April 8, 1930. E. T. NORBECK 1,753,618

FROST SHIELD

Filed March 9, 1928

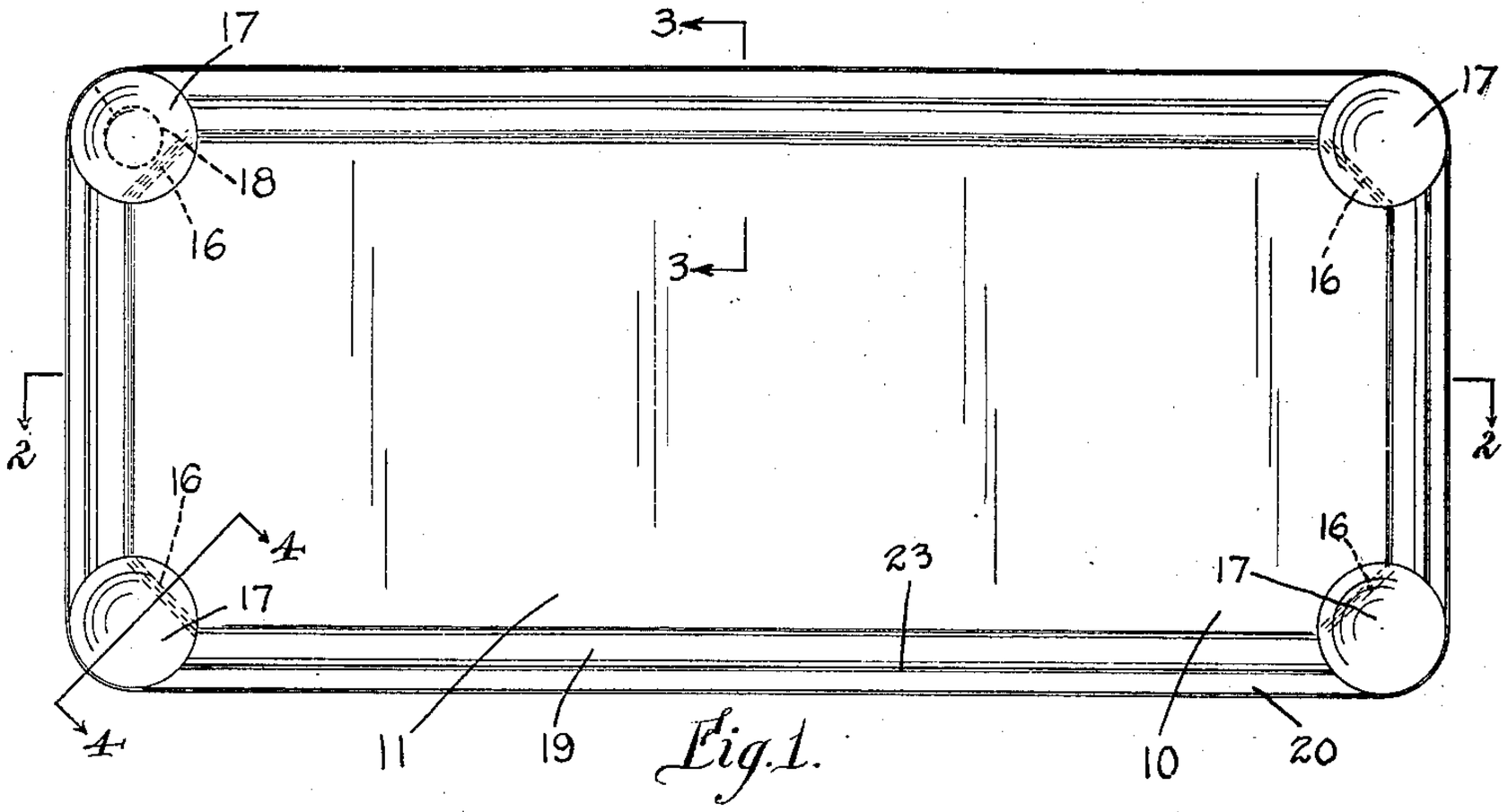


Fig. 1.

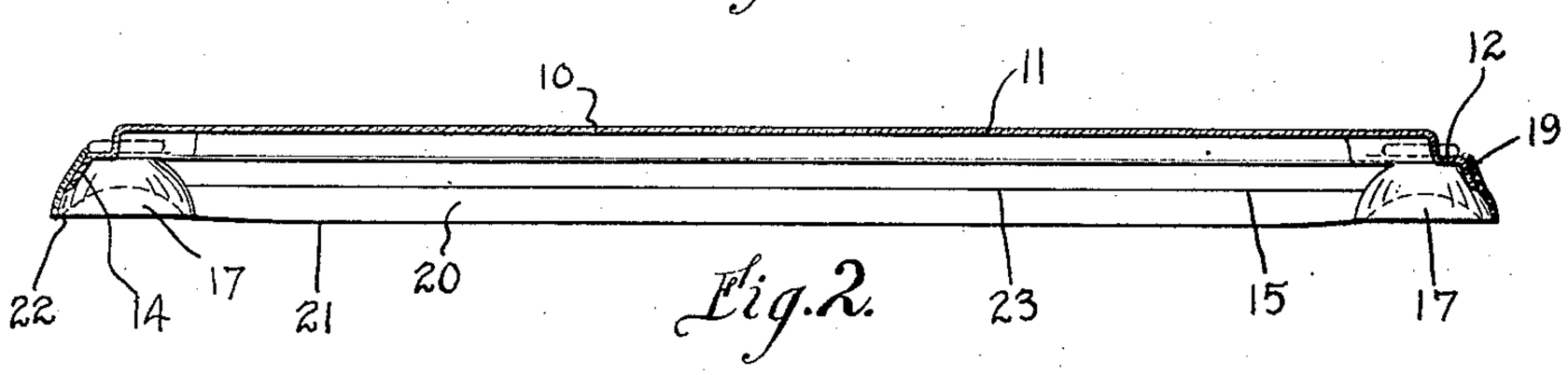


Fig. 2.

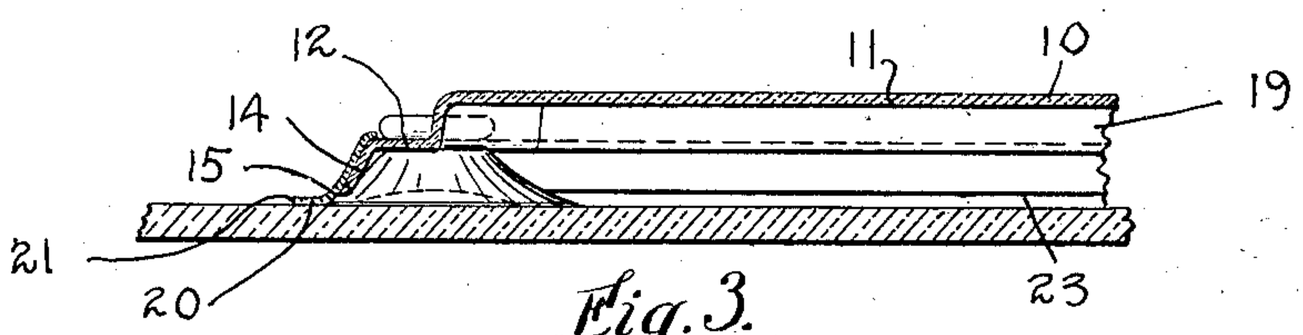


Fig. 3.

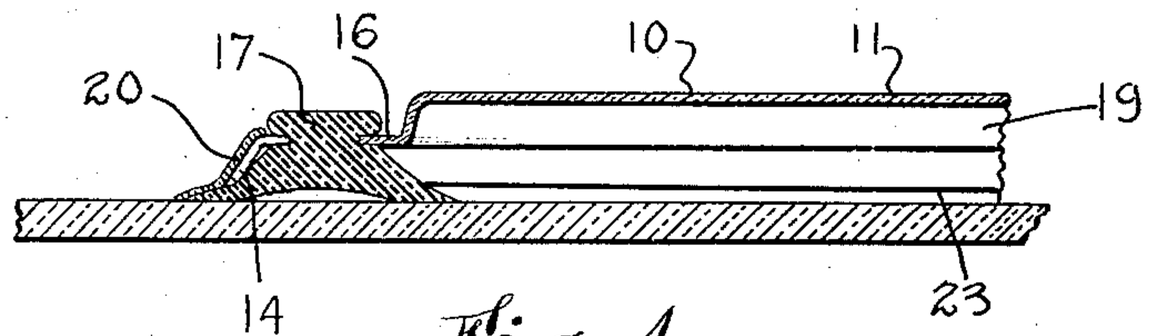


Fig. 4.

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Patented Apr. 8, 1930 1,753,618

UNITED STATES PATENT OFFICE

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FROST SHIELD

Application filed March 9, 1928. Serial No. 260,417.

My invention relates to frost shields and has for its object to provide a transparent member with a frame portion integrally connected to said member.

Another object of the invention resides in forming said frame with an offset portion having a plane surface substantially parallel to the body of said transparent member and with an outwardly flaring portion connected to said offset portion and in permanently attaching to said outwardly flaring portion a flexible contact strip adapted to yieldably and freely contact with the surface on which the frost shield is to be applied.

Another object of the invention resides in depressing the corners of the transparent member to the level of the offset planiform portion and of attaching suction cups to the corners of said member, said suction cups being disposed within the outwardly flaring portion of said frame and having the surface thereof disposed substantially in continuity with the edge of said outwardly flaring portion.

Another object of the invention resides in attaching said contact strip jointly to said outwardly flaring portion and to said suction cups, the edge of said contact strip coinciding with the edge of said suction cups and extending outwardly beyond the edge of said contact strip.

The full objects and advantages of my invention will appear in the detailed description thereof and are particularly pointed out in the claims.

In the drawing illustrating my invention in one form:

Fig. 1 is a rear elevational view of my invention detached from the surface to which it is to be applied.

Fig. 2 is a longitudinal sectional view taken on line 2—2 of Fig. 1.

Fig. 3 is an enlarged fragmentary sectional view taken on line 3—3 of Fig. 1, showing the frost shield attached to the surface of a pane of glass.

Fig. 4 is a view similar to Fig. 3 taken on line 4—4 of Fig. 1.

In the use of the frost shield for automobile wind shields it is desirable to have a relatively light construction which will not readily shake loose when applied to the wind shield and which will form a continuous contact through its extent so as to provide a perfect dead air space and prevent the frosting of the wind shield when the temperature becomes sufficiently lowered. It is further desirable to construct the frost shield in such a manner that the same is not readily broken and in the event that the device is roughly handled so that the same will not become permanently injured. My invention provides a structure whereby all of these benefits are secured as will become apparent from the following description:

The invention proper, which is best shown in Figs. 1 and 2, comprises a sheet of celluloid 10 which is arranged with a body portion 11 of proper size and shape and which forms the window through which vision is had. In the instant case I have illustrated the portion 11 as being substantially rectangular in form though it can readily be comprehended that any size or shape of the device may be employed. The frame of the device which is indicated in its entirety at 19 is formed by subjecting the celluloid to pressure in suitable dies under heat. Along the marginal portion of the sheet 10 the same is pressed to provide an offset planiform strip or portion 12 which is parallel to the body portion 11 and extends completely around the same. In addition the extreme marginal portion of the sheet 10 is pressed to form an outwardly flaring portion 14 which extends away from the body portion 11 and forms a space between the extreme edge 15 of the device of the body portion proper. When applied to a wind shield or other window on which the device is to be used the body portion 11 serves as a storm window or auxiliary transparent member through which clear vision may be had while the planiform portion 12 and the outwardly flaring portion 14 form a frame structure integrally connected with the planiform portion 11 and completely surrounding the same which I previously stated is designated in its entirety at 19.

At the four corners of the body portion 11 indicated at 16 the body of said frost shield

is depressed to the level of the surface of the planiform portion 12, forming four spaces to which suitable suction cups 17 may be attached. These portions of the structure are arranged with circular openings 18 adapted to receive the heads or buttons of the suction cups so that the same may be disposed within the frame structure 19 previously referred to. It will be noted that the openings 18 are so disposed and the corners of the outwardly flaring portion 19 of sheet 10 is so constructed that the same contacts with the surface of the suction cups 17, causing the surface of said suction cups at their contacting portions with the members 14, to lie in substantial continuity therewith.

For the purpose of effecting a tight closure so as to provide a perfect dead air space between the transparent member 11 and the surface on which the device is attached I employ a contact strip 20 which may be constructed of thin flexible rubber, or any other suitable material. This contact strip is cemented or otherwise attached to the outer surface of the outwardly flaring portion 14 and to the contacting surfaces of the various cups 17. It will be noted that the extreme outer edge 21 of this contact strip coincides with the corresponding edge 22 of the various suction cups 17 while the same extends outwardly beyond the outer edge 23 of the outwardly flaring portion 14 of the device proper. Due to this construction the contact strip 20 may be conveniently spliced at any of the suction cups without breaking the seal along the surface of the glass and when the suction cups are pressed firmly in place the said contact strip forms a continuous contact throughout its extent with the surface of the glass to which it is attached so that a perfect dead air space is provided.

In the use of the invention it is merely necessary to moisten the suction cups or, if desired, to apply any other suitable liquid thereto and to merely press the device in place upon the wind shield. The suction cups 17 hold the structure properly attached while the extreme edge 21 of the contact strip 20 forms continuous contact with the surface of the wind shield upon which the device is attached. Where the length of the frost shield is fairly great additional suction cups may be arranged intermediate those disposed at the corners of the device or the entire frame 19 may be slightly bowed toward the surface of the glass on which it is to be used, near the center of the same, so that when pressure is applied to the various suction cups 17 contact may be had throughout the extent of the sealing strip 20.

My invention is highly advantageous in that a simple and effective device is provided whereby clear vision through the wind shield or other glass closures of automobiles or other structures may be had regardless of outside temperature. The device is extremely light in construction and once properly applied will not jar loose when used upon motor vehicles or other structures which are in constant motion. The contact strip serves to form an effective seal between the transparent member and the surface of the glass upon which it is to be used so that a perfect dead air space is provided. By attaching the contact strip jointly to the marginal edge of the frame structure and suction cups the sealing strip may be conveniently spliced at the suction cups so as to avoid a break in the continuity of the contacting edge of said contact strip, thereby insuring perfect contact throughout the entire marginal portion of the device. The frame of the device being integrally connected with the transparent member forms a rigid construction which may be bent or otherwise distorted without becoming permanently injured, rendering the device particularly applicable for use on motor vehicles.

Changes in the specific form of my invention, as herein disclosed, may be made within the scope of what is claimed without departing from the spirit of my invention.

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

1. A frost shield comprising a transparent celluloid member having the marginal portions thereof bent out of the plane of the body of said member to form a frame integral therewith, the edge of said member extending obliquely outwardly from said frame, and a flexible contact strip attached to said oblique edge and extending in the same direction as said edge.

2. A frost shield comprising a transparent member, a frame surrounding said transparent member, suction cups formed with flaring walls arranged along the edge of said frame, and a resilient contact strip attached jointly to said frame and to the flaring walls of said suction cups, said contact strip serving to form a dead air space between the transparent member and the surface to which it is attached.

3. A frost shield comprising a transparent member, a frame surrounding said transparent member, said frame having an outwardly flaring edge, suction cups attached to said frame and having flaring walls disposed in continuity with said flaring edge and a flexible contact strip jointly attached to said outwardly flaring edge of said frame and to the flaring walls of said suction cups.

4. A frost shield comprising a transparent celluloid member of substantially rectangular form having the marginal portion thereof bent out of the plane of said member to form a frame integral with said member and having a planiform portion and an outwardly

flaring portion issuing from said planiform portion, the corners of said celluloid member being depressed to the level of said planiform portion, suction cups attached to said celluloid member at said depressed corners and disposed within said frame with the outwardly flaring portion in continuity with the edge of said suction cups, and a flexible contact strip jointly secured to said flaring portion and to the edges of said suction cups.

5. A frost shield comprising a transparent celluloid member of substantially rectangular form having the marginal portion thereof bent out of the plane of said member to form a frame integral with said member and having an offset planiform portion and an outwardly flaring portion issuing from said planiform portion, the corners of said celluloid member being depressed to the level of said plane surface, suction cups attached to said celluloid member at said depressed corners and disposed within said frame with the outwardly flaring portion in continuity with the edge of said suction cups and a flexible sealing strip jointly secured to said flaring portion and to the edges of said suction cups, the extreme edge of said flexible contact strip coinciding with the edge of said suction cups and extending outwardly beyond the edge of said outwardly flaring portion.

6. A frost shield comprising a transparent celluloid member having a marginal portion thereof bent outwardly therefrom in flaring relation, an elastic contact strip permanently secured to said flaring marginal portion and adapted to yieldably and freely contact along an edge thereof with the surface of the member on which the frost shield is to be applied, and means for detachably securing said transparent member to the surface on which it is applied with said contact strip in contact therewith.

7. A frost shield comprising a transparent celluloid member having a marginal portion thereof bent out of the plane of said member to form an offset planifrom strip parallel to said transparent member, and the extreme edge thereof bent outwardly from said planiform strip in oblique relation thereto, and a flexible contact strip secured to said oblique edge, and means for attaching the frost shield to a window with the edge of said contact strip in contact with the surface of the window.

8. A frost shield comprising a transparent member, a frame on said member, suction cups attached to said frame, and a flexible contact strip attached to said frame and to said suction cups, said contact strip being joined at its point of attachment to one of said suction cups.

9. A frost shield comprising a transparent member, suction cups attached to said member, a contact strip cemented to said member and to one of said suction cups, said contact strip being joined at its point of attachment to said suction cup to which it is attached.

In testimony whereof I have affixed my signature to this specification.

EMIL T. NORBECK.