June 17, 1941. R. W. SMITH 2,246,192

SEPARABLE PIVOT CONNECTION FOR WINDOW SASH OPERATORS

Filed Jan. 18, 1940

FIG. 1.

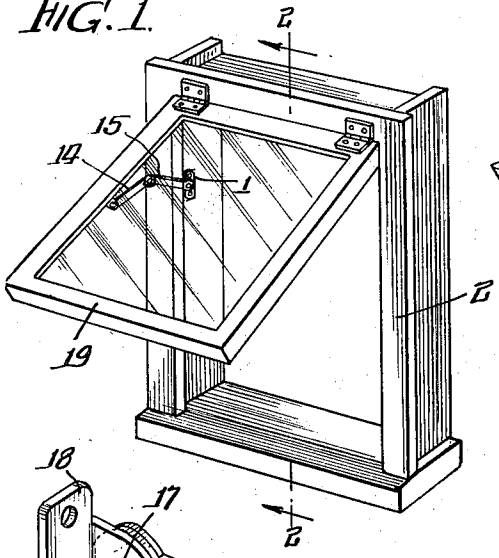
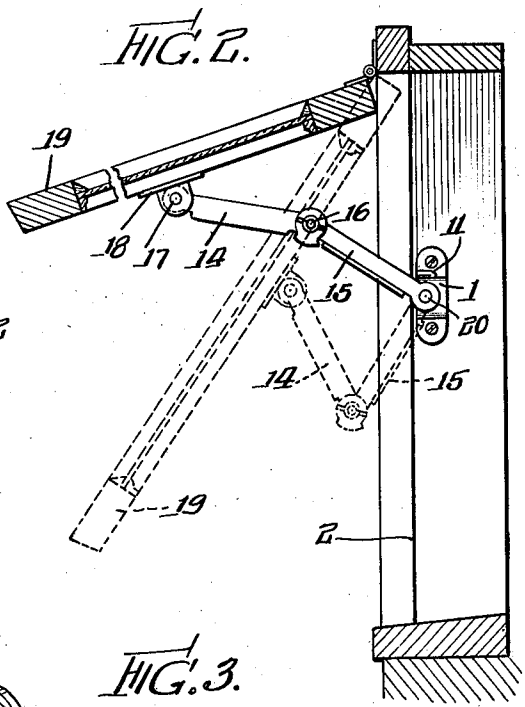



FIG. 2.



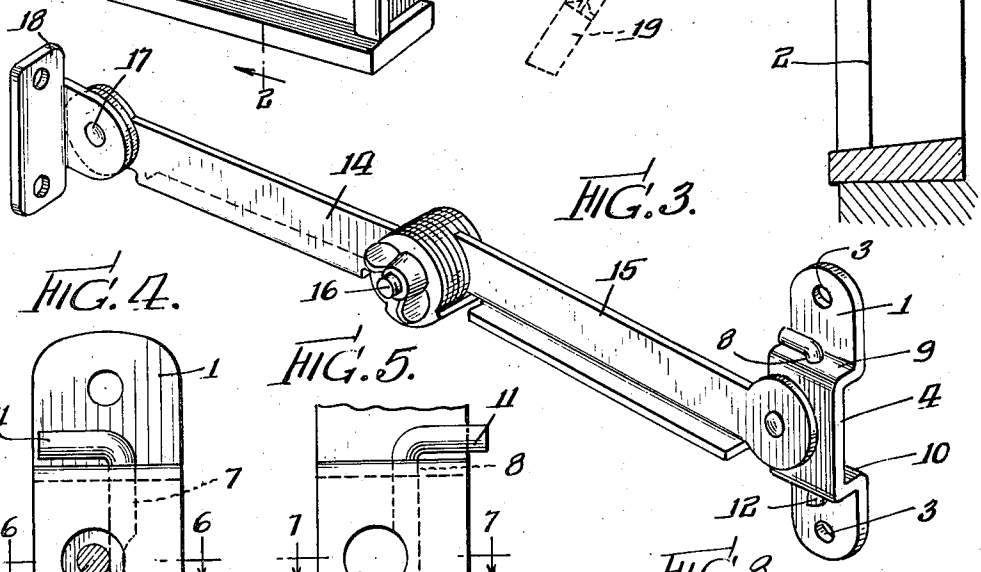




FIG. 3.

FIG. 4.

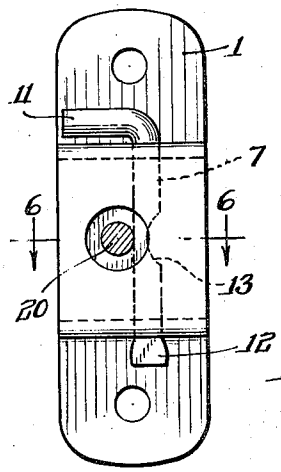



FIG. 5.

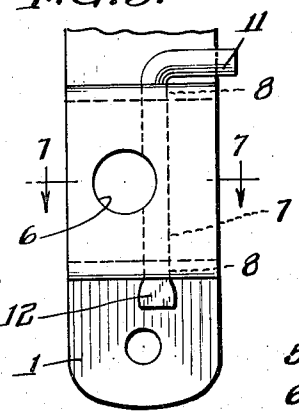



FIG. 8.

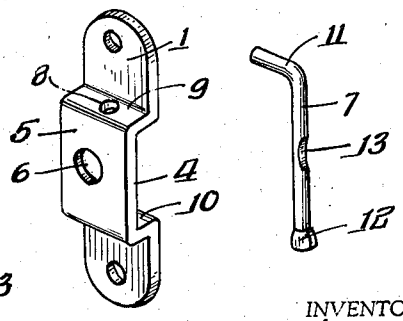



FIG. 6.

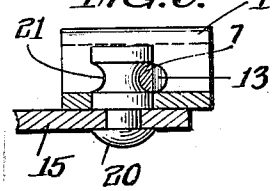
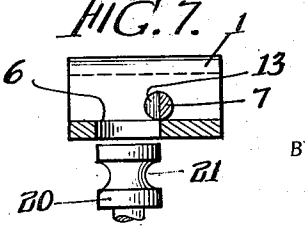



FIG. 7.




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# UNITED STATES PATENT OFFICE

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## SEPARABLE PIVOT CONNECTION FOR WINDOW SASH OPERATORS

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2 Claims. (Cl. 292—263)

This invention relates to sash operators, such as the braces or holders employed for holding storm sash and screen sash in different positions in a window frame.

Generally stated, the object of the invention is to provide a novel and improved construction and arrangement whereby the pivot or swivel of the operator or brace, on the window frame, is of an improved nature or form, so that the operator and its pivot or swivel can be readily detached from the pivot bracket on the window frame, by adjusting a retaining device about an axis at right angles to the axis of the said pivot or swivel, whereby the said bracket does not need to be removed when the sash is taken out of the window frame, but instead is permitted to remain in position where it is fastened thereon, and so that the said pivot or swivel is again easily restored to operative condition when the sash is again placed in position in the window frame.

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 operator or brace pivot or swivel 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 drawing, in which—

Fig. 1 is a perspective of a window frame provided with a sash and a sash operator pivot or swivel, of a separable nature, on the window frame, embodying the principles of the invention.

Fig. 2 is a vertical section of said window frame and sash, on a larger scale, on line 2 and 2 of Fig. 1 of the drawings.

Fig. 3 is an enlarged perspective of the said sash operator or brace shown in Figs. 1 and 2 of the drawings, showing the same separated from the sash and from the window frame as well.

Fig. 4 is an enlarged front elevation of the pivot or swivel bracket that is fastened to the window frame, showing the adjustable pivot-retaining device in position to prevent removal of the said pivot or swivel from the bracket.

Fig. 5 is a similar view, but showing the said device adjustably in position to permit insertion or removal of the pivot or swivel.

Fig. 6 is a horizontal section on line 6—6 in Fig. 4.

Fig. 7 is a horizontal section on line 7—7 in Fig. 5.

Fig. 8 is a perspective view showing the parts of the pivot or swivel plate separated.

As thus illustrated, the invention comprises a pivot or swivel bracket or plate 1 fastened to the window frame 2 by screws inserted through the holes 3 formed in the upper and lower ear portions of said bracket, the latter being preferably of metal pressed into the desired form to provide a recess or chamber 4 between the middle of the plate and the side surface of the window frame. The bulging outer wall 5 of the said plate or bracket is provided with a round opening 6 formed therein, not centrally, but rather off center, as shown more clearly in Figs. 4 and 5, where it will be seen that the said round hole or opening 6 is displaced laterally so that it is nearer the left-hand edge of the plate or bracket 1, than it is the right-hand edge thereof. A pin 7, made, for example, of heavy wire, extends vertically in the openings 8 formed in the upper and lower horizontally disposed portions 9 and 10 of said plate or bracket. The upper end of said pin is provided with a horizontal or laterally bent portion 11, forming a handle, and the lower end portion 12 of the pin is pinched or upset to prevent it from being pulled up vertically out of the bracket. It will be seen that the said pin 7 is adapted to rotate about a vertical axis, which latter practically coincides with the right-hand edge of the hole or opening 6, as indicated more clearly in Figs. 4 and 5 of the drawing. On the side of the pin facing away from the handle 11, there is a curved notch 13 that is curved on the line of the circle of the opening 6 formed in the bracket.

The so-called sash operator, which is in the nature of a brace or holder, may be of any suitable known or desired construction, but as shown it comprises the duplicate links 14 and 15 swiveled or pivoted together at 16 forming a toggle joint where their ends meet at a point about midway between the opposite ends of the said brace or holder. The outer end of the operator is pivoted at 17 on a bracket 18, which is fastened by screws to the sash 19, which latter may be either a screen sash or a storm sash, or any kind of sash. The inner end of the said operator or sash holder is provided with a rigid pivot or swivel 20, the enlarged head of which latter projects through the hole 6 when the sash operator is in use, and which is provided within the cavity 4 with a circumferential groove 21, which is preferably curved on the line of the circle formed by the circumference of the pin 7 previously mentioned. See Figs. 6 and 7 of the

drawing. The head of the pivot is the same in diameter as the hole 6 which forms the bearing for the oscillatory pivot.

Therefore, when the adjustable pin 7 is in the position shown in Fig. 5 of the drawing, the hole 6 is not obstructed, and the pivot or swivel 20 may be inserted through this hole until the inner side of the link 15 is flatwise against the wall 5 of the bracket or swivel plate. Then, when the pin 7 is adjusted to the position shown in Fig. 4 of the drawing, the notch 13 is thereby turned around to the other side, and the cylindrical surface of said pin enters the groove 21 and thus locks the pivot or swivel 20 against any outward displacement from the bracket. Then, when it is desired to remove the sash from the window frame, or to perhaps remove the operator or brace bodily by itself, all that is necessary is to again turn the said pin 7 back to the position shown in Fig. 5 of the drawing, for in this position the notch 13 is in alignment with the hole 6, as shown in Figs. 5 and 7 of the drawing, and the swivel or pivot 20 can be pulled outwardly from the bracket or swivel plate, by flexing or springing the brace laterally toward the other side of the window. Thus, the pivot or swivel-retaining pin 7 is adjustable about an axis which is preferably vertical, and which is desirably at right angles to the axis of the pivot or swivel 20 of the brace or holder that forms the so-called sash operator.

It will be understood that by adjusting the said brace or sash operator into different positions, it can be used to swing the sash outwardly or inwardly, or to lock the sash in its vertical position in the window frame, or to release the sash from said position, and it is for these reasons that the said sash operator is desirably pivoted to swiveled in a bracket secured to the window frame, in such position that the said left-hand edge of the bracket or swivel plate is preferably against or quite close to the inner surface of the sash, when the latter is in vertical closed position, as indicated more clearly in Fig. 2 of the drawing.

It is important to observe, of course, that the enlarged inner end of the stud 20 forms a head which has the same diameter as the hole 6 that forms a bearing for the oscillatory stud or pivot. In this way, the said pivot is pulled out by simply flexing the rigid but flexible and springy jointed brace toward the other side of the window. The jointed brace thus formed is sufficiently rigid to do the required work. The bent or formed angle on each of the two duplicate bars 14 and 15 makes the operator rigid in any position thereof. When folded, it will not take any more room than others that are made lighter and of much less weight. Either link 14 or 15 can be pivoted on the sash and either link can be swiveled on the window frame, so that identically the same parts can be assembled at either the right or left brace or operator to be used as either a right or lelft side of the window. The sash operator will not collapse while in the open position, and there will not be any danger of having a finger pinched. When the operator is detached from the house, the bracket-plate has no objectionable projections thereon. The simple action of fastening the arm to the side plate on the window frame with the bent wire locking device makes it simple and trouble-proof and gives it more than ample strength to make it durable and lasting. The toggle-joint at 16 locks just a little above center, so that the brace is rigid and effective in the fully open position of the sash. The locking pin 7, it will be seen, is fixed and immovable and is stationary, except that it can be adjusted about a vertical axis, and this pin not only extends through the chamber provided between the wall 4 and the window frame, but also extends through the top and bottom walls 9 and 10 of the bracket-plate. The bracket-plate 1 is not movable, but to the contrary is fixed in a stationary position on the window frame.

It is important to observe that the upper and lower bearings 8 on the bracket 1 are widely spaced apart and that hence the greater portion of the length of the retaining pin 7 has no engagement with the bracket plate and that in the same way the greater portion of the cylindrical inner head of the stud 20 has no engagement with the bracket plate, so that the greater portions of both the pin and the stud are free and unengaged within the chamber formed on the inner side of the bracket plate.

What I claim as my invention is:

1. A device of the class described comprising a sash brace and a bracket plate adapted to be fastened in stationary position to a window frame providing a chamber between the frame and an outset vertical wall of the plate, said chamber being open at its front and rear sides and having top and bottom walls, an oscillatory and cylindrical pivotal stud mounted adjacent one end of the sash brace rotatable about a fixed axis in a bearing in said vertical wall so that the greater portion of the stud within the chamber is free from engagement with said plate, and a vertical retaining device extending through said chamber comprising an upstanding rotatable member journalled within the top and bottom walls and having a portion extending through said chamber in juxtaposition to said pivot stud, said pivot stud having an annular recess formed therein and a peripheral portion of said rotatable retaining member extending into said recess to prevent axial movement of said pivot stud while permitting unimpaired rotation thereof in the journal, a peripherally disposed portion of said rotatable retaining member being cut away and operative when the retaining member is rotated to bring said cut away portion opposite the stud to permit the stud to be freely withdrawn.

2. A device as defined in claim 1 wherein said rotatable retaining member is provided with a manually operable handle portion disposed outwardly beyond the upper wall of the bracket and extending transversely thereto, said handle being adapted to reside in substantial parallelism with an adjacent fastening flange when the stud is retained against axial displacement and being adapted to reside in a position 180° removed and in substantial parallelism with said flange when the cut away portion of the retaining member is adjacent said stud.

RAYMOND WILLIAM SMITH.