Jan. 3, 1928. 1,654,619

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SELF LOCKING GLASS RETAINING STRIP

Filed June 4, 1926

Fig. 1

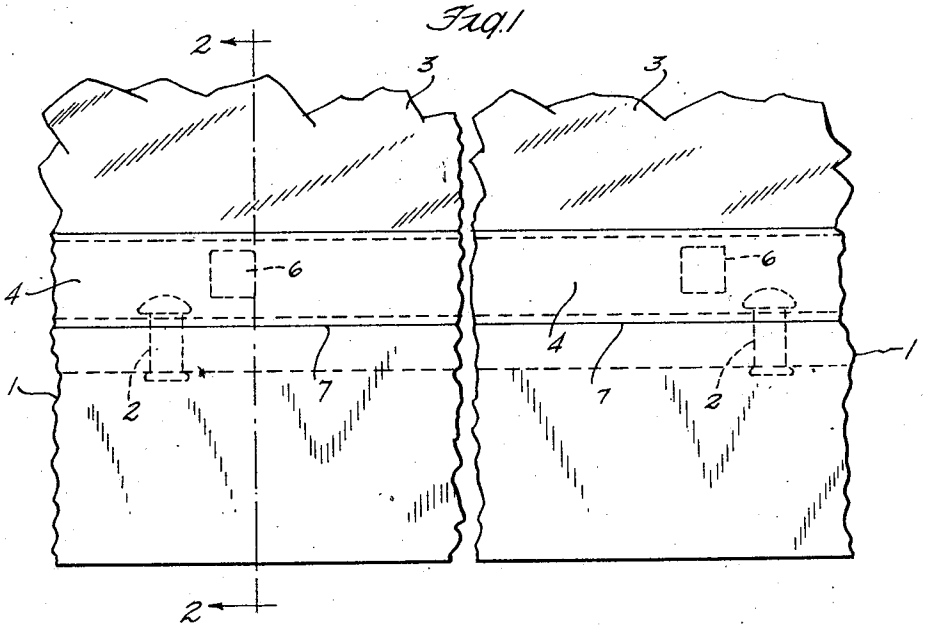
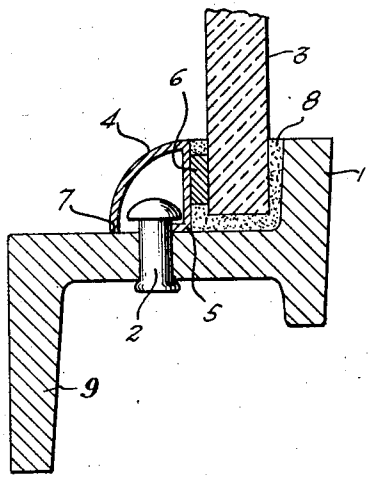


Fig. 2



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Patented Jan. 3, 1928. 1,654,619

UNITED STATES PATENT OFFICE.

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SELF-LOCKING GLASS-RETAINING STRIP.

Application filed June 4, 1926. Serial No. 113,595.

This invention relates to retaining strips or beads for fastening panes of glass in window sash, and aims particularly to provide a self-locking retaining strip or bead which can readily be applied to any type of sash and which has many advantages over strips or beads heretofore used when applied to metal sash.

The glazing of wooden sash is comparatively easy, whether such glazing be done in the ordinary manner with brads and putty, or whether it be done with retaining strips or beads, since attachment of the strips or beads to the sash can readily be effected. In the glazing of metal sash, however, and particularly of metal casements, a much more difficult problem is encountered, since the strips or beads cannot be fitted and nailed in place on metal sash as in the case of wooden sash and it is therefore necessary to provide some means for attaching the strip or bead to the metal. One of the most common modes of doing this heretofore has been to provide the strips or beads with holes which register with tapped holes in the sash, the strip or bead being then attached to the sash by means of screws.

Not only does the screw method of attaching the beads or strips to metal sash require considerable time and labor for the actual driving of the screws through the strip or bead, but it is frequently found that the screw holes in the strips or beads do not register accurately with those tapped in the sash and thus the workmen on the job must stop to drill new holes in the bead or tap new holes in the sash, with the result that it has been found that the cost of glazing metal sash frequently represents from 10 to 15 per cent of the total labor cost of installing the window.

As above suggested, the present invention aims to provide a self-locking strip or bead and a fastening therefor which will do away with the excessive labor cost involved in the use of the older types of beads or strips, which will be neat and sightly in appearance and which can be applied on the job without the use of special tools. Moreover, the invention aims to provide a strip or bead which can be applied to any type of sash, either wood or metal, which conceals the means by which it is secured to the sash and which does not require accurate spacing of such securing means from each other as has been the case with the retaining strips or beads heretofore employed.

A further object of the invention is the provision of a self-locking retaining strip which is locked firmly by the pressure of the putty or other sealing means interposed between it and the glass.

Further objects and important features of the invention will appear from the following more detailed description of the invention.

According to the present invention, window sash, and particularly metal window sash, are provided with projections having undercut portions as, for example, rivets having projecting heads or screws having suitable heads, preferably flat on their under sides, or any other suitable and convenient fastening means. Cooperating with these fastenings is a metal retaining strip or bead preferably of hollow cross-section and having an inturned lip adapted to extend under the undercut portions or heads of the securing means or fastenings, this lip being formed as a rearward extension from the sash-engaging edge of the side of the bead or strip which is adapted to lie in proximity to the glass. From the outer edge of this side a bracing side extends into engagement with the sash on the side of the fastening means remote from the glass. Sufficient clearance is provided between the glass and the heads of the fastening means so that the sealing strip can be put in place, the lip passing down between the heads of the fastening means and the glass. Temporary securing wedges may be placed between the glass and the bead or strip which serve to force the lip back beneath the heads into strip locking relation thereto, when putty may then be applied between the retaining bead or strip and the window and the lip thus permanently locked in position under the heads of the fastenings, the retaining bead or strip thus serving its function both of furnishing a backing for the putty and of concealing the heads of the fastening means. If desired, putty may also be put in the hollow interior of the strip or bead, thus further sealing it weather-tight against the sash. The pressure of the putty or wedges between the glass and the fastenings, however, forces the edge of the bracing side of the strip tightly into engagement with the sash.

It has been proposed in the past to use

metal retaining strips which are curved in cross-section or formed with a bracing side and which in some cases bear on the window sash, but it has been necessary with these prior constructions either to use nails to fasten the strip to the sash or to provide other special means for attaching the strip. It is an important advantage of the present invention that the retaining strip or bead can be applied, without the use of special tools, simply and easily, and that it can be permanently locked in place by the mere application of the putty or other sealing means, thus decreasing the labor required and providing a strong self-locking fastening which will not yield when pressure is applied to the glass.

The present invention is suitable for windows, either large or small, and either in exposed or in sheltered positions. The invention is also applicable to glass doors and structures of considerable size since there is no tendency to loosen even when the total pressure exerted by the glass is considerable as in the case of large windows or doors which are subject to considerable wind pressure.

It is an advantage of the present invention that the fastening means can be permanently applied to the sash before the window is installed and that the retaining strip fits the sash irrespective of the placement of the fastening means which do not have to be aligned accurately with holes in the strip, as in the case of prior constructions, thus greatly increasing the labor required in installing the windows.

The invention will be described in greater detail in connection with a preferred embodiment shown in the drawings, in which

Figure 1 is a front view of a portion of a metal casement sash embodying the present invention, and

Figure 2 is a vertical section on the line 2—2 of Figure 1.

The casement window illustrated comprises a metal sash 1 of special cross-section whereby it provides a glass retaining shoulder or flange and a stop flange 9, the sash being provided at suitable intervals in a line parallel with the glass retaining shoulder with undercut projections or fastening means 2 which, in the illustrated embodiment of the invention, consist in rivets having heads preferably flat on their under sides. The pane of glass 3 is located between the retaining shoulder of the sash and the rivets, being usually set in sealing material 8, such, for example, as putty, and the retaining strips or beads 4, which may be of the cross-section shown in the drawings, are then put in place, there being sufficient clearance between the glass 3 and the rivet heads for the lip 5 of the retaining strip or bead to pass between the glass and the rivet heads as the strip or bead is brought down into engagement with the sash. The retaining strip or bead 4 may be temporarily held in its interlocking relation to the fastenings 2 by wooden wedges 6, which may either be left in position when the glass has been completely puttied, or may be withdrawn. After the bead or strip 4 has been placed in the position shown in Fig. 2, the application of the putty or other sealing means 8 to seal the joint weather-tight may be completed.

It will be noted that the curved side of the bead or retaining strip 4 constitutes a bracing side which retains the vertical side in its upright glass retaining position, the fastening 2 engaged by the lip 5 preventing the lower edge of this glass retaining side of the bead or strip from being pushed outward on the sash and also serving as a fulcrum for the action of the curved bracing side. Thus an increase of the pressure between the glass and the vertical face of the strip or bead 4 serves only to lock it more tightly into engagement with the sash and with the fastenings 2, and the same action, of course, occurs when pressure is applied to the face of the glass remote from the bead or strip 4.

Although the bracing side of the bead or strip 4 is shown as arc-shaped in cross-section, it will be understood that the invention is not limited to this particular cross sectional contour and that other contours, made up of either straight or curved lines, may be employed, this bead being susceptible of shaping to produce ornamental effects. The arc-shaped contour is used simply for illustrative purposes, since it shows one of the simplest forms in which the bracing side may be used not only to effect the concealment of the attaching means 2, but also to form, by its engagement with the sash at the point 7, a firm support for the upper edge of the side of the bead which is adjacent to the glass.

In the drawings, the window sash is shown as being made of metal, a construction for which the present invention is particularly adapted, and rivets or headed studs are shown as the fastening means. It should be understood, of course, that the retaining strips or beads of the present invention can be applied to wood as well as to metal sash and that other fastening means can be substituted for the rivets. Thus, for example, screws can be used and while, for most purposes, rivets are cheaper, the present invention presents marked advantages over constructions heretofore used, even where screws are employed as the fastening means since the screws do not have to be applied on the job, but can be put in position in the factory and there is no necessity for accurate alignment of the screws with holes in the retaining strips. The absence

of exposed holes in the retaining strips also makes for permanency of the construction when it is desired to use corrodible metals for the beads or retaining strips.

These beads or strips may be made from almost any kind of drawn metal and need not be of thick cross-section, particularly when a curved construction such as here shown is used since this increases its resistance to bending.

It will be seen that the present invention constitutes a simple and effective means for use in glazing windows, applicable to both wooden or metal sash, but particularly useful in reducing the labor of glazing metal sash on the job. As above suggested, the concealing of the fastening means and the susceptibility of the exposed bracing side of the bead or retaining strip to ornamental shape make a construction that is pleasing to the eye and harmonizes well with the simple lines of metal casements and other metal or wooden sash. There being no depressions or projections on the beads, the dusting or cleaning of the joints is facilitated.

The beads or strips of the present invention can be produced on a large scale and are interchangeable for all sash requiring the particular size, it being possible to make the strips or beads in continuous lengths which may be cut to fit the sash on the job.

It will be apparent from the cross-section of the strip shown in Fig. 2 of the drawings that it is not necessary to make the slot in the sash-engaging face of the bead or strip of a width equal to or greater than the width of the head of the retaining device 2, since by first hooking the lip 5 under the overhang of the retaining device 2 the bead will be brought into such position that the lower edge of the bracing side 4 will readily pass over the head of the fastening or retaining device 2 without spreading of the slot.

What is claimed as new is—

1. A hollow metallic glazing bead for window sash showing in cross-section a side adapted to lie substantially parallel to the pane, a lip on one edge of said side adapted to hook beneath the overhang of an undercut-retaining device carried by the sash, and a bracing side connected to the other edge of said first mentioned side and arranged to transmit directly to the sash and substantially normal thereto the thrust of any tendency of said first mentioned side to rock about its hooked engagement with the retaining device as a fulcrum.

2. A hollow metallic glazing bead for window sash having in one face a slot adapted to receive without spreading the head of an undercut-retaining device, said bead showing in cross-section a side adapted to lie substantially parallel to the pane, a lip on one edge of said side forming one margin of said slot and adapted to hook beneath the overhang of said retaining device, and a bracing side having one edge forming the other margin of said slot, said bracing side being connected to the other edge of said first mentioned side and constructed and arranged to transmit directly to the sash and substantially normal thereto the thrust of any tendency of said side to rock about its hooked engagement with the retaining device as a fulcrum.

3. A hollow metallic glazing bead according to claim 1, in which said bracing side is arc-shaped in cross-section.

4. A hollow metallic glazing bead for window sash having an opening only in its sash-engaging face, said bead showing in cross-section a side adapted to lie substantially parallel to the plane of the window pane, a lip on one edge of said side adapted to hook beneath the overhang of an undercut-retaining device carried by the sash, and a bracing side connected to the other edge of said first mentioned side, completely concealing the undercut-retaining device and arranged to transmit directly to the sash and substantially normal thereto the thrust of any tendency of said first-mentioned side to rock about its hooked engagement with the retaining device as a fulcrum.

5. A hollow metallic glazing bead for window sash having in its sash-engaging face a continuous slot, said bead showing in cross-section a side adapted to lie substantially parallel to the pane, a lip on one edge of said side forming one margin of said slot and adapted to hook beneath the overhang of an undercut-retaining device carried by the sash, and a bracing side connected to the other edge of said first mentioned side, completely concealing said retaining device and said slot and arranged to transmit directly to the sash, upon the side of said retaining device remote from the pane, and substantially normal to the sash, the thrust of any tendency of said first-mentioned side to rock about its hooked engagement with the retaining device as a fulcrum.

6. A hollow metallic glazing bead for use with undercut-retaining devices carried by the sash, having in its sash-engaging face a slot of a width slightly narrower than the width of the heads of the undercut-retaining devices, said bead showing in cross-section a side adapted to lie substantially parallel to the pane, a lip on one edge of said side forming one margin of said slot and adapted to be hooked beneath the overhang of said retaining device and thereby bring the other margin of the slot into such relation to the other edge of the head of the retaining device that the bead will slip over the head without spreading of the slot, and a bracing side having one edge forming the

other margin of said slot, said bracing side being connected to the other edge of said first mentioned side and constructed and arranged to conceal completely the retaining devices and the slot and to transmit directly to the sash and substantially normal thereto, the thrust of any tendency of said first-mentioned side to rock about its hooked engagement with the retaining device or devices as a fulcrum.

7. A hollow metallic glazing bead according to claim 1, in which the width of the lip is so proportioned to the normal space between the retaining devices and the pane of glass that the bead may be readily slipped into its hooked engagement with the overhang of the undercut-retaining devices.

8. The combination with a window sash having the usual glass-retaining shoulder and having opposed to the glass-retaining shoulder undercut-retaining devices, of a hollow metallic glazing bead showing in cross-section a side adapted to lie substantially parallel to the pane of glass, a lip on one edge of said side extending away from the glass and adapted to hook beneath the overhang of said undercut-retaining devices, and a bracing side connected to the other edge of said first-mentioned side and constructed and arranged to conceal completely the undercut-retaining devices and to transmit directly to the sash and substantially normal thereto the thrust of any tendency of said first-mentioned side to rock about its hooked engagement with the retaining devices as a fulcrum, said lip being of such a width as to permit its ready insertion between the pane and the retaining devices, and means introduced between said pane and the first-mentioned side of said bead for simultaneously locking both said bead and said pane to said sash.

Signed at New York, New York, this 1st day of June, 1926.

FRANCIS G. STERNBERG.