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INSULATED CLOSURE AND EQUIPMENT THEREFOR

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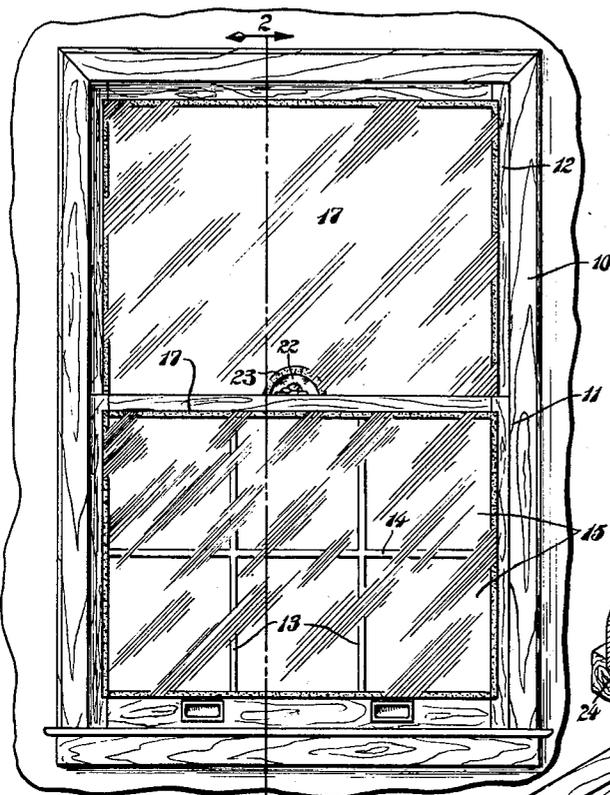


Fig. 1.

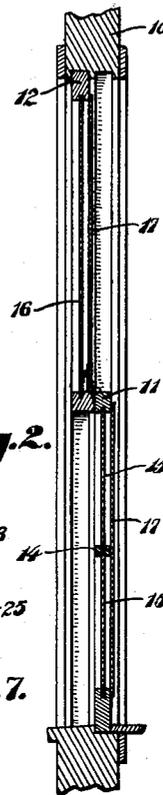


Fig. 2.

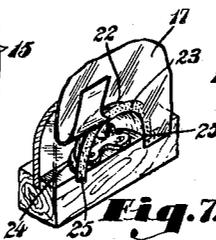


Fig. 7.

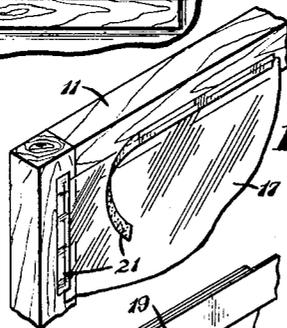


Fig. 6.

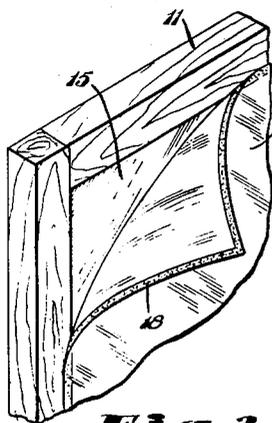


Fig. 3.

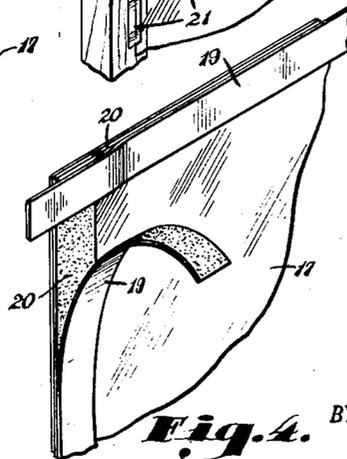


Fig. 4.

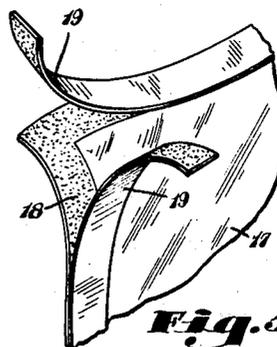


Fig. 5.

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INSULATED CLOSURE AND EQUIPMENT THEREFOR

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2 Claims. (Cl. 160—102)

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The present invention relates to insulated closures and equipment therefor, and the primary object of the invention is to provide the simplest possible form of means for establishing an insulating air space between the standard glazing of a building closure element and a member separately associable with such element.

During the years in which this country was recently involved in war, and when conservation of fuel of all sorts was a patriotic duty, the use of so-called storm windows was widely popularized, and the public generally thereby became acquainted with the startling savings capable of being effected by insulating window panes, door panes, and the like against heat transmission by conduction. It is well established that, while there is a certain amount of heat loss by direct air travel through interstices around doors and window sashes and past the frames thereof, there is also a great deal of heat loss by conduction through the glass panes; and it is well understood that that conduction loss can be largely overcome by the establishment of a dead air space against one face of the glass panes.

Storm windows are associated with the window frames in an attempt to prevent both types of heat losses. But storm windows are cumbersome and difficult to install and to remove; and if they are to be fully effective, they must be individually made for each window opening and must be hand-fitted thereto, so that they are necessarily very expensive.

According to the present invention, I propose to provide means readily associable with, and removable from, the glazed areas of building closure elements, by which I mean doors as well as windows, and all types of windows, including casement windows, sliding sash windows, and others. According to my invention, the means used will be extremely inexpensive, reasonably durable, and applicable to, and removable from, the selected closure elements with a minimum of difficulty.

It has heretofore been proposed to provide translucent elements dimensioned to span the glazed areas of building closure elements. But in all previous instances known to me, more or less complicated, and relatively ineffective, means have been provided for securing such supplemental devices to the closure elements in an effort to produce an air-tight association therebetween, whereby to establish a true dead air space. In all previous cases known to me, the mounting means for the supplemental devices have been so expensive and so relatively difficult to operate

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that the concept of providing such supplemental devices for association with the closure elements has found no commercial acceptance.

According to my invention, on the other hand, the supplemental devices will be adhesively secured directly to the closure elements in spanning relation to the glazed regions thereof, by adhesive means cooperating with the entire perimeter of such devices, and without the use of any supplemental fastening means whatever. Each such device will comprise a suitably dimensioned sheet of translucent material, which preferably will be flexible, and very light, so that the cumbersomeness of devices heretofore used is completely overcome.

Throughout the present specification and claims, the word "translucent" is used in its broadest sense to include not only the quality of permitting the passage of light but also the quality of permitting vision.

It will be seen, therefore, that my invention contemplates the provision of means of a character quite different from anything heretofore known to me to have been used, for the purpose of establishing a dead air space against one surface of the glazed portion of a building closure element. Further objects of the invention will appear as the description proceeds.

To the accomplishment of the above and related objects, my invention may be embodied in the forms illustrated in the accompanying drawings, attention being called to the fact, however, that the drawings are illustrative only, and that change may be made in the specific constructions illustrated and described, so long as the scope of the appended claims is not violated.

Fig. 1 is an elevation of a sliding sash type window, with an embodiment of my invention installed therein;

Fig. 2 is a sectional view taken substantially on the line 2—2 of Fig. 1;

Fig. 3 is a fragmental perspective view, upon an enlarged scale, of one corner of a window sash to which a flexible sheet is partially applied;

Fig. 4 is a fragmental perspective view of a sheet of translucent material, embodying one form of my invention;

Fig. 5 is a similar view illustrating another form of my invention;

Fig. 6 is a similar view illustrating still another form of my invention; and

Fig. 7 is an enlarged perspective view of a detail.

Referring more particularly to the drawings, it will be seen that I have shown a window frame

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in which are slidably mounted a lower sash 11 and an upper sash 12, in accordance with standard practice. The lower sash is shown as provided with framing strips 13 and 14 in which are mounted a plurality of separate, small panes 15; while the upper sash is shown as carrying a single large pane of glass 16. Each such sash, in accordance with standard practice, is formed to provide a surface perimetally surrounding the glazed region and spaced from the plane of the pane or panes 16 or 15.

According to my invention, I secure a sheet of translucent material, which is preferably light and flexible and of the general character of "cellophane," "Plexiglas" or other suitable substance, to that surface of the sash which thus perimetally surrounds the glass. While I prefer to use a paper-thin sheet which is substantially as flexible as paper, it will be obvious that many of the advantages of the present invention can be attained though stiffer and thicker materials are used.

Such a sheet is illustrated at 17 in the accompanying drawings. The effectiveness of the dead air space between such sheet and the panes 15 or 16 is to a large extent dependent upon complete air tightness of that space; and therefore I prefer that the complete perimeter of the sheet 17 be firmly and tightly secured to the sash surrounding the pane or panes; and it is further desirable that the sheet 17 shall be stretched reasonably tightly so that, throughout its entire area, it will be spaced from the pane or panes 16 or 15.

In order to provide the simplest and most effective means possible for securing the sheet 17 to the window sash, I provide adhesive material, associated with the entire perimeter of the sheet 17, and adhesively engaging the sash. One preferred means for providing the perimetral adhesive region is illustrated in Fig. 5, in which the perimetral region of one face of the sheet 17 is coated with a suitable adhesive, as at 18. Preferably, such adhesive will be of the pressure type, which presents a permanently-tacky surface which is characterized by the fact that it will adhere to substantially any surface when applied thereto with simple pressure. In order to protect the adhesive 18 during storage, transportation, and similar handling, I apply a masking ribbon 19 thereto, such ribbon being of such character that, while it will be held in place by the adhesive 18 during any ordinary handling, it can be stripped away therefrom in the manner indicated in Fig. 5.

Alternatively, I may apply to the perimetral region of one surface of the sheet 17 strips 20, commercially prepared and provided with permanently-tacky pressure adhesive upon both faces thereof. One adhesive face is, of course, applied to the sheet 17, leaving the other adhesive face available for use in securing the sheet to a building closure element. In this case, also, masking ribbon 19 will be provided to protect the adhesive strips 20 during handling.

Still another form, perhaps over-simplified, is illustrated in Fig. 6. According to that embodiment of the invention, adhesive ribbon 21 may be used for securing the sheet 17 to a building closure element, such ribbon being treated on one face only with a pressure type adhesive, and having a substantial width, so that approximately one-half of the adhesive surface may be engaged with the outer surface of the sheet 17, throughout the perimeter thereof, the remaining

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portion of the adhesive surface projecting perimetally beyond the sheet 17 for engagement with the building closure element.

The sheets 17 may be applied either to the inner surface or to the outer surface of the closure element; or, in some installations, it may be desirable to apply such sheets to both surfaces of the closure element. In most instances, however, when a sheet is to be applied to one surface only of a closure element, it will be installed on the inner surface thereof in order that the sheet may be protected against the weather.

When a sheet is to be installed upon the inner surface of the upper sash of a window of the type illustrated herein, it may be desirable to provide means for rendering the standard latching device, ordinarily to be found upon such a sash, accessible for use. In such circumstances, a dome shaped element 22, formed of any suitable material, such as a stiffened translucent moldable plastic, may be provided to house such latch element in the manner illustrated in Fig. 7. The element 22 will be formed with a radially out-turned lip 23, suitably coated with a tacky adhesive, and the sheet 17 will have a notch cut in its lower edge to conform to the contour of said lip 23. The element 22 will likewise have an out-turned base lip 24 suitably treated with adhesive, and secured to the upper surface of the lower frame member of the sash. When such a unit is to be installed, it will first be placed upon the sash member, in the illustrated position, and secured thereto through the medium of the lip 24. Preferably the opposite ends of the lip 23 will be slightly projected below the lip 24 and provided with adhesive material on their rear surfaces. Those projections, then, will be secured to the forward surface of the sash frame member, in the manner illustrated. Now, a sheet 17, notched as indicated at its lower edge, will be secured to the sash in the manner above described, with its notch in registry with the open side of the element 22, and the rim of said notch will be pressed against the lip 23 of the element 22 to form an air tight seal therebetween. The lower, adhesive-coated edge of the sheet 17 will overlies and imprison the projections 25, whose extent will preferably be substantially one-half the width of the adhesive-coated region of the sheet 17, as is clearly to be seen in Fig. 7.

As an alternative, which presently appears to me to be preferable, the dome 22 may be permanently assembled with a sheet 17 at the factory. Any suitable means, such, for instance, as the out-turned, adhesive-coated lip 23, may be used for permanently securing the dome to the sheet in registry with the notch formed in the sheet; but preferably the assemblage of the dome with the sheet will be effected by means of a solvent for the plastic substances, which will produce the equivalent of a weld between the two elements, in a manner well known in the art.

When so assembled, the dome will still be provided with the equivalent of the extensions 25, coated with adhesive on their rear surfaces for attachment to the sash element in the manner illustrated in Fig. 7, and with the adhesive-coated lip 24 to be secured to the upper surface of the sash element. The manner of application of the assemblage to a window sash will be obvious from the above discussion.

Sheets produced in accordance with the present invention for sale may be packaged and shipped either flat or rolled upon a hollow man-

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drel or cardboard, or the like. Where the dome 22 is permanently assembled with a sheet, such sheet will always preferably be shipped in rolled condition. For that purpose, and to accommodate and protect the dome, the hollow cardboard mandrel will be formed with an opening in the periphery suitably shaped and positioned to receive the dome. The sheet is applied to the mandrel with that surface from which the dome projects in contact with the mandrel and with the dome projecting through the mandrel opening into the hollow body of such mandrel. Now, the remainder of the sheet will be rolled upon the mandrel and suitably secured to produce a compact package in which the dome is suitably protected against deformation.

It will be apparent that sheets of the character disclosed herein may be commercially prepared in all standard sizes for association with standard glazed openings in building closure elements; and that, when so prepared, they may be effectively associated with such glazed openings with a minimum expenditure of time and effort. A sheet sufficiently large for association with any standard glazed opening will weigh only a few ounces and may be readily handled by any one. Such devices, when commercially manufactured, will be so inexpensive that, if removed, they will probably be discarded, and new ones will be purchased for use the following fall; but that is not at all necessary, since the type of adhesive preferably used will be of such character that, after the sheets are stripped from the building closure elements, the adhesive strips may be re-masked, whereupon the sheets may be rolled and stored for use the following season. In many installations, of course, these sheets will be allowed to remain in place on the closures, regardless of season, since advantageous insulation

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against outdoor heat will thus be attained. Even in such installations, however, the ready removability and replaceability of my insulating sheets will be advantageous, since wear and damage will require occasional replacement.

I claim as my invention:

1. In a window construction comprising a frame and a pair of relatively movable glazed sashes mounted in said frame, said sashes being provided, respectively, with cooperating latch elements, a sheet of translucent material for each sash, each such sheet having its perimetral region adhesively secured to its sash and spanning the glazed area thereof, and a guard element for at least one of said sashes, housing the latch element thereof and adhesively secured to the sheet secured to said sash to expose said latch element while establishing a substantially airtight seal between said sheet and said sash.

2. The organization of claim 1 in which said guard element is semi-dome shaped and is provided with a basal lip sealed to said sash and with a frontal lip sealed to said sheet.

LEO DOBRIN.

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