Feb. 12, 1929. 1,702,094

M. SILVER

WINDOW CONSTRUCTION

Filed June 30, 1927 2 Sheets-Sheet 1

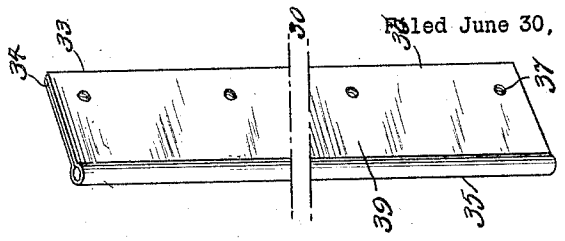


Fig. 2.

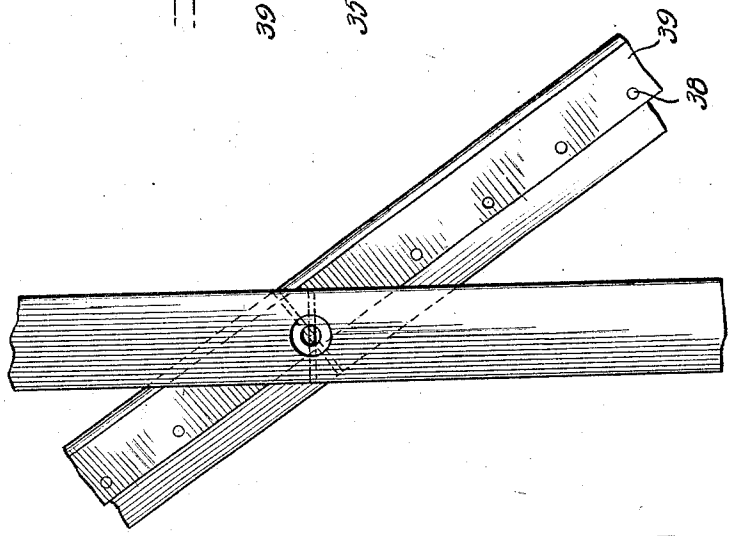


Fig. 2.

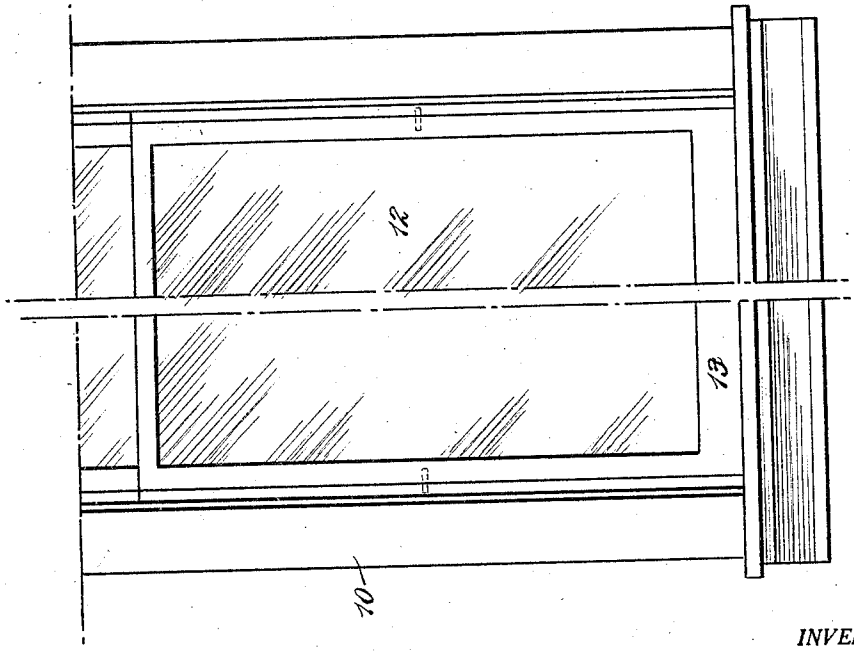


Fig. 1.

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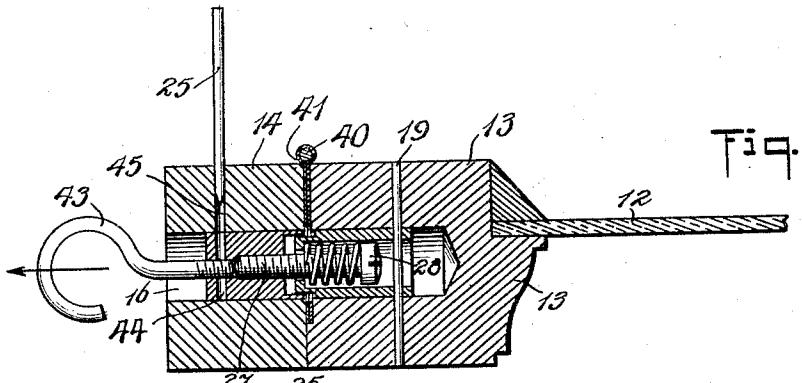


Fig. 4.

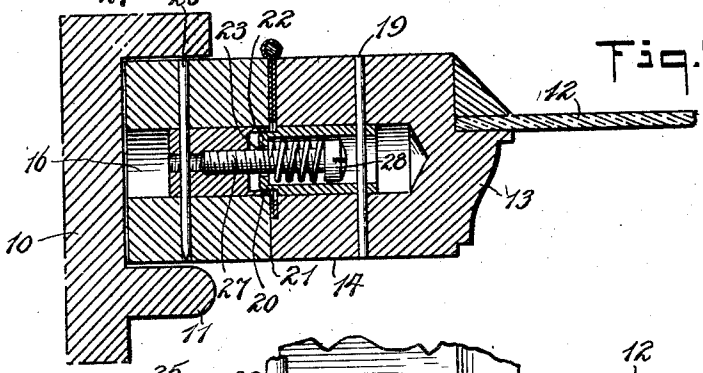


Fig. 5.

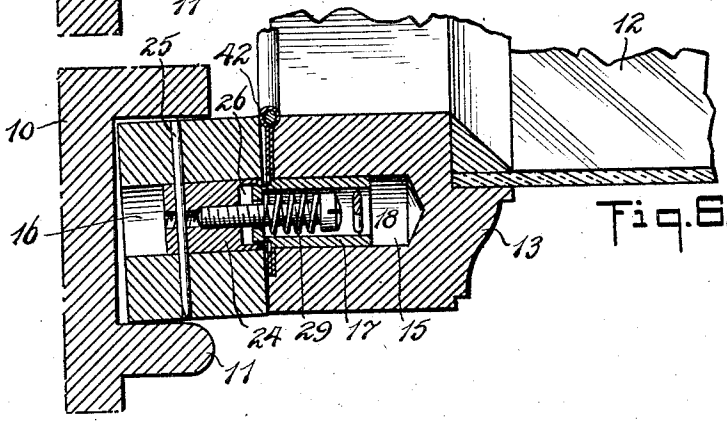


Fig. 6.

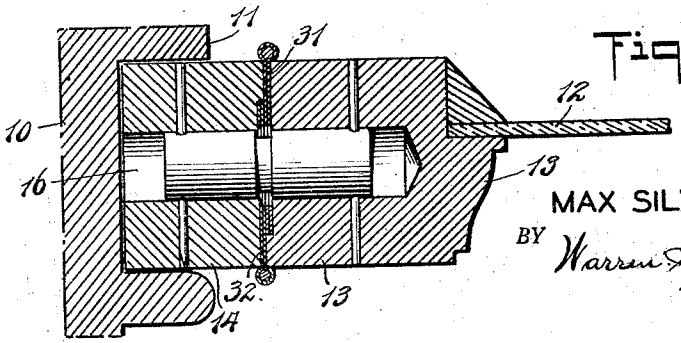


Fig. 7.

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Patented Feb. 12, 1929. 1,702,094

UNITED STATES PATENT OFFICE.

MAX SILVER, OF BROOKLYN, NEW YORK.

WINDOW CONSTRUCTION.

Application filed June 30, 1927. Serial No. 202,517.

The invention relates in general to a window construction of the type in which the window as a whole may be raised or lowered in a guiding frame conventionally, and in which the glass containing frame portion may be tilted at various angles and about a horizontal axis, and the invention particularly relates to the pivotal connection between the slidable sash and the tiltable glass carrying frame. More specifically defined, the invention relates to a window construction of the type above outlined and which features an improved form of weather strip for sealing the joints between the sliding sash and the tilting glass containing frame.

The primary object of the invention is to provide a tilting window structure in which the joints between the tiltable and non-tiltable portions of the frame may be securely water-sealed when the window is closed and in which the window may be held at any tilted position into which it may be moved.

Another object of the invention is to provide an improved form of weather stripping which will be non-rusting, which can be distorted to conform to warping and other irregularities of the structure to which it is to be attached and which when in position will maintain its pre-set position and configuration.

Still another object of the invention is to provide a form of pivotal connection between the movable parts which connection can be readily mounted in position, concealed within the structural parts, which can be set with any desired tension in its spring element; which can be readily demounted for repair and substitution of parts and in which the close fitting of the joint can be maintained as the parts forming the joint wear away.

Various other objects and advantages of the invention will be in part obvious from an inspection of the accompanying drawings and in part will be more fully set forth in the following particular description of one form of mechanism embodying my invention, and the invention also consists in certain new and novel features of construction and combination of parts hereinafter set forth and claimed.

In the accompanying drawing:

Fig. 1 is a view in front elevation of a window construction showing a preferred embodiment of the invention and with the window in its normal closed position;

Fig. 2 is a view in side elevation of a portion of the sash and frame shown at the left of Fig. 1 and with the glass containing frame tilted at an angle to its normal closed position;

Fig. 3 is a detailed view of the weather strips featured in this disclosure and shown before it is applied;

Figs. 4 to 7, inclusive, are transverse sectional views each taken approximately on the line 4—4 of Fig. 1 and taken axially of the pivotal connection at one side of the frame, it being understood that the frame structure is duplicated at the opposite side except for obvious reversal of parts; Fig. 4 is an explanatory view showing the method of placing the pivot spring under tension; Fig. 5 shows the relation of the parts including the pivotal connection when the window is closed; Fig. 6 shows the same when the window is in a tilted position; and Fig. 7 is a view corresponding to the preceding figures but showing weather strips at opposite edges of the joint.

Referring to the window structure shown in Fig. 1, there is shown a frame 10 provided as shown in Figs. 5 and 7, with conventional guideways 11 between which guideways on opposite sides of the frame slides the unit 12 hereinafter referred to collectively as the window. The window includes a central glass containing frame 13 and at opposite edges vertically disposed sashes 14 constituting runners in their respective guideways 11. For a more detailed description of the parts of the frame at one side, such for instance as the left side, the vertical side of the frame and the adjacent sash will be referred to hereinafter as parallel strips. The sash strip 14 and frame strip 13 is provided with a cylindrical pivot socket 15 access to which is provided through the open end 16 at the outer edge of the sash 14. Into this socket is inserted one of the pair of oppositely disposed pivotal connections between the frame and the sash. This pivotal connection includes a hollow, cylindrical barrel 17 fitted in the portion 18 of the socket contained in the frame and secured in position by a nail or pin 19 extending through the frame and through the barrel adjacent its rear end. The forward end of the barrel beyond the edge of the frame 13 is reduced to form a bearing cylinder 20 which projects across the joint 21 formed by the contacting flat sides of the

strips 14 and 15 when in their normal parallel closed position as shown in Figs. 4 and 5. The reduced end of the barrel is provided with a spring stop forming end 22 provided centrally thereof with a screw receiving aperture 23.

Mounted in the portion of the pocket 15 contained in the strip 14 is a long, massive nut 24. The nut is secured in position by means of a nail or pin 25 passed through the sash 14 and nut 24. The nut is provided on the end facing the joint with a recess 26 which receives the reduced end 20 of the barrel and coacts therewith to provide a loose, flat, circular bearing for maintaining the parts in their approximate rotated positions and at the same time permits the canting of the sash and frame as shown in Fig. 6 and as hereinafter more fully explained. A pivot screw 27 has one end adjustably threaded into the nut 24, has its mid-portion intruded through the aperture, and has its headed end 28 slidably mounted in the cylindrical barrel 17. A tension spring 29 bears at one end against the stop 22 provided by the reduced end of the barrel and bears at its other end against the head 28 of the screw.

Positioned in the joint 21 is a weather strip 30 and which in the showing in Figs. 4 and 6 constiututes a single weather stripping secured to the glass frame 13 at one edge of the joint. In the showing in Fig. 7 there are two weather strips, one of which 31 is secured to the glass frame and the other of which, 32, is secured to the sash 14 so as to seal opposite edges of the joint.

Referring to the detailed showing of the weather strip in Fig. 3, it is formed of a single sheet of non-rusting metal, preferably zinc, which is bent back upon itself along a line parallel to and intermediate opposite edges 33 and 34 to form a bead 35 outlining one edge of plate 36 of a double layer of metal. The plate 36 provides a fastening portion and is provided with fastening apertures 37 designed to receive nails 38 flat headed screws or like fasteners usually used in securing weather stripping in place in joints. The line of apertures 37 are spaced from the bead in order to provide a bendable portion 39 between the line of fasteners and the bead to permit portions of the weather strip to be bent as desired so as to maintain the bead in overlapped relation to the joint even in those conditions where the parts forming the joint are warped out of their original positions.

The bead contains a bead wire 40 preferably formed of some relatively rigid material, such as steel, so that the bead wire will tend to give rigidity to the strip as a whole and will maintain its preset position in sealing engagement with the joint, even after it has been repeatedly moved and flexed incidental to the opening and closing of the window. In the preferred form herein illustrated, the bead is symmetrically disposed to position its center in the plane containing the joint 21. The bead is preferably formed circular in cross section so that the inner side 41 facing the sash 14 will provide a wedge surface to assist the edge 42 to ride up the side of the bead as shown in Fig. 6 when the glass frame is rotated to move the window into open position as shown in Fig. 2.

In mounting the parts in position, the pin 19 is driven through the frame and barrel part of the pivotal connection as shown in Fig. 4 with the screw engaging the nut but without tension on the spring. By means of a suitable tool, such as the hook 43 in threaded engagement with the nut, the nut can be forcefully drawn outwardly, that is from right to left in the showing in Fig. 4, until the slot 44 in the nut aligns with the slot 45 in the sill after which the nail 25 may be driven into and through the opposite part of the sill thus securing the nut in its axially adjusted position and with the requisite tension on the spring.

In operation it is to be understood that the window can be raised or lowered conventionally or the glass containing frame may be swung into any desired angular position. As the frame is moved toward the position shown in Fig. 2 and passed the beaded edge of the weather strip, the sash will be wedged away from the frame angularly as shown in Fig. 6 as it in effect rides up the wedge 42. This canting of the parts is permitted by the giving of the spring in which case the head of the pivot screw approaches the reduced end of the barrel compressing the spring during this action. The spring thus being under pressure, which supplements the pressure caused by the initial tension of the spring, there is provided sufficient frictionally holding effect to secure the frame in any tilted position into which it may be forced. When the frame is restored to its closed position with the strips 13 and 14 in parallelism as shown in Figs. 5 and 6, the spring will exert itself in causing the sash to be drawn into tight engagement with the frame thus closing the joint 21 as soon as the exteriorally positioned bead is moved out of its position between the parts forming the joint. When in this closed position, the bead overlaps the edge of the joint and effectively seals the same against any leakage through the joint.

In the modified form in Fig. 7, the plates 36 of the two weather strips are in mutually overlapped relation so that the joint 21 is outlined by metal facings and no part of the wooden parts are exposed at the joint. In this case however as is the case with the single weather strip the plates 36 are of less width than the parts to which they are attached and are countersunk so as to bring their outer, joint forming faces flush with the remaining face of the part to which they are attached.

I claim:

1. In a device of the class described, the combination of a sash, a window frame coacting when disposed in parallelism to form a joint therebetween, a pivotal connection between the sash and frame, extending across said joint and providing for a swinging movement of the frame relative to the sash, said connection including a barrel pinned to the frame and having a reduced end projecting across the joint and provided with an aperture, a nut pinned to the sash spaced inwardly from its free edges and having a recessed end receiving the reduced end of the barrel and forming therewith a loose bearing permitting a slight angular rocking movement of the sash and frame in addition to the swinging movement of the frame, a headed screw threaded into the nut with its headed end slidable axially in the barrel and having its mid portion slidable through said aperture, a coiled spring under tension bearing at one end on the head of the screw and at its other end on the end of the barrel provided with the aperture.

2. In a window construction, the combination of a guideway, a window slidable in the guideway and including a sash and a frame, a pivotal connection between the sash and frame to permit the frame to swing relative to the sash and guideway about a horizontal axis, a beaded weather strip secured to the frame having its bead disposed exteriorally of, overlapping and thus closing one edge of the joint between the sash and frame when the frame is in normal closed position paralleling the guideway, and said connection including spring means for holding the frame frictionally in all of its positions, and for permitting the sash and frame to move out of their aligned position so as to permit the beaded weather strip to be carried by the frame past the sash when the frame is swung from its normal position.

3. In a device of the class described, the combination of two strips having flat sides which when in engagement form a flat faced joint, means for pivotally connecting the strips to permit one to rotate relative to the other, a weather strip including a bead secured to one of the strips and lapping one edge of said joint exteriorally of the same and said strip capable of relative movement in the direction of their pivotal axis for permitting the bead secured to one of the strips to pass the other strip when the strips are relatively rotated.

4. In a device of the class described, the combination of two strips adapted to extend in parallelism and to be moved into relative angular positions, a pivotal connection between the strips including a spring stop carried by one of the strips a pin passed laterally through the stop to secure the same to the strip, a nut carried by the other strip, a pin passed laterally therethrough to secure the same to its associated strip, a headed screw threaded into the bolt and extending into the stop and providing a pivot pin for the connection and a spring bearing at one end on the stop and at the other end on the head of the screw, and acting to force the strips towards each other while permitting relative movement between the stop and nut.

5. A window construction including two strips, having flat sides in engagement and coacting when the strips are in parallelism to form a joint, a pivotal connection therebetween including a spring tending to maintain the strip in engagement with each other, a weather strip carried by one of the strips and including a bead at one edge of the joint, said bead being circular in cross section and disposed approximately with its center contained in the plane of the joint, and said weather strip including a plate portion with its outer side flush with the flat side of its associated strip which forms one side of the joint, and means engaging the plate portion in spaced relation to the bead for securing the weather strip in place.

6. A window construction including two strips having flat sides in engagement and coacting when the strips are in parallelism to form a joint, a pivotal connection therebetween including a spring tending to maintain the strip in engagement with each other, a weather strip carried by one of the strips and including a bead at one edge of the joint, said bead being circular in cross section and disposed approximately with its center contained in the plane of the joint, and said weather strip including a plate portion with its outer side flush with the flat side of its associated strip which forms one side of the joint.

7. A window construction including two strips, having flat sides in engagement and coacting when the strips are in parallelism to form a joint, a pivotal connection therebetween including a spring tending to maintain the strips in engagement with each other, a weather strip carried by one of the strips and including a bead at one edge of the joint, said bead being circular in cross section and disposed approximately with its center contained in the plane of the joint.

8. In a device of the class described, the combination of two strips normally in parallel engagement and then forming a joint therebetween and adapted to be moved one past the other, a weather strip bead carried by one of the strip at one edge of the joint, and resilient means tending to maintain the strips in engagement and permitting the strip not provided with the bead to move past the bead, and said bead providing a wedging face for assisting the strip to move past the bead.

9. A window construction including a

sash, a glass frame, a pivotal connection therebetween including a spring acting to maintain a frictional engagement between the sash and frame while permitting the frame to swing about its pivotal connection, a weather strip for closing the joint between the sash and frame, said strip including a bead positioned exteriorally of the sash and frame at one edge of the joint therebetween.

Signed at New York, in the county of New York, and State of New York, this 29th day of June, A. D. 1927.

MAX SILVER.