A. G. PETERS.

PANE FASTENING.

APPLICATION FILED FEB. 29, 1916.

1,223,609.

Patented Apr. 24, 1917.

2 SHEETS—SHEET 1.

FIG. 1.

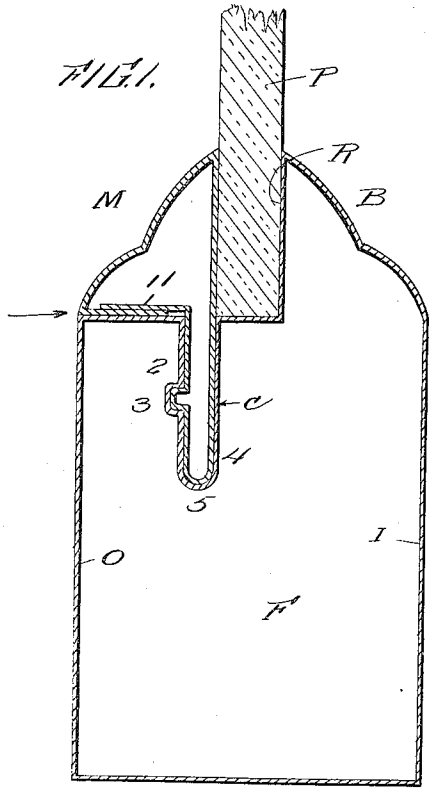
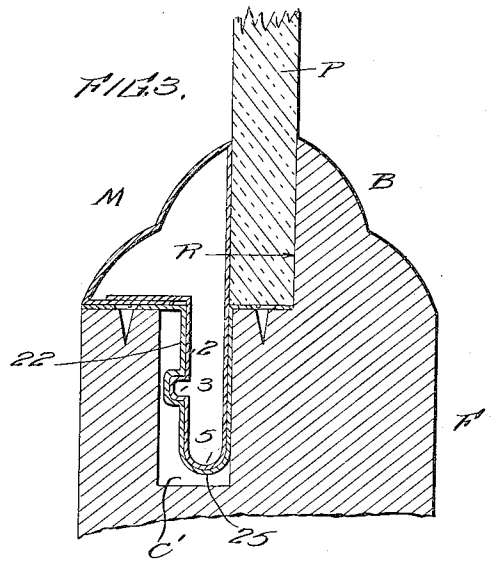


FIG. 3.



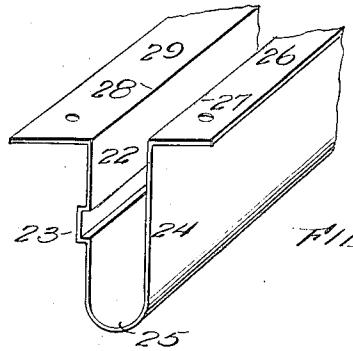


FIG. 4.

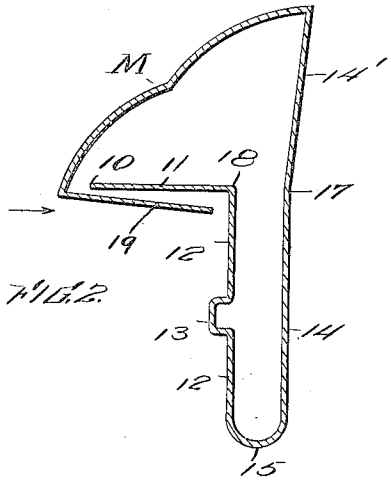


FIG. 2.

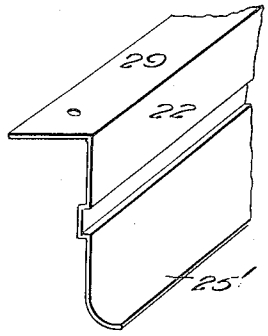


FIG. 5.

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2 SHEETS—SHEET 2.

FIG. 7.

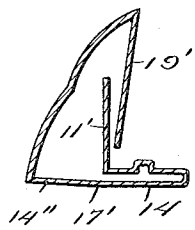


FIG. 6.

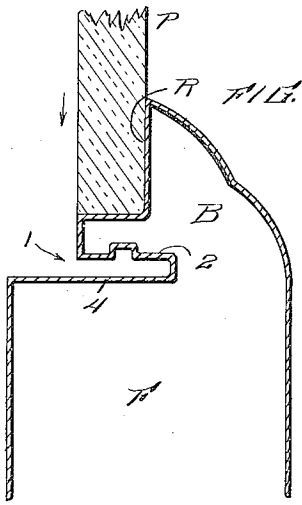


FIG. 8.

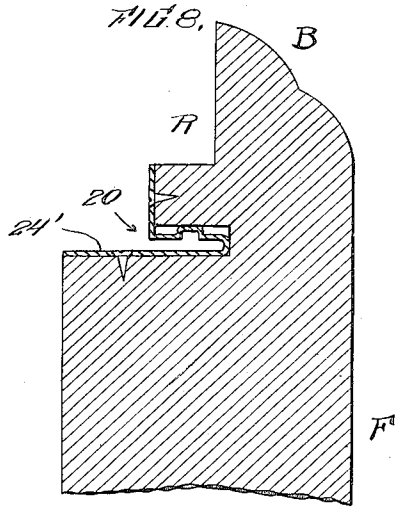


FIG. 12.

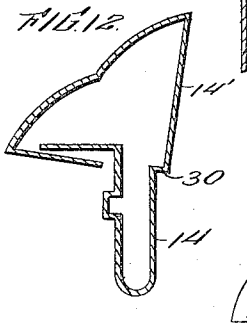


FIG. 11.

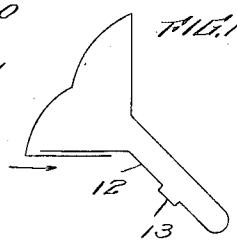


FIG. 10.

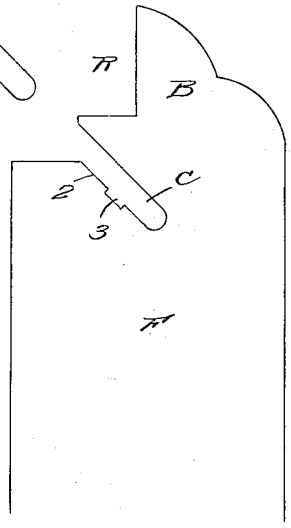


FIG. 15.

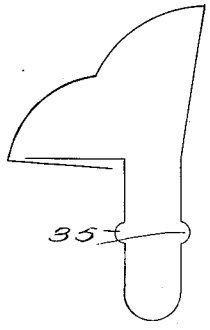


FIG. 13.

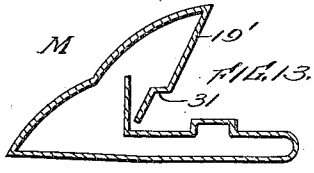


FIG. 16.

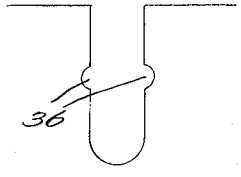
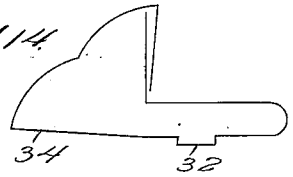


FIG. 9.



FIG. 14.



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PANE-FASTENING.

1,223,609. Specification of Letters Patent. Patented Apr. 24, 1917.

Application filed February 29, 1916. Serial No. 81,187.

To all whom it may concern:

Be it known that I, ARNOLD G. PETERS, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Pane-Fastenings; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to metallic building structures, and more especially to removable pane fastenings for window sashes, although it will be clear that the fastening device might be used for holding a panel in a door. In either case it is not essential that the sash frame or door frame be of metal.

The primary object of the present invention is to produce a metal molding cut into strips or sections, preferably four in number so as to surround a rectangular pane or panel, and so shaped on the exposed portion as to correspond with the beading at one side of the rabbet in the sash frame; and to provide the latter with a channel adjacent its rabbet which is so shaped as to receive the remaining portion of the strip or section and hold it removably therein. Further objects are to adapt this fastening to panels of different thickness, to provide means for lining the channel with metal, and to devise a system by which the strips or sections can be inserted alongside the panel, in a direction at right angles thereto, or perhaps obliquely, and in any case the strips will match each other accurately at the corners. These several objects are carried out in the manner hereinafter more fully described and claimed, and as shown in the drawings wherein:—

Figure 1 is a sectional view through the lower rail of the frame of a sash or door, the glass pane or wooden panel resting on the rabbet therein, and what might be called the simplest form of my fastener inserted vertically alongside said panel; and Fig. 2 is a sectional detail of the fastener alone.

Fig. 3 is a section similar to Fig. 1 showing the channel in the frame as lined, and Fig. 4 is a detail of the lining, while Fig. 5 is a detail of what might be called a half lining.

Fig. 6 is a section similar to Fig. 1 and Fig. 7 a sectional detail similar to Fig. 2, these views showing one form of my fastening device to be inserted in the channel by a movement at right angles to the plane of the panel; and Fig. 8 is a sectional view of a piece of the frame with a full lining inserted horizontally therein, while Fig. 9 is a detail of a half lining.

Fig. 10 is a diagrammatic sectional view similar to Fig. 1, and Fig. 11 a detail similar to Fig. 2, showing respectively a frame and a fastening device which latter is to be inserted obliquely into the channel.

Figs. 12 and 13 are details showing the shape in section of fastening strips or members which may be employed where the panel is thinner than the width of the rabbet, and Fig. 14 is a detail showing the rib on the opposite wall from that which carries it in all the preceding views.

Fig. 15 is a diagrammatic sectional detail of an amplified form of fastening strip wherein both walls have ribs, and Fig. 16 is a detail showing the shape of the lining which will be used therewith and also illustrative of the grooves in both walls of the channel.

Broadly speaking, my present invention is a removable fastener for holding a glass pane P in a sash frame F (or a panel within a door frame) with the edge of the pane or panel resting on a rabbet R formed in the frame, one wall of the rabbet constituting one side of a bead or beading B forming an integral part of the frame and usually at the inside of the same. It is immaterial to the present invention whether the frame be of wood or of metal, so long as it has the contour illustrated in the drawings, and of course it is immaterial whether it be a sash frame or a door frame and whether the letter P designates glass or wood. But I preferably make the fastening device in male and female members whereof the latter is in the shape of a channel C within the frame, lined or not as preferred, while the male member is in the shape of a metal molding whose exterior or exposed portion M preferably complements the bead B in contour and whose remaining or concealed portion enters the channel and removably engages the same in a manner which will be made clear. Said channel may be upright or vertical and alongside the plane of the panel P as perhaps best seen in Fig. 3, or it may be horizontal as best seen in Fig. 6, or it might be

oblique as best seen in Fig. 10. The molding is cut into strips or members substantially corresponding in length with the four sides of the opening which is to be closed by the panel, and the strips engage each other at the corners of said opening in a manner yet to be explained. It will therefore be quite obvious that the size of the opening and hence the size of the panel is immaterial, because the strips can be cut in corresponding lengths; and furthermore the exact dimensions and in fact the exact shape of parts is not necessary to the gist of the present invention.

In Figs. 1 and 2 is shown what might be called the simplest type of my invention. I have used the letters O and I in Fig. 1 to designate the outer and inner faces of the frame F, which will leave the bead B thereof on the inside. On the assumption that the panel P stands at about the center of the thickness of the frame F as shown, the inner wall of the rabbet R constitutes the outer face of the bead B and the bottom wall of said rabbet R is continued across the radially inner edge of the frame F to its outer face O. In this bottom wall is cut the upright channel C, the mouth of which (numbered 1 in Fig. 6) is here closed by the molding which stands therein. The outer wall 2 of the channel has a longitudinal groove 3 about where shown, and the inner wall 4 of the channel is united by a bend 5 at its lower edge with the corresponding inner edge of the outer wall 2. This channel as a whole constitutes the female member of the fastening device. The male member thereof is in place in Fig. 1, but is shown removed in Fig. 2. Its exposed portion may be broadly designated by the reference letter M as a molding which complements the beading B; and it is made of a continuous strip of spring metal bent into the shape herein shown. Beginning at one edge 10, the strip is formed into a lip 11, then bent at about right angles at 18 into an outer wall 12 which has a rib 13 at about the mid-length thereof adapted to enter the groove 3, and the lower edge of this wall is united by a bend 15 with the inner wall 14 which is flat and stands normally parallel with the outer wall as shown in full lines. At 17 the inner wall makes a slight angle so that the upper portion 14′ of this wall is ordinarily inclined inward beyond a vertical. From the upper edge of the portion 14′ the metal is carried over in any fanciful form to and into the molding M, and from the lower edge of the latter the metal is bent inward into a lip 19 underlying the first-named lip 11.

The parts are assembled by putting the lower edge of the panel P into the rabbet R, then bringing the walls 14, 14′ of the member M up against the outer face of the panel P, and moving it downward so that the bend 15 first enters the open mouth of the channel, the rib 13 and its wall are sprung inward to the position shown in dotted lines, and when the bend 15 contacts with the bend 5 the parts spring into the position shown in Fig. 1. I may here say that in order to remove this member so as to take the panel out of the frame, it is only necessary to insert some sharp intrument such as a screw-driver or glazier's knife between the lip 19 and the shoulder at the upper edge of the frame F, as shown by the arrows in Figs. 1 and 2, press it inward until the outer wall 12 is deflected or sprung to the position shown in dotted lines, and twist the blade to draw the member out of the channel which can readily be accomplished, now that the rib is disengaged from the groove.

Figs. 3, 4 and 5 are employed to show a lining. The frame F in Fig. 1 might be of metal, as in fact might be the frame F of Fig. 3 although in the last view I have shown it as of wood and in section. It is precisely the same in section as already described, excepting that the channel C′ is a little wider and has no groove 3. In Fig. 4 is shown a metallic lining for this channel. This lining has a flat lip 29 bent at a right angle 28 into an outer wall 22 provided with a groove 23, and the lower edge of this wall is united by a bend 25 with a flat inner wall 24. The upper edge of the latter is bent at right angles 27 into an inner lip 26, and the two lips 26 and 29 are secured to the upper edge of the frame F by any suitable means as by tacks or screws passing through the holes shown therein. The lining in Fig. 5 need hardly be described in detail, further than to say that it is exactly a counterpart of the outer portion of the lining shown in Fig. 4, or it is cut through so as to leave only a part of the bend at the bottom as indicated at 25′. As the inner wall 24 of the lining in Fig. 4 is flat and the inner wall of the channel C′ is flat, it is quite obvious that the inner wall of the lining might be omitted unless it were desired to line the entire channel so as to make it water-proof. The male member is inserted into a channel provided with either of these linings, and removed therefrom, in the manner already described.

The embodiment of my idea shown in Figs. 6 to 9 inclusive contemplates the insertion of the male member horizontally with respect to an upright frame and panel. As the detailed construction of parts is otherwise almost identical with that already described, it will not be necessary to repeat it or to confuse the views with reference numerals other than as applied to points of difference. In Figs. 6 and 8 the channel is cut horizontally into the frame, and what would be its outer wall 2 in Fig. 1 because that wall was disposed toward the outside

of the frame, is here also its outer wall 2 because it can be reached from outside the panel P. Therefore this word "outer" must not be confused with the radially outer (or "lower") edge of the frame bar here shown in section. The wall 4 is again flat, but instead of leading to the rabbet R it extends to the outer face O of the frame F. The member shown in Fig. 7 is in many respects identical with that shown in Fig. 2. The angle 17′ is here reversed, or in other words the wall 14″ is bent inward toward the member rather than outward as seen in Fig. 2. This carries the molding M a little farther inward and causes the lip 19′ to normally stand slightly remote from the inner lip 11′. In the insertion of the member shown in Fig. 2, pressure of the wall 14′ against the panel P will flatten out the angle 17, and when the parts are all assembled as seen in Fig. 1 the pane or panel will be held close against the bead B. Insertion of the member shown in Fig. 7 into the channel of Fig. 6 also flattens out the angle 17′ and puts the wall 14″ into the plane of the wall 14, and the lip 19′ comes against the panel P so that the latter is also held close against the beading B. Thus it will be seen that the angles 17 and 17′ in the two members shown in Figs. 2 and 7, while reversed, perform the same function of holding the contact face of the male member close against the panel and the latter close against the beading. A full lining 20 is shown in Fig. 8, which differs only from that shown in Fig. 4 in that it here omits the angle 27 and therefore its flat wall 24′ is wider than its opposite wall as the shape of the channel requires. The half lining 21 shown in Fig. 9 is almost exactly identical with the half lining shown in Fig. 5, but in any case where a half lining is used I prefer that it always have that wall which is grooved, and my reason for this preference is because it is easier to make the groove in the lining and then insert it than it is to form the groove in one wall of the channel in the frame. The parts in this embodiment of my invention are assembled in the same manner as above described excepting that the male member is inserted horizontally. To separate the members, a blade is inserted along the line indicated by the arrow in Fig. 6; it passes behind the lip 19′ and bears against the ribbed wall, and the latter is deflected inward and the male member removed in the same manner as hereinbefore described and as shown in dotted lines in Fig. 2.

The embodiment of my invention shown in Figs. 10 and 11 differs from either of those hereinbefore described only in that the male member is inserted into the female member or channel in an oblique direction or at about an angle of 45° to either the vertical or horizontal. For the purpose again of avoiding confusion, I will not repeat the description or amplify the reference numerals in these views. In fact, in addition to the reference letters I need but state that the lower wall of the channel C is here shown at 2 provided with a groove 3, and the yielding wall 12 of the member M has the rib 13. If so, the tool must be inserted about as indicated by the arrow. However, it is possible to reverse this arrangement and have the groove and rib at the upper side of the channel herein shown, as will be explained in the next paragraph.

Amplifications of this idea are illustrated in Figs. 12 to 16. In Fig. 12 the walls 14 and 14′ still stand at a slight angle to each other as seen in Fig. 2, but at their point of juncture an offset or shoulder 30 is provided. With this type of male member it is obvious that a thinner panel P could be clamped within the rabbet in the frame. In Fig. 13 a similar offset or shoulder 31 is shown as formed within the lip 19′ of the member shown in Fig. 7, and for the same purpose. Fig. 14 is used to show that the rib might be formed on the other wall, elsewhere shown and described as the flat wall 14. In this view the rib is numbered 32 and the wall 34, and of course the channel or the lining would have to be made accordingly. To insert a male member of this type would require that the wall 34 spring inward as the rib moves into the channel, and it might not be possible always to remove this member in the manner heretofore described. Fig. 15 shows an embodiment in which ribs 35 are formed on both walls of the male member, and the channel would have to have grooves in both its walls to correspond, or if lined the lining shown in Fig. 16 would have to have grooves as seen at 36. Here again it might be difficult to remove the male member. I might say in this connection, however, that while I have consistently shown the ribs and grooves as not very pronounced, they could be made larger, rounding or angular, it is not impossible that the rib and groove on any one wall might be duplicated, and it is not beyond the general idea that one face of the rib and groove could be inclined and the other abrupt so as to produce almost a tooth in case it were not desired to remove the fastening device. Therefore I do not wish to be limited too strictly in this respect. Again, I do not contemplate the necessity of employing any extraneous elements or agents to hold the parts in place in a water-proof condition, but yet it is possible that either the channel or the male member could be painted or provided with an adhesive before they were engaged with each other; and in some cases if this were employed it might be thought that the adhesive would take the place of the rib and

groove and in that event both walls could be left smooth. In any case, the resiliency of the metal of which the male member is made will cause it to expand when it comes to rest within the channel, and its walls will therefore contact closely with the walls of the channel or the lining of the latter, and in addition to this fact of course the strips of molding will be to a certain extent held in place where they meet each other at the corners of the panel.

At the corners of each panel where the sections or strips of the male member come into contact with each other, they must be mitered on the proper angle as well known to the skilled artisan in this line. For a quadrilateral panel and with the construction shown in Fig. 6, this miter would be strictly at a 45° angle, and for the construction shown at Fig. 10 this miter must be such as will permit the ends of the fourth strip to pass into place after the others are all in position. With the construction shown in Fig. 1, however, three strips may be put into place with comparative ease but the ends of the last strip will be cut off on irregular lines so that they will fit closely over and slide along the exposed ornamental faces of the two strips adjacent.

What I claim is:

1. The herein described pane fastening composed of a strip of spring metal formed near one edge into a molding, extending thence into a wall, the remote edge of said wall being united with a second wall spaced from the first, and a rib on said second wall projecting away from the first wall, the whole for use substantially as described.

2. The herein described pane fastening composed of a strip of spring metal formed at one edge with a lip, extending thence into a molding, the remote edge of the molding extending into a wall, the remote edge of said wall united with a second wall spaced from the first and having a rib and the edge of the ribbed wall formed into a second lip overlying the lip first named, the whole for use substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ARNOLD G. PETERS.

Witnesses:

L. O. RUE,

THOS. STANDIFORD.