July 27, 1948. A. LARSON 2,446,014

STABILIZER FOR DOUBLE HUNG WINDOWS

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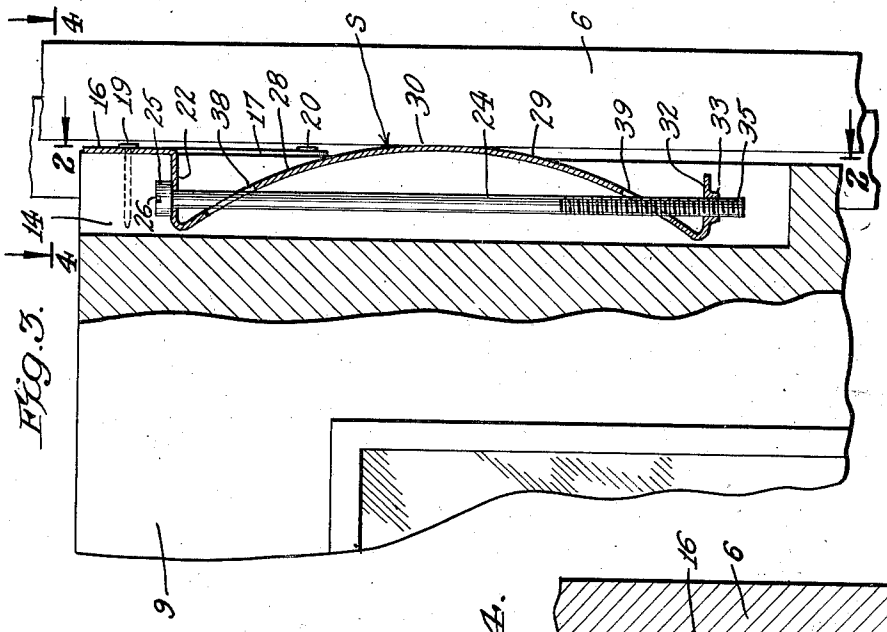


Fig. 5.

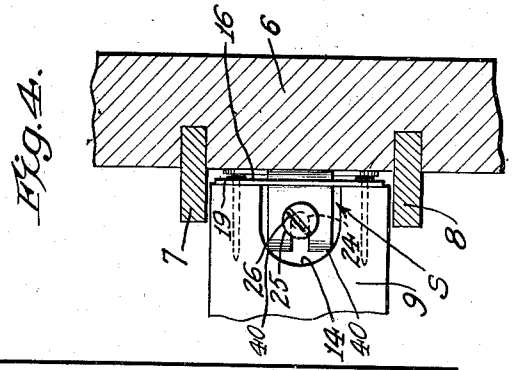


Fig. 4.

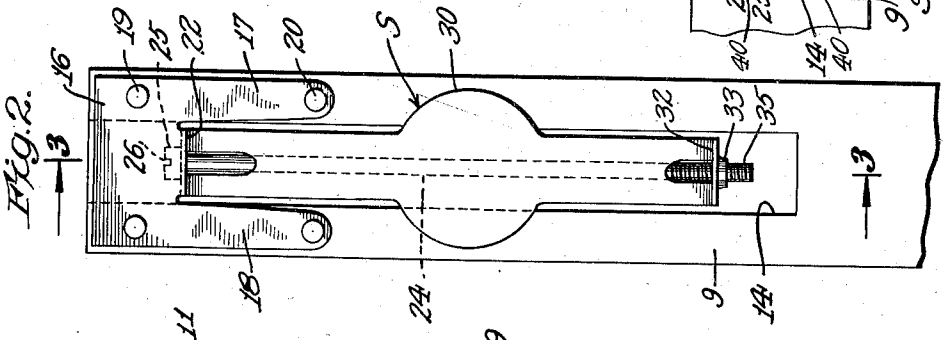


Fig. 2.

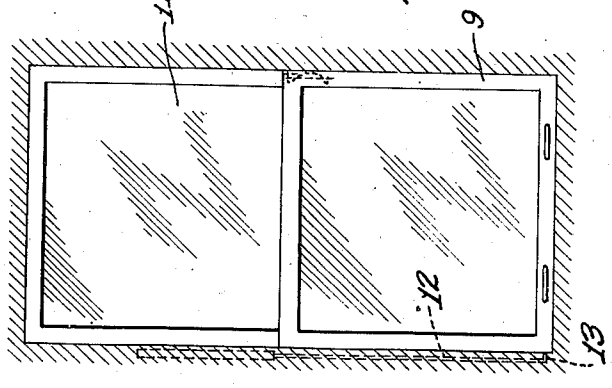


Fig. 1.

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STABILIZER FOR DOUBLE HUNG WINDOWS

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10 Claims. (Cl. 292—76)

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This invention relates to a stabilizer for sliding sashes.

It has been found when a window is counterbalanced on one side only, that a drop of the unbalanced side of the sash takes place in spite of the fact that the counterbalancing device, regardless of its type, is of sufficient strength to support the full weight of the sash. This is due to the fact that in fitting the sash at the time of installation, a certain amount of clearance must be allowed for the free movement of the sash. If this is not done, the slightest swelling of the sash will lock it tight. Liberal applications of paint may also cause the sash to lock, notwithstanding the fact that the window is suspended from either one or both sides.

In time, the sash invariably shrinks in size and the clearance becomes excessive, leaving the sash very loose. In the case of double hanging, this causes a familiar chattering sound, when the sash is raised or lowered. The reason for this is that the sash will not slide evenly, but tilts in the frame and causes one corner to stick; as it breaks loose, the corresponding corner on the opposite side sticks, and when this breaks loose, the first one sticks, etc. Thus the alternate corners may catch, causing the familiar chattering sound, during the full run of the sash.

If some provision is made to hold at least one of the guiding surfaces in alignment, this trouble will not occur and, accordingly, it is one of the objects of this invention to provide a device to hold at least one of the guiding edges of a sash in alignment with the cooperating guiding surface on the window frame and which will adjust itself, to a considerable extent, to small changes in clearances, and which is provided with means for adjusting the same to greater changes and without removing the device from the sash or removing the sash from the window frame.

This invention relates more particularly to the provision of means for making the counterbalancing of sashes at one side practical. Attempts have been made to provide means adapted to counteract the rotational tendency exerted by a single counterbalance located on one side of a vertically sliding sash, so as to keep the sash in alignment with the side frame members of the window frame to insure proper and full sash movement. One of the means comprises a pressure shoe in the form of a flat spring carried by the sash and arched out centrally for sliding engagement with the bottom of the sash guide groove in the window frame. Means is also provided to adjust the spring to exert greater or

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less pressure against the window frame by a pivotal movement of the spring, but this means is accessible only after removal of the sash from the window frame.

The main objects of this invention are to provide improved friction shoe means for counteracting the rotational tendency of a sliding sash counterbalanced only on one side, improved and readily accessible means for adjusting the pressural force of the shoe on the window frame, a simplified stabilizing shoe formed from a single sheet of material, a stabilizing shoe provided with a wide bearing surface supported by narrow resilient elements or arms automatically compensating for small changes in window frame widths, and to otherwise improve the construction, mounting and servicing of constructions of this character.

Other objects of this invention will appear from the following description made with reference to the drawings, in which,

Figure 1 is an indoor face view of a window equipped with my improvements;

Figure 2 is an edge view on line 2—2, Figure 3, of a sash equipped with my improved sash stabilizer;

Figure 3 is a view partly in vertical section on line 3—3 of Figure 2 showing a sash equipped with my improved sash stabilizer; and

Figure 4 is a view on the line 4—4 of Figure 3.

The woodwork of the window opening or the window frame may be of any suitable construction, and may include, as shown in Figure 4, side frame members 6, outdoor guiding strips 7, and indoor guiding strips 8, for the lower inner sash 9, which together constitute a slideway for the sash. The upper outer sash 11 may be rigidly secured in the window frame or provision may be made for lowering it as in the usual double-hung windows.

As disclosed in Figure 1, a sash counterbalancing device 12 indicated diagrammatically by dotted lines, and which may be of any approved construction, is mounted in the left side frame member of the window frame and is attached to the lower left-hand corner of the lower sash as indicated at 13. This holds the sash in any of its raised positions and tends to rotate it clockwise in its lowered and in any of its raised positions, so as to move its upper right-hand corner into engagement with and to bite into the bottom of the slideway on the right side frame member thereby interfering with the raising of the sash, and to move its lower left-hand corner to press against and bite into the slideway on the left

side frame member thereby resisting lowering of the sash.

For the purpose of counteracting this movement and for holding the sash in alignment with the guideway, I have provided a stabilizer generally indicated by the letter S, Figures 2 and 3, and for the purpose of mounting this stabilizer on the edge of the sash the upper portion of the right-hand side member of the sash frame is provided with a groove 14 as indicated in Figures 2, 3 and 4.

The stabilizer S is formed from a single piece of sheet material which may be stamped and then shaped into the form disclosed. This stabilizer comprises a supporting base and end portion 16 provided with legs 17 and 18 which are adapted to be secured on the edge face of the side member of the sash by means of nails or screws 19 and 20.

The strip of metal between the legs 17 and 18 is bent downwardly, that is, to the left, as shown at 22, Figure 3, and is provided with a hole to receive an adjusting screw bolt 24 which is provided with a head 25 provided with a screw driver engaging slot 26. The strip is then bowed outwardly toward the right, Figure 3, providing bowed resilient portions 28 and 29 integral with a widened friction producing shoe element 30 which may be of circular form as shown in Figure 2. The outer end of the bowed portion 29 is bent toward the right, to provide a flange 32, Figure 3, which is preferably provided with a thickened portion 33, which may be threaded for cooperation with the threaded end 35 of the adjusting bolt 24. The resilient portions 28 and 29 are slotted, as shown at 38 and 39, to receive the adjusting bolt 24 so as to permit change of curvature of these portions and thereby adjustment of the stabilizer by means of the bolt 24.

As shown in Figures 3 and 4, the points of connection between the connecting member 22 and the resilient portion 28 and between the flange 32 and resilient portion 29 may be seated and supported on the bottom of the groove 14 in the right side member of the sash frame as indicated at 40, Figure 4.

The stabilizer disclosed may be used with sashes provided with counterbalancing means on one or on both sides, or with sashes without counterbalancing means, to hold the sash spaced from the side frame members of the window frame, and it may be used with any sliding panel or the like. The stabilizer consists of but two parts providing a device which is inexpensive to construct, assemble and install, and easy to adjust and repair, and which is so constructed as to automatically adjust itself to small variations in the space between the sash and window frame.

While I have illustrated and described a preferred embodiment of my invention, it is obvious that changes may be made within the principles of the invention and the scope of the appended claims, and it is to be understood that I reserve the right to all such changes.

I claim:

1. A stabilizer comprising a forwardly arched resilient shoe portion, a forwardly extending flange on each end of said shoe portion and a laterally extending attaching portion on the forward end of one of said flanges.

2. A stabilizer comprising a forwardly arched resilient shoe portion, a forwardly extending flange on each end of said shoe portion and a laterally extending attaching portion on the forward end of one of said flanges, and means cooperating with said forwardly extending flanges for tensioning said resilient shoe portion.

3. A stabilizer comprising a forwardly arched resilient shoe portion, a forwardly extending flange on each end of said shoe portion and a laterally extending attaching portion on the forward end of one of said flanges, and means cooperating with said forwardly extending flanges for tensioning said resilient shoe portion, said tensioning means comprising a bolt, said forwardly extending flanges being provided with aligned holes to receive said bolt with the head of the bolt bearing on the outer face of one of said forwardly extending flanges and with the threaded end of said bolt threaded into the hole in the other of said forwardly extending flanges.

4. A stabilizer comprising an arched resilient shoe portion, a forwardly extending flange on each end of said shoe portion and a laterally extending attaching portion on the forward end of one of said flanges, and means providing a wide bearing surface on the most forwardly projecting section of said arched shoe portion.

5. A stabilizer comprising a forwardly arched resilient shoe portion, a forwardly extending flange on each end of said shoe portion and a laterally extending attaching portion on the forward end of one of said flanges, and means cooperating with said forwardly extending flanges for tensioning said resilient shoe portion, said tensioning means comprising a bolt, said forwardly extending flanges being provided with aligned holes to receive said bolt with the head of the bolt bearing on the outer face of one of said forwardly extending flanges and with the end of said bolt threaded into the hole in the other of said forwardly extending flanges, the ends of said arched shoe portion being slotted for receiving said bolt.

6. A sliding friction shoe comprising an arcuate resilient portion and an attaching portion extending substantially tangentially with the central portion of said arcuate resilient portion, a connection between said resilient and attaching portions, means on the free end of said arcuate resilient portion extending exteriorly of said resilient portion and means for adjusting said latter means and said connection relatively to and from each other to vary the tension of said resilient portion.

7. A sliding friction shoe for attachment to the outer edge faces of the walls of a groove in a sliding member, comprising an attaching portion consisting of a base plate and spaced leg portion for seating on and for attachment to said faces of the walls of said groove, a portion on said base projecting from one side thereof, a resilient friction shoe connected to said portion and of arcuate form curved about an axis located on said side of said base, and means for moving said portion and the free end of said arcuate friction shoe toward each other to tension said friction shoe and project its crown beyond the other side of said base.

8. A sliding friction shoe comprising an attaching plate, a rearwardly extending element on one end of said plate, a forwardly arched resilient bearing element carried at one of its ends by the rear end of said first mentioned element and having its middle portion lying substantially in the plane of said plate.

9. A sliding friction shoe comprising an attaching plate, a rearwardly extending element on one end of said plate, a forwardly arched resilient

bearing element carried at one of its ends by the rear end of said first mentioned element and having its middle portion lying substantially in the plane of said plate, and means cooperating with said rearwardly extending element and the other end of said arched element for changing the curvature of said arcuate element.

10. A sliding friction shoe comprising an attaching plate, a rearwardly extending element on one end of said plate, a forwardly arched resilient bearing element carried at one of its ends by the rear end of said first mentioned element and having its middle portion lying substantially in the plane of said plate, a forwardly extending member on the other end of said bearing element and a threaded tensioning bolt extending through

said rearwardly and forwardly extending element and member.

ALGOT LARSON.

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