Oct. 14, 1941. H. J. SAUER 2,259,179

REAR-VISION MIRROR BRACKET

Filed April 17, 1940

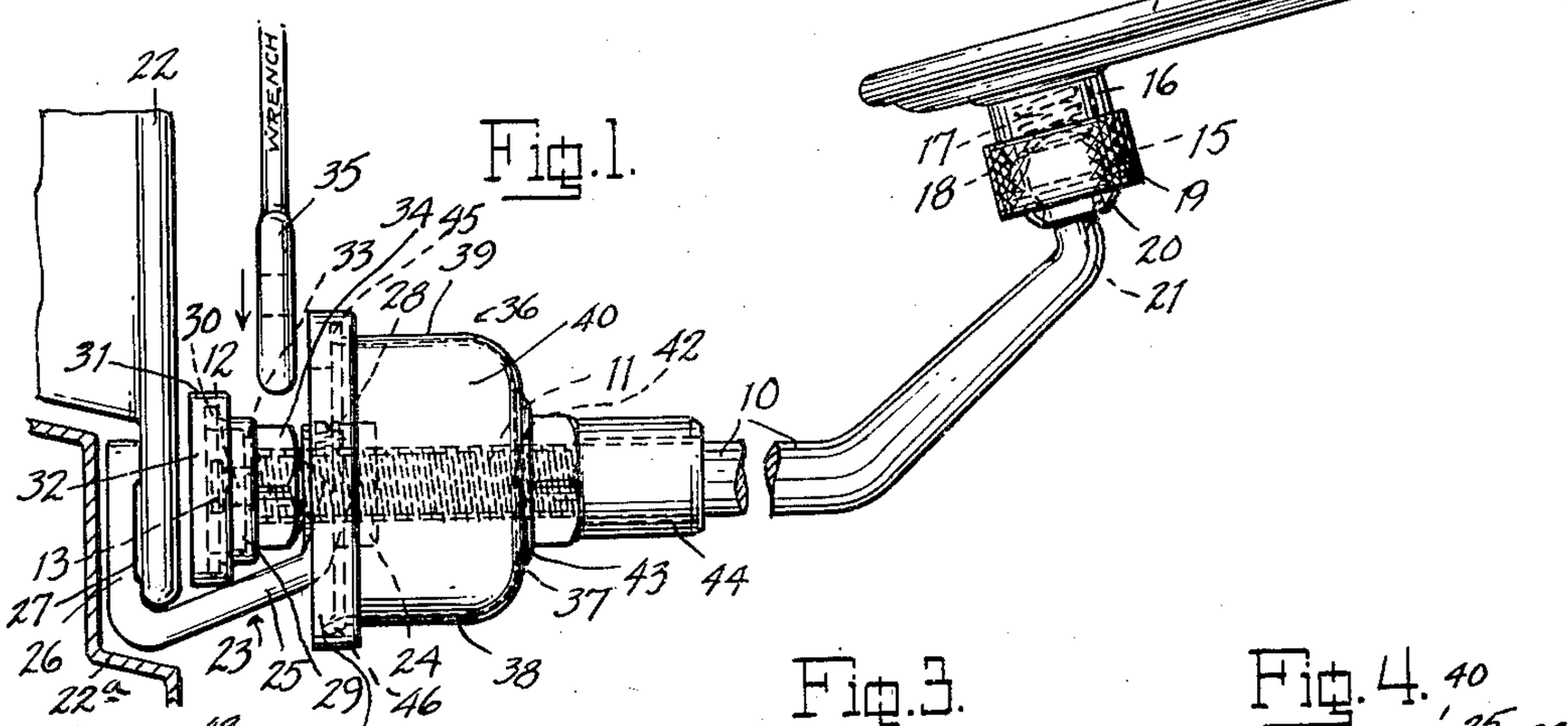

Fig. 1.

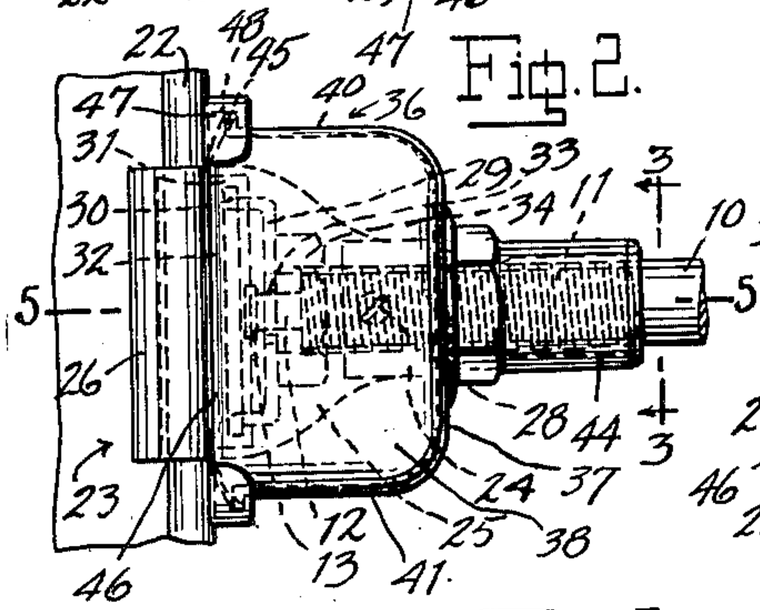

Fig. 2.

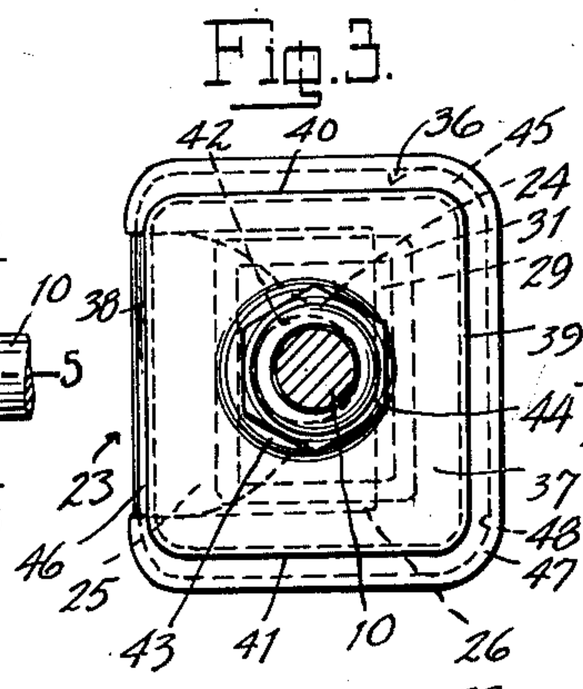

Fig. 3.

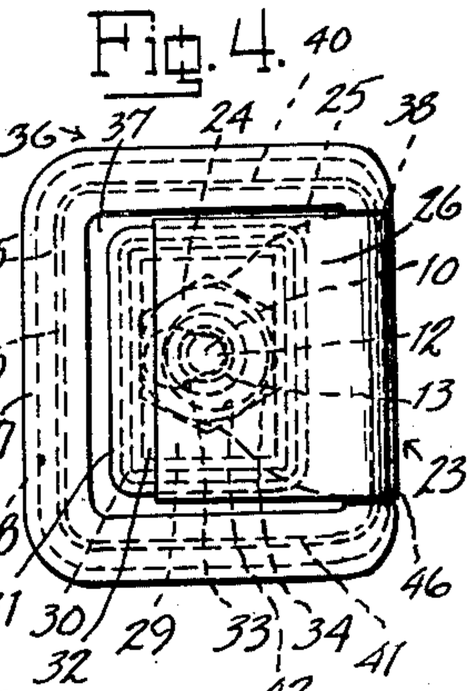

Fig. 4.

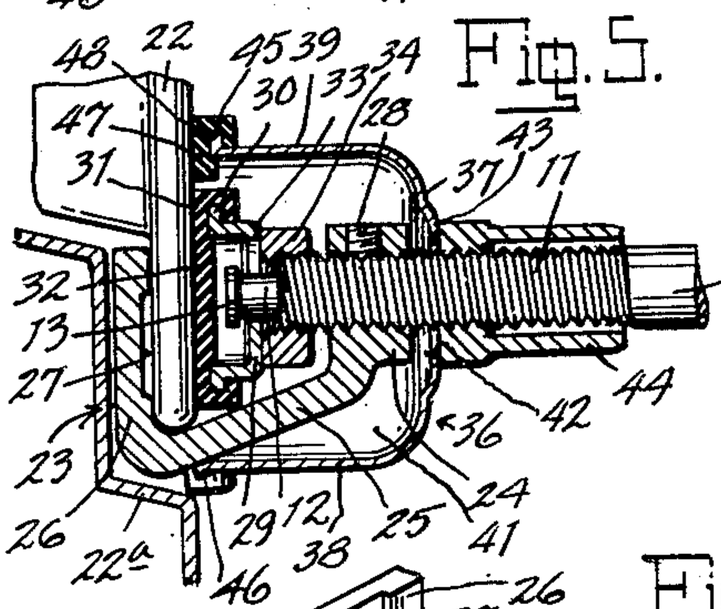

Fig. 5.

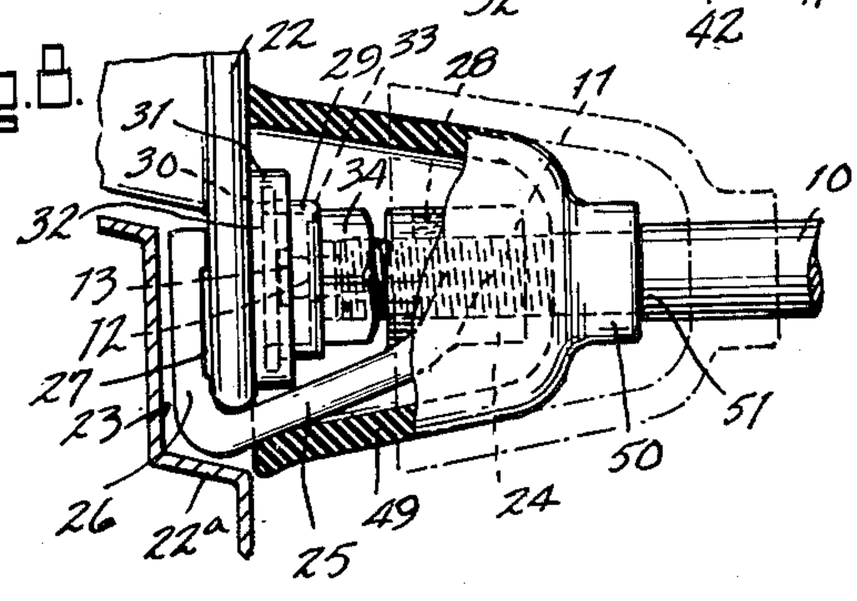

Fig. 8.

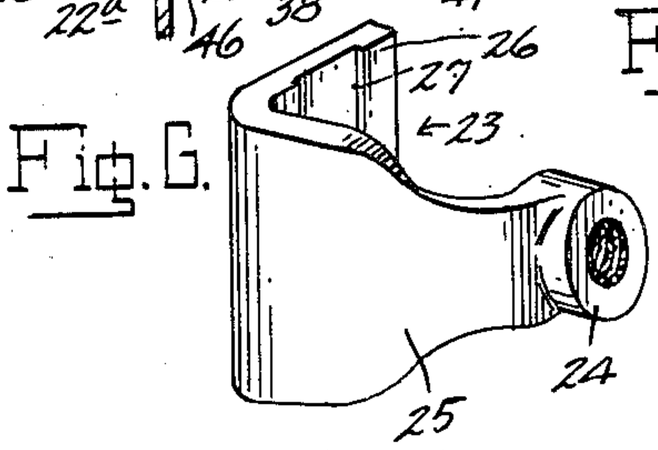

Fig. 6.

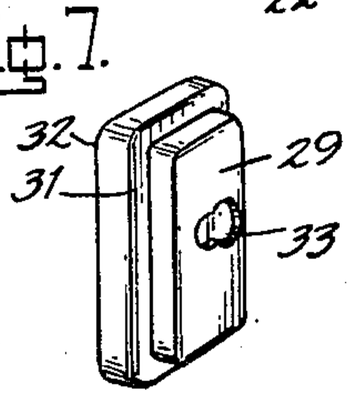

Fig. 7.

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REAR-VISION MIRROR BRACKET

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Application April 17, 1940, Serial No. 330,026

3 Claims. (Cl. 248—226)

The present invention relates to a rear vision mirror bracket, particularly of the type adapted for securing to the forward flanged edge or an automobile door.

In mirror brackets heretofore in use it has been the usual practice to provide a clamping member arranged to be hooked about the flange of the door to engage at the inner side, and cooperating clamping means for engaging the door at the outer side. In these previous brackets one of these clamping members constitutes a casing for enclosing the clamping means at the outer side, and due to the fact that this casing has to withstand the strain of the clamping action it has been necessary to construct it of relatively heavy material. In order to obtain an attractive finish this casing member is usually constructed of sheet metal, and it has been found that even where very heavy gauge sheet metal is employed there is a tendency for this metal to become distorted when any unusual strain is placed thereon. A further objectionable feature of these prior brackets is that where the casing member constitutes a part of the inner clamping member which engages around the door flange there is a space between the inner surface of the casing and the outer surface of the door which is both unsightly and permits dirt and water to enter the interior of the bracket. Furthermore the incorporation of the clamping means, as for instance, screws and the like, in the casing member results in an unattractive appearance, particularly in the case of those structures where screw heads are exposed or where holes are provided in the casing for access to screws provided interiorly of the casing.

It is an object of the present invention to provide a bracket in which the clamping means is entirely concealed, and which may be of sufficiently sturdy construction to withstand the strain of clamping and supporting the mirror, which due to its weight and the fact that it is supported at some distance from the door surface is subject to vibration which imposes a relatively great strain upon the clamping means.

It is a further object to provide a casing member to completely conceal the clamping means at all sides, so that there is no space through which dirt and moisture may enter. It is further proposed to provide such casing member which does not take any of the strain of the clamping action, and consequently this casing member may be formed of relatively thin material, as for instance, thin sheet metal, or moulded plastic composition, either of which is inexpensive, and lends itself to the production of sharply defined surface ornamentation and an attractive exterior finish. The casing member may also be constructed of flexible resilient material, as for instance, rubber.

A further object is to provide a bracket which will permit of the angular adjustment of the bracket arm, and which may be secured with facility. Another object is to provide a bracket which is theftproof, and to this end it is proposed to provide the clamping means so cooperatively arranged that in the closed position of the door it is impossible to remove any of the parts of the bracket or the bracket arm, even though the person attempting to remove the parts succeeds in loosening the clamping means.

A still further object is to provide a bracket which will rigidly support the mirror supporting arm along a relatively long portion thereof, and to this end it is proposed to provide one of the clamping means in the form of a clamping hook, preferably of cast metal, having a clamping plate portion for engaging the inner surface of the door flange, and having a relatively long hub disposed at the outer side of the door flange and connected to the clamping plate portion by a diagonally disposed arm inclined outwardly away from the door surface, the inner end of the mirror supporting arm being engaged in the hub and being rigidly supported thereby along a substantial length thereof and at a point substantially outwardly spaced from the door surface.

With the above and other objects in view, embodiments of the invention are shown in the accompanying drawing, and these embodiments will be hereinafter more fully described with reference thereto, and the invention will be finally pointed out in the claims.

In the drawing:

Fig. 1 is a plan view of a rear vision mirror bracket and mirror, according to an exemplary illustrated embodiment of the invention, the same being shown engaged with the door flange and prior to clamping, the casing member being in its adjusted open position to permit access to the outer clamping means by means of a wrench or the like.

Fig. 2 is a front elevation, showing the bracket in its clamped relation upon the door flange, the mirror supporting bracket arm being broken away.

Fig. 3 is a side elevation from the outer side, detached from the door flange, the mirror supporting bracket arm being shown in section taken along the line 3—3 of Fig. 2.

Fig. 4 is a side elevation from the inner side.

Fig. 5 is a horizontal sectional view taken along the line 5—5 of Fig. 2.

Fig. 6 is a perspective view of the clamping hook member.

Fig. 7 is a perspective view of the outer clamping member.

Fig. 8 is a view partially in plan and partially in horizontal section of a modified form of the invention, in which the casing member is formed of flexible resilient material, the dot-and-dash lines showing the adjusted open position of the casing to permit access to the outer clamping means.

Similar reference characters indicate corresponding parts throughout the several figures of the drawing.

Referring to the drawing, and particularly to Figs. 1 to 7 thereof, the rear vision mirror bracket according to the exemplary illustrated embodiment of the invention shown therein, comprises a mirror supporting bracket arm 10, provided at its inner end with a screw threaded portion 11 and a reduced diameter stud portion 12 having a shoulder forming head 13, and upon which threaded portion and stud portion the inner and outer clamping means are cooperatively engaged, as will hereinafter more fully appear.

Upon the outer end of the bracket arm there is adjustably mounted the rear vision mirror element 14, the adjustable mounting consisting of a ball end 15 formed upon the end of the arm 10 and engaged in an exteriorly threaded nipple 16 secured to the mirror casing, a spring 17 being disposed within the nipple which presses a concave-convex friction bearing plate 18 against the ball surface. A cap nut 19, provided with a spherical shoulder 20 having an aperture 21, is screwed upon the nipple 16 to retain the ball in assembled relation with the nipple, the spherical shoulder 20 fitting the ball surface and the aperture 21 being substantially larger than the neck of the arm 10 adjacent the ball, so that the connection may have universal swivelling movement about the ball to adjust the position of the mirror. The compressed spring exerts sufficient pressure to retain the position of the mirror frictionally, the cap nut 19 being loosened to reduce this friction during adjustment. It will be understood that instead of the mirror, a spot-light or a combination spot-light and rear vision mirror, or any other similar device may be provided upon the end of the arm 10.

The clamping means, which is adjustably mounted upon the inner end of the bracket arm, consists of an outer clamping element adapted to engage the outer surface of the automobile door flange 22 and an inner clamping member adapted to extend around the edge of the flange and engage it at its inner side in opposed relation to the outer clamping member.

The inner clamping member, indicated generally as 23, is of hook-shape and is preferably in the form of a relatively heavy casting, of brass or bronze, so as to effectually take the strain of the clamping action without distortion, and consists of a cylindrical interiorly threaded hub portion 24, a diagonally extending supporting arm 25 for the hub portion, which is adapted in the operative relation of the door to extend around the edge of the door flange 22 with the arm projecting outwardly from the outer surface of the door, while the axis of the hub 24 is at a right angle to the outer surface of the door, and a clamping plate portion 26 adapted to engage the inner surface of the door flange, and disposed in a plane at right angles to the axis of the hub portion 24 in opposed relation thereto. The clamping surface of the plate portion 26 is preferably recessed, as at 27, to provide a vertically ribbed surface for a more positive firmly contacting engagement with the inner door flange surface.

The clamping hook member 23 is adjustably engaged upon the screw threaded portion 11 of the bracket arm 10 at a point substantially outwardly spaced from the stud portion 12 at the inner end of the bracket arm, and a set screw 28 is provided in the hub portion 24 which may be tightened against the bracket arm to fix its position of relative angular adjustment, after the clamping hook member is engaged with the door flange to determine the exact point at which the user of the mirror bracket desires to have the mirror positioned with respect to his line of vision.

The outer clamping member consists of a rectangular box-like member 29, preferably formed of relatively heavy material, as cast metal, or heavy gauge sheet metal, so as to effectually take the strain of the clamping action without distortion, and is provided with an outwardly projecting rim flange 30 engaged in the grooved rim 31 of a door surface engaging pad member 32, preferably of rubber or other similar yieldable material to engage the door without marring or scratching it. A bayonet slot 33 is provided in the member 29 for locking engagement with the headed stud portion 12, the small portion of the bayonet slot being central of the member 29 and adapted to closely engage the stud portion 12 and the large portion of the slot being adjacent the rearwardly disposed edge of the member 29 and slightly larger than the head 13, so that when the clamping member is shifted forwardly it may be engaged or disengaged with the stud portion 12. The purpose of this arrangement is to permit the outer clamping member to be readily assembled without the use of tools, and to provide a structure which is theft proof when cooperatively clamped upon the door flange. In this respect it is pointed out that in the cooperative clamped position, as shown in Fig. 5, the forward edge of the outer clamping member is approximately in contact with the inclined arm 25 of the inner clamping member 23, so that it is impossible to shift the outer clamping member forwardly to bring the enlarged portion of the bayonet slot into register with the head 13, and it is therefore impossible to remove the bracket arm 10 by screwing it outwardly, as the head 13 is prevented from passing through the small portion of the bayonet slot. In the closed position of the door the flange 22 engages within an angular recess 22a of the door frame, the end wall of this recess being opposed to the edge of the door flange, so that it is impossible to remove the clamping member from the door, or to shift it laterally. When the bracket is detached from the door flange the inclination of the arm 25 provides sufficient space forwardly of the outer clamping member, so that the clamping member may be shifted forwardly to the point where the head 13 may pass freely through the enlarged portion of the bayonet slot.

Upon the threaded portion 11 of the bracket arm, between the hub portion 24 of the inner clamping hook member 23 and the outer clamping member 29, there is provided a clamping nut 34 which is arranged to be tightened down upon the outer clamping member to bring it into clamping engagement with the door surface. This nut may be conveniently turned by means of an ordi-

nary spanner wrench 35, as shown in Fig. 1, the casing member, presently to be more fully described, being adjusted outwardly to its open position to expose the nut for this purpose.

The casing member, indicated generally as 36, is in the form of a rectangular box consisting of an outer side wall 37, a front wall 38, a rear wall 39, and top and bottom walls 40 and 41, the inner side of the cover which faces the surface of the door being open. The side wall 37 is provided centrally with an aperture 42 and in surrounding relation to the aperture the wall is preferably provided with an outward embossing 43, forming a projecting nut bearing platform at the outer side, for engagement by the sleeved securing nut 44, which is engaged upon the threaded portion 11 of the bracket arm 10, and forming a clearance space at the inner side for the hub portion 24 of the clamping hook member. The inner edge of the casing member is provided along the rear, top and bottom walls thereof with an outwardly projecting right angular rim flange 45, and along the front wall 38 with a diagonally projecting lip flange 46, this lip flange adapted in the operative position of the bracket to engage the inclined surface of the arm 25 of the clamping hook member in sealed relation, and the rim flange 45 adapted to interlockingly engage a rubber sealing strip 47 extending along the rear, top and bottom walls and provided with an angular groove 48 in which the rim flange is engaged. The outer surface of this sealing strip extends into close contacting relation with the outer wall surfaces of the casing member, while the inner surface which engages the outer door surface extends inwardly beyond the inner wall surfaces, so as to provide a substantially wide supporting surface for the rim flange 45, which in the operative closed position of the cover member imbeds slightly into the sealing strip, as shown in Fig. 5, this compressed interlocking relation being such as to prevent any possibility of shifting of the sealing strip due to vibration or other causes.

The aperture 42 is substantially larger than the diameter of the bracket arm 10, so as to permit of a limited lateral shifting movement of the casing member as the casing member is secured in its closed position against the door surface, this shifting movement permitting the lip flange 46 to firmly engage the surface of the diagonal arm 25 of the clamping hook member, within a relatively large range of variation in the relative clamping positions of the inner and outer clamping members, due to variations in the thickness of the door flange 22, and without tilting of the casing member. Thus in the case of a relatively thicker door flange than that illustrated in Fig. 5, the casing member will be shifted rearwardly from the position illustrated, so as to maintain its sealing relation with the outer surface of the door and with the inclined arm 25.

In Fig. 1 the cover member is shown in its open position to permit access to the outer clamping member, the securing nut 44 being backed off to the end of the screw threads 11 for this purpose. In this position the relative looseness between the aperture 42 and the bracket arm 10 permits the casing member to be tilted to also permit of access to the set screw 28 of the clamping hook member by means of a screw driver to fix the adjusted angular position of the bracket arm. When this angular position is fixed, and the outer clamping member is securely clamped, the casing member is closed to completely enclose the clamping parts of the bracket and effectually seal them against the entrance of dirt and water. In this relation it is only necessary that sufficient pressure be exerted upon the casing member to maintain it firmly in sealed relation there being no strain of the clamping action imposed upon this casing member. Consequently the casing member may be formed of relatively thin material, as for instance, thin sheet metal, or moulded plastic material, which would be entirely impractical if any appreciable clamping strain was imposed upon the casing member. In addition to the inexpensiveness of this type of casing member, it lends itself to more attractive surface finishing. In the case of sheet metal it may have sharply defined designs impressed therein, and in the case of moulded plastic material, it may in addition to having sharply defined designs be provided in various colors. In view of the fact that the casing member need not engage the door surface with any great pressure the resilient sealing strip may if desired be dispensed with, or it may be moulded directly upon the edge of the casing member.

In Fig. 8 I have shown a modified form of casing member 49 formed of moulded resilient rubber, and provided with a cylindrical neck portion 50 snugly engaged about the arm 10. This engagement may be sufficiently tight so as to maintain the cover member in its closed sealing relation frictionally, while permitting it to be forced outwardly upon the arm to expose the outer clamping member during mounting of the bracket. Also the clamping arm may be shouldered, as at 51, in outwardly spaced relation to the screw threads 11, so as to positively retain the neck portion 50 in closed position, while permitting the inner sealing edge to yield and conform to the surface of the door, the shoulder being sufficiently low however to permit the neck portion 50 to be forced over it to the open position, as shown by the dot-and-dash lines.

I have illustrated and described preferred and satisfactory embodiments of the invention, but it will be understood that changes may be made therein, within the spirit and scope thereof as defined in the appended claims.

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

1. In a bracket for a rear vision mirror or the like for attachment to a vehicle member having inner and outer substantially parallel surfaces and an edge surface between said inner and outer surfaces, a bracket arm, an inner clamping member having a securing portion secured upon said arm in spaced relation to the end of said arm, a clamping portion to engage the inner surface of said vehicle member and a connecting arm portion between said securing and clamping portions to extend about said edge surface of said vehicle member, an outer clamping member disposed between the end of said bracket arm and the outer surface of said vehicle member, means adapted to move one of said clamping members relatively to the other clamping member to clamp them with respect to said vehicle member, and a four-sided casing member adjustably mounted upon said bracket arm outwardly of said securing portion of said inner clamping member adapted to be moved longitudinally of said bracket arm between closed and open positions, and adapted in the closed position to be engaged along three of its sides

with the outer surface of said vehicle member in surrounding relation to said outer clamping member, and to be slidably engaged along its other side with said connecting arm portion of said inner clamping member.

2. In a bracket for a rear vision mirror or the like for attachment to a vehicle member having inner and outer substantially parallel surfaces and an edge surface between said inner and outer surfaces, a bracket arm, an inner clamping member having a hub portion secured upon said arm in spaced relation to the end of said arm, a clamping portion to engage the inner surface of said vehicle member, and a connecting arm portion between said hub and clamping portions to extend about said edge surface of said vehicle member, an outer clamping member disposed between the end of said arm and the outer surface of the vehicle member to clampingly engage it, and a nut screwed upon the inner end of said arm between said hub portion of said inner clamping member and said outer clamping member adapted upon being screwed toward said outer surface of said vehicle member to clamp said outer clamping member against the outer surface of said vehicle member.

3. In a bracket for a rear vision mirror or the like for attachment to a vehicle member having inner and outer substantially parallel surfaces and an edge surface between said inner and outer surfaces, a bracket arm, an inner clamping member having a hub portion secured upon said arm in spaced relation to the end of said arm, a clamping portion to engage the inner surface of said vehicle member, and a connecting arm portion between said hub and clamping portions to extend about said edge surface of said vehicle member, an outer clamping member disposed between the end of said arm and the outer surface of the vehicle member to clampingly engage it, a nut screwed upon the inner end of said arm between said hub portion of said inner clamping member and said outer clamping member adapted upon being screwed toward said outer surface of said vehicle member to clamp said outer clamping member against the outer surface of said vehicle member, and a casing member adjustably mounted upon said bracket arm outwardly of said hub portion for movement between open and closed position, adapted in the open position to expose said nut at its peripheral sides and adapted in the closed position to engage the outer surface of said vehicle member in surrounding relation to said nut and said outer clamping member, one wall of said casing member being slidably engageable with the surface of said connecting arm portion of said inner clamping member.

HENRY J. SAUER.