

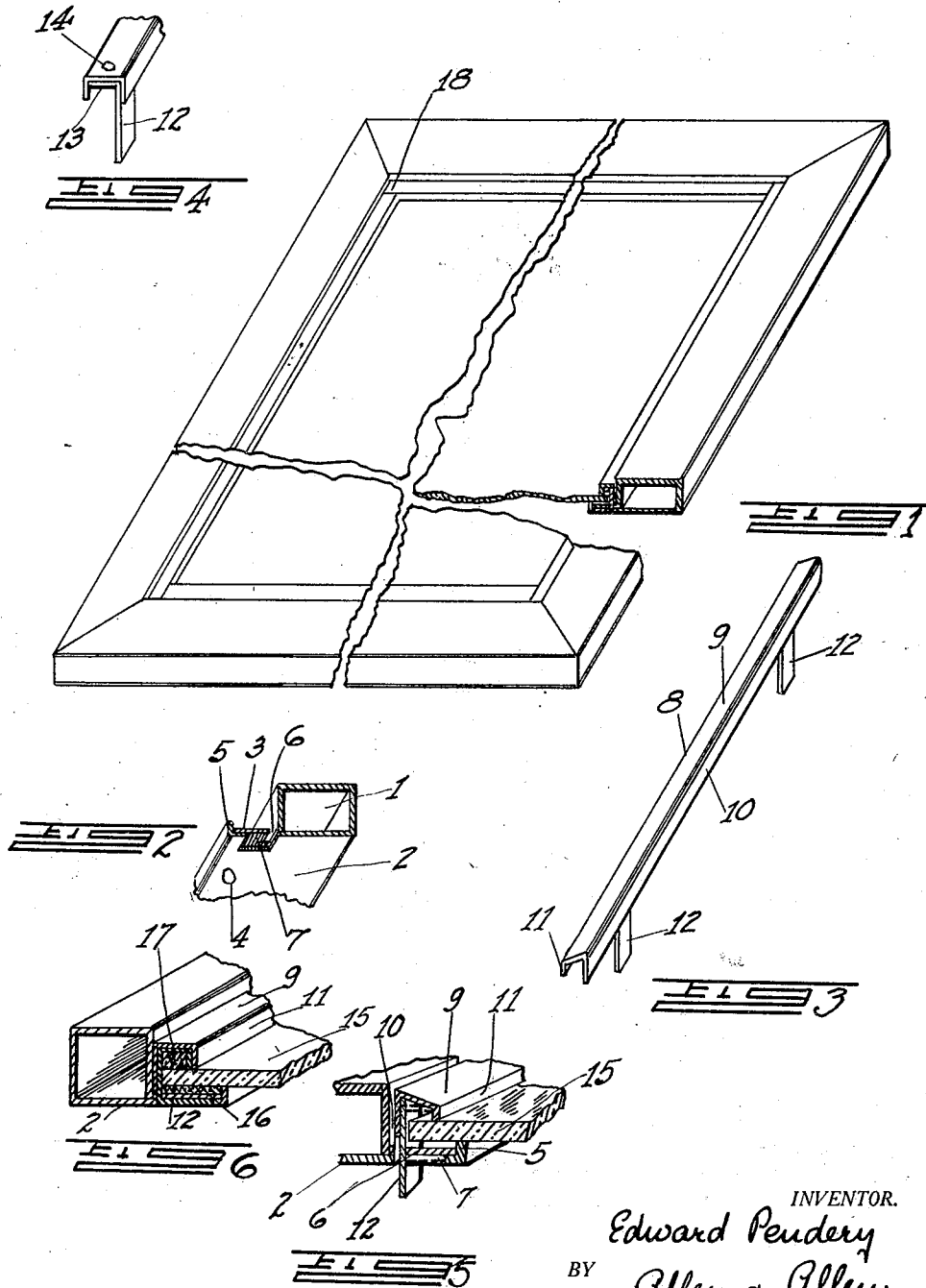
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GLASS FASTENING DEVICE

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GLASS-FASTENING DEVICE

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My invention pertains to methods of fastening glass into metallic sash or sash having metallic edges and it is particularly adaptable to the fastening of glass into metal sash of the same general type as is used in the frame of window screens. My sash is useful in the formation of windows of any general type, but by reason of the lightness, neatness and general economy of the construction, it is particularly valuable for movable glass structures such as wind guards for office windows and the like. A particular adaptation contemplated by me is the provision of sash members to replace screen members in houses during the winter time. The solarium windows are generally of the casement type. Slides for screens are fastened inside these windows on the sill and on the top and two horizontally slidable screens are placed within these guides. My construction makes it possible for the householder to replace these screens with glass in the winter time thereby eliminating drafts and conserving heat in solariums in which frequently heating arrangements are inadequate.

It is an object of my invention to permit the installation of glass in light and inexpensive metallic frame structures. It is a further object of my invention to provide a positive fastening for the glass; one which will not permit it to rattle; one which is easily installed and provides a continuous and positive engagement for the glass; one which makes unnecessary the use of putty in places where it can be seen, and where it may easily chip off. It is a further object of my invention to provide an all-metal fastening for glass in which the use of putty, felt or calking is incidental and is not depended upon for a positive fastening. These and other objects of my invention, I accomplish by that certain construction and arrangement of parts to be hereinafter more specifically pointed out and claimed.

In the drawing:—

Figure 1 illustrates a metallic sash to which glass has been fitted by my fasteners which are shown in position.

Figure 2 illustrates partly in section a preferred form of metal sash.

Figure 3 is a perspective of one of my fasteners.

Figure 4 is a section thereof showing the method of attachment of the tines.

Figure 5 illustrates the spring action of my glass fastener.

Figure 6 shows the fastener fully installed.

Metal sash or frames for window screens are preferably made up of bent tubular sheet metal sections, cut to the proper length and mitered. The mitered sections may be brazed or welded together if desired but are preferably fastened by means of screws to inside angular members which give rigidity to the corners. A view of such a sash is shown in Figure 1 and a section of it in Figure 2. The frame of the window screen ordinarily has a channel for a screen attachment member but in my construction I prefer to eliminate this channel and somewhat modify the form as will be described.

A piece of sheet metal is bent upon itself in the ordinary manner (see Figure 2) to form a square channel section 1, which is the body of the frame. One side of the sheet metal forms a plain side of the frame which I have designated as 2 and which is wider than the channel 1 and extends beyond it. The other side of the metal piece is bent so as to have an edge 3 lying along the back of the face 2 and the two metallic parts are conveniently spot welded together at intervals shown in Figures 2 and 4. This spot welding draws the frame together and holds it rigid. It will be understood that this construction gives to the sheet metal frame greater strength.

In my construction the side 2 is continued out further than the end of the piece 3 and a portion thereof is bent over to form a ridge as at 5. This ridge extends toward the back of the frame beyond the surface of the piece 3 and forms a shallow channel as will be understood. The construction so far described follows what has hitherto been done in the manufacture of metallic-framed window screens excepting that the piece 5 would be extended further in such constructions so as to provide between it and a channel 1 a deeper channel for the insertion and

fastening of the screen. Since in placing glass within my frame I do not have a problem of fastening a flexible member within a channel, I stop the member 5 short as shown so as to provide a bearing for the glass and only a shallow channel in which may be placed putty if desired.

My frame construction however differs further from the frame of a window screen in the slots which I provide for the accommodation of the tines of my fastening device. At intervals, adjacent the shoulder formed by the channel 1, I provide narrow slots 6, through which the tines may be inserted. These slots extend through the member 3. In the member 4, I provide a slot or hole of the same width but of much greater length as at 7 so that when a tine is inserted through slot 6 and it is bent over it will lie within the hole 7 and will be flush with the surface of the side 2.

My screen fastening member consists of a generally channel shaped piece of sheet metal 8 in Figure 3. This metal should be springy in character and may conveniently be made of spring brass or bronze. It comprises a back portion 9, a rear side 10 and a front side 11. The shape of my channel is not rectangular. The side 10 further lies at less than a right angle to the back 9. The exact angle of the side 11 to the back 9 is not important though generally it will be made parallel to the side 10. At intervals tines 12 are fastened to the member 8. By reference to Figure 4 it will be seen that these tines are conveniently attached by being bent over at their upper end as at 13 and spot welded to the back 9 as at 14, though it will be clear that the tine may be otherwise attached if desired, or cut out integral with the member 8. The tines 12 are narrow strips of sheet metal which will go through the slots 6. By reference to Figure 5, the method of use of my glass fastener will be clear. A sheet of glass 15 is placed upon a frame. The glass will of course be cut to size and will rest upon the ridge 5, the end of it overlying the narrow channel formed by said ridge. My fastener 8 will be put in position adjacent the channel 1 with the side 10 abutting the shoulder thereof and the tines 12 extending through the slots 6. When first applied the fastener will be in the position shown by the solid lines. When however the tine 12 is bent over so as to lie in the position shown in the hole 7, the leverage exerted by bending over the tine will draw the fastener down into position as shown in the dotted lines with the back 9 lying parallel with the frame member 2. The side 10 abutting the shoulder of the channel 1 and the side 11 bearing against the glass 15. It will now be seen that a rectangular relationship of the parts of the fastener has been brought about by the leverage, and that the springiness of the metal tending to cause the fas-

tener to resume the shape shown in Figure 3 or in the solid lines in Figure 5 will cause the side 11 to bear against the glass with considerable force and the glass will be rigidly held between the members 5 and 11. Figure 6 shows more clearly the assembled relationship of the sash fastener and glass. It will be seen very clearly in this view that when bent over as indicated, the end of the tine 12 will lie wholly within the hole in the side member 2 so as to be flush with the surface thereof. It will be obvious for this purpose that tines 12 in my fastener will have been cut to a predetermined length.

The finish placed upon the metal frame will now be applied and will cover both the surface 2 and the bent over end of the tine 12 so that upon this side of my frame the fastening means will be unobtrusive and may be entirely hidden. If desired, putty as at 16 may be placed in the channel of the frame and as at 17 in the channel of my fastener, and I have found that when putty is so applied, I can achieve a construction in which water will not enter around the edges of the glass at all. Further the putty is invisible to the observer excepting possibly through the glass and while I have shown in Figures 1, 5 and 6 a fastening member which is somewhat narrower than the channel of the frame, it will be obvious that I can make the channel and the fastening member of the same width if desired. Further, it will be obvious that the putty is entirely closed from the air so that its life will be preserved and so that it cannot be chipped off or broken as in ordinary sash constructions in which putty is exposed. In my construction the putty has a calking function and is not at all relied upon to fasten glass in place.

I have shown in Figure 1 a sash containing a single light of glass. It will be clear that when desired a sash may be made to contain one or more lights of glass by having members extending across the sash from side to side at intervals providing a shoulder equivalent to that shown by channel 1, with a channel and a ridge 5 on either side thereof. Two or more lights of glass may then be placed in position and held there with the appropriate number of fasteners. I do not preferably bevel my fasteners but cut them of the proper length and form my corners as shown at 18 in Figure 1 because I find this gives a more attractive finish.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In a sash a shoulder defining a glass opening, a ledge extending inwardly from said shoulder and forming a bearing for said glass, a glass fastening member with a head having a portion adapted to abut said shoulder and a portion adapted to overlies the upper surface of said glass, a tine attached to

said head, and a hole through said ledge for the passage of said tine, said tine being bent over on the under side of said ledge.

2. In a sash a shoulder defining a glass opening, a ledge extending inwardly from said shoulder and forming a bearing for said glass, a glass fastening member adapted to abut said shoulder and overlie the upper surface of said glass, a tine depending from said fastening member, and a hole through said ledge for the passage of said tine, said tine being bent over on the under side of said ledge, the under side of said ledge being hollowed out to receive the bent over portions of said tine.

3. In a sash a shoulder defining a glass opening, a ledge extending inwardly from said shoulder and forming a bearing for said glass, a glass fastening member adapted to abut said shoulder and overlie the upper surface of said glass, tines depending from said fastening member, and holes through said ledge for the passage of said tines, said tines being bent over on the under side of said ledge, the under side of said ledge being hollowed out to receive the bent over portions of said tines, said glass fastening member comprising a channel for putty.

4. In a sash a shoulder defining a glass opening, a ledge extending inwardly from said shoulder and forming a bearing for said glass, a glass fastening member adapted to abut said shoulder and overlie the upper surface of said glass, tines depending from said fastening member, and holes through said ledge for the passage of said tines, said tines being bent over on the under side of said ledge, the under side of said ledge being hollowed out to receive the bent over portions of said tines, said glass fastening member comprising a channel for putty, said ledge comprising a channel for putty.

5. In a sash a shoulder defining a glass opening, a ledge extending inwardly from said shoulder and forming a bearing for said glass, a glass fastening member adapted to abut said shoulder and overlie the upper surface of said glass, tines depending from said fastening member, and holes through said ledge for the passage of said tines, said tines being bent over on the under side of said ledge, said glass fastening member comprising a sheet-metal member held under tension against said glass by said tines.

6. In a sash comprising bent sheet-metal, a shoulder defining a glass opening, a ledge extending inwardly from said shoulder and forming a bearing for said glass, said ledge formed of a double thickness of said sheet-metal, and a glass fastening member adapted to abut said shoulder and overlie said glass, tines depending from said fastening member, and holes in said ledge for the passage of said tines, said holes passing through both thicknesses of said sheet metal but in

the lower thickness thereof extended to accommodate the ends of said tines when bent over, and said tines bent over and the ends thereof lying within said elongated holes whereby said ends hold against the upper thickness of said sheet-metal.

7. In a sash comprising bent sheet-metal, a shoulder defining a glass opening, a ledge extending inwardly from said shoulder and forming a bearing for said glass, said ledge formed of a double thickness of said sheet-metal, and a glass fastening member adapted to abut said shoulder and overlie said glass, tines depending from said fastening member, and holes in said ledge for the passage of said tines, said holes passing through both thicknesses of said sheet metal but in the lower thickness thereof extended to accommodate the ends of said tines when bent over, and said tines bent over and the ends thereof lying within said elongated holes whereby said ends hold against the upper thickness of said sheet metal, the lower thickness of said sheet metal in said ledge extending beyond said upper thickness and bent upwardly toward said glass whereby a channel is formed in said ledge for putty.

8. In a sash comprising bent-sheet metal, a shoulder defining a glass opening, a ledge extending inwardly from said shoulder and forming a bearing for said glass, said ledge formed of a double thickness of said sheet metal, and a glass fastening member adapted to abut said shoulder and overlie said glass, tines depending from said fastening member, and holes in said ledge for the passage of said tines, said holes passing through both thicknesses of said sheet metal but in the lower thickness thereof extended to accommodate the ends of said tines when bent over, and said tines bent over and the ends thereof lying within said elongated holes whereby said ends hold against the upper thickness of said sheet metal, the lower thickness of said sheet metal in said ledge extending beyond said upper thickness and bent upwardly toward said glass whereby a channel is formed in said ledge for putty, said glass fastening member comprising a channel part of sheet-metal forming a channel for putty.

9. In a sash a shoulder and a ledge to support glass, a glass fastening member adapted to overlie the upper edge of said glass and comprising a sheet metal channel member with a part adapted to abut said shoulder and a part adapted to rest against said glass, tines on said glass fastening member, said tines passing through holes in said ledge and bent over on the reverse side thereof, whereby said fastening member is held against said glass and said shoulder.

10. In a sash a shoulder and a ledge to support glass, a glass fastening member adapted to overlie the upper edge of said glass and comprising a sheet metal channel member

with a part adapted to abut said shoulder and a part adapted to rest against said glass, tines on said glass fastening member, said channel member being of spring metal and initially non-rectangular shape, said tines passing through holes in said ledge and bent over on the reverse side thereof whereby tension is exerted on said part abutting said shoulder, said tension drawing said channel member to rectangular shape against the spring of the metal whereby spring tension is exerted against said glass.

11. In a sash a shoulder and a ledge to support glass, a glass fastening member adapted to overlie the upper edge of said glass and comprising a sheet metal channel member with a part adapted to abut said shoulder and a part adapted to rest against said glass, tines on said glass fastening member, said channel member being of spring metal and initially non-rectangular shape, said tines passing through holes in said ledge and bent over on the reverse side thereof whereby tension is exerted on said part abutting said shoulder, said tension drawing said channel member to rectangular shape against the spring of the metal whereby spring tension is exerted against said glass, said channel part abutting said shoulder being longer than said part resting on said glass.

12. In a sash a shoulder and a ledge to support glass, a glass fastening member adapted to overlie the upper edge of said glass and comprising a sheet metal channel member with a part adapted to abut said shoulder and a part adapted to rest against said glass, tines on said glass fastening member, said channel member being of spring metal and initially non-rectangular shape, said tines passing through holes in said ledge and bent over on the reverse side thereof whereby tension is exerted on said part abutting said shoulder, said tension drawing said channel member to rectangular shape against the spring of the metal whereby spring tension is exerted against said glass, said channel part abutting said shoulder being longer than said part resting on said glass, said ledge being formed of two thicknesses of sheet metal, said holes passing through both thicknesses thereof, but in the lower thickness extended to accommodate the ends of said tines when bent over, said tines bent over and the ends thereof lying within said elongated holes, the lower thickness of said sheet metal in said ledge extending beyond the upper thickness and bent upwardly toward said glass, whereby a channel is formed in said ledge for putty, and putty filling said channel, and said channel member of said glass fastening member.

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