Dec. 28, 1937. F. HUNTER 2,103,532

MOUNTING FOR DOUBLE PANELS

Filed March 19, 1936 2 Sheets-Sheet 1

Fig. 1.

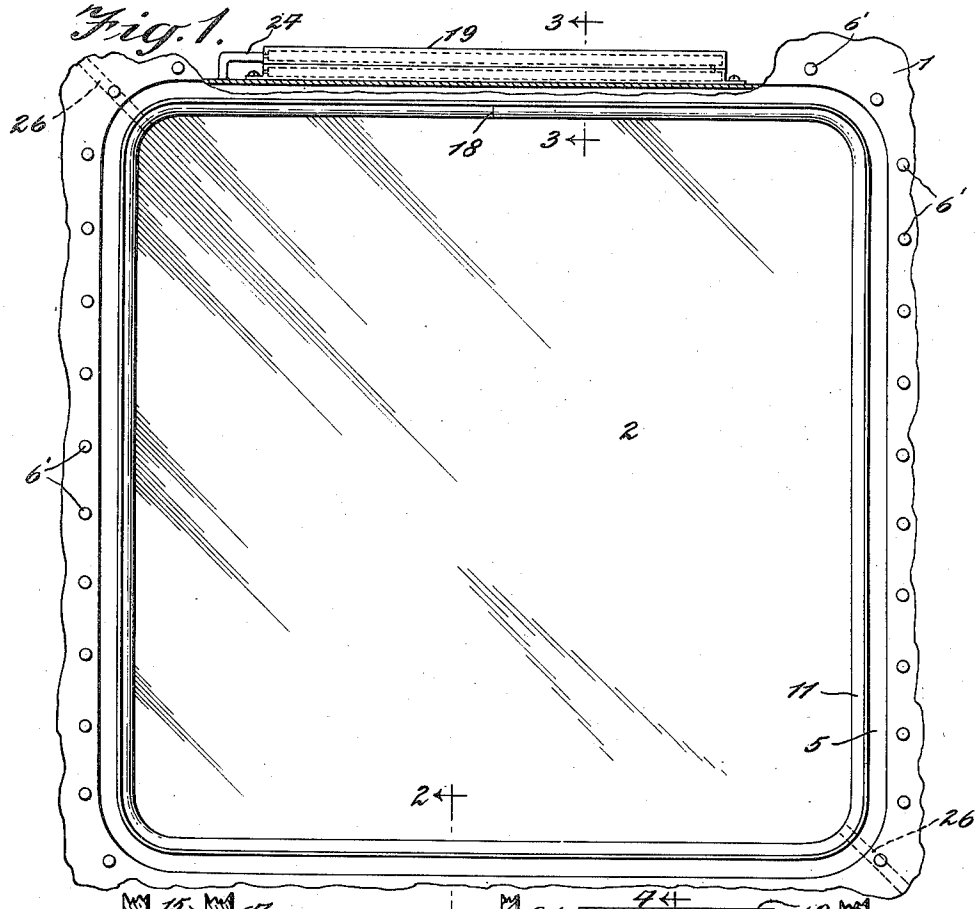


Fig. 2.

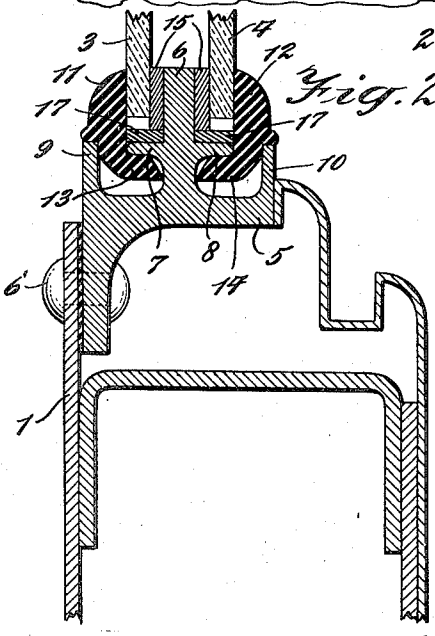
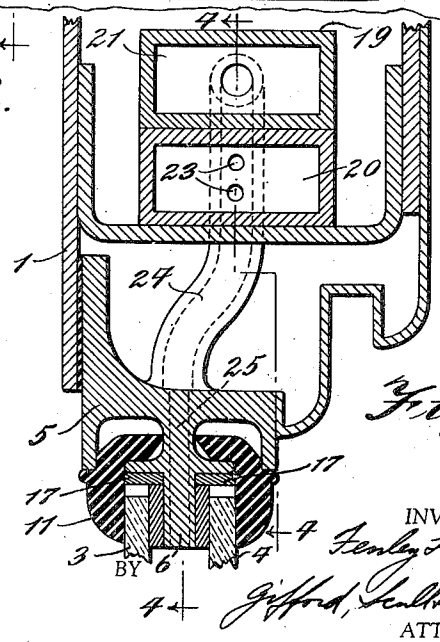


Fig. 3.



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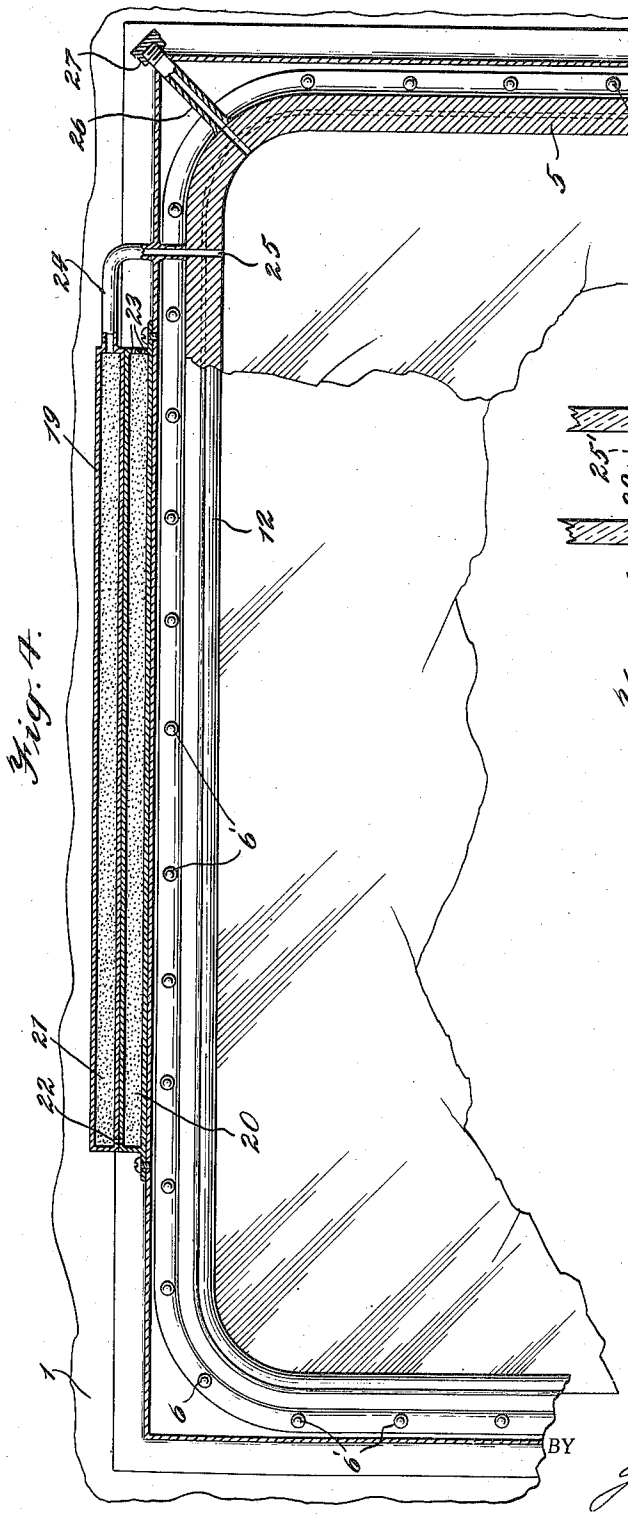


Fig. 4.

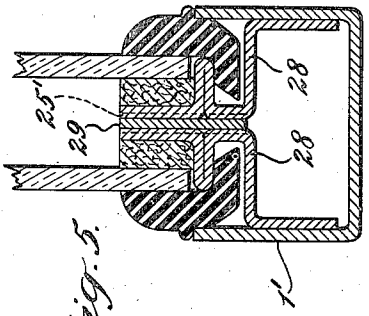


Fig. 5.

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UNITED STATES PATENT OFFICE

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MOUNTING FOR DOUBLE PANELS

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Application March 19, 1936, Serial No. 69,640

7 Claims. (Cl. 20—56.5)

This invention relates to a novel and improved manner of mounting double panels, the novel features of which will be best understood from the following description and the annexed drawings, in which I have shown a selected embodiment of the invention and in which:

Fig. 1 is a face view of a double panel mounted according to the invention;

Fig. 2 is a section on the line 2—2 of Fig. 1;

Fig. 3 is a section on the line 3—3 of Fig. 1;

Fig. 4 is a view taken from the opposite side of the panel mounting than that appearing in Fig. 1, with parts shown in section, the sectional part being taken on the line 4—4 of Fig. 3;

Fig. 5 is a view similar to Fig. 2, but showing a different form of construction which may be used.

While the invention may have numerous uses, it may be assumed, for the sake of illustration, that it is employed in connection with railroad car windows, where it has been found to be particularly useful. It will of course be obvious that it may be used with other windows or panels in other locations, but it will simplify matters to discuss some of the problems involved in the mounting of a double panel in railroad cars.

It is highly desirable that a panel in a car window should be mounted so that it will be tightly held against vibration. This is desirable even with a single panel. With the advent of air-conditioned cars, window sashes, instead of being movable, are usually fixed in position and provided with double panels of glass so that the space between the two panels will provide an insulation for the car, from heat and noise.

According to one feature of my invention, I provide a mounting which will support two panels of glass or the like with a space between them and in such a way as to avoid any substantial vibration of the panels. The prevention of vibration becomes of greater importance when using two or more panels than when only a single panel is used. This is because the glass panels enclose a volume of air which, as noted above, is used as insulation. That air is maintained as dry as possible so as to avoid frosting in cold weather, but if there is sufficient vibration of one of the panels so as to cause it to become loose, then moist air may enter the space between the panels. This undesirable result is avoided by our construction.

According to another feature of the invention, the panels are not only so mounted as to avoid any substantial vibration thereof and so as to securely seal the space therebetween against any accidental admission of air, but a means is provided for maintaining the air between the panels substantially dry. This will prevent frosting of the outside panel in cold weather.

Referring now to the drawings and more particularly to Figs. 1, 2, 3, and 4, I have indicated the invention as employed in connection with the window of a car, part of the frame of which is indicated at 1, this frame having an opening closed by a window 2 comprising glass panels 3 and 4. The frame supports thereon a bracket 5 surrounding the opening and having a rib 6 extending inwardly towards the center of the opening. The inner edge of this rib defines the opening. While I shall sometimes refer to the bracket 5 as a separate element from the frame, nevertheless it is essentially a part of the frame to which it may be secured by rivets 6'.

Extending in opposite directions from the rib 6 are shelves 7 and 8, and opposite each shelf is a flange 9 or 10. The inner edges of these flanges with the adjacent edges of the shelves form throats through which may pass portions of resilient strips 11 and 12. These strips are resilient and preferably made of compressible material, and each is provided with a foot 13 or 14 which passes through one of the throats and is engaged beneath a shelf 7 or 8. When so engaged, the upper part of each strip is under compression between the inner edge of the flange and the panel associated therewith. For example, the upper part of the strip 12 appearing in Fig. 2 is under compression between the panel 4 and the edge of the flange 10. The manner in which such a strip acts is more fully described and claimed in the patent to Lytle Gale Hunter, No. 1,891,932. Between each panel and the rib 6 a cushion 15 may be placed, and similar cushions 17 may be used between the shelves and the adjacent edges of the panels. These cushions, for example, may be made of felt.

The bracket 5 may be conveniently formed of extruded aluminum or of any other suitable material, and provides a simple and very efficient support for the two panels, at the same time cooperating with the strips 11 and 12 to effectively seal the space between the panels so that air may not escape therefrom or enter the space past the edges of the panels. Each strip is preferably continuous and may be made in one piece with a single joint indicated at 18, where the two ends of a single strip may be brought together.

Mounted on the frame adjacent the panel mounting, and here shown as mounted above it, is a device for preserving the air in the space

between the panels substantially dry. The apparatus is best shown in Figs. 3 and 4, and it will be seen that it comprises a container 19 in the form of two boxes 20 and 21, one on top of the other and connected at one end through a hole 22. One end of the lower box is open to the atmosphere through two holes 23, and the same end of the upper box is connected to the space between the panels as by means of a tube 24 communicating with a duct 25, which may be a bore formed in the metal of the bracket 5.

The container 19 may be filled with some suitable material which will permit the slow passage of air therethrough, but will catch the water in the air as it passes therethrough. Any suitable water-absorbing or adsorbing material may be used, which, for the sake of convenience, I shall claim as moisture-absorbing. One material which I have found to be satisfactory is that sold commercially as "Activated Alumina".

The device just described will operate in the following manner:

Assuming that the air within the space between the panels is under sufficient pressure to cause it to pass through the duct 25, it will work through the material in the container 19 until it reaches the atmosphere at the holes 23. If, on the other hand, the pressures are such that air tends to flow into the aforesaid space, atmospheric air will enter the container at the holes 23 and pass through the container to the duct 25. In such passage, however, its moisture will be removed so that when it enters the space between the panels, it will be thoroughly dry. It will thus be seen that, as pressures vary, the moist air will leave the space between the panels and be replaced by dry air.

Preferably, the parts are assembled in dehydrated air so that the air initially trapped in the space between the panels is relatively dry. If it is not dry enough for the desired purpose, it may be removed through one or more ducts, two of which are indicated at 26 at diagonally opposite centers to the panels. Each of these ducts may have an end equipped with threads to receive a cap 27 so that it will be normally closed, and the same threads may be used for the purpose of attaching a pump so as to evacuate the space between the panels. The ducts 26 may be placed at any points desired, and as many such ducts may be used as found necessary. As the air is evacuated from the space between the panels, it will be replaced entirely by air passing through the container 19, which air will be thoroughly dry before it enters the space. At the same time it will be seen that no other air can enter this space because of the tight seals provided along the edges of both panels.

In Fig 5, I have shown a modified construction, in which the frame 1' receives a bracket formed of two single brackets 28 placed back to back and separated by a continuous shim 29 through which the duct 25' may be formed. Otherwise, this construction functions in the same way as previously described, and further detailed description thereof will be omitted.

The invention described above has been found to be quite satisfactory under test. The moisture-absorbing material may be removed, dried, and used again, although ordinarily it will have a quite long life before any such renewal is found necessary. The two strips 11 and 12, preferably made of live rubber, are under sufficient compression to provide a tight seal for the space between the panels, and at the same time they yield enough to absorb the many shocks to which a panel in a car is subjected. These shocks are absorbed by the strips without breaking the seal. Other expedients have been tried in an effort to achieve the functions achieved by my invention, but, so far as I know, they have all been unsuccessful. Rigid tests, however, have shown the success of my invention.

While I have shown the invention as embodied in a specific form, it is to be understood that various changes in details may be made without departing from the scope of the invention, as defined by the appended claims.

I claim:

1. In combination, a frame having an opening therein, a bracket surrounding said opening and rigidly secured to said frame and comprising a rib extending inwardly towards the center of the opening and defining the edge thereof, two shelves on said rib and extending in opposite directions therefrom, two flanges on said bracket and disposed on opposite sides of said rib and extending inwardly towards the center of the opening and having their inner edges spaced from the edges of said shelves to form throats, two spaced panels, each larger than the opening defined by said rib and overlapping said rib on opposite sides thereof, and two strips of resilient compressible material holding said panels against movement away from said rib, each of said strips having a portion thereof extending through one of said throats and into engagement with the outer side of one of said shelves and each strip also being compressed between the panel and flange associated therewith.

2. In combination, a frame having an opening therein, a bracket surrounding said opening and rigidly secured to said frame and comprising a rib extending inwardly towards the center of the opening and defining the edge thereof, two shelves on said rib and extending in opposite directions therefrom, two flanges on said bracket and disposed on opposite sides of said rib and extending inwardly towards the center of the opening and having their inner edges spaced from the edges of said shelves to form throats, two spaced panels, each larger than the opening defined by said rib and overlapping said rib on opposite sides thereof, and two strips of resilient compressible material holding said panels against movement away from said rib, each of said strips having a portion thereof extending through one of said throats and into engagement with the outer side of one of said shelves and each strip also being compressed between the panel and flange associated therewith, said strips extending around the opening on all sides thereof, thereby sealing the space between said panels.

3. In combination, a frame having an opening therein, a bracket surrounding said opening and rigidly secured to said frame and comprising a rib extending inwardly towards the center of the opening and defining the edge thereof, two shelves on said rib and extending in opposite directions therefrom, two flanges on said bracket and disposed on opposite sides of said rib and extending inwardly towards the center of the opening and having their inner edges spaced from the edges of said shelves to form throats, two spaced panels, each larger than the opening defined by said rib and overlapping said rib on opposite sides thereof, two strips of resilient compressible material holding said panels against movement away from said rib, each of said strips having a portion thereof extending through one

of said throats and into engagement with the outer side of one of said shelves and each strip also being compressed between the panel and flange associated therewith, said strips extending around the opening on all sides thereof, thereby sealing the space between said panels, means for admitting a small amount of air into said space, and means for removing moisture from said air before entering said space.

4. In combination, a frame having an opening therein, two spaced panels substantially parallel to each other and extending across said opening, a bracket secured to said frame and having a rib extending around the edge of said opening and inwardly between the edge portions of said panels, a resilient strip of compressible material engaging the face of each panel and holding said panel against said rib, spaced members forming a throat on either side of said rib, said strips each having a portion extending through one of said throats and laterally into a recess in the bracket, means for admitting a small amount of air into the space between said panels, and means for removing moisture from said air before entering said space.

5. In combination, a frame having an opening therein, two spaced panels substantially parallel to each other and extending across said opening, a bracket secured to said frame and having a rib extending around the edge of said opening and inwardly between the edge portions of said panels, a resilient strip of compressible material engaging the face of each panel and holding said panel against said rib, spaced members forming a throat on either side of said rib, said strips each having a portion extending through one of said throats and laterally into a recess in the bracket, means for admitting a small amount of air into the space between said panels, means for removing moisture from said air before entering said space, and other means for removing air from, or for introducing air into, said space.

6. In combination, a frame having an opening therein, two spaced panels substantially parallel to each other and extending across said opening, a bracket secured to said frame and having a rib extending around the edge of said opening and inwardly between the edge portions of said panels, a resilient strip of compressible material engaging the face of each panel and holding said panel against said rib, spaced members forming a throat on either side of said rib, said strips each having a portion extending through one of said throats and laterally into a recess in the bracket, a duct leading from the space between said panels, and a container of moisture-absorbing material connected to said duct and opening to the atmosphere, so that air may pass through said material to or from said space.

7. In combination, a frame having an opening therein, two spaced panels substantially parallel to each other and extending across said opening, a bracket secured to said frame and having a rib extending around the edge of said opening and inwardly between the edge portions of said panels, a resilient strip of compressible material engaging the face of each panel and holding said panel against said rib, spaced members forming a throat on either side of said rib, said strips each having a portion extending through one of said throats and laterally into a recess in the bracket, a duct leading from the space between said panels, a container of moisture-absorbing material connected to said duct and opening to the atmosphere, so that air may pass through said material to or from said space, and one or more other normally closed ducts leading from said space to the atmosphere, for the purpose set forth.

FENLEY HUNTER.