May 10, 1955 E. S. TILLOTSON 2,707,910

ADJUSTABLE WINDOW VENTILATOR

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Fig. 1.

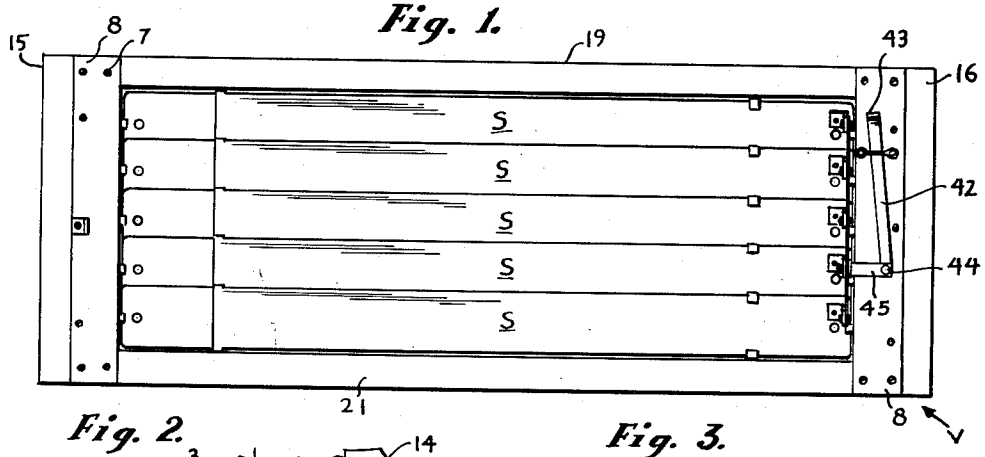


Fig. 2.

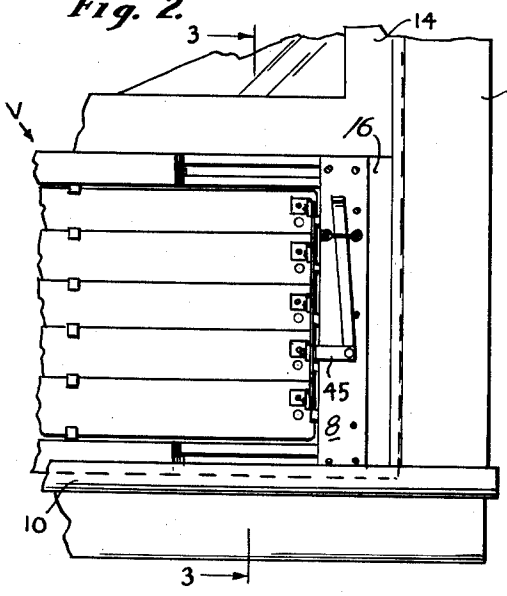


Fig. 3.

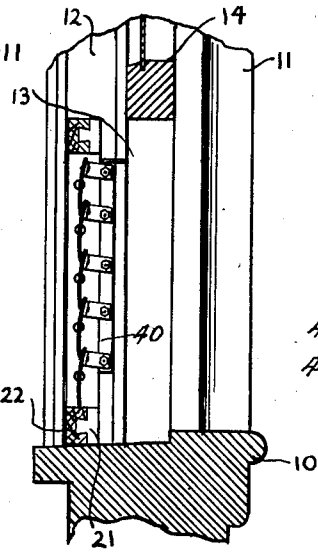


Fig. 4.

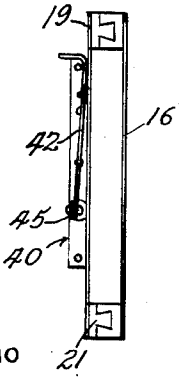


Fig. 5.

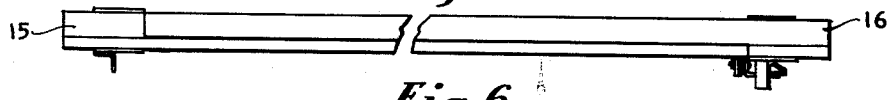
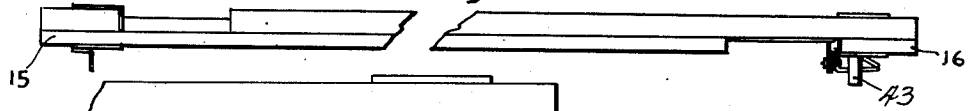


Fig. 6.



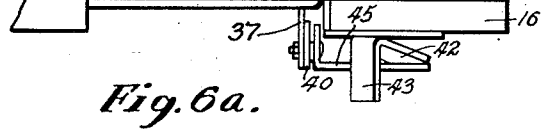


Fig. 6a.

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Fig. 7.

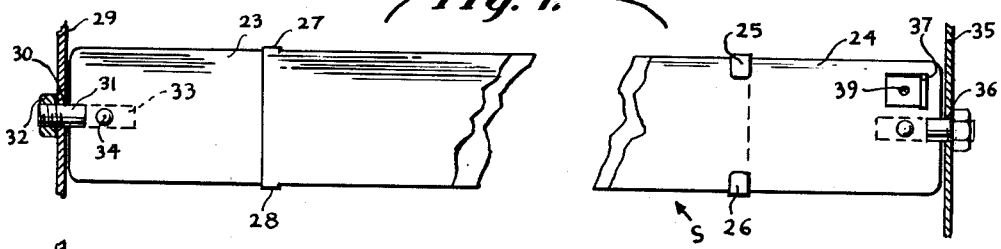


Fig. 8.

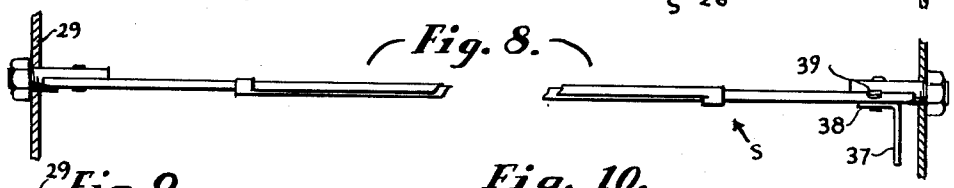


Fig. 9.

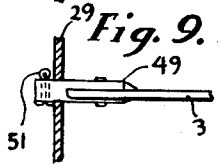


Fig. 10.

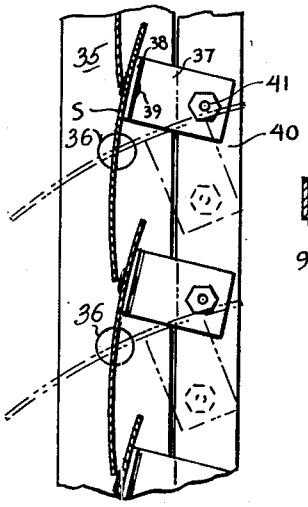


Fig. 11.

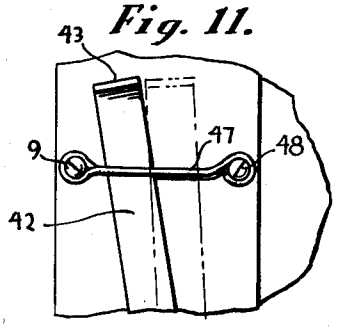


Fig. 12.

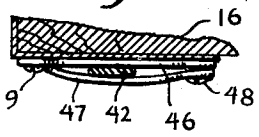


Fig. 13

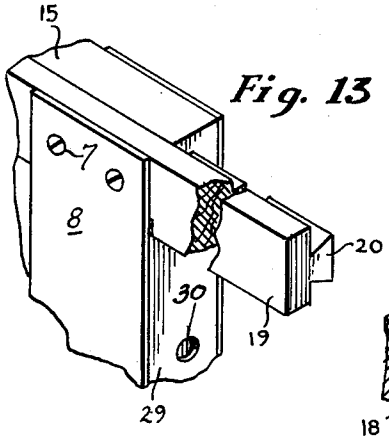
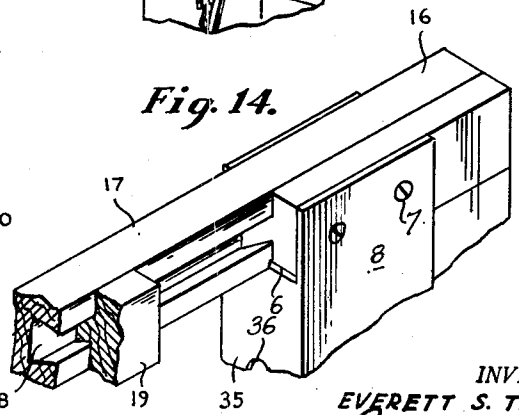


Fig. 14.



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ADJUSTABLE WINDOW VENTILATOR

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Application August 2, 1951, Serial No. 239,928

5 Claims. (Cl. 98—99.8)

The present invention relates to window ventilators and is concerned primarily with a ventilator that is adjustable to fit any size window within a fairly wide range and which is particularly adapted to fit entirely within the outer channel of a window frame.

A window ventilator of the type with which this invention is concerned consists essentially of a plurality of slats or vanes that are pivotally mounted in a frame and mechanically connected together for simultaneous operation. An important feature of the invention lies in the provision of a new and improved operating lever for adjusting the vanes together with a highly simplified type of locking device which is associated with the lever for holding the latter in an adjusted position.

More in detail the invention has as an object the provision, in a ventilator of the character indicated, of an operating lever that is maintained in spaced relation with respect to the frame and which is received in a locking device mounted on the front face of the frame and which locking device consists of two converging arms between which the lever is adapted to be wedged when it is to be locked in an immovable position. By simply moving the lever inwardly where the arms are more widely spaced it may be manipulated to adjust the vanes.

Another object of the invention is to provide, in a window ventilator of the character indicated, a frame which consists essentially of two side assemblies each of which carry complemental elements of telescopic top and bottom bars. In carrying out this idea in a practical embodiment one side assembly carries top and bottom bars formed with a dovetail groove while the other side assembly carries corresponding bars formed with complementally shaped dovetail tongues which are received in these grooves. Obviously, the two side assemblies may be moved relative to one another with the movement being accommodated by the interfitting tongue and groove assemblies at the top and bottom.

If a window ventilator is to be adjustable to fit a particular size window it is necessary that the slats or vanes also be adjustable in length. Thus, another object of the invention is to provide, in a window ventilator of the character indicated, a plurality of vanes that are pivotally mounted in an adjustable framework and each of which consists of two complemental parts which are in overlapping sliding engagement. One of these parts is pivotally mounted on the side assembly at one side and the other part is pivotally mounted on the side assembly at the other side. Each part carries a pair of tabs which are bent over the other part to maintain the assembled relation and yet permit of this sliding adjustment.

A window ventilator made in accordance with the above noted objectives may be made sufficiently thin to fit in the outer channel of a conventional window frame and while so positioned will not interfere with closing movement of the sash in the inner channel. Moreover, due to its adjustability it may be accurately fitted in such a frame and the lever for angularly adjusting the vanes is positioned where it is conveniently accessible to an operator and may

be locked against movement with a minimum of effort. The lever and locking device associated therewith are so designed as to not interfere with the sliding movement of the sash in the inner channel.

Various other more detailed objects and advantages of the invention such as arise in connection with carrying out the above noted ideas in a practical embodiment will, in part become apparent, and in part be hereinafter stated as the description of the invention proceeds.

The invention, therefore, comprises an adjustable window ventilator which consists essentially of a frame made up of two side assemblies each carrying elements of a tongue and groove sliding bar construction at the top and bottom. Pivotally mounted in the frame are a plurality of slats or vanes each of which is made up of two relatively slidable parts and which are mechanically connected for angular adjustment together. An operating lever is connected to this connecting means and a locking device for the lever is mounted on the inner face of one side assembly of the frame and consists of a pair of converging arms between which the lever is adapted to be wedged.

For a full and more complete understanding of the invention, reference may be had to the following description and accompanying drawings wherein:

Figure 1 is a view in front elevation of an adjustable window frame that is designed in accordance with the precepts of this invention.

Figure 2 is another elevational showing taken on an enlarged scale as compared to Figure 1 and showing one end of the ventilator as mounted in the outer channel of a conventional window frame.

Figure 3 is a vertical section taken about on the plane represented by the line 3—3 of Figure 2.

Figure 4 is a view in end elevation of the ventilator per se.

Figure 5 is a top plan view of the ventilator with parts broken away showing the ventilator in a completely collapsed position.

Figure 6 is a view similar to Figure 5 showing the ventilator as extended.

Figure 6(*a*) is an enlarged detailed view of the end of the ventilator of Figure 6, showing the vane regulating mechanism.

Figure 7 is an enlarged detailed view of one of the slats and the pivotal mounting at each end.

Figure 8 is a view similar to Figure 7 showing the slat in a position turned ninety degrees with respect to the showing of Figure 7.

Figure 9 is a detailed view illustrating a modified form of pivotal mounting for the slats.

Figure 10 is an enlarged detailed view looking at one of the side assemblies of the frame from the inside and showing the slats in section.

Figure 11 is an enlarged detailed plan view of the locking device for the lever.

Figure 12 is a sectional view through the frame showing the locking device on a plane normal to the showing of Figure 11.

Figure 13 is an enlarged detailed perspective of a portion of the side assembly at one side; and

Figure 14 is another perspective of a portion of the side assembly at the other side.

Referring now to the drawings wherein like reference characters denote corresponding parts and first more particularly to Figures 2 and 3, a portion of a window frame is therein illustrated and is shown as including a bottom sill **10** from which upstands two side frame members, one of which is shown at **11**. The latter is formed with an outer channel **12** in which the upper or outer window sash (not illustrated) is slidably mounted and an inner channel **13** in which the window sash **14** is slidably positioned.

The ventilator of this invention which is referred to in its entirety by the reference character V is shown as mounted in the outer channels 12 between the outer sash and the bottom sill 10.

The ventilator V comprises a side assembly 15 at the left hand side and another side assembly 16 at the right hand side (speaking with reference to the showing of the drawings).

Referring now more particularly to Figures 13 and 14 which may be considered along with Figures 5 and 6, the side frame assembly 16 is shown as carrying a top bar 17 that is formed with a groove 18 of dovetail cross section. The side assembly 15 carries a top bar 19 having a tongue 20 of dovetail cross section that is complemental to and received in the groove 18. Thus, the two bars 17 and 19 together make up a top bar the length of which may be adjusted by sliding the members 17 and 19 relative to one another. This sliding bar construction is duplicated at the bottom with the side assembly 15 carrying a bottom bar 21 having the dovetail tongue and the side assembly 16 carrying a bottom bar 22 formed with a dovetail groove receiving the tongue on the bar 21.

As is clearly shown in Figures 1, 2 and 3 a plurality of slats or vanes are pivotally mounted on and between the side assemblies 15 and 16. Each of these vanes is referred to in its entirety by the reference character S. Referring now more particularly to Figures 7 and 8 the detailed construction of one of these vanes will be described in detail. Each vane S is shown as being formed of two parts 23 and 24. These parts may be made from any material desired, although the invention has particularly in mind the use of sheet metal, which may be readily stamped into the desired shape.

The vane part 23 is shown as being formed with two tabs 25 and 26 which are folded over the vane part 24. Likewise, the vane part 24 is formed with two tabs 27 and 28 which are folded over the vane part 23. These tabs 25, 26, 27 and 28 are preferably formed integrally with the respective vane parts. It is evident that these tabs maintain the assembled relation at the same time permitting relative sliding movement between the parts 23 and 24.

A side wall 29 is shown as included as a part of the side assembly 15. The top bar 19 is formed with a recess on its bottom edge and which recess receives the top edge of the wall 29 as shown in Figure 13. The lower edge of the wall 29 is received in a recess in the bottom bar 21 in a similar manner. The reception of the top and bottom edges of the wall 29 in recesses in the top and bottom bars serves to reinforce this wall 29. This wall 29 is formed with a plurality of openings one of which is shown at 30, there being an opening 30 for each vane S. Rotatably mounted in the opening 30 is a bolt 31 having a threaded end which receives a nut 32 that is positioned within the side assembly 15 and which prevents withdrawal of the bolt. The bolt 31 is provided with a flat face 33 against which the vane part 23 is snugly engaged. The vane part 23 may be secured to the bolt 31 in any preferred manner such as by the rivets shown at 34.

This pivotal mounting for the vane part 23 on the side assembly 15 is duplicated for the vane part 24 and the side assembly 16. The latter is shown as including a side wall 35 that stops short of the upper end of the side assembly 16. This side wall 35 is reinforced at its top and bottom edges by the latter edges being received in recesses 6 in the top bar 17 and bottom bar 22 respectively. This wall 35 is formed with a plurality of openings 36, there being an opening 36 for each vane S. Bolts 31 are pivotally mounted in these openings 36 and the part 24 of each vane is anchored to the bolt in the manner above described.

Mounted on the inner face of each vane S is and L-shaped bracket 37. The bracket 37 has an arm 38 which is riveted to the respective vane as indicated at 39 and another arm which outstands from the vane and which is formed with an opening.

Referring now more particularly to Figure 10 which may be considered along with Figures 1, 2 and 3, a connecting bar 40 is shown as being pivotally connected to the outstanding arm of each of the brackets 37. This pivotal connection may be achieved by the nut and bolt assemblies as indicated at 41. It is evident that when the bar 40 is moved rectilineally it will cause an angular adjustment of all of the vanes S about the bolts 31 as pivots. To accomplish this an operating lever 42 is provided. The lever 42 at its upper free end is formed with an outturned flange or tab 43 which may be availed of as a handle. The other end of the lever is pivotally connected as indicated at 44 to an L-shaped arm 45 which outstands from and is rigidly connected to the flat side of the connecting bar 40.

It is important to note that this arm 45 is spaced from the adjacent or inner face of the side assembly 16. Thus, it may be moved with the movement being free of any frictional resistance caused by the engagement of either the arm 45 or lever 42 with the side assembly 16 of the frame.

Referring now more particularly to Figures 11 and 12 the locking device for the lever 42 will be described. This locking device comprises an inner ply 46 of a piece of wire that lies flat against the face of the side assembly 16 and an outer ply 47 of the same piece of wire with the outer end portions of the plies in converging relation with respect to one another. At the inner ends of the plies 46 and 47, where they are connected there is an eye that receives a screw fastener 9. The outer ends of both plies are also formed with eyes which receive a screw fastener 48 that secures the outer ends of the plies in the position illustrated. When the lever 42 is moved over into the broken line position depicted in Figure 11 it is wedged between the plies 46 and 47 of the wire and held against movement. Thus, the vanes S are held against angular adjustment.

When it is desired to adjust the vanes the lever 42 is swung over into the full line position of Figure 11 in which it is freely movable between the plies 46 and 47. It may now be moved either downwardly or upwardly to cause a corresponding movement on the part of the connecting bar 40 and thus achieve a desired angular adjustment of the vanes S. After this adjustment is achieved the lever 42 is again wedged in between the plies 46 and 47 by moving it to the right and into the broken line position of Figure 11. The wedging action of the plies 46 and 47 may be adjusted by varying the distance between the outer ends thereof by adjusting the screw 48.

From the foregoing it is evident that the frame in which the vanes S are mounted may be adjusted to accurately fit any window within a wide range. Moreover, as the frame is extended or collapsed each vane S is also extended or collapsed. The vanes may be fully closed as illustrated in Figure 1 or may be open to any angular degree desired by simply availing of the handle 43 to first release the lever 42 from the locking device 46, 47 and then move the lever to obtain the desired adjustment after which the lever is again locked to maintain the adjustment.

The construction illustrated and described makes it possible and entirely practical for the ventilator V to be sufficiently thin so as to be mounted in the outer channel 12 of the window without interfering with the closing of the inner sash 14. If the inner sash 14 is to be closed then the vanes S in the ventilator V should first be adjusted to a fully closed position.

Referring now more particularly to Figure 9 a slightly modified form of pivotal mounting for the vanes will be described. In place of the bolts 31 dowel pins 49 are employed. Each dowel pin 49 passes through one of the openings 30 or 36 in the walls 29 and 35. A cotter pin shown at 51 passes through an opening in that portion of the dowel pin 49 that lies inside the wall and prevents withdrawal of the dowel pin. Each dowel pin

is also formed with a slot that receives the adjacent end of the vane S with a rivet or comparable fastener maintaining the assembled relation.

As is illustrated more clearly in Figure 1 each of the side assemblies 15 and 16 includes a face plate 8 on its inner side which is intended to be removable to afford access to nuts 32 on bolts 31 for the purpose of loosening, tightening, or replacing the nuts. These plates 8 are held in position by screws 7 which are unscrewed when it becomes necessary to remove one of the plates 8.

While preferred specific embodiments of the invention are hereinbefore set forth, it is to be clearly understood that the invention is not to be limited to the exact constructions, mechanisms, and devices illustrated and described because various modifications of these details may be provided in putting the invention into practice within the purview of the appended claims.

What is claimed is:

1. In an adjustable window ventilator adapted to be mounted in the upper sash channel of a window frame so as not to interfere with the sliding movement of the lower sash, a frame comprising a pair of side assemblies, a top bar and a bottom bar carried by one side assembly and each formed with a dovetail groove, a top bar and a bottom bar carried by the other side assembly with each bar having a dovetail tongue received in the groove of the corresponding bar whereby said side assemblies are relatively adjustable through extensible top and bottom bars, a plurality of extensible vanes pivotally mounted between said side assemblies, a bracket carried by each vane in offset relation with respect to its pivotal mounting, a connecting bar pivotally connected to each bracket, an arm laterally outstanding from said connecting bar and in spaced parallel relation to the plane of said sash, an adjusting lever pivotally connected to said arm and lying substantially flush with one of said side assemblies to preclude interference with the lower sash of the window, and a locking device carried by one of said side assemblies and operatively associated with said lever.

2. In an adjustable window ventilator adapted to be mounted in the upper sash channel of a window frame so as not to interfere with the sliding movement of the lower sash, a frame comprising a pair of side assemblies, a top bar and a bottom bar carried by one side assembly and each formed with a dovetail groove, a top bar and a bottom bar carried by the other side assembly with each bar having a dovetail tongue received in the groove of the corresponding bar whereby said side assemblies are relatively adjustable through extensible top and bottom bars, a plurality of extensible vanes pivotally mounted between said side assemblies, a bracket carried by each vane in offset relation with respect to its pivotal mounting, a connecting bar pivotally connected to each bracket, an arm laterally outstanding from said connecting bar and in spaced parallel relationship to the plane of said sash, an adjusting lever pivotally connected to said arm and lying substantially flush with one of said assemblies, a locking device carried by one of said side assemblies and operatively associated with said lever, said locking device consisting of a wire loop approximating a catenary configuration and lying substantially flush with said side assembly at its extremities so as to lock said lever in place when wedged therebetween, and means for fixedly attaching the extremities of said wire loop to said side assembly.

3. In an adjustable window ventilator adapted to be mounted in the upper sash channel of a window frame so as not to interfere with the sliding movement of the lower sash, a frame comprising a pair of side assemblies, a top bar and a bottom bar carried by one side assembly and each formed with a dovetail groove, a top bar and a bottom bar carried by the other side assembly with each bar having a dovetail tongue received in the groove of the corresponding bar whereby said side assemblies are relatively adjustable through extensible top and bottom bars, a plurality of extensible vanes pivotally mounted between said side assemblies, each of said vanes comprising two relatively slidable parts with each part having a pair of tabs folded over the other part, a bracket carried by each vane in offset relation with respect to its pivotal mounting, a connecting bar pivotally connected to each bracket, an arm laterally outstanding from said connecting bar in spaced parallel relationship with the plane of said sash, an adjusting lever pivotally connected to said arm and lying substantially flush with one of said side assemblies to preclude interference with the lower sash of the window, and a locking device carried by one of said side assemblies and operatively associated with said lever.

4. In an adjustable window ventilator including a side assembly and a plurality of angularly adjustable vanes, mechanism for adjusting said vanes comprising a connecting bar pivotally connected to said vanes, an arm outstanding from said connecting bar and spaced from said side assembly, an adjusting lever having one end pivotally connected to said arm, and a locking device for said lever fixedly attached to said side assembly, said device consisting of a straight wire lying flush against said side assembly and a second wire associated with said straight wire and curved outwardly therefrom so as to form a pocket for wedging the lever therebetween in locked fashion.

5. In an adjustable window ventilator including a side assembly and a plurality of angularly adjustable vanes, mechanism for adjusting said vanes comprising a connecting bar pivotally connected to said vanes, an arm outstanding from said connecting bar and spaced from said side assembly, an adjusting lever having one end pivotally connected to said arm and the other end having a flange providing an operating member, and a locking device for said lever fixedly attached to the face of said side assembly by screws and consisting of a straight wire lying flush against said face and a second wire associated with said straight wire and curved outwardly therefrom with its end portions in converging relationship with said straight wire, said lever passing between said wires whereby it is adapted to be wedged between the converging end portions thereof to lock the lever against movement.

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