

Aug. 2, 1938.

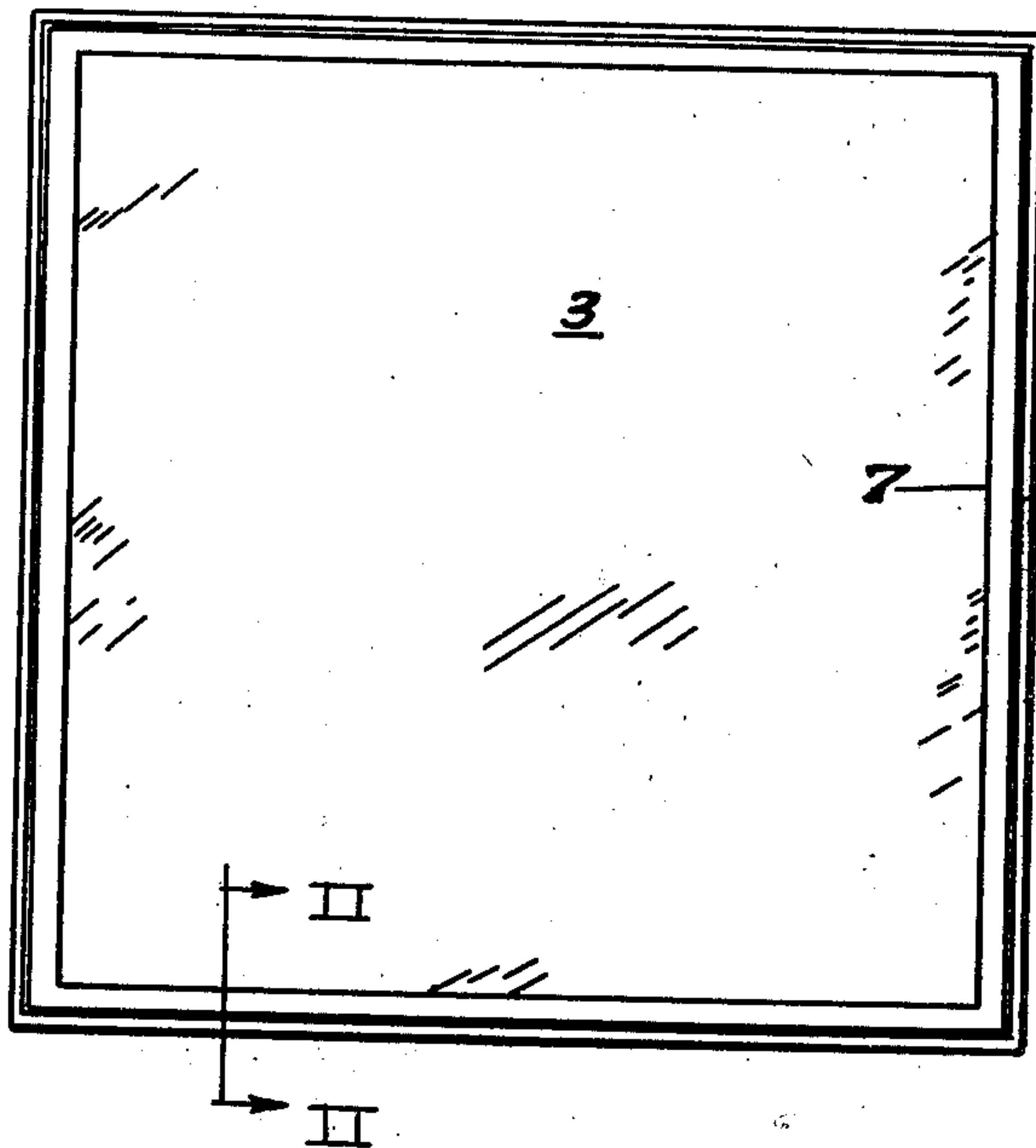
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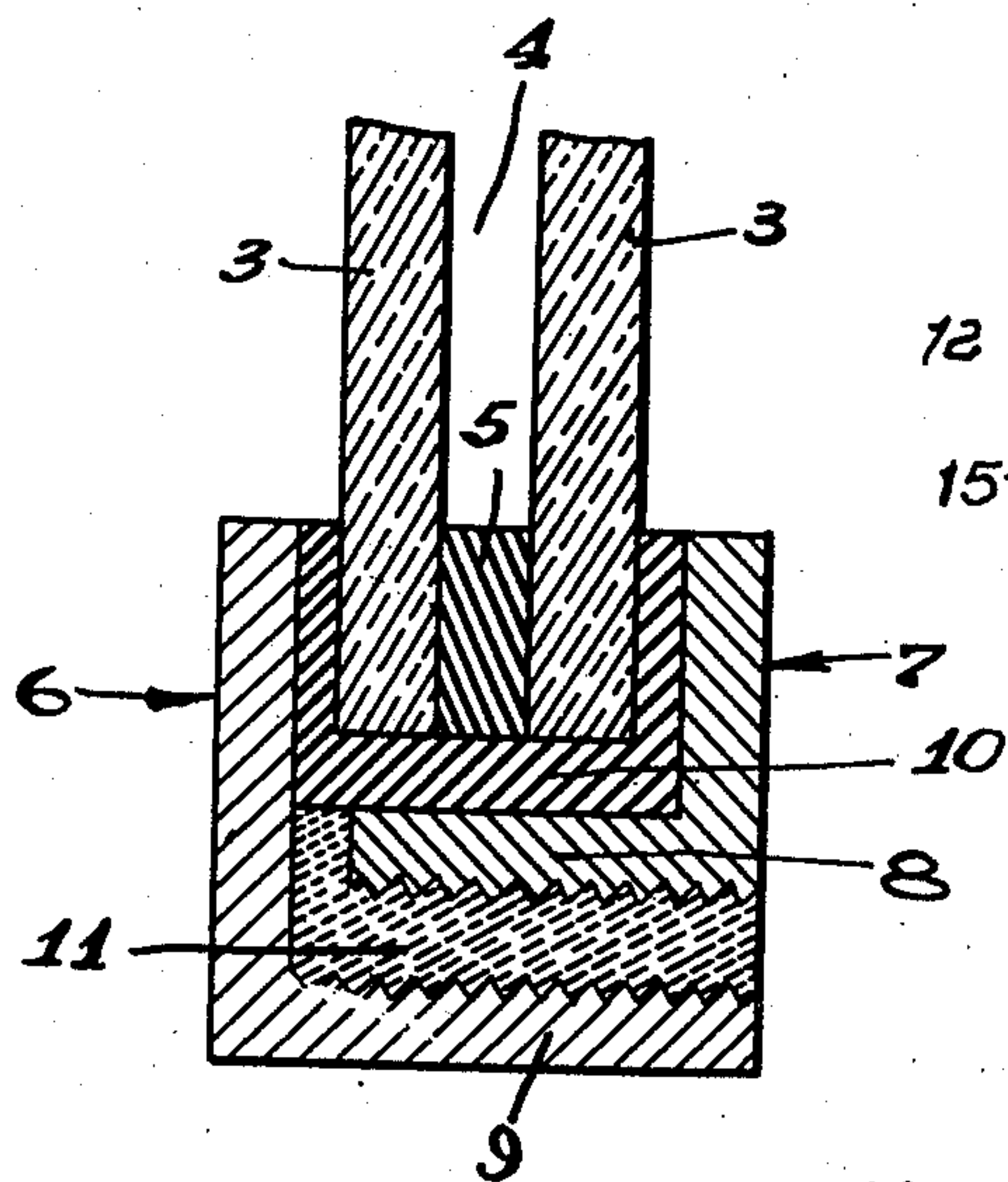
DOUBLE WINDOW CONSTRUCTION

Filed Oct. 2, 1937

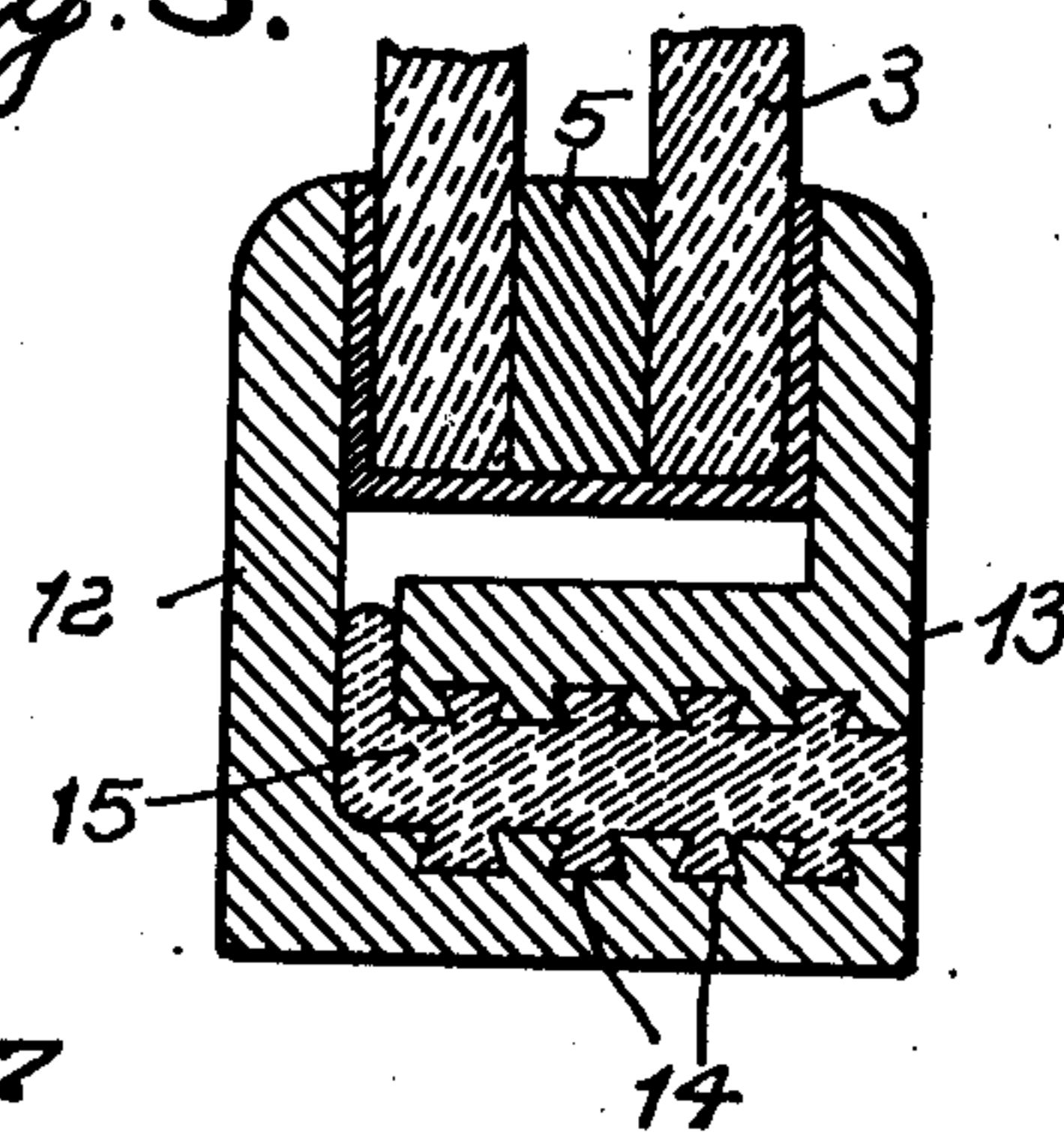
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



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## UNITED STATES PATENT OFFICE

2,125,397

## DOUBLE WINDOW CONSTRUCTION

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Application October 2, 1937, Serial No. 166,950

7 Claims. (Cl. 20—56.5)

The invention relates to a double window construction involving the use of two glass sheets with a spacer of rubber or the like between the edges, and the invention has to do particularly with the metal frame which holds the sheets and spacer in assembled relation. This frame is suitable for mounting in a window sash or in the metal side wall of a car by suitable clamping means, such as those shown in the patent to Fox and Stroud No. 2,054,856, dated September 22, 1936. The frame is of channel cross section and is formed of a pair of oppositely facing L-shaped members their side flanges in opposition to the faces of the glass sheets and their base flanges in overlapping relation forming the web of the channel. One of the objects of the invention is the provision of improved means for holding the two members in assembled relation without the use of screws or similar fastening devices, so that the cost of assembly due to the drilling of holes and the application of screws or the like is reduced to a minimum. A further and very important object of the invention is the provision of securing means of the character specified which will act as insulating means between the two frame members and prevent the member on the inner side of the window from becoming chilled from the member whose flange lies on the outer side of the window. Due to this expedient, the insulating value of the unit as a whole is materially increased, since a metal mounting for a double glazed window offsets to a considerable degree the insulating effect due to the double pane construction. One embodiment of the invention is illustrated in the accompanying drawing, wherein:

Figure 1 is a front elevation. Fig. 2 is a section on a larger scale on the line II—II of Fig. 1, and Fig. 3 is a section through a modification. Referring to the drawing, 3, 3 are a pair of glass sheets with insulating space 4 therebetween, the sheets being spaced and sealed by the strip 5 of rubber or other suitable material. The frame is of channel shape, as indicated in Fig. 2 and comprises the L-shaped metal members 6 and 7 having their vertical flanges in opposition to the side faces of the glass sheets and their base flanges 8 and 9 in overlapping relation beneath the edges of the sheets. The U-shaped packing strip 10, preferably of rubber, surrounds the edges of the sheets and prevents contact between the metal frame members and the glass sheets. The base flanges 8 and 9 of the frame members are spaced apart, as shown, and the flange 8 is substantially shorter than the flange 9, so that

a space is provided between the end of such flange 9 and the vertical flange of the member 6. The space as thus provided is filled with a body of material 11 which hardens and locks the two frame members in assembled position. The material is applied with the spacer 5 and packing strip 10 under compression, and hardens in this position, so that a proper seal is insured in the completed unit. To increase the holding effect between the filling material and the flanges 8 and 9, the faces of the flanges are provided with holding recesses, preferably in the form of serrations.

The material 11 is preferably of organic composition having good heat insulating capacity, so that in addition to its function as a bond securing the frame members together without the use of screws or bolts, it serves to cut down any heat transmission between the members 6 and 7, thus giving the unit increased efficiency as an insulator, this being particularly important when the unit is mounted in a metal wall, as the side of a car. Materials, such as sealing wax or sulphur, may be used and give good insulation. These materials are readily melted at low temperatures and applied by flowing into the recess between the base flanges where they harden quickly at atmospheric temperatures and form an adequate bond.

Other materials which do not have to be melted and which harden and set under atmospheric conditions may be used, such as plaster of Paris, a wide range of other quick setting plasters, or rubber compounds which are self vulcanizing, and certain of the synthetic resins, all of which have reasonably good heat insulating capacity, as compared with metal. If the insulating factor is of small moment, as in those cases where the metal frame is seated in and practically surrounded by a wood frame or putty, low fusing metal may be employed to fill the recess and lock the frame members together. In some cases, the locking material may have such adherence to the metal flanges that the detail of serrating or recessing may be dispensed with. While the filling material is ordinarily applied in a form approximating a liquid, it may be placed in position in relatively plastic form similar to putty, and it will be understood that the term "subject to flow" employed in defining the condition of the material at the time it is applied, is used in its broad sense to cover any condition under which the material is sufficiently mobile to be forced into the locking recess.

Fig. 3 illustrates a modification wherein the



frame members 12 and 13 have their base flanges provided with undercut grooves 14 instead of the serrations of the construction of Figs. 1 and 2, the filling material 15 being similar to the material 11 heretofore described. This gives an increased locking effect between the base flanges.

What I claim is:

1. In combination in a double window construction, a pair of spaced glass sheets with spacing and sealing means therebetween at their margins, a channel in which the edges of the glass sheets are mounted comprising a pair of metal members of L-cross section facing each other with their base flanges overlapping, but spaced apart and with their other flanges in opposition to the side faces of the glass sheets, and a filler of material subject to flow in application but self-hardening under atmospheric conditions filling the space between the base flanges.

2. In combination in a double window construction, a pair of spaced glass sheets with spacing and sealing means therebetween at their margins, a channel in which the edges of the glass sheets are mounted comprising a pair of metal members of L-cross section facing each other with their base flanges overlapping but spaced apart and with their other flanges in opposition to the side faces of the glass sheets, the opposing faces of the base flanges being provided with holding recesses, and a filler of material subject to flow in application but self-hardening under atmospheric conditions filling the space between the base flanges.

3. In combination in a double window construction, a pair of spaced glass sheets with spacing and sealing means therebetween at their margins, a channel in which the edges of the glass sheets are mounted comprising a pair of metal members of L-cross section facing each other with their base flanges overlapping but spaced apart and with their other flanges in opposition to the side faces of the glass sheets, the opposing faces of the base flanges being serrated, and a filler of material subject to flow in application but self-hardening under atmospheric conditions filling the space between the base flanges.

4. In combination in a double window construction, a pair of spaced glass sheets with spacing and sealing means therebetween at their margins, a channel in which the edges of the glass sheets are mounted comprising a pair of metal

members of L-cross section facing each other with their base flanges overlapping but spaced apart and with their other flanges in opposition to the side faces of the glass sheets, and a filler of insulating material subject to flow in application but self-hardening under atmospheric conditions filling the space between the base flanges.

5. In combination in a double window construction, a pair of spaced glass sheets with spacing and sealing means therebetween at their margins, a channel in which the edges of the glass sheets are mounted comprising a pair of metal members of L-cross section facing each other with their base flanges overlapping but spaced apart and with their other flanges in opposition to the side faces of the glass sheets, the base flange nearest the glass sheets being substantially shorter than the other base flange, so that its end is spaced away from the side flange of the other member, and a filler of insulating material subject to flow in application, but self-hardening at atmospheric conditions filling the space at the end of the shorter base flange, and the space between the two base flanges.

6. In combination in a double window construction, a pair of spaced glass sheets with spacing and sealing means therebetween at their margins, a channel in which the edges of the glass sheets are mounted comprising a pair of metal members of L-cross section facing each other with their base flanges overlapping but spaced apart and with their other flanges in opposition to the side faces of the glass sheets, and a filler of material which melts readily on the application of heat, but which is hard and strong at atmospheric temperatures filling the space between the base flanges.

7. In combination in a double window construction, a pair of spaced glass sheets with spacing and sealing means therebetween at their margins, a channel in which the edges of the glass sheets are mounted comprising a pair of metal members of L-cross section facing each other with their base flanges overlapping but spaced apart and with their other flanges in opposition to the side faces of the glass sheets, the opposing faces of the base flanges being provided with holding recesses, and a filler of insulating material filling the space between the base flanges.

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