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C. F. WALZ

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ANTIFROST DEVICE AND METHOD OF MAKING THE SAME

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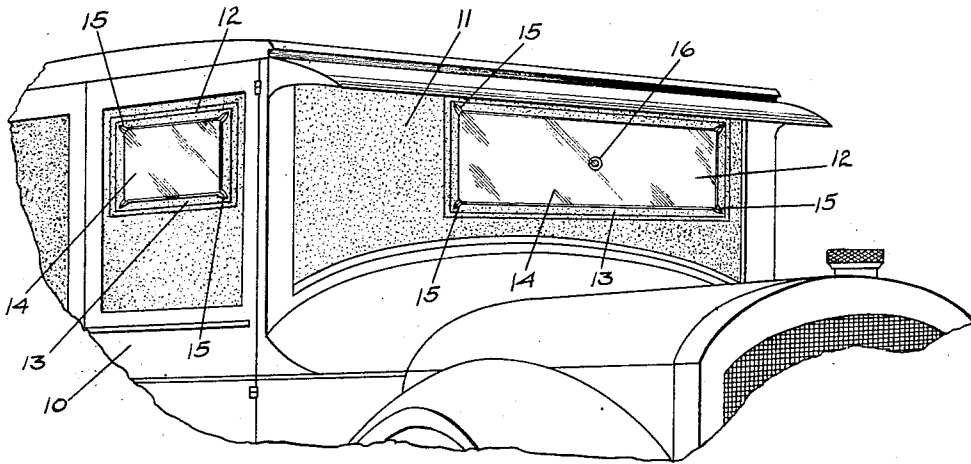


Fig. 1

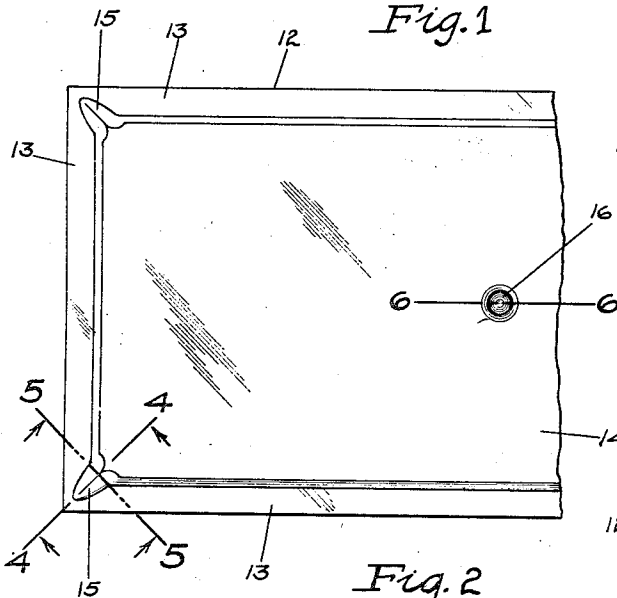


Fig. 2

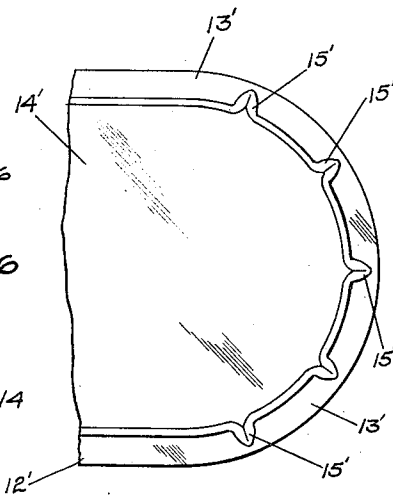


Fig. 3

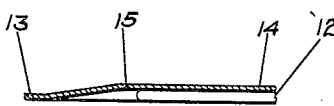


Fig. 4

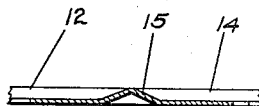


Fig. 5

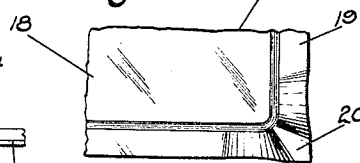


Fig. 7



Fig. 8

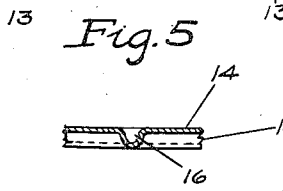


Fig. 6

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ANTIFROST DEVICE AND METHOD OF MAKING THE SAME

Application filed December 19, 1928. Serial No. 327,165.

This invention relates to an anti-frost device and to a method of making the same, and has more particular reference to an anti-frost device or shield of the type composed of a flat sheet of flexible material shaped or formed to provide a marginal portion of said sheet lying in a single plane and adapted to be secured against a glass, such as an automotive vehicle windshield, and a raised body portion, bounded by the said marginal portion, and adapted to lie in spaced relation to the glass against which the marginal portion is situated.

An anti-frost shield now of commerce, and of the general nature as above stated, consists of a sheet of celluloid, including a raised body portion of regular, or rectangular, outline, bounded by a marginal portion intended to lie in a single plane to fit snugly throughout its complete area against a glass, such as a windshield, in connection with which the anti-frost shield is adapted for use. As is well known, celluloid cannot be heated to a sufficiently high temperature to be freely drawn without danger of this material becoming translucent, or blurred, at least in parts of its surface, to lose its transparency and thus become unfit for use as a vision element. So, in constructing an anti-frost shield of the character as roughly outlined, there can be no free drawing of the celluloid, but rather, there can only be (what may be more properly termed) a "shaping" or "forming" of this material.

It is obvious that when a regular, or rectangular, raised portion is "shaped" or "formed" into a flat sheet of material, within the confines of a marginal portion of the sheet, both the longitudinal and transverse dimensions of the sheet are shortened, or lessened, and there is an accumulation of material about the raised portion, within the said marginal portion, to cause at least a tendency toward parts of the marginal portion becoming bulged, or wrinkled, to lie without the original plane of the sheet. In the instance where the raised portion is of general rectangular, or square, outline, the tendency toward bulging or wrinkling, is naturally, at or adjacent to the corners of the sheet, or

marginal portion. In the instance where the raised portion is circular, elliptical, or of other curvilinear outline, the tendency toward bulging, or wrinkling, is more or less distributed about the perimeter of the raised portion, either regularly or irregularly, as the case may be, depending upon several factors, as, for instance, the particular curvilinear shape of the raised portion, and the relative stiffness of the different parts of the material of the marginal portion extending about the raised portion.

An object of the present invention is to provide an anti-frost device constituted by a flat sheet of flexible material "shaped" or "formed" to provide a marginal portion of the sheet accurately lying in a single plane, to snugly fit a glass, such as a windshield, throughout the area of the marginal portion, and a raised body portion bounded by the said marginal portion, adapted to lie in spaced relation to said glass.

A further object is to provide a method of "shaping" or "forming" a flat sheet of flexible material to produce a device, of the general nature as set forth, having a marginal portion accurately lying in a single plane throughout its area, and a raised portion bounded by the said marginal portion.

A further object is to provide an anti-frost device comprising a sheet of flexible, transparent material, such as celluloid, shaped or formed to include a marginal portion of the sheet lying in a single plane, a regularly conformed, preferably substantially rectangular, raised body portion of the sheet bounded by the said marginal portion, and raised fillets, ribs, or the like, composed of parts of the material of the sheet situated at or adjacent to the location of jointure of the raised body portion with the marginal portion and within the confines of the said marginal portion, in which raised fillets, ribs, or the like, are contained the natural accumulations of the material of the sheet ordinarily resulting when the longitudinal and transverse dimensions thereof are shortened or lessened by "shaping" or "forming" operations upon the sheet.

And a still further object is to provide a method of "shaping" or "forming" a flat sheet

of flexible material, such as celluloid, to produce a device, of the general nature as set forth, having a marginal portion lying in a single plane, a regularly conformed raised body portion bounded by a the marginal portion, and raised fillets, ribs, or the like, composed of parts of the material of the sheet situated at or adjacent to the location of jointure of the raised body portion with the marginal portion and containing the natural accumulations of the material of the sheet ordinarily resulting when the dimensions thereof are shortened or lessened, which method contemplates the simultaneous "shaping" or "forming" of the said raised body portion and raised fillets, ribs, or the like, into the said sheet of material.

Other objects and advantages of the invention will appear as the description proceeds. In the accompanying drawing forming a part of this specification, two different embodiments of structure, in which the characteristics of the invention are present, have been disclosed, but it is to be understood that the invention is not confined to the exact features shown, as various changes may be made within the scope of the claims which follow.

In said drawings:

Figure 1 is a perspective view of a fragment of an automotive vehicle upon the windshield of which an anti-frost device, made in accordance with the invention, is secured;

Fig. 2 is an enlarged plan view of a portion of the improved anti-frost device;

Fig. 3 is a view similar to Fig. 2, but disclosing a modified form of anti-frost device having the features of the invention;

Figs. 4, 5 and 6 are detail sectional views on lines 4—4, 5—5, and 6—6, respectively, in Fig. 2;

Fig. 7 is a plan view of a fragment of an anti-frost device now of commerce; and

Fig. 8 is an edge view of the disclosure of Fig. 7.

In Fig. 1, numeral 10 represents an automotive vehicle upon the windshield 11 of which is secured, in any suitable manner, an anti-frost device, represented generally at 12, possessing the features and characteristics of the present invention.

As disclosed more clearly in Figs. 2, 4, 5 and 6, the anti-frost device 12 consists of a single sheet of flexible material, desirably celluloid, which has been "shaped" or "formed" to provide a marginal portion 13 the whole area of which lies in a single flat plane, a regularly conformed raised body portion 14, of substantially rectangular outline as shown, within the confines of the said marginal portion and bounded about its perimeter thereby, and raised fillets, ribs, or the like, 15, composed of parts of the material of the sheet situated at or adjacent to the location of jointure of the raised body portion with the marginal

portion, and within the confines of the said marginal portion. Numeral 16 designates the usual teat, arranged centrally of the raised body portion and adapted to engage the windshield, or other glass, to hold the center of the raised portion away from the windshield or glass.

The raised fillets, ribs, or the like, 15, as will be noted, are at each of the four corners of the raised body portion 14, and constitute, or contain, the natural accumulations of the material at the corners of the sheet, as hereinbefore referred to, occasioned, or resulting, when the longitudinal and transverse dimensions thereof were shortened or lessened by the "shaping" and "forming" operation, or operations, performed to produce the said regularly conformed, or rectangular, raised body portion 14.

In the manufacture of the novel and improved anti-frost device of Figs. 1, 2, 4, 5, and 6, the "taking-up" of material at or adjacent to the corners of the sheet, to produce the fillets, ribs, or the like, 15, is preferably only sufficient to account, or compensate, for the natural accumulations having tendency toward bulging or wrinkling of the marginal portion of the sheet, to thus insure that the whole of the area of the said marginal portion will accurately lie in the plane of the originally flat sheet, as will be understood. Desirably, the "shaping" or "forming" of the regularly conformed raised body portion 14 and the raised fillets, ribs, or the like, 15, into the sheet of material is performed as a single operation upon the sheet, or, stated in other words, the "shaping" or "forming" of the raised fillets, ribs, or the like, is preferably performed simultaneously, or concurrently, with the "shaping" or "forming" of the regularly conformed raised body portion.

In Figs. 7 and 8 I have illustrated an anti-frost device as now on the market, and hereinbefore referred to, the device of the said Figs. 7 and 8 consisting of a sheet of celluloid 17 shaped or formed to provide a substantially rectangular raised body portion 18 bounded by a marginal portion 19 intended to lie in a single, flat plane. It will be evident from an inspection of these figures, that there is an accumulation of material at the corners (one being shown) of the marginal portion thereof producing bulges, or wrinkles, 20 at each corner and lying without the plane of the originally flat sheet. Clearly, such a construction of marginal portion can have its whole area but approximately fitted against a flat windshield, or other glass, so that the confined and useful air space between the raised body portion and the windshield or glass can be made only approximately airtight, while in the instance of the structure of the invention, the fit can produce an absolutely airtight space beneath the

raised body portion, as is, evidently, highly desirable.

In Fig. 3 I have disclosed an anti-frost device in all respects similar to the device of Fig. 2, and substantially similarly produced, except that in the present instance the raised body portion 14' is of substantially elliptical outline, and the raised fillets, ribs, or the like, 15' are disposed in spaced relation to each other in the marginal portion 13' at the smaller ends of the ellipse. In instances of regularly conformed raised body portions of still other curvilinear outlines, the raised fillets, ribs, or the like, will be disposed about the raised body portions in that manner best suitable to the conditions, as will be understood.

I claim as my invention:

1. A device of the class described, comprising a sheet of flexible material, such as celluloid, shaped to provide a marginal portion of said sheet lying in a single plane, a regularly conformed raised body portion of the sheet bounded by the said marginal portion, and raised fillets composed of parts of the material of the sheet in spaced relation to each other about the raised body portion and situated within the confines of the marginal portion in proximity to the location of jointure of the raised body portion with the said marginal portion, the said raised fillets containing the natural accumulations of the material of the sheet occasioned by the lessening of the longitudinal and transverse dimensions thereof resulting from the shaping of the said regularly conformed raised body portion into the said sheet.

2. The method of making a device of the class described, which consists in shaping a flat sheet of flexible material, such as celluloid, to provide a marginal portion of the sheet lying in a single plane and a regularly conformed raised body portion of the sheet bounded by and within the confines of the marginal portion, in shaping raised fillets into said sheet, simultaneously with the shaping of said raised body portion, in spaced relation to each other about the raised body portion and within the confines of the marginal portion at places in proximity to the location of jointure of the raised body portion with the said marginal portion, and in causing said fillets to take up and contain the natural accumulations of the material of the sheet occasioned by the shortening of the longitudinal and transverse dimensions thereof resulting from the shaping of the said regularly conformed raised body portion into the sheet.

In witness whereof, I have hereunto set my hand this 6th day of December, 1928.

CARL F. WALZ.