

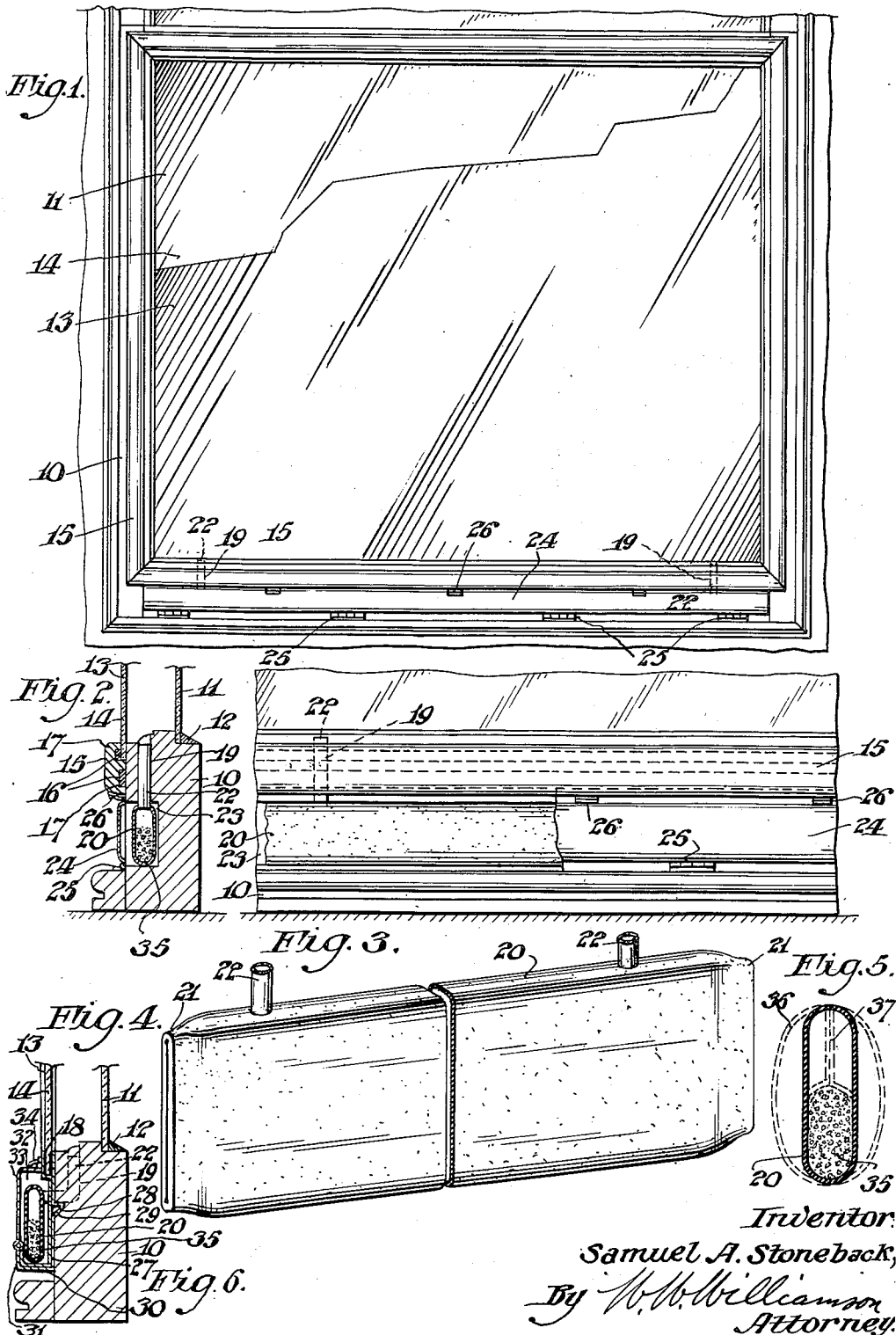
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WINDOW GLASS INSULATION SYSTEM

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WINDOW GLASS INSULATION SYSTEM

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4 Claims. (Cl. 20—56.5)

My invention relates to a new and useful window glass insulation system and has for its object to provide means for connection with the dead air space of an insulated window to permit "breathing" and simultaneously dehydrate the static air contained within the dead air space.

The invention is adapted for use in connection with all styles or types of windows such as sash, bulk, movable and stationary windows having two panes of sealed glass spaced to provide a dead air space for insulation purposes.

Another object of the invention is to provide an expansible and contractible receptacle containing a dehydrating agent and connected by passageways with a dead air space of an insulated window structure, whereby any increase in the static air pressure may be accommodated and such static air dehydrated to prevent the formation of mist on the inside of the window glasses.

A further object of the invention is to provide means for housing the expansible and contractible receptacle.

A still further object of the present invention is to utilize the general arrangements disclosed in my Patents Nos. 2,042,077, dated May 26, 1936, and 2,117,581, dated May 17, 1938, and combine therewith an automatic dehydrating, temperature expansion and contracting device to prevent clouding or breaking of the window glass due to changes of temperature on either or both sides of the window relative to the building in which the window is located.

Still another object of the invention is to provide an arrangement that may be preconstructed and have a pane of glass glazed therein, the whole to be mounted on a window frame or sash and sealed to form the dead air space for insulation purposes.

With the above and other objects in view this invention consists of the details of construction and combination of elements hereinafter set forth and then designated by the claims.

In order that those skilled in the art to which this invention appertains may understand how to make and use the same, I will describe its construction in detail, referring by numerals to the accompanying drawing, forming a part hereof, in which:

Fig. 1 is a view having portions broken away and showing one construction of my invention.

Fig. 2 is an enlarged fragmentary sectional view thereof.

Fig. 3 is a face view of Fig. 2 with portions broken away to illustrate details of construction.

Fig. 4 is an enlarged perspective view of the

expansible and contractible receptacle in a normal condition.

Fig. 5 is a sectional view thereof and showing in dotted lines the expanded and contracted conditions of the receptacle.

Fig. 6 is a sectional view similar to Fig. 2 illustrating a modified means for mounting the extra pane of glass.

In carrying out my invention as herein embodied 10 represents a window frame which may be in the form of a movable sash as shown, mounted to slide or swing in another frame or such window frame may be stationary as in bulk or other similar structures. In the window frame is mounted the usual or primary pane of glass 11 sealed by the putty 12 in the ordinary manner.

A secondary pane of glass 13 is mounted on the window frame, preferably against a face thereof, in spaced parallel relation to the primary pane of glass to provide a dead air space 14. In the arrangements illustrated in Figs. 1, 2 and 3, which is covered by my Patent No. 2,042,077, dated May 26, 1936, a glazing moulding 15 overlaps the edges of the secondary pane of glass and is secured to the face of the window frame. This molding has one or more grooves 16 in its inner face adapted to contain a suitable water-proof plastic material 17 to seal the joints and prevent any air entering or leaving the dead air space 14 by leakage or seepage.

In Fig. 4 a holder 18 for the secondary pane of glass 13 is shown as bounding the edges of said glass in which the latter is glazed. Said holder has a generally U-shaped or channeled portion to receive the edges of the pane of glass and the plastic sealing material and also has a lip projecting from the said channeled portion whereby the holder may be attached to the window frame by screws, nails or other equivalent fastening devices. This arrangement permits a working man to take the measurements of a window to be equipped with the insulation system and have the assembly made up at a factory or work shop so that it is only necessary to hang the assembled structure for installation.

The dead air space 14 provided by either of the above mentioned constructions has one or more passageways or ducts 19 leading therefrom through some portion of the window frame and these passageways may be straight or angular so long as they lead to the location of the expansible and contractible receptacle 20. This receptacle may be made of latex tubing having the ends sealed as at 21. The interior of the receptacle

is in communication with the dead air space 14 by one or more nipples 22 projecting through and completely filling the passageways 19 and the upper end of one of said nipples may be at a higher level than the other in order to insure a circulation of the air from the dead air space through the receptacle 20 as occasion requires. The flow of air through the nipples may be controlled by the valve arrangements covered by my Patent No. 2,117,581, dated May 17, 1938.

The receptacle 20 may be located in any suitable place as on a shelf, on the floor or hung on the wall below the window but preferably said receptacle is enclosed in a housing, two different forms of which are disclosed in Figs. 2 and 6. As illustrated particularly in Fig. 2, a recess 23 is formed in the window frame or sash open at the front and said opening may be closed by a door or cover 24 hinged at 25 and normally retained in a closed position by one or more spring latches 26 which will permit the door 24 to open should the receptacle expand to a size larger than the recess 23 or the housing as a whole. In the form of housing illustrated in Fig. 6, the bottom rail of the holder is fashioned to provide a back wall 27 of a housing below the channel, from which wall projects a rib 28 to enter a groove 29 in the face of the window frame, a bottom wall 30 and an upstanding short front wall 31. End walls 32 may be provided if desired. To the upper edge of the front wall 31 is hinged the door or cover 33 including a front and intumed top and said door or cover is normally retained in a closed position by one or more spring latches 34 which provides for access to the receptacle and permits said receptacle to push the door open if it expands sufficiently to more than fill the housing.

The receptacle contains a dehydrating agent 35 such as silica jell or activated alumina which will absorb moisture from the air as it flows from the dead air space due to expansion. Whenever the air in the dead air space expands it will be forced through one or both of the nipples into the receptacle and thus prevent excess pressure on the panes of glass which might cause breakage or other damage thereto. The air forced into the receptacle will cause the latter to expand to some such position as indicated by the dotted lines 36 in Fig. 5. As the air in the dead air space contracts due to a change in temperature that air in the receptacle will be withdrawn and returned to said dead air space and will be free of moisture. If substantially all of the air is withdrawn from the receptacle, the walls will contract or collapse to some position such as indicated by the dotted lines 37. The circulation of the air through the receptacle containing the dehydrating agent will be so dry that the glass will not become fogged to interfere with the visibility.

Of course I do not wish to be limited to the exact details of construction herein shown and described as these may be varied within the scope of the appended claims without departing from the spirit of my invention.

Having described my invention what I claim as new and useful is:

1. In a window, a frame having a recess in the lower rail with ducts leading from said recess to the top of said rail, a primary pane of glass therein and having the edges sealed air tight, a sec-

ondary pane of glass placed against a face of the frame in spaced relation to the primary pane of glass to form a dead air space with which communicates the ends of the ducts at the top of the frame lower rail, means to seal the edges of the secondary pane of glass air tight, a contractible and expansible receptacle located in the recess, a dehydrating agent in the receptacle, means carried by said receptacle and projecting into the ducts and completely filling the latter to form communications between the dead air space and the interior of the receptacle to permit breathing of the window and simultaneously dehydrate the substantially static air of the dead air space, a door hinged to the frame to close the recess, and spring means to normally hold the door closed while permitting it to be opened by pressure due to expansion of the receptacle beyond the confines of the recess.

2. In a window glass insulation system, a frame having primary and secondary panes of glass sealed to provide a dead air space from which lead ducts, a latex receptacle capable of expansion and contraction and located outside of the dead air space, a dehydrating agent in the receptacle, nipples on the receptacle projecting into the ducts and filling the same to provide communications between the dead air space and the interior of said receptacle, and a housing to receive and hold the receptacle, said housing including a hinged door normally retained in a closed position by a spring latch which permits the door to be forced open if the receptacle expands beyond a predetermined extent.

3. The combination with a window frame having a primary pane of glass therein, of a holder secured to a face of the window frame, said holder including channelled portions to receive a plastic sealing material and the edges of a pane of glass, a secondary pane of glass glazed in said holder prior to the mounting thereof on the window frame to provide a dead air space between the two panes of glass, said window frame having ducts in the bottom rail leading from the dead air space to a face of said rail which face also has a groove therein, a portion of a housing including a back wall and a bottom wall and a short upstanding front wall formed with the lower part of the holder, said back wall having holes to register with the ducts and also provided with a rib to enter the groove in the face of the window frame rail, a door hinged to the short front wall to complete the housing, spring means to normally hold said door closed, a contractible and expansible receptacle in the housing, a dehydrating agent in the receptacle, and nipples carried by the receptacle and projecting into the ducts and completely filling the latter to provide communications between the interior of said receptacle and the dead air space.

4. In a window glass insulation system, a sash having primary and secondary panes of glass sealed to provide a dead air space, a housing carried by said sash and including a hinged door normally retained in a closed position by a spring latch, a normally contracted latex receptacle located in said housing, means to provide a plurality of communications between said receptacle and the dead air space, and a dehydrating agent in the receptacle.

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