April 14, 1936. E. L. BATTEE 2,037,303

UNIVERSAL JOINT UNIT

Filed July 22, 1933

Fig. 1

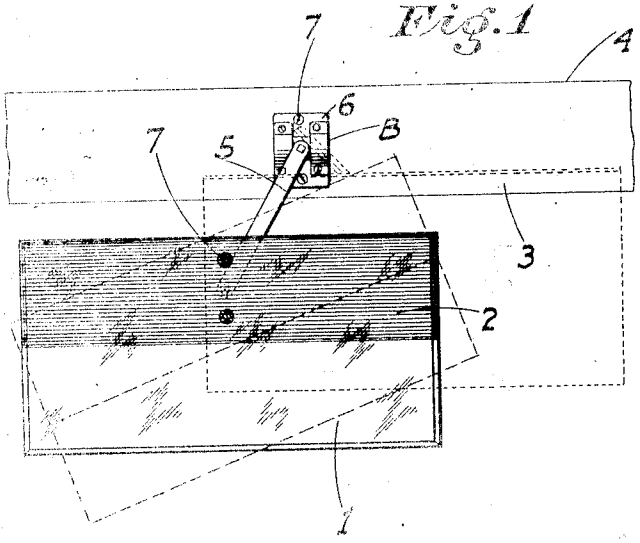


Fig. 2

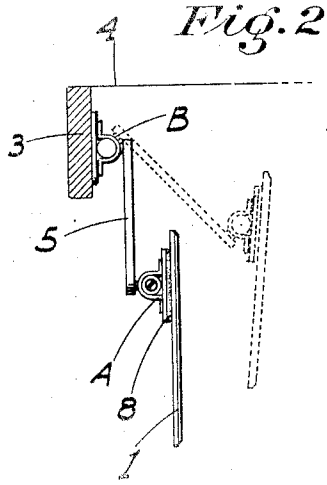


Fig. 3

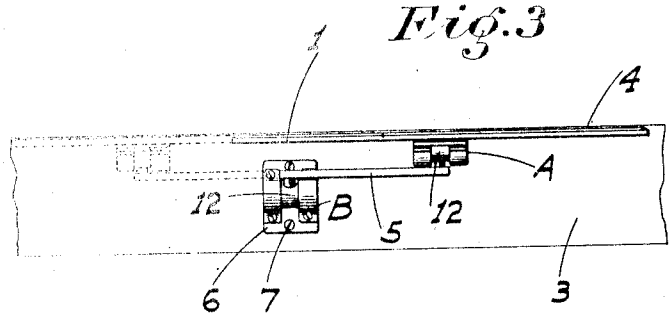


Fig. 4

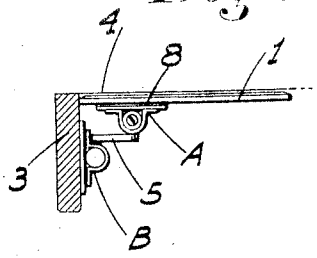


Fig. 7

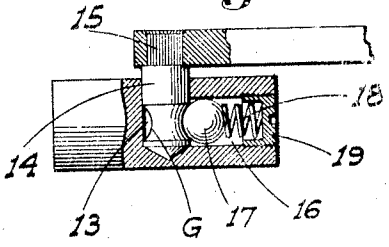


Fig. 5

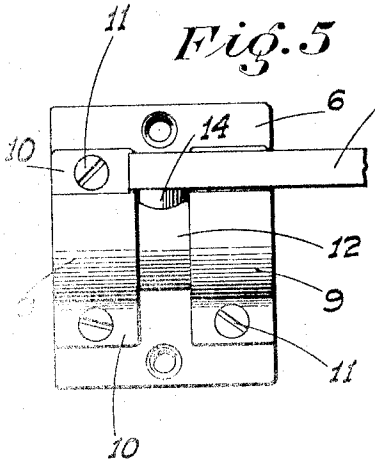


Fig. 6

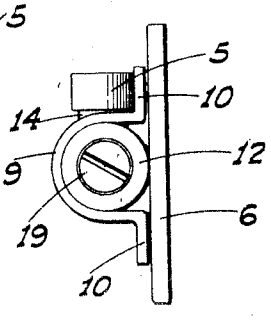
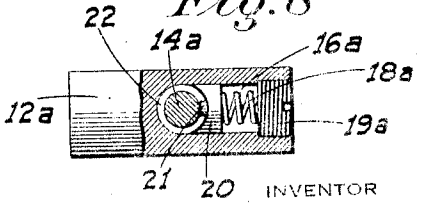


Fig. 8



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Elvin L. Battee, Sacramento, Calif.

Application July 22, 1933, Serial No. 681,781

3 Claims. (Cl. 287—14)

This invention relates particularly to a universal joint supporting means for glare shields, such as are mounted in motor vehicles. A major object is to provide a particular mounting for the shield so arranged that the latter may have a great range of movement and be easily and quickly disposed in any desired position, as conditions may demand and which also enables the device to be disposed when not in use, in directly flat contact with the roof of the car.

A further object is to provide a joint structure for the purpose so constructed that the tension on the relatively movable parts may be readily adjusted to suit any particular condition.

A further object of the invention is to produce a simple and inexpensive device and yet one which will be exceedingly effective for the purpose for which it is designed.

These objects I accomplish by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claims.

In the drawing similar characters of reference indicate corresponding parts in the several views:

Fig. 1 is a front view of the shield as mounted in a car and in an operative position.

Fig. 2 is an end view of the device as in the position shown in Fig. 1.

Fig. 3 is a view looking in the same direction as in Fig. 1 showing the shield folded up against the roof.

Fig. 4 is an end view of the shield in the position occupied in Fig. 3.

Fig. 5 is a full sized front view of the universal joint member.

Fig. 6 is an end view of the same.

Fig. 7 is a longitudinal view of the movable unit of the universal joint detached and mainly in section.

Fig. 8 is a similar view of a modified form of unit taken in a plane at right angles to that of Fig. 7.

Referring now more particularly to the characters of reference on the drawing, the shield comprises a pane 1 of rectangular form and preferably made of glass impregnated throughout with pigment to give a smoked or grey appearance so as to cut any bright light passing therethrough. Other suitable materials however may be used instead. The upper half of the back side of the pane is coated with silver as indicated at 2 so as to render said upper portion completely opaque and at the same time give the corresponding front surface reflecting properties so that this portion of the shield serves as a rear view mirror. This special type of shield is more particularly claimed in my co-pending application for patent, Serial No. 681,780, filed July 22, 1933.

By reason of this construction the pane when properly positioned will positively cut off light otherwise passing through the windshield of the car and the upper portion of the shield to the eyes of the driver, and yet permits him to see through the lower portion of the shield with ample clearance for proper driving but with all glare cut owing to the smoked nature of the glass. The upper portion of the shield when thus disposed serves as above stated as a rear vision mirror, and at night the glare of headlights from the rear and reflected from the mirror are softened on account of the coloring of the glass.

The mirror is mounted for movement in different planes by a special form of universal joint which forms the subject matter of this application. One such joint A is attached to the back of the upper opaque portion of the shield centrally of its area while the other joint B is attached to the transversely extending vertical panel 3 of the car which as usual extends from the top of the windshield to the roof 4 of the car. Certain members of the joints, as hereinafter described, are connected together by a rigid link 5 which supports the shield in relatively suspended relation to the panel.

Since the two joint units are duplicates of each other only one will be described in detail. Each joint therefore comprises a base plate 6 adapted to be secured by screws 7 to the panel or to the back of the shield as the case may be. The plate of the joint A has a gasket 8 of cork or the like interposed between said plate and the adjacent surface of the glass to prevent possible breakage or scratching of the silver coating.

Mounted on the plate 6 in axially alined and longitudinally spaced relation are saddles 9 having laterally projecting base flanges 10 receiving screws 11 by which the saddles are adjustably secured to the plate. The saddles on the joint B are disposed so that their axes are horizontal while those on the joint A extend parallel to the longitudinal edges of the shield.

Turnably mounted in the saddles is a pivot 12 which also bears for its full length against the plate 6, resistance to turning of the shaft being governed by adjustment of the screws 11. The flanges 10 of the saddles are normally spaced from the plate slidably as shown in Fig. 6 so that said saddles may have a tight clamping grip on the shaft when the screws are tightened down. The shaft between the saddles is provided with

a blind laterally extending bore 13 in which a pin 14 turns, said pin projecting from the shaft to a point beyond the periphery of the saddles and being connected at its outer end to the adjacent end of the link 5 in non-turning relation, as shown at 15 in Fig. 7.

The pin is prevented from pulling out from the shaft and ease of rotation adjustably restricted by suitable means, two forms of such means being shown in Figs. 7 and 8. In the form shown in Fig. 7 the shaft is bored from one end to communicate with the bore 13, as shown at 16. A ball 17 disposed in the bore bears against a curved circumferential groove G in the pin. This ball is pressingly held against said grooved surface by a compression spring 18 seated in the bore 13 and adjustably compressed by a screw plug 19 mounted in the outer end of the bore 16.

In the type of device shown in Fig. 8 the same result is obtained by the use of a short plunger 20 disposed in the bore 16*a* in the shaft 12*a*. The end of this plunger is curved to follow the contour of and engage the pin 14*a* and has an axial projection 21 engaging a circumferential groove 22 in the pin, so that the latter is prevented from moving axially. The plunger is pressed against the pin in the same manner as the ball—that is, by means of a compression spring 18*a* held in place by a screw plug 19*a*. The shaft 12 extends only to the ends of the supporting saddles so that a neat compact arrangement is had, longitudinal shifting of the shaft being positively prevented by the projecting portion of the pin 14 as an axis. Similarly the opposite end of the link may turn about the pin 14 of the joint B as an axis and may independently turn about the corresponding shaft 12 as an axis.

I have determined from comparison that a much greater range of movement of the link and a correspondingly greater range of movement of the ball is possible with the use of my improved joint than with the form of ordinary ball joint. This is because the link is free to turn on end pin 14 through an arc of 180° even when said pin is turned so as to be parallel to the back plate, while said link can also swing through an arc of 180° about the shaft 12 as an axis. This is not the case with the ordinary ball and socket type of joint, as will be realized.

As a result, the shield may be easily swung to a great number of different positions when in use, both as regards the distance from the windshield, its height relative to the panel 3 and with respect to the vertical plane of the fixed joint B transversely of the vehicle on which the shield is mounted. If the shield is tilted at a downward angle to the left, when driving at night or when the sun is low in the heavens toward the left of the car, the opaque upper portion of the shield shuts off the glare from the sun or from headlights approaching on the left-hand side of the road, while at the same time perfect driving vision of the right hand side of the road is had through the upwardly tilted lower portion of the shield. The shield may also be swung up to lie flat against the roof of the car when not in use, as illustrated in Figs. 3 and 4. Since resistance to turning of the rotatable parts may be adjusted to almost any degree by adjusting the saddle screws 11 or the plug 19, these parts may be arranged so that while the shield may be easily pulled or pushed to any desired position, it will not be dislodged from such position by any vibrations incident to the operation of the car.

While I have particularly designed and described this joint unit for use in connection with glare shields, I wish it understood that I do not desire to limit myself to such use of the joint unit, since it may be adapted for other types of service or under any conditions which call for the support of a member for universal movement relative to a fixed surface.

From the foregoing description it will be readily seen that I have produced such a device as substantially fulfills the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claims.

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

1. A universal joint comprising a shaft, mounting means turnably supporting the same, a pin extending radially therefrom, said shaft having a blind radial socket into which the pin turnably projects, a rigid link projecting radially from and rigid with the outer end of the pin, and means in the shaft and engaging the pin to both yieldably restrain rotation of the pin and also positively preventing axial movement thereof.

2. A universal joint comprising a shaft, mounting means turnably supporting the same, a pin extending radially therefrom, said shaft having a radial socket into which the pin turnably projects, a rigid link projecting radially from the outer end of the pin, said pin having a circumferential groove about its socket enclosed portion, an element slidably mounted in the shaft axially thereof and engaging said groove and the adjacent periphery of the pin, and a spring yieldably pressing said element against the pin.

3. A universal joint comprising an axially turnable shaft, mounting means turnably supporting the same, a pin extending radially from the shaft, said shaft having a blind radial socket into which the pin turnably projects, a link rigid with and projecting radially from the outer end of the pin, and means concealed within the shaft and engaging the adjacent portion of the pin to hold the latter against axial movement while allowing it to rotate.

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