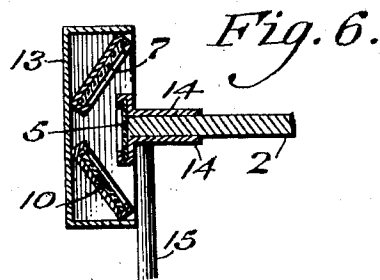
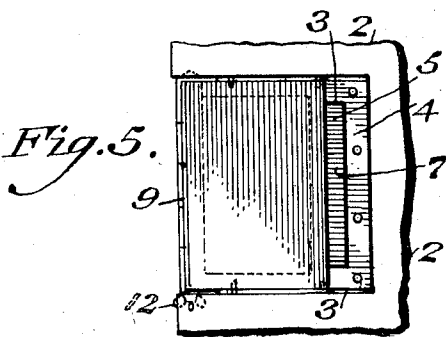
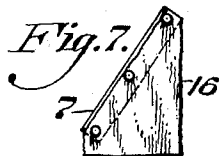
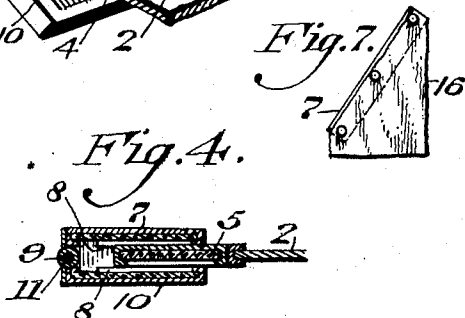
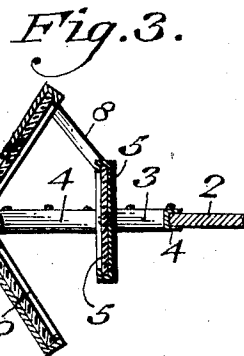
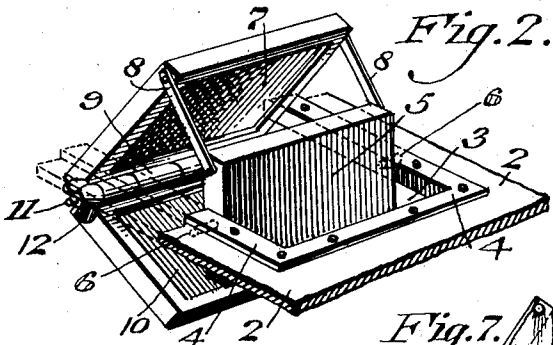
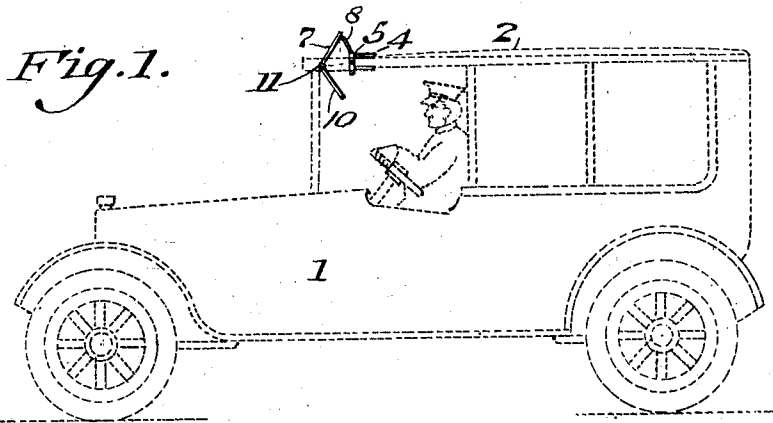


T. J. KENNEDY.
REFLECTING APPARATUS.
APPLICATION FILED JAN. 28, 1920.

1,365,247.

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REFLECTING APPARATUS.

1,365,247.

Specification of Letters Patent. Patented Jan. 11, 1921.

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To all whom it may concern:

Be it known that I, THOMAS J. KENNEDY, a citizen of the United States, residing at Wyncote, in the county of Montgomery, State of Pennsylvania, have invented a new and useful Reflecting Apparatus, of which the following is a specification.

My invention relates to the general class of reflecting apparatus or devices applicable to moving vehicles of any character, but particularly to vehicles of the general type used on land, and also to boats, or, if desired, to flying machines.

These devices, technically known as periscopes, comprise given arrangements of compound reflecting mirrors or kindred reflecting surfaces, and the particular object of my invention is a reflecting apparatus adapted to be applied, for instance, to any type of automobile in such position with relation to a top or cover when the vehicle is closed, or to a wind shield or front when the vehicle is open,—that the device presents itself in a position in front of the driver or chauffeur who by looking into it is enabled to command a view of the road in the rear of his vehicle so as to be able to steer it in such manner and direction as the necessities arising from an overtaking vehicle may require.

My invention comprehends a reflecting apparatus comprising an assemblage of three mirrors which when in service are adapted to be opened or extended in a manner hereinafter described and when not in service to be folded upon each other, the particular object of making the apparatus a folding device being to protect its reflecting surfaces or mirrors from the elements when the device is not in use.

For the purpose of illustrating my invention, I have represented two types or embodiments of it which are at present preferred by me, because in practice they give useful and satisfactory results. It is to be understood, however, that I do not confine myself to precise dimensions or details of the construction so long as it embodies my invention in its broad sense.

In the accompanying drawings—

Figure 1 represents in side elevation a typical automobile of the sedan or limousine type, with my reflecting apparatus shown as applied in operative position to the roof.

Fig. 2 represents in perspective my apparatus detached and also in operative position.

Fig. 3 represents a longitudinal, central, side, sectional elevation of the apparatus as shown in Fig. 2.

Fig. 4 represents in similar side sectional elevation the apparatus typified in Figs. 2 and 3, with the mirrors in their folded or closed and non-operative position.

Fig. 5 represents a fragmentary top plan view of the apparatus as shown in Fig. 4.

Fig. 6 represents a modification of my apparatus and of its means for application. Fig. 7 represents a side elevation of a detached portion.

Similar numerals of reference indicate corresponding parts.

Referring to the drawings:—

1 designates the body of a typical automobile and 2 the inclosing roof or body cover. In the mode of application illustrated in the first five figures of the drawing, a preferably quadrangular recess in the front part of the roof, conforming to the outline of the mirror 5, is designated 3, and is so placed that it is essentially in front of the seat which the driver occupies so that he faces a mirror, which makes it possible for him through the compound arrangement of two other mirrors hereinafter described to view the road in the rear of the vehicle.

Within the roof recess 3, which is preferably provided with a binding edge frame 4, and transversely of the longitudinal axis of the vehicle, is mounted a mirror 5, which I call the vertical mirror, and which in the operative position of the reflecting apparatus as an entirety, is frictionally or otherwise tightly held transversely of the recess by pins or trunnions 6, which, while making it possible to fold said vertical mirror flatwise within the recess, also make possible its permanent placement in a vertical plane with relation to the vehicle.

In front of this vertical mirror 5 is what I call the rear-reflecting mirror 7, which is of about the same dimensions as the mirror 5, and which at its upper edge is pivotally connected, preferably by a pair of counter-part links 8, to the upper edge of said vertical mirror 5, while at its lower or forwardly extending edge said mirror 7,—or the frame which carries it, because it is to be understood that each of the three mirrors is pref-

erably mounted in a suitable frame,—is hinged by a hinged connection 9 to the upper and forwardly extending edge of another mirror, which, for distinction, I call the driver's mirror 10, and which when the parts are in operative position bears such angular relationship to the eyes of the driver as will enable him to see an object in the rear

The image of the object in the rear is reflected first upon the reflecting surface of the rear-reflecting mirror 7,—thence deflected to the forwardly facing reflecting surface of the vertical mirror 5,—and thence again deflected to the rearwardly facing reflecting surface of said last-mentioned or driver's mirror 10, so as to cast the ultimate reflection within the view of the driver.

It will, therefore, be apparent that there are three reflections of an object upon the road to the rear of the moving vehicle to which my apparatus is applied, and that in the angular relationship of the parts when in operative position, as illustrated in Figs. 1, 2 and 3, the angles of incidence and reflection are necessarily such that the image received upon the rear-reflecting mirror is transferred from it to the vertical mirror and from said vertical mirror to the driver's mirror, whence, of course, the object is reflected within the range of the vision of the driver.

In order tightly to secure the driver's mirror 10 at the proper angular relation with respect to the rear-reflecting mirror 7 and the vertical mirror 5, I pass through the preferably tubular hinged connection between the carrying frames of said two mirrors 7 and 10, a hinge pin 11, an end of which extending beyond the hinge knuckles, is threaded and has applied to it a locking thumb nut 12 to effect the desired tightening of the hinge knuckles and secure the retention of the mirrors referred to.

Assuming the normal position of the vertical mirror to be that represented, or in a vertical plane, the links 8 which connect said mirror with the rear-reflecting mirror 7, are naturally so proportioned as to impart to said mirror 7 the desired angular position with reference to the rear of the vehicle.

In order to effect the desired folding of the three mirrors into the assembled closed position which will protect their reflecting surfaces from the elements, all that it is necessary to do is, first, to turn the vertical mirror 5 about its trunnions 6, until it occupies the horizontal position within the recess 3 in the roof which it is illustrated as occupying in Figs. 4 and 5.

Having, then, thus moved the vertical mirror into a horizontal plane, it will be obvious that, through its links 8, when the grip of the thumb nut upon the hinge pin is eased, the rear reflecting mirror 7 will be

brought down upon said vertical mirror, the reflecting surfaces of the two mirrors facing each other.

It will be further obvious that when this has been done, the driver's mirror can be manually elevated about its hinge until its reflecting face lies flat against the rear face of the vertical mirror then occupying a horizontal position, and that the thumb nut may then be tightened up, with the necessary result of retaining all three of the mirrors in parallel horizontal planes and in practical contact with each other.

In the modification represented in Fig. 6, the rear reflecting mirror 7 and the driver's mirror 10 are permanently secured at the desired angles within an inclosing case 13, which may be formed with a socket 14 extending rearwardly of the open rear of the case, conveniently adapted to hold the vertical mirror 5; and further adapted either as illustrated in Fig. 6 to be slipped over upon the roof of the vehicle, or, if desired, to be supported by a vertical standard 15 of the wind shield or front face of the automobile.

Of course, in this modified application, it will be obviously impossible to effect the folding of the mirrors upon each other because each is permanently secured with relation to the inclosing casing.

In order to protect the device from the effects of bad weather and the heat of the sun there are secured to the sides of the frame of the mirror 7 curtains 16 pendant therefrom, one of which is shown in Fig. 7, the effect of which is evident.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. A reflecting apparatus which comprises in combination, a vertical mirror the reflecting surface of which faces forwardly and which in operative position is vertically disposed,—a rear reflecting mirror the reflecting surface of which faces rearwardly so as to receive its reflection from the rear, and which at its upper edge is connected with the upper edge of the vertical mirror so as to occupy an angular position with relation thereto,—and a driver's mirror which at its upper edge is connected with the lower edge of the rear reflecting mirror and which faces rearwardly at an angle with reference to the reflecting surface of said vertical mirror so as to cast its reflection within the view of the driver.

2. A reflecting apparatus, which comprises in combination,—a carrying surface formed with a recess,—a vertical mirror pivoted within said recess, the reflecting surface of which faces forwardly and which in operative position is vertically disposed with respect to its recess, but in inoperative position is adapted to be placed horizontally

within said recess,—a rear-reflecting mirror the reflecting surface of which when in operative position faces rearwardly so as to receive its reflection from the rear,—foldable connective devices between the upper surface of said rear-reflecting mirror and the vertical mirror,—a hinged connection along the lower edges of the rear-reflecting mirror,—a driver's mirror the upper edge of which is hingedly united with said hinged connection, and which when in operative position faces rearwardly at an angle with reference to the reflecting surface of said vertical mirror so as to cast its reflection within the range of view of the driver,—and means for tightening or loosening the hinged connection between the rear-reflecting mirror and the driver's mirror, whereby the connected assemblage of the three mirrors may when not in use be folded flat upon and with reference to each other and when in use may be extended into operative position.

3. In a reflecting apparatus of the character described and in combination,—two mirrors the reflecting surfaces of which face in the same direction and which are connected longitudinally by a hinged joint,—a mirror the reflecting surface of which faces those of the two aforesaid mirrors, and which is connected by links to the upper part of one of the aforesaid mirrors,—and a frame within which the foregoing three mirrors are adapted to be folded.

4. A reflecting apparatus of the character described, in which are combined,—a normally vertically disposed mirror,—an upper normally angularly disposed mirror,—a lower normally angularly-disposed mirror,—a hinged connection between the two mirrors which are normally angularly-disposed,—a link connection between the normally vertical mirror and the upper of the two angularly-disposed mirrors,—means for retaining said vertical mirror in vertical position,—and a framing for supporting the vertical mirror and the hinged connection between the other two mirrors.

5. The combination to form a foldable reflecting apparatus,—of a forwardly facing, normally vertical, mirror,—two rearwardly facing, normally angularly-disposed mirrors,—a hinged connection between the two rearwardly facing mirrors, a fastening means for tightening said hinged connection to retain the rearwardly facing mirrors in desired positions,—foldable link connections between the upper part of the upper of the two rearwardly facing mirrors and the upper part of the forwardly facing mirror,—and means for supporting the vertical mirror and the hinged connection between the other two mirrors in a common plane.

6. In a reflecting apparatus of the character described, the combination with a carrying frame, of three mirrors: one a forwardly facing mirror pivoted to each carrying frame,—the other two rearwardly facing mirrors hingedly connected to each other by a hinge supported upon said carrying frame,—and a foldable union between the upper of the two hingedly connected mirrors and the vertical mirror.

THOMAS J. KENNEDY.

Witnesses:

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