May 21, 1929. R. L. PARKS 1,713,710

WINDSHIELD CLEANER

Filed Aug. 20, 1927

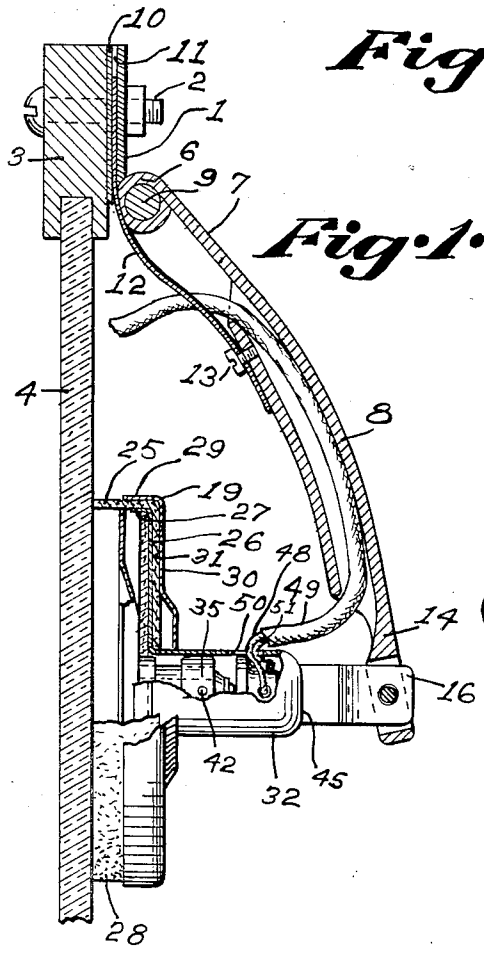


Fig. 1.

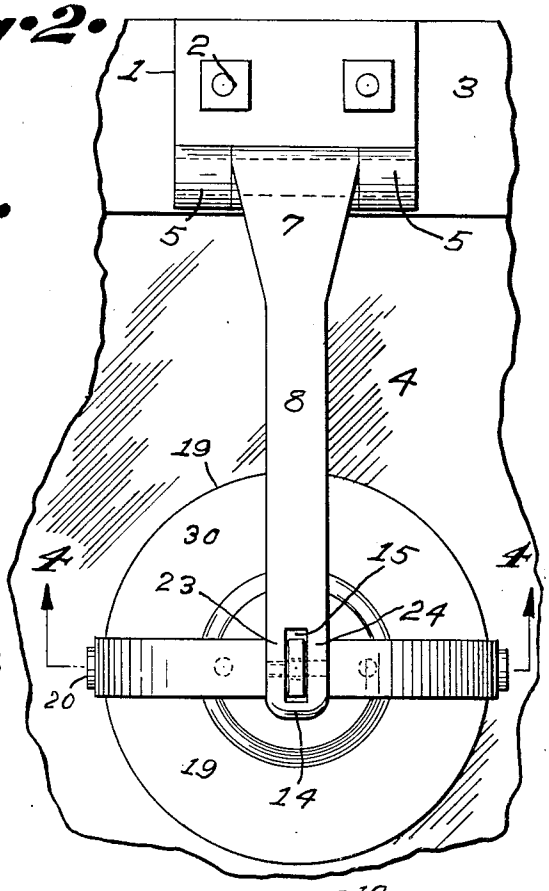


Fig. 2.

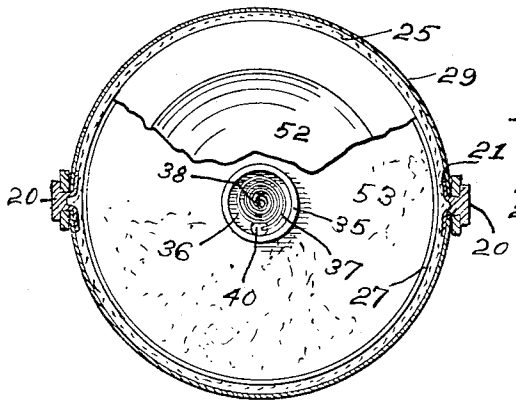


Fig. 3.

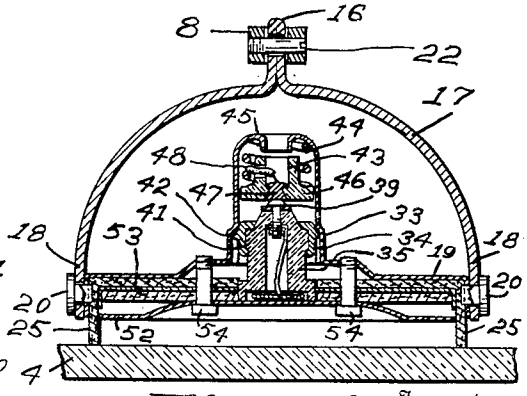


Fig. 4.

Inventor:
Randall L. Parks,
By Hugh K. Wagner,
Attorney.

Patented May 21, 1929. 1,713,710

UNITED STATES PATENT OFFICE.

RANDALL L. PARKS, OF COLE CAMP, MISSOURI.

WINDSHIELD CLEANER.

Application filed August 20, 1927. Serial No. 214,266.

This invention relates to means for repelling or removing moisture in the form of dew, frost, rain, or snow, and the like from the windshields of vehicles or from any transparent shield or protecting pane whose transparency is impaired by the accumulation of such deposits of moisture thereon. The purpose of this invention is to provide a simple moisture repelling device that may be conveniently applied to the windshield. Another object is the provision of such a device that will have no moving parts. Other objects and advantages will appear in the course of the following description of a preferred embodiment of the invention.

In the accompanying drawing forming part of this specification, in which like numbers of reference denote like parts wherever they occur,

Figure 1 is a longitudinal central sectional view of the device as it appears when applied to a windshield, certain parts being broken to show portions in elevation and others in the section;

Figure 2 is an elevation of the same;

Figure 3 is a view of the side of the device that is presented to the windshield, a portion being broken away to reveal other portions concealed thereby; and

Figure 4 is a transverse central sectional view taken on the line 4—4 in Figure 2.

A bracket 1 is attached by means of bolts 2 to the frame 3 of the windshield pane 4. Bracket 1 forms the butt of a hinge and presents curled projections or eyes 5 that straddle the curled projection or eye 6 of the strap 7, preferably formed as part of the hollow arm 8, a pin 9 passing through the eyes 5 and 6 to connect pivotally the butt and strap portions of the hinge. A plate or sheet 10 is interposed between the bracket 1 and the frame 3 and underlies a groove 11 that is formed in the underside of the bracket 1 to receive and guide a flat spring 12 whose other end is attached by a screw 13 to the underside of the arm 8. The free end 14 of arm 8 is a solid continuation of the anterior side of the intermediate hollow portion of the arm, and is slotted at 15 from front to rear to receive loosely a lug 16 that projects forwardly of the intermediate portion of an arcuate-shaped link 17, whose rear ends 18 straddle a cup-shaped casing 19, and are pivotally connected thereto by pins 20, that pass through openings therefor in the ends 18 and casing 19 and whose ends 21 are bifurcated and spread in opposite directions against the inner side of the casing 19. A pin 22 passes through transverse holes in the lug 16 and the slotted end 14, the pin fitting loosely in lug 16 so as to permit a slight universal movement of the lug thereon, and being externally screw-threaded at one end to fit the internally screw-threaded transverse hole in one side 23 of the end 14, and having its other end slotted for the application thereto of a screw driver and entering the transverse hole in the other side 24 of the end 14 in unthreaded relation thereto. Spring 12 normally tends to straighten and thereby to urge the casing 19 toward the pane 4 through the intervention of the arm 8 and the link 17.

A cup-shaped gasket 25 lines the interior of the casing 19 and is clamped thereagainst by a plate 26, that is preferably provided with a cylindrical flange 27 to maintain the cylindrical flange 28 of the gasket 25 against the cylindrical flange 29 of casing 19. Gasket flange 28 preferably extends a suitable distance beyond the casing 19 and is adapted to bear on the pane 4 to form a cup-shaped inclosure whose mouth is thus closed by the pane 4. Web 30 of casing 19 and web 31 of gasket 25 are apertured centrally to accommodate a cylindrical shell 32 that is formed integral with the plate 26 and rises from the margin of a central aperture therein. The interior side of shell 32 is provided with an annular groove 33 and a pair of diametrically opposed grooves 34 that extend longitudinally from the groove 33 to the inner end of the shell. A cylindrical plug 35 of suitable refractory insulating material is seated in the shell 32, and the end of the plug that faces the pane 4 is recessed or depressed centrally at 36 to receive a coil 37 of resistance wire, one end of which passes through a central opening 38 in the plug and is connected to the metal tip 39 that closes the opposite end of the opening 38, and the other end of which passes through an eccentrically disposed opening 40 in said plug and is connected to a metal band 41 that passes around the plug 35 and is suitably affixed thereto. Band 41 presents a pair of diametrically opposed protuberances 42 on its outer face that are adapted to ride in the grooves 33 and 34. Plug 35 is inserted in the shell 32 by presenting it thereto so that protuberances 42 are alined with grooves 34, and then pushing it in until the protuberances 42 in grooves 34 reach groove 33, a slight turn of the plug then rotating the protuberances 42

out of alinement with the grooves 34 and thereby preventing the plug from being retracted until the plug is turned again to bring the protuberances 42 into alinement with the grooves 34. A cylindrical plug 43 of suitable insulating material is disposed in the shell 32 behind the plug 35 and is urged into engagement with plug 35 by a compressible coil spring 44 that intermediates the end wall 45 of shell 32 and a flange 46 on the plug 43. Plug 43 bears a metal center 47 that is engaged by the tip 39 and that is connected to one insulated wire or lead 48 of a flexible cord 49, that passes through a hole 50 in the wall of shell 32 and up into the free end of arm 8 and therethrough until it emerges at the other end of the arm, from whence it passes to any suitable source of electrical energy through suitable switches or controlling devices (not shown). The other insulated wire or lead 51 is connected to the spring 44, from whence the current passes through shell 32 and band 41 to heating coil 37. Plug 35 projects beyond plate 26; and the coil-bearing recess 36 in the projected end is covered by a metal disc 52 that extends radially to the gasket flange 28. A gasket or layer 53 of heat-insulating material is interposed between the plate 52 and the plate 26, the several layers of plates and gaskets being clamped together by means of screws 54 that pass in unthreaded relation through openings therefor in the gaskets and in the plates 26 and 52 and that screw into tapped openings therefor in the web 30 of casing 19. The concentrated heat from the coil 37 enters the disc 52 and is diffused through the latter over a large area, from which it is imparted to the pane 4 by radiation and by convection of the air inclosed in the space between the plate 52 and the pane 4. The concentration of a high degree of heat on a small area of the glass pane 4 might result in the cracking of the glass; and the positioning of the coil 37 in spaced relation to the pane 4, and the heat diffusing effect of plate 52 tend to prevent such an occurrence. Plate 52 is preferably dished or concave on the side thereof that faces the pane 4, so that the marginal portions of the plate, which are cooler than the central portion thereof, are disposed closer to the pane 4 than the said central portion, thereby varying the air gap between the disc 52 and pane 4 to compensate for the unequal heating of the disc and thereby to effect uniform distribution of heat from the plate to the pane. The heating of the pane in this manner drives off all deposits of moisture, dew, rain, snow, frost, or sleet therefrom and so prevents the vision of the driver from being obscured thereby.

The parts that need not be of insulating material are preferably formed of brass or steel, and the gaskets 31 and 53 are preferably formed of sheet asbestos. It will observed that the pivotal connection of the arm 8 to the windshield permits the casing 19 to be lifted from the pane 4 for inspection or access thereto or for other purposes, and that the pivotal connection of the casing 19 to the arm 18 allows the casing to be turned to further facilitate such inspection and the like. Furthermore, the universal movement permitted by the loose connection of lug 16 to arm 8, and the other pivotal connections insure that the edge of the flange 28 will be automatically accommodated to the pane 4 when spring 12 holds the heating device against the pane.

Having thus fully described this invention, I hereby reserve the benefit of all changes in form, arrangement, order, or use of parts, as it is evident that many minor changes may be made thereto without departing from the spirit of this invention or the scope of the following claims.

I claim:

1. A heating device for the purpose set forth comprising a cup-shaped casing, a gasket adapted to fit therein so that its edge extends beyond the edge of the casing, a plate within the casing for clamping the gasket against the wall of the casing, a heat diffusing plate supported in the casing in retracted relation to the plane of the gasket edge, heat insulating material intercalating said plates, and an electrically heated element disposed behind the heat diffusing plate.

2. A heating device for the purpose set forth comprising a cup-shaped cover, an electrically heated element disposed within the cover, and a heat-distributing plate disposed transversely in the mouth of said cover and adapted to be heated by the said element.

3. A heating device for the purpose set forth comprising a housing presenting an open side, an electrically heated element disposed centrally within the housing, and a heat distributing plate within the housing adjacent and substantially parallel to the open side, and having its central portion heated by said element, the said plate presenting a concave exterior face to equalize the radiation from the unequally heated central and outer portions thereof.

4. A heating device for the purpose set forth comprising a cup-shaped casing, a gasket adapted to fit therein so that its edge extends beyond the edge of the casing, a plate within the casing for clamping the gasket against the wall of the casing, a heat diffusing plate supported in the casing in retracted relation to and substantially parallel to the plane of the gasket edge and presenting a concave exterior face, heat insulating material intercalating said plates, and an electrically heated element disposed centrally behind the heat-diffusing plate.

5. A heating device for the purpose set forth comprising a cup-shaped casing, a gasket adapted to fit therein so that its edge ex-

tends beyond the edge of the case, a plate within the casing for clamping the gasket against the wall of the casing and presenting a central, rearwardly directed casing, a heat diffusing plate supported in the first-named casing in retracted relation to and substantially parallel to the plane of the gasket edge and presenting a concave exterior face, heat insulating material intercalating said plates, and an electrically heated element disposed centrally behind the heat-diffusing plate and positioned within the casing associated with said plate.

In testimony whereof I hereunto affix my signature.

RANDALL L. PARKS.