June 4, 1957 P. SCROGGINS 2,794,208

WINDOW HINGE

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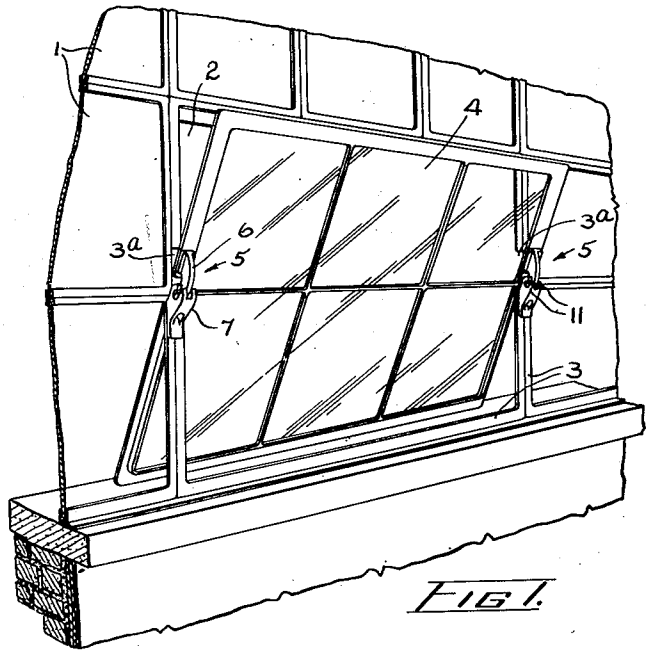


FIG 1.

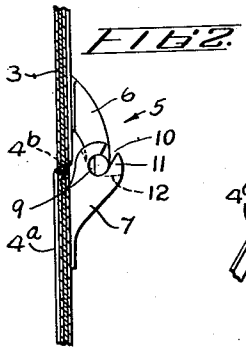


FIG 2.

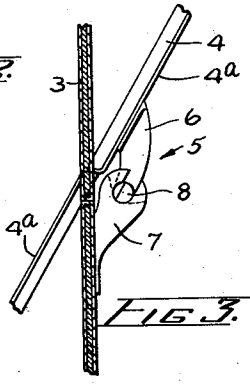


FIG 3.

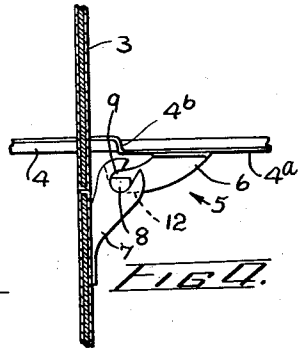


FIG 4.

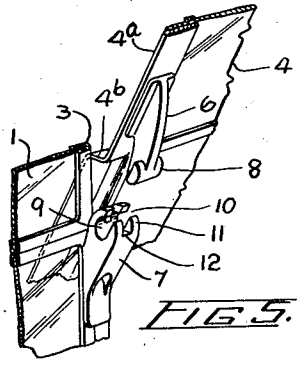


FIG 5.

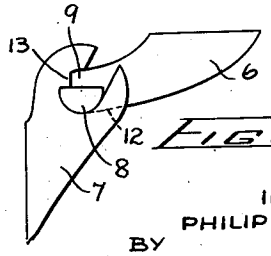


FIG 6.

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WINDOW HINGE

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5 Claims. (Cl. 16—171)

This invention relates to a window hinge.

The object of the invention is to provide a window hinge which is of simple and economical construction, which will permit the sash to be swung open a predetermined amount and support it in open position; and which will permit the sash to be readily removed from its frame for cleaning or repair or for replacement by a screen.

The scope of the invention is set forth in the appended claims, but a preferred embodiment will now be described with reference to the accompanying drawings in which:

Fig. 1 is a fragmentary perspective view of the inside of a window having a sash swung partly open on hinges constructed according to the invention;

Fig. 2 is a fragmentary sectional view of the window showing the elements of a hinge in the position they occupy with the sash closed;

Fig. 3 is a view similar to Fig. 2 and showing the hinge elements with the sash partly open;

Fig. 4 is a view similar to Figs. 2 and 3 showing the hinge elements with the sash fully open;

Fig. 5 is a fragmentary perspective view showing the sash removed from its supporting frame; and

Fig. 6 is a side view showing a slightly modified hinge construction.

The window illustrated consists of a plurality of stationary panes **1**, a rectangular opening **2** surrounded by a frame **3**, and a movable sash **4** located in the opening and pivotally mounted on the frame by means of hinges generally indicated by reference numerals **5**. The sash has a peripheral flange **4***a* which, above the hinge axes, is at the inside of the sash **4** and fits tightly against the inside of the frame **3** when the sash is closed, but the flange is staggered at **4***b* approximately opposite the hinge axes and below the hinge axes it is at the outside of the sash **4** and fits tightly against the outside of the frame **3** when the sash is closed. The frame **3** is cut away as at **3***a* at either side to provide clearance for the staggered portions **4***b*.

Each hinge **5** consists of a first element **6** welded or otherwise secured to the flange **4***a* at the inside of the sash **4** and a second element **7** secured to the frame **3** below the cut away portion **3***a*. The element **6** depends from its point of attachment to the flange **4***a* and has at its lower end a transverse integral pin **8** extending from either side. The pin **8** is the shape of a circular cylinder that has had a part cut away along a plane parallel to but to one side of its axis, and in the embodiment illustrated the said plane is vertical when the sash is closed, or, in other words, is parallel to the sash. Thus the pin is in transverse section a circular segment larger than a semicircle, and has a partly round side surface that is more than semi-cylindrical. The axis of the pin forms the axis of the hinge.

The element **7** extends upwardly from its point of attachment to the frame **3** and has near its upper end a transverse cylindrical opening **9** of very slightly greater diameter than the pin **8** so that the pin may be journalled in the opening **9** for hinging of the sash **4** in the frame **3**.

To permit the pin **8** to be inserted in and removed from the opening **9**, the element **7** is slotted from the opening as at **10**, and is bifurcated as at **11** to permit rocking of the element **6** between the bifurcations. The slot **10**, as best seen in Figs. 2, 3 and 4, runs at an angle of approximately thirty degrees from the vertical, and the side of the slot remote from the frame **3** is tangential to the opening **9**. The width of the slot is less than the diameter but greater than the radius of the opening **9**, being very slightly greater than the minimum transverse dimension through the axis of the pin **8**, i. e. than the height of the circular segment defined by the pin in transverse section, so that when the sash **4** is swung open to the position shown in Fig. 3, where said transverse dimension of the pin is parallel to the width of the slot, the sash may be removed from the frame by lifting the pins **8** of each hinge out of the openings **9** through the slots **10**, as will appear from Fig. 5. Thus the window sash is easily removable for cleaning or replacement by a screen sash.

If the sash **4** is to be fully opened, it is rotated past the position shown in Fig. 3 to that shown in Fig. 4, where the lower surface of the element **6** abuts against a stop surface **12** of the element **7** between its bifurcations. The sash is supported in the fully open position by the surfaces **12** of the two hinges and by the restraint that the cylindrical surfaces bounding the openings **9** impose on the pins **8** against upward movement from the position shown in Fig. 4.

A slightly modified construction is shown in Fig. 6, in which a small abutment **13** is provided on the cylindrical surface bounding the opening **9** for engagement with the flat side of the pin **8** when in the fully open position, thus assisting in the support of the sash.

It will be seen that a very simple hinge construction has been devised permitting hinging movement in both a clockwise and a counterclockwise direction from the position of Fig. 3 in which the sash can be removed from its supporting frame.

It is to be understood that the form of the invention herewith shown and described, is to be taken as a preferred example of the same, and that various changes in the shape, size and arrangement of the parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

What I claim my invention is:

1. A hinge for mounting a window sash on a support, comprising a first element having a base securable to the window sash and a second element having a base securable to the support, one of said elements having a pin and the other element having a circular opening in which the pin is rotatable for hinging action of the elements, the circular opening and the pin having a common axis forming the axis of the hinge, said other element having a slot from the circular opening of a width less than the diameter but greater than the radius of the opening, the sides of the slot lying at an angle of less than 90° to the base of said other element, the pin having a partly round side surface provided by a circular segment, the transverse section of which is more than semi-cylindrical and a flat surface parallel to the plane of the window sash and having a maximum transverse dimension normal to the flat surface through its axis substantially equal to the width of the slot whereby when the pin is positioned in the opening with said dimension parallel to the width of the slot the pin is removable through the slot to remove the window sash from the support.

2. A hinge as claimed in claim 1, in which one side of the slot is tangential to the circular opening.

3. A hinge as claimed in claim 1, in which when the pin is in the opening the elements are free for relative rotation in both a clockwise and a counter-clockwise direction from the position in which the pin is removable through the slot, the elements having co-operable stop means for limiting the relative rotation in at least one direction.

4. A hinge for mounting a window sash on a support, comprising a first element having a base securable to the window sash and a second element having a base securable to the support, one of said elements having a pin which in transverse section is a circular segment larger than a semi-circle, having one partly round side surface and one flat surface parallel to the window sash, the other element having a circular opening of substantially the same diameter as said circular segment and in which the pin is rotatable for hinging action of the elements, the circular opening and pin having a common axis forming the axis of the hinge, said other element having a slot from the circular opening of a width substantially equal to the maximum transverse dimension of said circular segment in a direction normal to the flat surface through the centre of the circular segment, the sides of the slot lying at an angle of less than 90° to the base of said other element whereby, when the window is partly open, the pin is positioned with said dimension parallel to the width of the slot and is removable through the slot to remove the window sash from the support.

5. A hinge for mounting a window sash on a support, comprising a first element having a base securable to the window sash and a second element having a base securable to the support; the first element having an integral generally cylindrical hinge pin extending from either side of the element, each pin being in transverse section a circular segment larger than a semi-circle, having one

partly round surface and one flat surface parallel to the window sash; the second element being bifurcated to receive the first element between the bifurcations and having a transverse circular opening of substantially the same diameter as said circular segment in which opening the pins are rotatable for hinging action of the elements, the bifurcations restraining movement along the axes of of the pins, the circular opening and pins having a common axis forming the axis of the hinge, the bifurcations being slotted from the circular opening, the slots being of a width substantially equal to the maximum transverse dimension of said circular segment normal to the flat surface through the centre of the circular segment, lying at an angle of less than 90° to the base of said other element and at one side being tangential to the circular openings whereby when the window is partly open the pins are positioned with said maximum dimension parallel to the width of the slots the pins are removable through the slots to remove the first element from between the bifurcations and the window sash from the support, the filst element when the pins are in the opening being free for rotation between the bifurcations in both a clockwise and a counter-clockwise direction from the position in which the pins are removable through the slots, but restrained from movement along the axes of the pins, the second element having a stop for limiting rotation of the first element in one direction to position the window sash in fully open position.

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