Dec. 31, 1940. C. O. LARSON 2,226,824

WINDOW SASH OPERATOR

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FIG. 1.

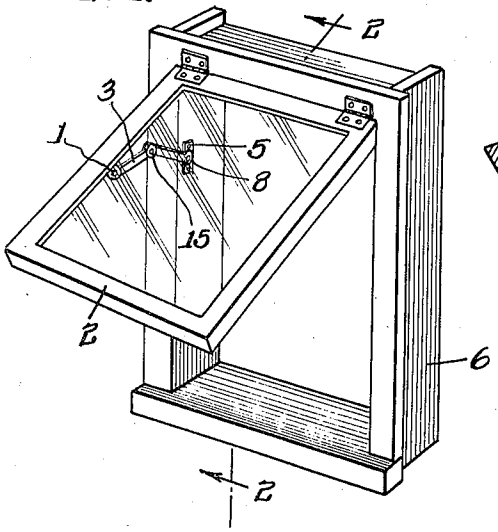


FIG. 2.

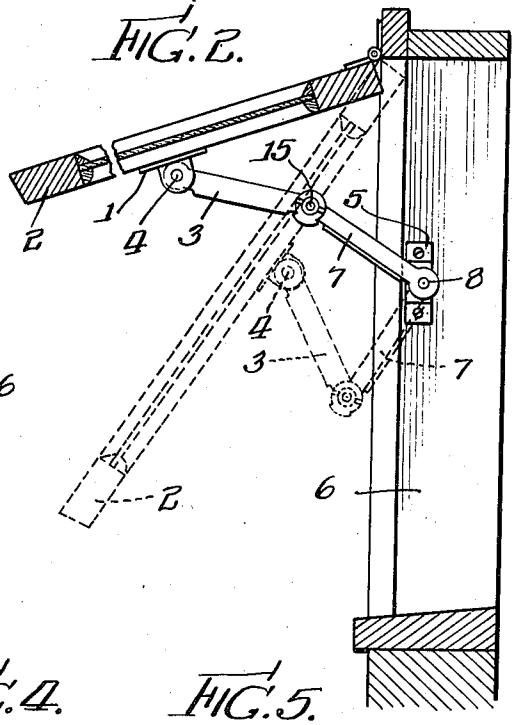


FIG. 3.

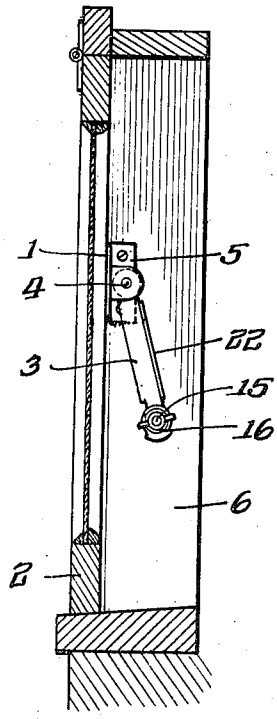


FIG. 4.

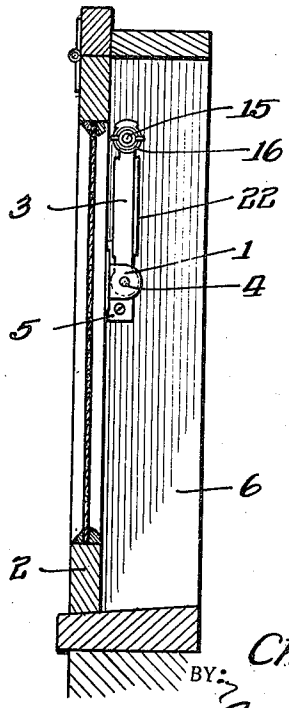
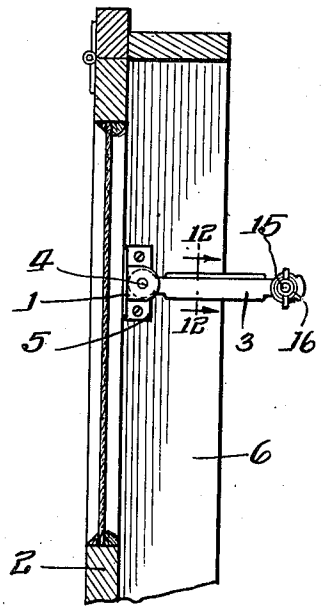


FIG. 5.



INVENTOR.
Charles O. Larson
BY:
Arthur H. Duravd
ATTORNEY.

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FIG. 6.

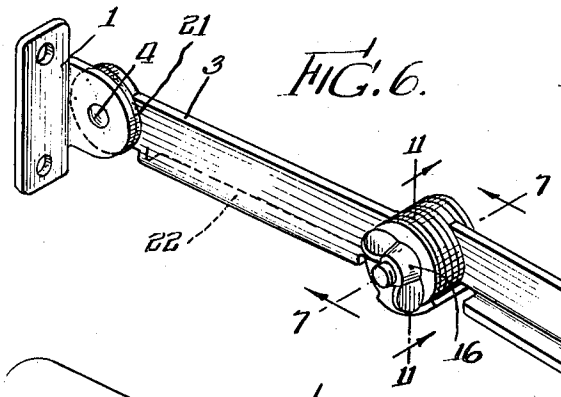
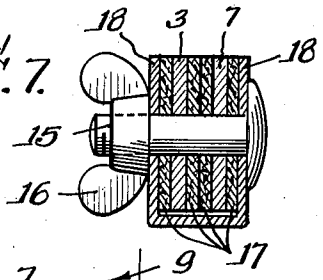


FIG. 7.



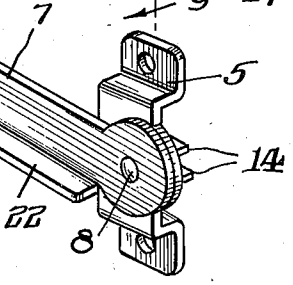


FIG. 8.

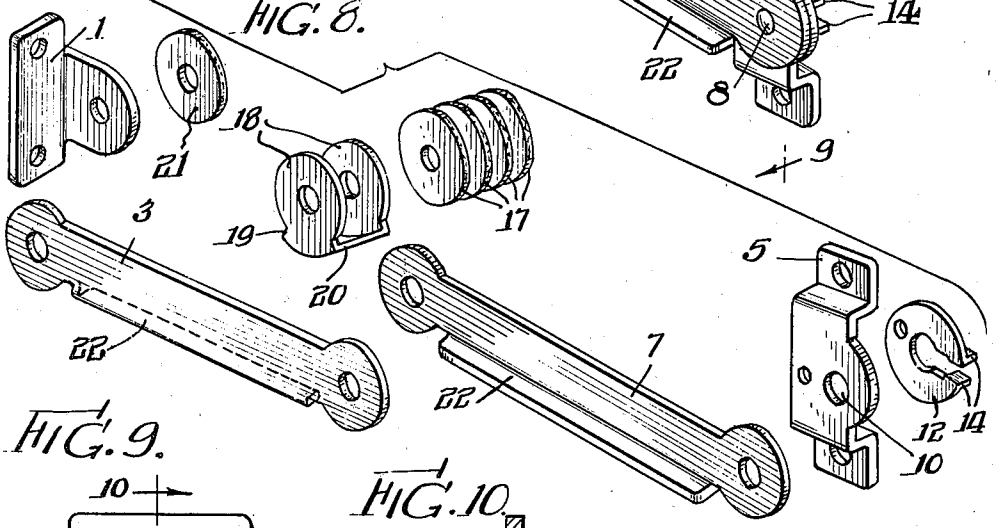


FIG. 9.

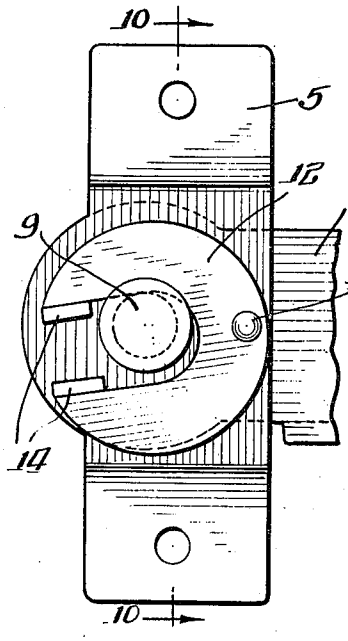


FIG. 10.

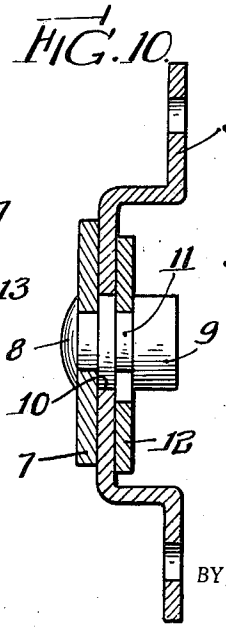


FIG. 11.

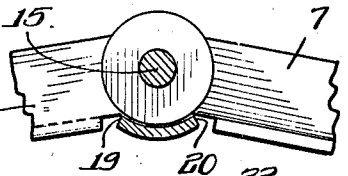
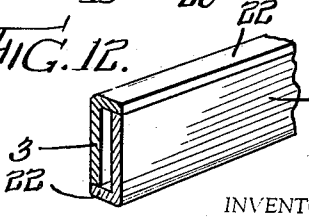


FIG. 12.



INVENTOR.
Charles O. Larson
BY:
Arthur H. Durand
ATTORNEY.

Patented Dec. 31, 1940

2,226,824

UNITED STATES PATENT OFFICE

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WINDOW SASH OPERATOR

Charles O. Larson, Sterling, Ill., assignor to Chas. O. Larson Co., Sterling, Ill., a corporation of Illinois

Application October 30, 1939, Serial No. 301,929

6 Claims. (Cl. 292—263)

This invention relates to holders for window sashes, and more particularly to those for use in holding storm window sashes in open position.

Generally stated, the object of the invention is to provide a novel and improved construction and arrangement whereby a toggle joint form of brace or holder is provided, having improved means for easily detaching the same from the window frame, and having improved means for changing or regulating the friction of a toggle joint, so that the sash, such as an ordinary storm window sash, may be held open at practically any desired angle thereof.

It is also an object to provide certain details and specific features of construction tending to increase the general efficiency and desirability of a window sash brace or holder of this particular character.

To the foregoing and other useful ends, the invention consists in matters hereinafter set forth and claimed and shown in the accompanying drawings, in which—

Fig. 1 is a perspective of a window frame provided with a sash holder or brace embodying the principles of the invention.

Fig. 2 is a vertical section on line 2—2 in Fig. 1, showing the sash entirely open in full lines, and partially open in dotted lines.

Fig. 3 is a similar view showing the sash in closed position, with the said brace or holder extending downwardly.

Fig. 4 is a similar view showing the said brace or holder extending upwardly.

Fig. 5 is a similar view showing the said brace or holder extension horizontally.

Fig. 6 is a perspective of the toggle joint brace or holder shown in Figs. 1 to 5 of the drawings.

Fig. 7 is an enlarged section on line 7—7 in Fig. 6.

Fig. 8 is a perspective view of said brace or holder, showing the parts thereof separated.

Fig. 9 is an enlarged fragmentary detail view of a portion of the said brace or holder.

Fig. 10 is a vertical section on line 10—10 in Fig. 9.

Fig. 11 is a section on line 11—11 in Fig. 6.

Fig. 12 is an enlarged section on line 12—12 in Fig. 5.

As thus illustrated, the invention comprises a bracket plate 1 secured by screws to the sash 2 of an ordinary storm window. The brace or holder member 3 is held by a pivot 4 on the bracket plate 1.

A bracket plate 5 is secured by screws to the window frame 6, and one end of the brace or holder bar 7 is pivoted on this plate 5, in the manner shown more clearly in Figs. 9 and 10 of the drawings. As shown, the bar 7 has a pivot 8 having a head 9 for insertion through the hole 10 in the plate 5, this pivot having a circumferential groove 11, as shown. It will be seen that the plate 5 is pressed outwardly, providing a sort of space or chamber on its inner side, and in this space a flat ring 12 is pivoted on the plate at 13, this ring having two projections 14 for adjusting the ring 12 to cause its inner edge to either engage or disengage the groove 11, so that the brace or holder bar 7 can be removed from the plate 5, and easily restored thereto, when such is necessary or desirable.

The ends of the bars 3 and 7 are pivotally connected together by a screw 15, which latter has a thumb nut 16 on the threaded outer end thereof. It will be seen that fibre washers 17 are interposed between the ends of the bars 3 and 7, and between the latter and the outside flexible walls of the clamp 18, so that by tightening the nut 16, the desired amount of friction will be provided in the toggle joint thus provided. It will be seen that the bottom portion of the clamp 18 is formed with two shoulders 19 and 20 for engaging, respectively, the lower edges of the bars 3 and 7, the joint at such time being a little above the center, as shown more clearly in Fig. 2 of the drawings, so that the sash is held entirely open; but there is a fibre washer 21 in the joint between the plate 1 and the bar 3, and this, with the fibre washers 17 in the toggle joint, afford enough friction to hold the brace or holder in any adjustable position thereof, to suit the convenience, as shown in the drawings.

It will also be seen that the bars 3 and 7 have flanges 22 on their lower edges, which flanges are engaged by the other edges of the two bars when the latter are parallel, as shown in Figs. 3, 4, 5 and 12.

When it is desired to take off the storm sash, the ring 12 can be adjusted easily, by inserting something that will engage the projections 14, and this will detach the brace or holder from the window frame, leaving it attached to the sash, with no parts to be lost. Thereafter, when it is desired to put the sash on again, the head 9 is easily slipped through the opening 10, and the ring 12 is easily adjusted to hold the parts together.

The different parts, with the exception of the fibre washers, can be made of any suitable metal, pressed into the desired form, in the manner

shown in the drawings, and the entire construction is simple and comparatively inexpensive to manufacture.

It will be observed that the pivots 4 and 8 are in alignment when the two bars 3 and 7 are parallel, as shown in Figs. 3, 4 and 5 of the drawings.

When the brace or holder is in the position shown in Fig. 4 of the drawings, the window sash is locked against outward movement, as in such case the flanges 22 hold the two bars 3 and 7 parallel. However, when the brace or holder is in the position shown in Fig. 3 of the drawings, then the window sash can be pushed outwardly in the manner indicated in Figs. 1 and 2 of the drawings. On the other hand, when the brace or holder is in the position shown in Fig. 5 of the drawings, it is convenient to insert the screws for fastening the plates 1 and 5 in position on the window structure.

Obviously, the two stops 19 and 20 serve to hold the joint above the center, as shown in Fig. 2, when the two links or bars 3 and 7 are extended for that purpose, so that the pivot or toggle joint is self sustaining in this position. The said joint is movable to its lowest position, as shown in Fig. 3, when the sash is closed, and it is movable to its highest position, as shown in Fig. 4, to lock the sash closed. On the other hand, when the joint is movable to its most inward position, as shown in Fig. 5, the fixture or device that serves as a brace or holder or operator for the sash is readily and conveniently attached in position. Obviously, the fixture may remain on the sash when the latter is taken off the window, and this sash can be either a storm window or a screen, as may be desired.

Thus, when the pivot stud 9 is pulled out of the hole 10, the bracket 5 is left smooth and without any projections thereon that might break off or that might catch or make any trouble. In other words, the stud 9 remains a permanent part of the link 7 and the operator will remain attached to the sash, and there is nothing that is liable to be lost. In addition, it will be seen that the two links 3 and 7 are duplicates, and that with their flanges 22 they form a smooth straight bar handle, when the two links are parallel, that can be grasped comfortably, without injuring the hand, when it is desired to adjust the toggle joint into different positions about the axis of the bearing 10 in the bracket plate. The sash operator thus constructed can be used on either side of the window, as may be desired. The device 12 will be operative at either side of the window, as it has two parallel engaging edges, either one of which may engage the annular groove 11 on the pivot stud. When the two links 3 and 7 are parallel, each flange 22 on one link has its edge flush with the outer side of the other link, and hence the handle formed is smooth and straight and does not have any projections that might injure the hand.

It is obvious, of course, that the parts of the sash operator can be assembled for either a right or a left, so that the same parts can be used on either side of the window. When the stud 8 is pulled out the device 12 remains fixed on the plate 5. Of course, when this plate 5 and the bracket 1 are used on the left side of the window, they are turned upside down. But the two bars 3 and 7 are always in position with their flanges 22 downward, regardless of at which side of the window the operator is used.

It is important to observe, therefore, that the links 3 and 7 are duplicates of each other, so that either link can be pivoted on the sash, and whereby either link can have the pivot stud fixed thereon. It is in this way, obviously, that identically the same parts can be used to form either a right or a left sash operator, one that will work exactly in the same manner on either side of the window.

What I claim as my invention is:

1. A window sash operator comprising a pair of links pivoted together to form a toggle joint at the middle of the operator, means to pivot one link on the sash, a bracket plate formed in effect with a chamber at the inner side thereof, means to fasten said plate in stationary position to the window frame, a pivot stud on the other link, said plate having a hole forming a bearing for said stud, so that the inner end of the latter is inside said chamber, whereby the parts of the operator have three horizontal parallel axes of motion, said stud having an annular circumferential groove inside said chamber, and a device adjustable on said plate to engage and disengage said groove, so that said stud can be pulled out of said hole when the sash is taken off, but said device remaining stationary on said plate when said joint is swung up or down about the axis of said bearing, said links each having a flange on practically one entire edge thereof, forming a straight angle strip of each bar, with means in said joint spacing the flat opposing sides of said links uniformly apart, with the edge of each flange flush with the outer side of the other link, when the two links are folded parallel, thus forming a smooth straight bar handle free from projections on its edges and which can be grasped comfortably and without danger of scratching the hand, when it is desired to move said joint into different positions about the axis of said bearing.

2. A window sash operator comprising a pair of links pivoted together to form a toggle joint at the middle of the operator, means to pivot one link on the sash, a bracket plate formed in effect with a chamber at the inner side thereof, means to fasten said plate in stationary position to the window frame, a pivot stud on the other link, said plate having a hole forming a bearing for said stud, so that the inner end of the latter is inside said chamber, whereby the parts of the operator have three horizontal parallel axes of action, said stud having an annular circumferential groove inside said chamber, and a device adjustable on said plate to engage and disengage said groove, so that said stud can be pulled out of said hole when the sash is taken off, but said device remaining stationary on said plate when said joint is swung up or down about the axis of said bearing, said links each having a flange on practically one entire edge thereof, forming a straight angle strip of each bar, with means in said joint spacing the flat opposing sides of said links uniformly apart, with the edge of each flange flush with the outer side of the other link, when the two links are folded parallel, thus forming a smooth straight bar handle free from projections on its edges and which can be grasped comfortably and without danger of scratching the hand, when it is desired to move said joint into different positions about the axis of said bearing, together with means on said joint for engaging said bars at points adjacent to the ends of said flanges to

limit the upward movement of said joint when the sash is open.

3. A window sash operator comprising a pair of links pivoted together to form a toggle joint at the middle of the operator, means to pivot one link on the sash, a bracket plate formed in effect with a chamber at the inner side thereof, means to fasten said plate in stationary position to the window frame, a pivot stud on the other link, said plate having a hole forming a bearing for said stud, so that the inner end of the latter is inside said chamber, each link being a duplicate of the other, so that said stud may be fixed on either link and either link may be pivoted on the sash, the parts of the operator having three horizontal parallel axes of motion, said stud having an annular circumferential groove inside said chamber, and a device adjustable on said plate to engage and disengage said groove, so that said stud can be pulled out of said hole when the sash is taken off, but said device remaining stationary and undisturbed on said plate when said joint is swung up or down about the axis of said bearing, said joint being above center when the sash is held open, and said joint having means to limit its upward movement when raised by hand into said above center position.

4. A structure as specified in claim 3, said links each having a flange on practically one entire edge thereof, forming a straight angle strip of each bar, with means in said joint spacing the flat opposing sides of said links uniformly apart, with the edge of each flange flush with the outer side of the other link, when the two links are folded parallel, thus forming a smooth straight bar handle free from projections on its edges and which can be grasped comfortably and without danger of scratching the hand, when it is desired to move said joint into different positions about the axis of said bearing.

5. A structure as specified in claim 3, said device having a fixed axis of adjustment on said plate, so that when said stud is pulled out said device remains on said plate.

6. A structure as specified in claim 3, said links each having a flange on practically one entire edge thereof, forming a straight angle strip of each bar, with means in said joint spacing the flat opposing sides of said links uniformly apart, with the edge of each flange flush with the outer side of the other link, when the two links are folded parallel, thus forming a smooth straight bar handle free from projections on its edges and which can be grasped comfortably and without danger of scratching the hand, when it is desired to move said joint into different positions about the axis of said bearing, together with means on said joint for engaging said bars at points adjacent to the ends of said flanges to limit the upward movement of said joint when the sash is open.

CHARLES O. LARSON.