

Sept. 24, 1957

F. J. DECKER ET AL
AWNING WINDOW STRUCTURE

2,807,059

Filed May 20, 1955

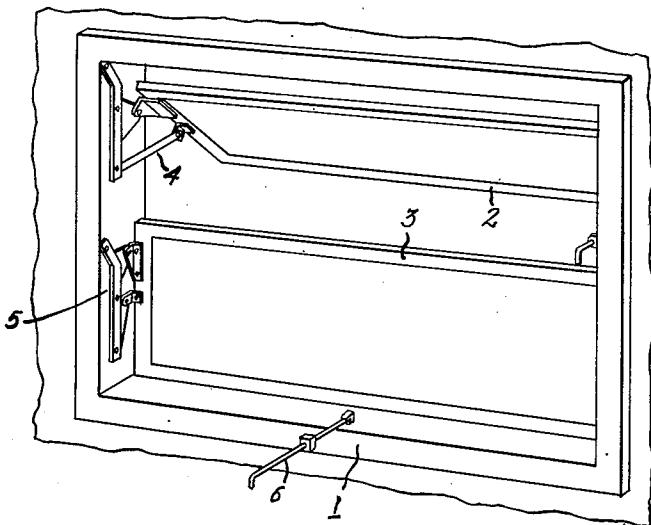


Fig. 1.

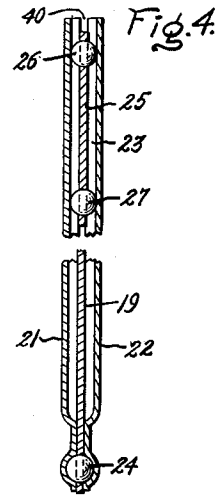


Fig. 4.

Fig. 3.

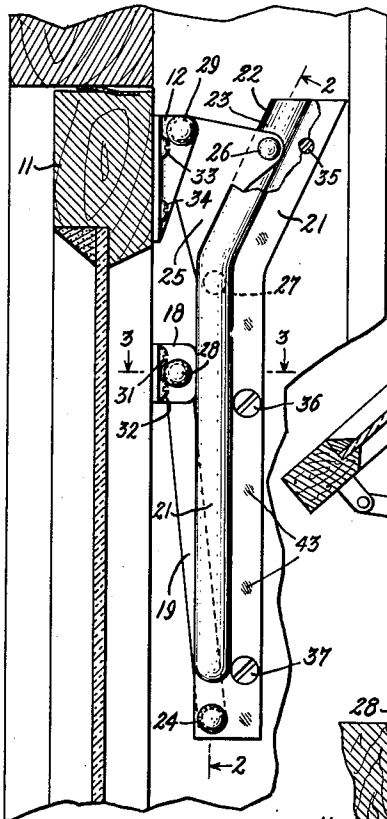


Fig. 2.

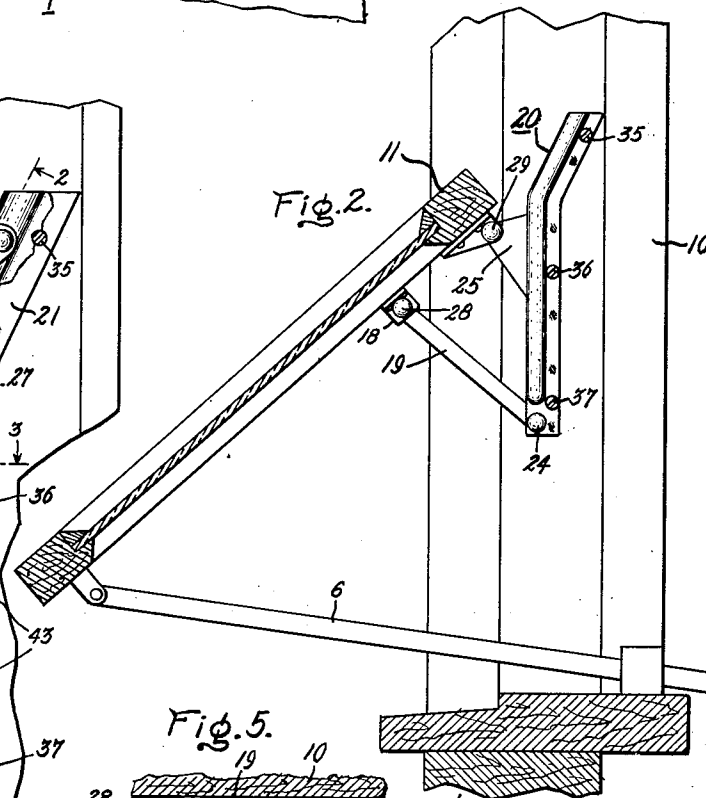
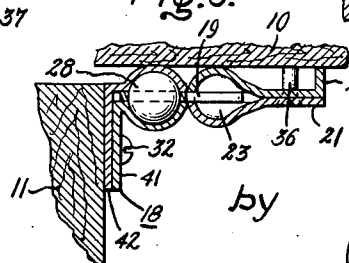


Fig. 5.



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AWNING WINDOW STRUCTURE

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Application May 20, 1955, Serial No. 509,839

7 Claims. (Cl. 20—42)

This invention relates to window operating mechanisms and more particularly to window hinge devices adapted to be used on awning type windows or the like.

It is an object of this invention to provide an awning type window wherein a new and novel hinge mechanism is utilized which requires no special window frame or sash structure for mounting purposes. Since no special window structure is required for mounting the operating mechanism, a considerable saving is realized from using the new and improved hinge mechanism embodied in this invention.

Another object of this invention is to provide a new and improved awning type window hinge mechanism which is simple in construction, durable, and efficient in operation.

Still another object of this invention is to provide a new and improved window hinge mechanism that can be readily and easily mounted and operated.

A further object of this invention is to provide a new and improved awning type window operating hinge which will not tend to jam, stick, or catch, due to changing weather conditions or painting.

These and other advantages of the invention will be more clearly understood from the following description taken in connection with the accompanying drawings and its scope will be apparent from the appended claims.

Figure 1 is a perspective view of a window casement having two awning type sashes mounted therein according to this invention with one being open and one being in a closed position;

Figure 2 is a vertical sectional view of a window frame having an awning type window mounted therein with the novel hinge mechanism shown in an open position;

Figure 3 is a similar view, showing the operating hinge partly in section and in a closed position;

Figure 4 is a partial vertical sectional view taken along lines 2—2 of Figure 3; and

Figure 5 is a horizontal sectional view taken along lines 3—3 of Figure 3.

Referring more particularly to the accompanying drawings, in Figure 1 a window frame 1 has sashes 2 and 3 mounted therein by means of the operating mechanisms or hinges 4 and 5, respectively. Sash 2 and hinge 4 are shown in their open positions, while sash 3 and hinge 5 are shown in their closed position. A sliding rod device 6 or similar means may be used to hold the sash in various positions as desired. This means is shown generally and does not comprise a part of the invention.

Figure 2 shows a more detailed view of the hinge structure in an open position mounted on a window frame 10 and on an awning type window sash 11, and Figure 3 shows an enlarged detailed view of the hinge structure in its closed position. The hinge mechanism has a support member 20 mounted on window frame 10 by screws 35, 36, and 37. The support member 20 is composed of members 21 and 22, shown in detail in Figures 4 and 5 which are attached by spot welding, for example at points 43, to form support member 20, having a track or channel 23 therein. Channel 23 extends over a substantial por-

tion of the support member 20. From Figure 5, it is noted that member 22 of support member 20 has a flange portion which allows support member 20 to be attached to the window frame solidly without impairing or obstructing the slidable operation in channel 23. A triangular plate 25 is slidably mounted in channel 23 by bearings 26 and 27 which are inserted in holes at opposite end portions of plate 25 as shown in Figures 3 and 4. A bracket 12 adapted to be attached to window sash 11 by screws 33 and 34 is pivotally mounted at pivot 29 to the apex of triangular plate 25. A support arm or link 19 is pivotally connected by pivot 24 to the lower portion of support member 20. A bracket 18 adapted to be secured to window sash 10 by screws 30 and 32 is pivotally connected at pivot 28 to the other end of support arm 19.

Figure 4 shows a view of support member 20 partially in section. Members 21 and 22 which make up support member 20 provides a channel 23 in which plate 25 is free to roll up and down in by the rotatable action of bearing 26 and 27. An opening 40 leading into channel 23 is provided by members 21 and 22 to allow a free sliding action by plate 25 in channel 23.

With reference to Figure 3, it should be noted that support member 20 angles off on its upper portion with respect to the plane of its main portion. This angled portion of member 20 is adapted to accommodate the triangular plate 25 when the sash is in its closed position as shown in Figure 3. As sash 10 is pushed outward, support arm 19 is pivoted by pivot 24 and moves out and away from support member 20. Bracket 18 is also pivoted at pivot 28 on the other end of support arm 19 to remain at right angles with window sash 11. Simultaneously with the aforesaid movement, plate 25 slides down in channel 23 and bracket 25 is pivoted at pivot 29 to force the window sash to move down and swing outward in cooperation with arm 19 and bracket 18 as shown in Figure 2. When closing window sash 11, plate 25 moves up in channel 23 into the angular portion of support member 20 and arm 19 moves up and into support member 20 as shown in Figure 3.

In Figure 5, the constructions of bracket 18, pivot 21, and support member 20 are shown. Like support member 20, bracket 18 is composed of two parts, members 41 and 42. Bracket 12 also has two parts. This type of construction is advantageous in that the members may be easily assembled by spot welding and will allow the free movement required in a mechanism of this type.

The hinge structure embodied in the invention requires no special window frame or sash. These hinges may be easily mounted on all types of frames and sashes. The hinge structure is sturdy and its easy operation will not be impeded by painting or changes in weather conditions.

Since other modifications varied to fit particular operating requirements and environments will be apparent to those skilled in the art, the invention is not considered limited to the examples chosen for purposes of disclosure and covers all changes and modifications which do not constitute departures from the true spirit and scope of this invention.

Having described our invention, what we claim as new and desire to secure by Letters Patent is:

1. An operating mechanism comprising a support member having a channel therein and a pivotal joint on one end thereof, a support arm having one end connected to said joint for pivotal movement therein, a mounting bracket, pivotal means for connecting said bracket to the other end of said support arm, a plate mounted in said channel for slidable movement therein, said plate having a pivotal connection thereon, and another bracket connected to said plate by said pivotal connection whereby said second bracket may be pivoted with respect to said plate.

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2. A window hinge mechanism comprising a support member adapted to be mounted on a window frame, said support member having a hollow channel therein, a plate slidably mounted in said channel for vertical movement therein, a first bracket member adapted to be attached to an awning type window sash, means pivotally mounting said bracket member on said plate, a support arm means for pivotally mounting one end of said support arm on said support member, a second bracket member adapted to be attached to an awning type window sash, and means pivotally mounting said second bracket on the other end of said support arm.

3. In combination, a window frame, an awning type window sash, a support member secured to said window frame, said support member having a vertical track therein, a plate slidably mounted in said track for vertical movement therein, a bracket secured to said window sash and pivotally connected to said plate whereby said bracket pivots as the plate slides vertically in said track, a support link, means pivotally mounting said support link to said support member, a second bracket secured to said window sash and means pivotally connecting said second bracket to said support link whereby said bracket pivots as the support arm is pivoted from said support member.

4. A window operating device for moving a window sash in a window frame, said device comprising a vertical support member, having a channel extending along at least the upper portion of said support member adapted to be secured to the window frame, a plate with rotatable bearings placed in said channel whereby said plate is free to move up and down in said channel by the rotating movement of said bearing in cooperation with said channel, a bracket adapted to be secured to the window sash, means pivotally mounting said bracket on said plate whereby said bracket is pivoted when said plate moves in said channel, a support link, a second bracket adapted to be attached to the window sash, means pivotally connecting said bracket to one end of said support link and means pivotally securing the other end of said support link to the lower portion of said support member whereby as the support link is pivoted, the bracket also pivots with respect to the support link.

5. An awning type window hinge adapted to move a window sash supported by said hinge in a window frame, a vertical support member having an angular upper extremity and a track coextensive with at least the upper portion of said member, a plate slidably mounted in said

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track by a rotatable bearing in cooperation with said track, a bracket adapted to be secured to the window sash, means pivotally mounting said bracket on said plate whereby said bracket is pivoted as said plate moves in said track, a support arm, means pivotally securing one end of said support member to the lower portion of said support member, a bracket and means pivotally connecting said last-named bracket to the other end of said support arm whereby the bracket is pivoted as said support arm is pivoted.

6. An awning type window hinge adapted to move a window sash supported by the hinge in a window frame, a vertical support member adapted to be secured to a window frame having an angular upper extremity and having a channelway extending over at least the upper portion of said support member, a triangular plate having at least two bearings rotatably associated therewith, said plate structure being slidably associated with said channelway for vertical movement therein by the rotational movement of said bearings in said channelway adapted to be secured to the window sash, a bracket means pivotally connected to the apex of said triangular plate, a support arm, means pivotally connecting one end of said support member to the lower portion of said support member, a bracket and means pivotally connecting said last-named bracket to the other end of said support arm.

7. A window hinge comprising a vertically mounted support member having an angular upper portion and having a channel in at least the upper half of said member, a triangular plate having holes in opposite end portions along the base of said triangle plate, bearings adapted to be rotatably fitted in the holes in said plate, said plate being positioned in said channel for slidable movement therein by the rotatable action of said bearings in cooperation with the side of said channel, a bracket pivotally mounted to the apex of said triangular plate, a support link pivotally mounted at one end thereof on the lower extremity of said support member and a bracket pivotally mounted on the other end of said support link.

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