for vehicles comprises a plane reflective face 13*a* and a convex reflective face 13*b* contiguous to and at an angle with 13*a*. A further convex face 13*c* may also be provided. Faces 13*b*, 13*c* increase the field of view provided by the mirror.



GB 2 092 534 A

FIG. 1

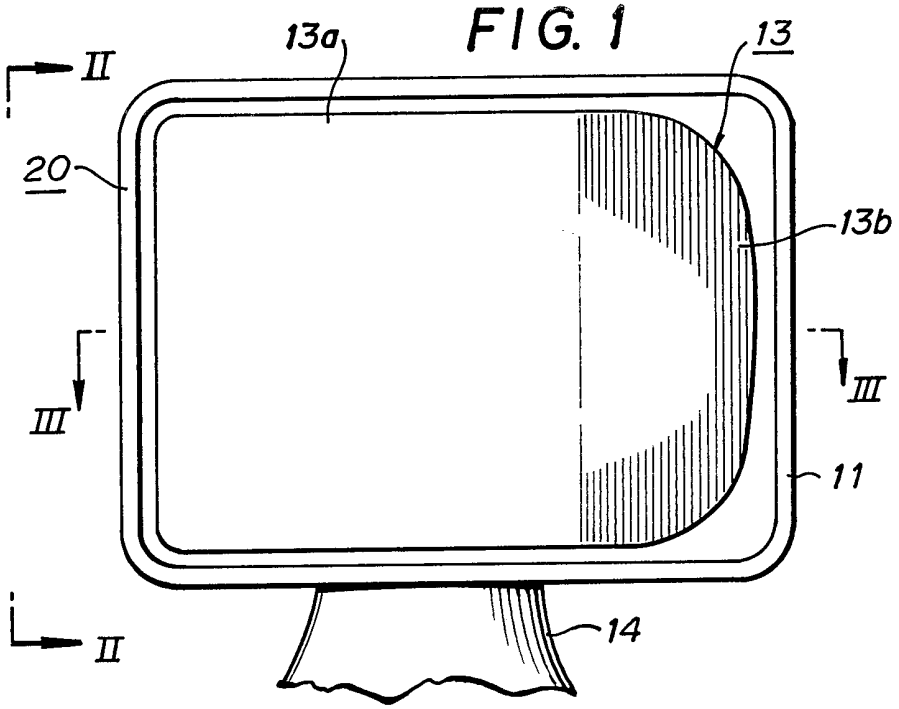


FIG. 2

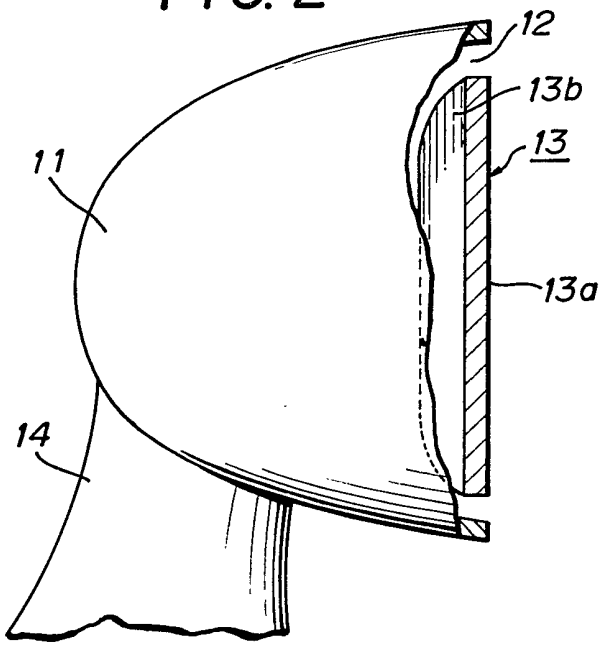


FIG. 3

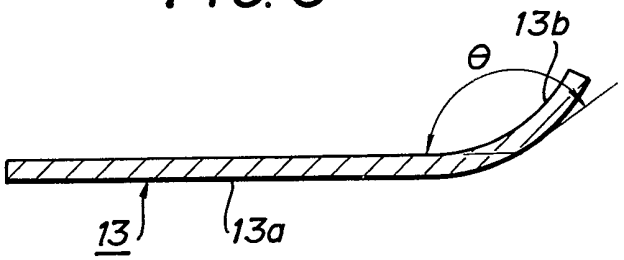


FIG. 4

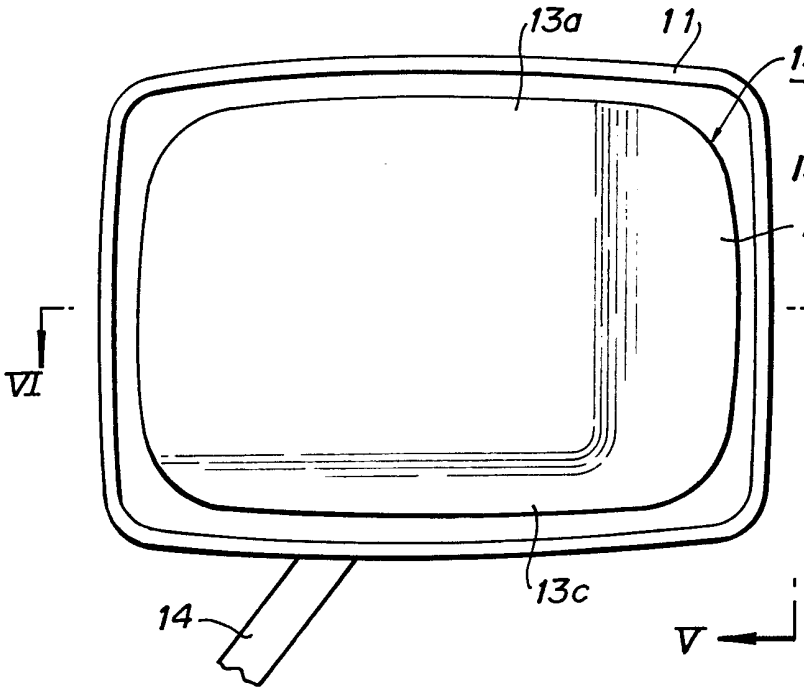


FIG. 5

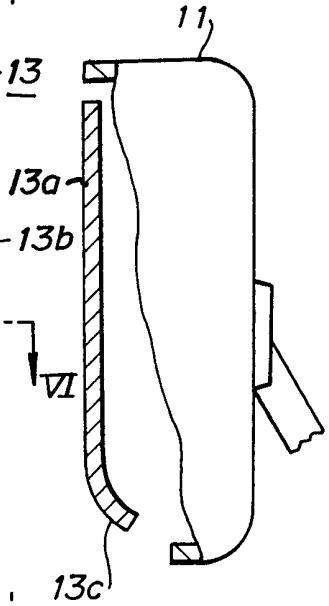


FIG. 6

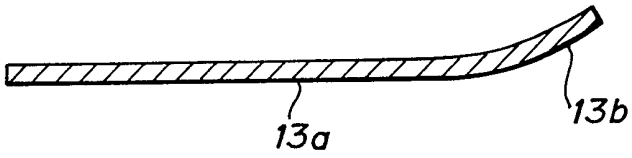


FIG. 7

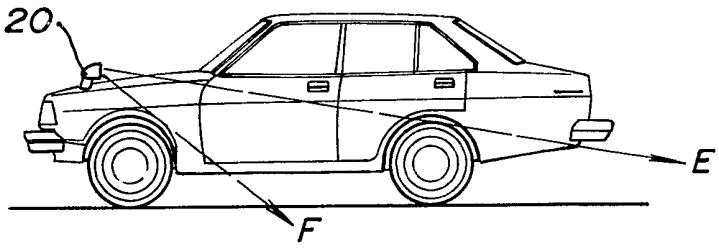
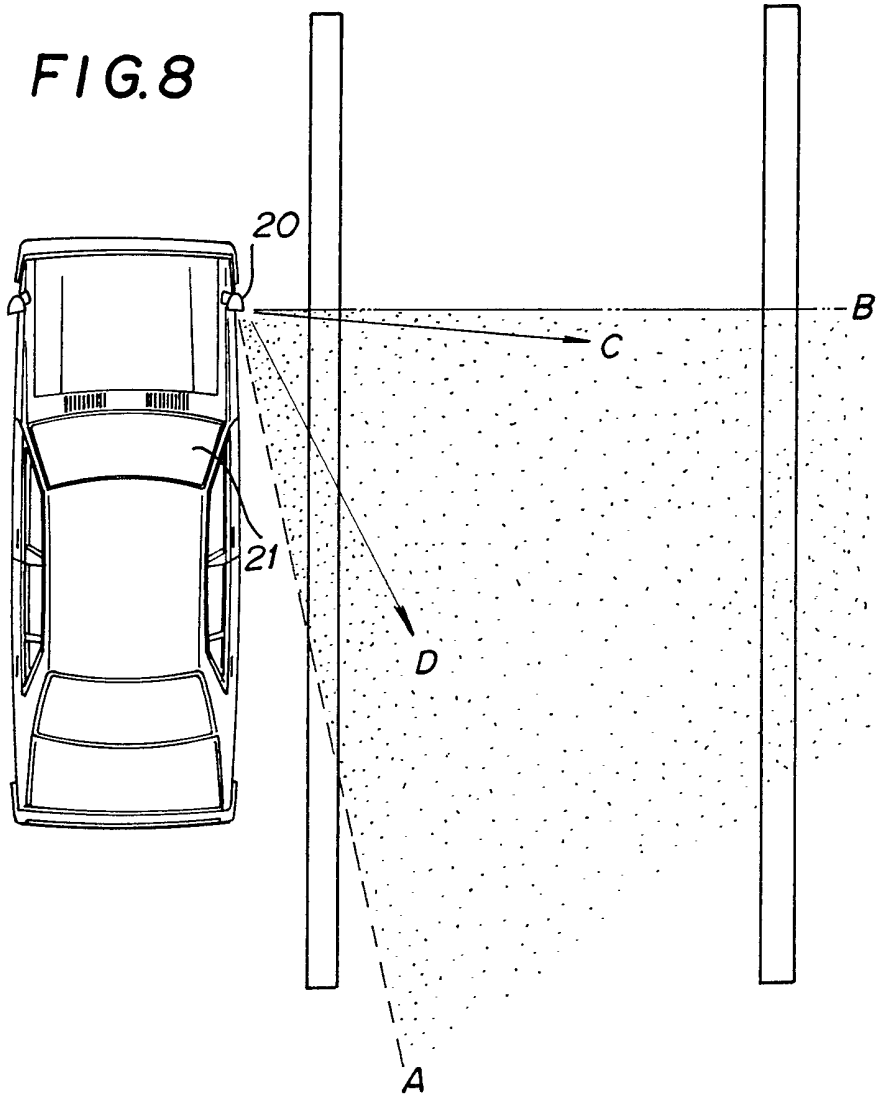


FIG. 8



SPECIFICATION

Rear-view mirror device for vehicles

The present invention relates to a rear-view mirror device for automotive vehicles and the like.

The well-known rear-view mirrors installed outside of automotive vehicles and the like, for example at the front wings or front fenders of automobiles have a single-plane mirror surface. With such a single-plane structure of the conventional rear-view mirror, the field of view of the driver in his seat is limited to a range from the end of the car body to a lateral position a little away from the car body. Any object existing on the lateral side or lateral rear side of the car body will not get into the field of view of the driver via the prior-art rear-view mirror device. When one is about to shift from one lane to another while driving a car along a motorway, for example, and if another car running in the latter lane is approaching your car of which you are not aware, a disastrous accident will possibly result. One reads and sees almost everyday such accidents in newspapers and television newscasts. Further, the conventional rear-view mirror device used on an automotive vehicle such as tractor trailer assures the view of the tractor rear, but not the view of the trailer rear, when the tractor trailer turns along a curve or around a corner. The range from the rear end of the tractor to the trailer's rear end cannot be covered by the driver's sight via the conventional rear-view mirror. If a person or bicycle is standing at that curve or corner when such a large automotive vehicle turns there, he or it will possibly be caught under the chassis of the vehicle because of the relatively long distance between the front and rear wheels. This is a critical problem in the field of traffic safety.

The present invention seeks to provide a rear-view mirror device for automotive vehicles and the like which assures a wider field of view.

According to the present invention there is provided a rear-view mirror device for vehicles comprising a mirror body and means for supporting said mirror body on a vehicle body, the surface of said mirror body including a first reflective face which is arranged to reflect in use substantially the vehicle body side and its neighborhood, and a second reflective face which adjoins the edge of the first reflective face and is inclined with respect to the first reflective face so as to cover a substantial range which cannot be covered by the first reflective face and extends further outwardly from the range covered by the first reflective face.

The second reflective face is preferably formed as a convex mirror contiguous to the first reflective face.

The apparatus may also comprise a third reflective face which is contiguous to the first reflective face and so arranged with respect to the first reflective face that it can cover, in use, a side lower range of the car body to produce an image thereof contiguous to the image produced by the first reflective face.

The third reflective face is also preferably formed as a convex mirror.

Preferred embodiments of the present invention will now be described, by way of example only with reference to the accompanying drawings of which:

Figure 1 shows a front view of a mirror device in accordance with a first embodiment of the present invention;

Figure 2 is a partly sectional side view taken along the line II–II of Fig. 1;

Figure 3 is a sectional view taken along the line III–III of Fig. 1 and showing only the mirror;

Figure 4 is a front view of a mirror device in accordance with a second embodiment of the present invention;

Figure 5 is a partly sectional side view taken along the line V–V of Fig. 4;

Figure 6 is a sectional view taken along the lines VI–VI of Fig. 4 and showing only the mirror;

Figure 7 illustrates the functioning of the mirror device shown in Figs. 4 to 6; and

Figure 8 illustrates the rearward field of view of the mirror devices of Figs. 1 to 6.

Referring now to the drawings, Figs. 1 to 3 show a first embodiment of the rear-view miror device according to the present invention. In the Figures, the reference numeral 11 denotes a mirror housing which is provided therein with an opening 12. A mirror 13 is disposed within said housing 12 of the housing 11. The mirror 13 is fixed to an appropriate backing material which is supported through a universal joint (not shown) on the housing 11. A stay 14 is integrally formed with the housing 11 which is fixed at a portion (not shown) thereof to the body of a car or other automotive vehicle.

The mirror 13 consists of a transparent plate member on the one face of which a reflective layer is formed. The mirror 13 comprises a first reflective face 13a and a second reflective face 13b which forms an angle δ with the first reflective face 13a. The first reflective face 13a is formed like a plane mirror as shown in Fig. 2.

The second reflective face 13b is contiguous to the first reflective face 13a and formed like a convex mirror of an appropriate radius of curvature.

This example of rear-view mirror apparatus is to be installed on the front fender or front wing of a car at a certain distance, for example, 1 meter, from the windscreen 21, as shown in Fig. 8. In the illustration, the mirror device as a whole is indicated by reference

numeral 20. Before the car is driven, the mirror device is manually pivotted about the universal joint for the first reflective face to reflect the car body side and its surroundings (for example, a range defined by the broken line A and the body side face) as in the case of conventional rear-view mirror. The angle δ of the second reflective face 13b with respect to the first reflective face 13a is so selected that the second reflective face 13b can give the driver (sitting in the seat to the right of the driving direction in the illustration) a field of view defined by the line A and two dot-dash line B.

The first reflective face 13a of this rear-view mirror device permits the driver to visually check the range including the car body side face and its surrounding quite the same as by the conventional rear-view mirror devices. According to the present invention, the second reflective face 13b further permits the driver to visually check the lateral side and lateral rear side, indicated by C and D, respectively, of the car. In addition, the driver of a car running along a main road can visually locate, by means of the rear-view mirror of the present invention, a car coming along a road which joins the main road obliquely. Thus, the driver can view, from the position of his seat, a range which could not be covered by the conventional rear-view mirror devices. The present invention is very advantageous for traffic safety. Since the first and second reflective faces 13a and 13b are contiguous to each other, the correlation between the images on these reflective faces is clear to the driver who will judge and act quickly and correctly at the occurrence of any imminent danger.

Figs. 4 to 7 show a second embodiment of the present invention. In the first embodiment described above, one reflective face is formed as contiguous to the lateral edge of another reflective face, to permit the driver to view a range which cannot be covered by the conventional rear-view mirror. In the second embodiment, however, two reflective faces are formed as contiguous to the lateral and lower edges of a mirror 13, to cover, respectively, ranges which cannot be viewed by conventional rear-view mirrors. In Figs. 4 to 7 the elements similar to those in the first embodiment are indicated with like reference numerals and symbols. As shown in Figs. 5 and 6, the above-mentioned two reflective faces are formed as convex mirros which are contiguous to the first reflective face 13a and are indicated at 13b and 13c. The second reflective face 13b is so formed as to permit the driver to view a range including the lateral and lateral rear sides of a car, the range being defined by the dotted line in Fig. 8, similarly to the first embodiment. The third reflective face 13c is so curved with respect to the first reflective face 13a as to provide a view of the side lower range of the car as contiguous to the view from the first reflective face 13a, when the rear-view mirror device is installed on a car body. The bending angle and radius of curvature of the third reflective face 13c are so selected that a range from the rear tyre (indicated at E) to the rear position of the door (indicated at F) as shown in Fig. 7 can be covered.

With this embodiment of the present invention, provision of two reflective faces contiguous to the first reflective face 13a for covering the ranges which cannot be viewed by the conventional rear-view mirror minimize such range as cannot be seen when driving a car etc. It will be clear to those skilled in the art that the mirror device permits the driver to view the lower zone of a car which is not viewable to the driver by any conventional rear-view mirror.

In the foregoing, examples of rear-view mirror for use on passenger cars have been described. However, it is possible to apply the present invention to larger cars and other vehicles. When the present invention is applied to a large car, it will be apparent to those skilled in the art than an accident of the type in which a person or bicycle standing at a corner is caught in under the car around the corner because the distance between the front and rear wheels is relatively long, can be prevented.

As described in the foregoing, a rear-view mirror device according to the present invention comprises a mirror and means for supporting said mirror to the body of a car, said miror including a first reflective face to view a substantial range including the car body side face and its surroundings, and a second reflective face so formed as contiguous to and curved with respect to the first face that an outer range compared with that covered by the first reflective face can be viewed as contiguous to the image on the first face. Thus, the driver can view, from his seat, a range which could not be viewed by the conventional rear-view mirror. Since the first and second reflective faces are formed as contiguous to each other, also the images on these reflective faces are contiguous to each other, so the driver can easily know the relation between the image on the first reflective face and that of a range which cannot be viewed by the conventional rear-view mirror. He can act quickly and correctly at the occurrence of any imminent danger. Because of the contiguity between the first and second reflective faces, if the reflective face for viewing the range which is invisible by the conventional rear-view mirror is narrow or the image thereon is somewhat distorted, the driver will be able to make a correct judgement. Further, since a single mirror can attain the above-mentioned effects, the rear-view mirror apparatus according to the present invention has a

simple construction and can be easily manufactured.

CLAIMS

1. A rear-view mirror device for vehicles comprising a mirror body and means for supporting said mirror body on a vehicle body, the surface of said mirror body including a first reflective face which is arranged to reflect in use substantially the vehicle body side and its neighborhood, and a second reflective face which adjoins the edge of the first reflective face and is inclined with respect to the first reflective face so as to cover a substantial range which cannot be covered by the first reflective face and extends further outwardly from the range covered by the first reflective face.

2. A rear-view mirror device as claimed in claim 1, wherein the second reflective face is formed as a convex mirror contiguous to the first reflective face.

3. A rear-view mirror device as claimed in claim 1 or 2, furrher comprising a third reflective face which is contiguous to the first reflective face and so arranged with respect to the first reflective face that it can cover, in use, a side lower region of the car body to produce an image thereof contiguous to the image produced by the first reflective face.

4. A rear-view mirror device as claimed in claim 3, wherein the third reflective face is formed as convex mirror together with the second reflective face.

5. A rear-view mirror device as claimed in any preceding claim wherein the first reflective face is formed as plane mirror.

6. A rear-view mirror device substantially as herein described with reference to Figs. 1,2,3 and 8, or 4,5,6,7 and 8 of the accompanying drawings.

Printed for Her Majesty's Stationery Office
by Burgess & Son (Abingdon) Ltd.—1982.
Published at The Patent Office, 25 Southampton Buildings,
London, WC2A 1AY, from which copies may be obtained.