May 18, 1937. R. L. BALLANTYNE 2,080,394

WINDOW CLOSURE

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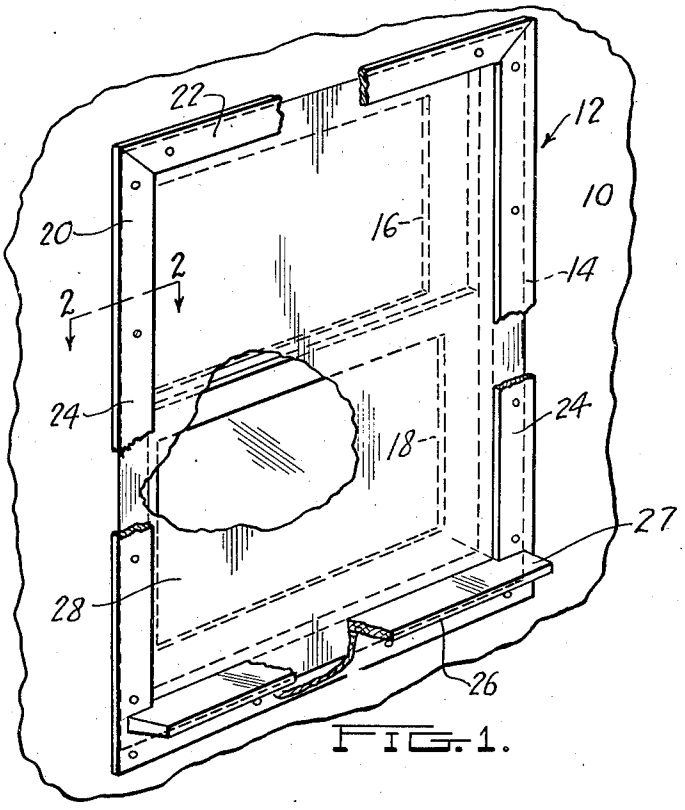


FIG. 1.

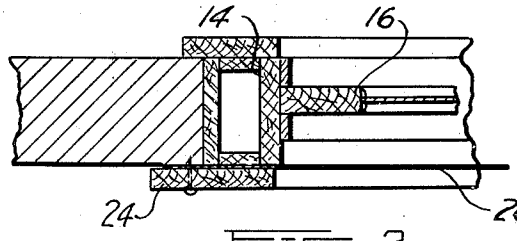


FIG. 2.

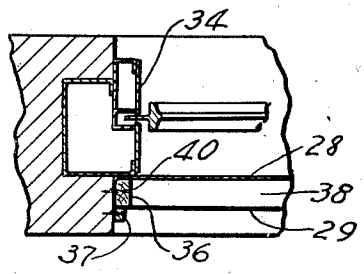


FIG. 3.

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WINDOW CLOSURE

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6 Claims. (Cl. 20—56.5)

This invention relates to windows and is more particularly directed to a supplementary closure adapted to seal the area contiguous with a window in order to prevent the ingress of air and dirt or other foreign matter, as well as materially aid in the control of temperature and humidity.

The invention comprehends the utilization of a closure of this character made of a flexible transparent material which may be retained in juxtaposed position with respect to a window frame or sash for sealing the same.

One of the objects of the invention is to provide a closure or sealing means of inexpensive material for windows and the like, which is capable of retaining or excluding heat, cold or humidity within a structure having the windows equipped with such means.

Another object of the invention is to provide a window closure or seal which will aid in retaining a normal temperature in structures equipped with an air cooling or conditioning system.

The invention also embraces the provision of a closure for sealing openings which serves to insulate such openings against undesirable temperature, moisture, frost, drafts and the like.

A still further object of the invention is to provide a window seal for preventing the entrance of objectionable audible sounds such as are present in airplanes, dirigibles, automotive vehicles, railway coaches and the like.

A further object of the invention is the use of a closure of sheet form positioned parallel with a window thereby providing a double wall between the outside and inside of a structure, thus preventing the dissipation of heat adjacent the window caused by the cooling of glass panes by the outside temperature.

Further objects and advantages are within the scope of this invention such as relate to the arrangement, operation and function of the related elements of the structure, to various details of construction and to combinations of parts, elements per se, and to economies of manufacture and numerous other features as will be apparent from a consideration of the specification and drawing of a form of the invention, which may be preferred, in which:

Figure 1 is a perspective view of a window casing with which has been incorporated a form of the invention;

Figure 2 is a sectional detail view taken substantially on a line 2—2 of Figure 1;

Figure 3 is a view similar to Figure 2 illustrating another type of window and method of incorporating a form of the invention to such a window.

Although the invention has been illustrated as incorporated for use with conventional glazed windows such as may be used in buildings, it is to be understood that I contemplate its use wherever the same may be found to have utility, for example in railway coaches, automobiles, aeroplanes and the like.

Referring to the drawing 10 designates a wall having an opening therein which is closed by means of a window structure 12 of suitable form. The window shown is inclusive of a frame or casing 14, upper and lower sash 16 and 18 respectively and interior trim 20. In the form shown the casing is sectional, being provided with top member 22, sides 24 and bottom section 26. In this instance an outwardly extending sill 27 terminates adjacent the bottom section 26 to facilitate the installation of sealing means or closure 28 of the invention. It is to be understood that I contemplate the use of any suitable arrangement for securing the closure or seal in desired position adjacent the window and that the arrangements shown are illustrative only.

The closure 28 is preferably of flexible transparent material and extends from the top member 22 to the bottom section 26 and from one side member 24 to the other, in the manner illustrated. The closure 28 is also spaced from the glazed sash 16 and 18 to provide a dead air space or pocket between the closure and the sash. As particularly shown in Figure 2, the closure 28 engages the frame 14 and thus is not in direct contact with the sash 16 or 18 and more particularly is not in contact with the glazed surfaces, which further insulates the closure 28 from the glazed surfaces.

The closure material may be any suitable transparent material such as regenerated cellulose, cellulose acetate, cellulose nitrate, transparent celluloid or suitably treated paper, although the latter is not as a rule as transparent as desirable. It is to be understood however, that a flexible material with any degree of transparency may be employed. An essential feature of the closure material is that it be comparatively strong and not readily ruptured, yet pliable enough to be readily installed.

In Figure 3, the closure 28 has been shown as applied as the sealing means for a metal sash window 34 in which instance, the closure 28 is preferably secured to a suitable moulding or frame member 36 of wood, strip metal, or other desirable material. The frame 36 is then secured in spaced

relation with respect to the window 34 and a dead air space provided. It will be noted that the closure or seal is easily installed and removed, means such as screws 40 being provided to secure the frame 36 in place. In some instances it may be desirable to use a plurality of closures which may be applied in spaced relation with each other and with respect to the glazed window. Such an arrangement is shown, the closure 29 being secured adjacent the closure 28 by a moulding or frame 37 in a manner similar to that of the closure 28 to provide a dead air space 38.

The invention may be used wherever storm sash are used or where double windows or glazing is desirable. The arrangement is also effective to prevent sweating or steaming of windows, for example in show windows, show cases and the like, as well as in automobiles. In the latter, steamed or frosted windows and windshields may be prevented by placing a sheet of closure material over the windshield receiving frame or moulding such as is present in many present day vehicles, and closing the windshield to hold the closure in place. Thus the closure is spaced from the glazed surface and a dead air space provided. The same is true in other vehicles, the closure being particularly adaptable for use in aeroplanes to prevent frost from accumulating on the windows or windshields, as well as to materially reduce the entrance of objectionable audible sounds. Most railway coaches have double windows or sash, but due to the fact that they are glazed with similar material the conductivity of the surfaces is the same, resulting in little advantage over the single sash. This may be overcome by the use of the present invention, the closure being installed between the glazed surfaces or interiorally of these surfaces.

From the foregoing it will be noted that I contemplate the use of a closure of a material dissimilar from that of the conventional glazed surface, in combination with such a surface, and that the closure be spaced a distance therefrom to provide a dead air space between the surfaces. The arrangement is particularly effective when used in structures equipped with air cooling or conditioning systems, which require that the window openings be sealed efficiently to maintain substantially constant temperature and humidity.

It is apparent that, within the scope of the invention, modifications and different arrangements may be made other than is herein disclosed, and the present disclosure is illustrative merely, the invention comprehending all variations thereof.

What I claim is:

1. In combination, a frame carrying a glazed surface, a second frame supporting said frame, and a plurality of sheets of flexible transparent material secured to said second frame and spaced from said glazed surface.

2. In combination with a window frame; a second frame supporting a glazed surface, a plurality of sheets of transparent material secured along their marginal edges to said second frame and each having an area substantially equal to that of the glazed surface and spaced from each other to form air pockets between said glazed surface and said sheets of transparent material.

3. In combination with a window sash having a supporting frame, a plurality of transparent cellulose closures secured along their marginal edges to said frame so as to be spaced from said window sash and from each other.

4. In combination with a window supporting frame; a glazed sash carried by said frame; and a sheet of flexible transparent material of sufficient area to at least equal that of the glazed surface fixedly secured along its marginal edges to said frame independently of said sash to form a substantially permanent air pocket between said glazed sash and said frame.

5. In combination with a window frame, a glazed sash supported by said frame, and a pliable transparent closure secured along its marginal edges to said frame, said closure and sash being spaced with respect to each other to form an air pocket therebetween.

6. In combination, a glazed surface, a frame around said glazed surface, a second frame supporting said frame, and a sheet of flexible transparent material fixedly secured along its marginal edges to said second frame and in spaced relation with respect to said glazed surface.

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