Sept. 27, 1955 J. M. OLSEN 2,718,675

REVERSIBLE SASH HARDWARE

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Fig. 2

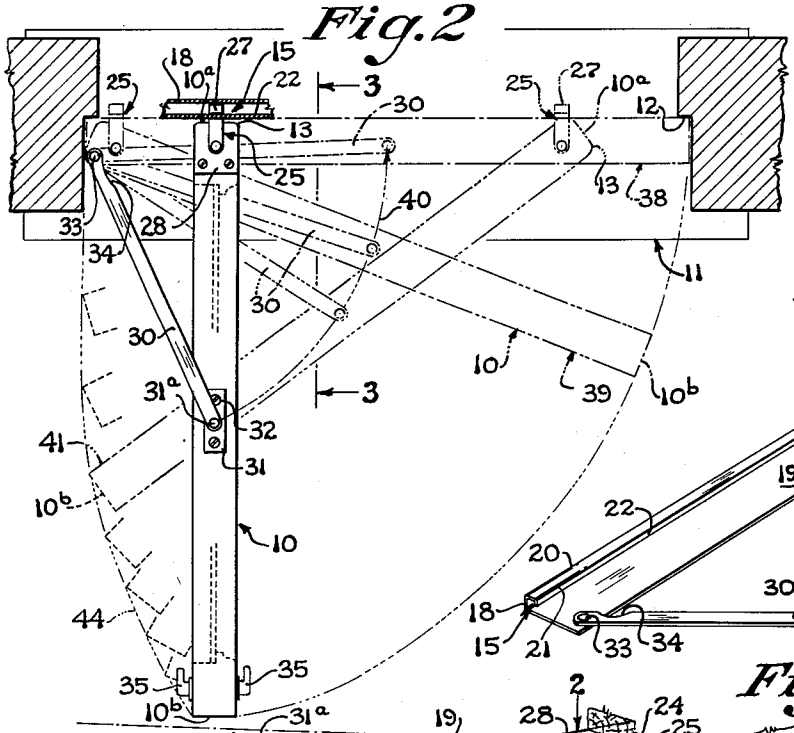


Fig. 5

Fig. 3

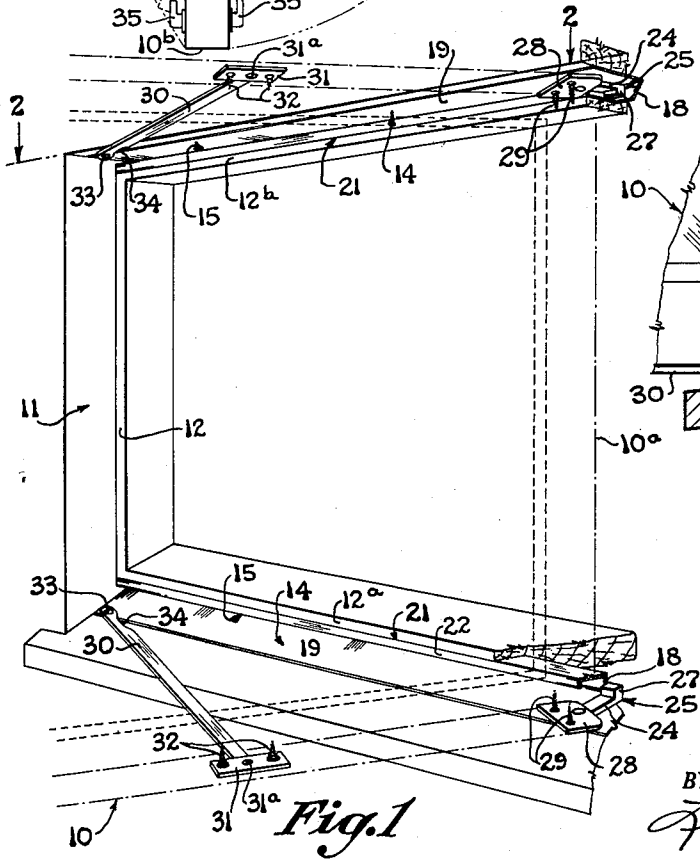


Fig. 1

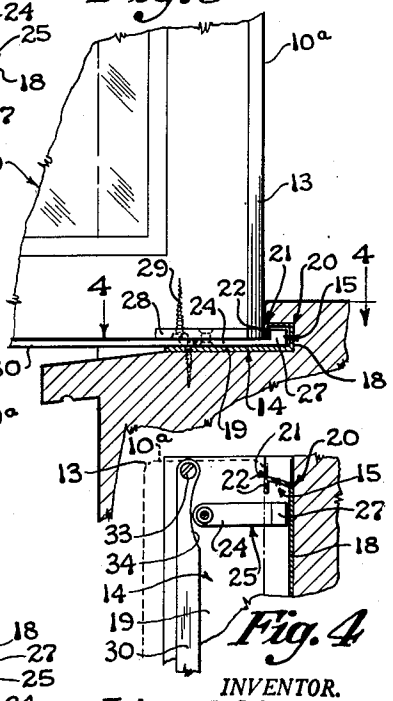


Fig. 4

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REVERSIBLE SASH HARDWARE

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1 Claim. (Cl. 20—42)

This invention relates to window sash, and pertains more particularly to an arrangement for reversibly mounting a sash in a window frame.

In the past several arrangements have been devised for reversibly mounting a sash in a window frame so as to facilitate washing both sides of the sash from within the building in which the sash is installed, but many of such sash have required complicated hardware, were difficult to install properly and frequently did not seat properly in their frame in both reversed positions of the sash.

The present invention contemplates the provision of an improved reversible mounting arrangement for a window sash so that the sash can be readily swung to desired angularly adjusted positions within its complete 180° of swing.

A further object of the invention is to provide reversible mounting means which will cause the sash to tend to remain in angularly adjusted position when arrested at any point throughout its swing.

In a preferred embodiment of my invention, I provide a pair of link arms which are adapted to be pivotally connected at one end of each thereof to opposite sides of a window frame and at the other end of each thereof to the mid-point of a sash to be mounted. One edge of the sash is arranged to slide transversely across the window opening while the angular position of the sash is controlled by the link arms, so that during the traversing movement of the one edge of the sash across the window opening, the sash will be swung through a reversing angle of 180°.

The foregoing and other objects and advatages of my invention will be apparent from the following description and the accompanying drawings, wherein:

Fig. 1 is a perspective view of a window opening with the sash mounting hardware mounted therein, a sash being indicated in dotted lines in the position it would occupy if mounted therein, portions being broken away.

Fig. 2 is a horizontal sectional view taken substantially along line 2—2 of Fig. 1, the window sash being shown in solid lines in its position of adjustment at an angle of 90° from the plane of the window frame, and in broken lines in other positions of adjustment, the path followed by the swinging end of the sash being indicated diagrammatically.

Fig. 3 is an enlarged, fragmentary, vertical sectional view taken along line 3—3 of Fig. 2.

Fig. 4 is a fragmentary sectional view taken along line 4—4 of Fig. 3.

Fig. 5 is a perspective view of a modified form of window mounting device embodying the invention.

In mounting a sash **10** in accordance with the present invention, a usual window frame **11** is prepared with a rabbeted, offset sash seat **12** in each of the four sides thereof. For the purpose of the present description, the sash is illustrated as being mounted to swing about a laterally movable vertical axis, but it is obvious that it also

can be mounted to swing about a vertically movable transverse axis if desired.

The window sash **10** is fitted to enter the frame **11** with sufficient clearance to prevent jamming therein and preferably with approximately the same clearance as in fitting casement sash for mounting on conventional hinges. One edge **13** of the sash is rounded slightly to provide clearance when swinging the sash into and out of either of its two closed positions.

Two similar strips **14, 14** of springy, rust-resisting sheet metal, such as spring brass or galvanized sheet steel, are mounted one along each of two opposite sides of the frame **11**. Each strip **14** has an open box channel **15** formed thereon by bending a marginal portion **18** of each strip **14** upwardly at an angle of 90° from the flat main portion **19** of the strip. This upwardly bent portion **18** then is bent inwardly at an angle of 90° at **20** and then downwardly at an angle of 90° at **21**. The last downwardly bent portion **22** terminates sufficiently short of the main strip portion **19** to provide clearance for the shank portion **24** of a slider or sliding sash support member **25** to permit the sliding member **25** to move slidably lengthwise of the box channel **15** formed on each of the strips **14, 14**.

A rectangular lug **27** is formed on an end of each of the sliding support members **25, 25** to have a free slidable fit within the box channel **15** of its associated strip member **14**. The projecting shank portion **24** of each sliding support member **25** is pivotally connected to a mounting plate **28**.

The mounting plates **28, 28** are flush mounted in the upper and lower edges, respectively, of the sash **10** adjacent the side **10***a* thereof having the rounded edge portions **13**. The mounting plates **28, 28** are secured to the sash **10** by screws **29, 29** with the pivotal axes of the connections between the sliding members **25, 25** and the mounting plates **28, 28** in alignment with each other. Thus, the sash is mounted so that its side **10***a* is free for simultaneous lateral sliding and pivotal adjustment.

For controlling the pivotal movement of the sash **10** proportionally to the sliding movement of the side **10***a* thereof transversely of the window frame **11**, two links **30, 30** are provided. The links **30, 30** are slightly less in length than one-half the width of the sash **10**. Each link **30** has a mounting plate **31**, pivotally secured by a pivot pin **31***a* to the end of the link which is to be connected to the sash **30**. The plates **31, 31** are adapted to be flush mounted and secured to the sash by screws **32, 32** with their pivotal axes of connection to the links **30, 30** aligned with each other along the vertical center line of the sash **10**. The outer ends of the links **30, 30** are pivotally connected to the upper and lower sides, respectively, of the frame **11**, by axially aligned pivot screws **33, 33** (Fig. 1). The pivot screws **33, 33** are so located that the pivotal connections **31***a*, **31***a* of the links **30, 30** to the sash will lie centrally of the window opening when the sash is closed. Each of the links **30, 30** is relieved at **34** to clear the shank **24, 24** of the sliding support member **25** when the sash is in its closed position shown in Fig. 4, and as indicated by the dash-and-one-dot broken line in Fig. 2.

The sash preferably is mounted with a smooth press fit between the projecting flat portions **19** of the top and bottom guide strips **14, 14**. Since these latter members are of comparatively light sheet metal, with some springiness, when the sash is thus fitted the strips have a light, springy, frictional engagement with the upper and lower edges of the sash **10**, tending to maintain it in adjusted position. These mounting strips **14, 14** also tend to seal these edges of the sash, when closed, in the manner of weatherstripping.

A pair of usual handle members **35, 35** may be mounted

one on each side of the sash **10** adjacent its free edge **10***b* to facilitate moving the sash to adjusted position.

In mounting the sash **10** in a window frame, the rabbeted, offset portions **12***a*, **12***a* in the upper and lower sides of the window frame **11** are recessed to receive the box channel portions **15**, **15** of the metal strip members **14**, **14**. The pivoted mounting plate **28** on the projecting end of the shank portions **24**, **24** of the sliding sash support members **25**, **25** then are flush-fitted into the sash **10** as shown in Fig. 1 and are secured to the sash by the screws **29**, **29**.

The connecting plates **31**, **31** pivotally mounted on the free ends of the links **30**, **30** then are flush mounted on the upper and lower edges, respectively, of the sash with the pivotal connections **31***a* to the links **30**, **30** located on the vertical center line of the sash **10**.

The rectangular lugs **27**, **27** then are slidably inserted in the box channels **15**, **15** of the strip members **14**, **14**, and the channeled strips **14**, **14** and the sash **10** are fitted into the widow frame.

The screws **33** which pivotally connect the other ends of the links **30**, **30** to the window frame **11** then are screwed into the frame so that the distance between the pivotal centers of the links, plus the distance from the axis of the pivot screws **33**, **33** to the side of the window frame, is equal to one-half the width of the sash opening.

When thus mounted, the sash can be swung from the closed position indicated by the dash-and-one-dot broken line **38** of Fig. 2 through the position indicated by the dash-and-two-dot broken line **39**, to the solid line position of Fig. 2. During this portion of sash movement, the sliding support members **25**, **25** move from their extreme left hand position shown in Fig. 2, to their solid line position therein, and the pivot pins **31***a* on the free ends of the links **30**, **30** move along the dash-and-three-dot arcuate path **40** toward the solid line position of Fig. 2.

Continued swinging movement of the sash **10** in the same clockwise direction as viewed in Fig. 2, while the sliding support members **25**, **25** continue their straight line movement toward the right hand side of the windows' opening, causes the free end of the sash **10** to swing inwardly along the dash-and-four-dot arcuate path **4**, past the broken dash line position **41** (Fig. 2) toward a reversed, closed position, not shown.

In the modified form of the invention shown in Fig. 5 the same box-channeled metal strip **14**, sliding support members **25**, and links **30** are employed as those shown in Figs. 1 to 4 inclusive. In the modified form of the invention shown in Fig. 5, however, a metal strip **42** replaces the connecting plates **28** and **31** shown in Figs. 1 to 4 inclusive. The strip is of a length to properly center a pivot pin **43** in a sash opening, not shown, when the box channeled strips **14** are mounted therein as shown in Figs. 1, 2, 3 and 4.

The strip **42** is adapted to be secured to opposite sides of a sash, not shown, in the same general manner as that described previously herein for connecting the plates **28** and **31** in the form shown in Figs. 1 to 4 inclusive. Holes **45** are provided in the strip **42** to receive usual mounting screws, not shown.

The manner of mounting the modified device shown in Fig. 5 will be obvious to one familiar with the art having an understanding of the form of the invention shown in Figs. 1 to 4 inclusive, and its manner of operation is similar thereto.

While I have illustrated and described a preferred embodiment of my present invention, it will be understood, however, that various changes and modifications may be made in the details thereof without departing from the spirit and scope of the invention as set forth in the appended claim.

Having thus described my invention, what I claim and desire to protect by Letters Patent is as follows:

A fully reversible window sash support for mounting a sash formed to seat in either of two fully reversed positions in a window frame having a sash seat therein, said sash support comprising a track of a length substantially equal to that of a side of a frame in which the track is to be mounted, a sash support slider mounted on said track for guided movement therealong, said slider extending outwardly from the track when the latter is mounted along the sash seat in a side of such window frame, means for pivotally connecting a sash edge portion adjacent one end thereof to the outer end of said slider for free 180° pivotal movement thereon, a flange of thin, springy, sheet metal extending laterally from the track in the same direction as the slider, a link mounting pivot connected to said flange at one end thereof and spaced therefrom in the same direction as that in which the slider extends from the track, a link pivotally mounted at one end thereof on said link pivot, and means for pivotally connecting the other end of said link to the mid-point of the same sash edge as that to which the slider is pivotally connected, the form of the link and the spacing of its mounting pivot from the track being such to enable the slider to clear the link mounted pivot when the sash pivoted on said link is swung by a movement of the slider from one end of the track to the other, from a first fully seated position in such window frame with the slider at the opposite end of the track from the link mounting pivot, to a second, reversed, fully seated position with the slider at the same end of the track as the link mounting pivot.

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