May 22, 1956 A. F. LICKTEIG 2,746,101

FRICTION HINGE

Filed Sept. 13, 1954

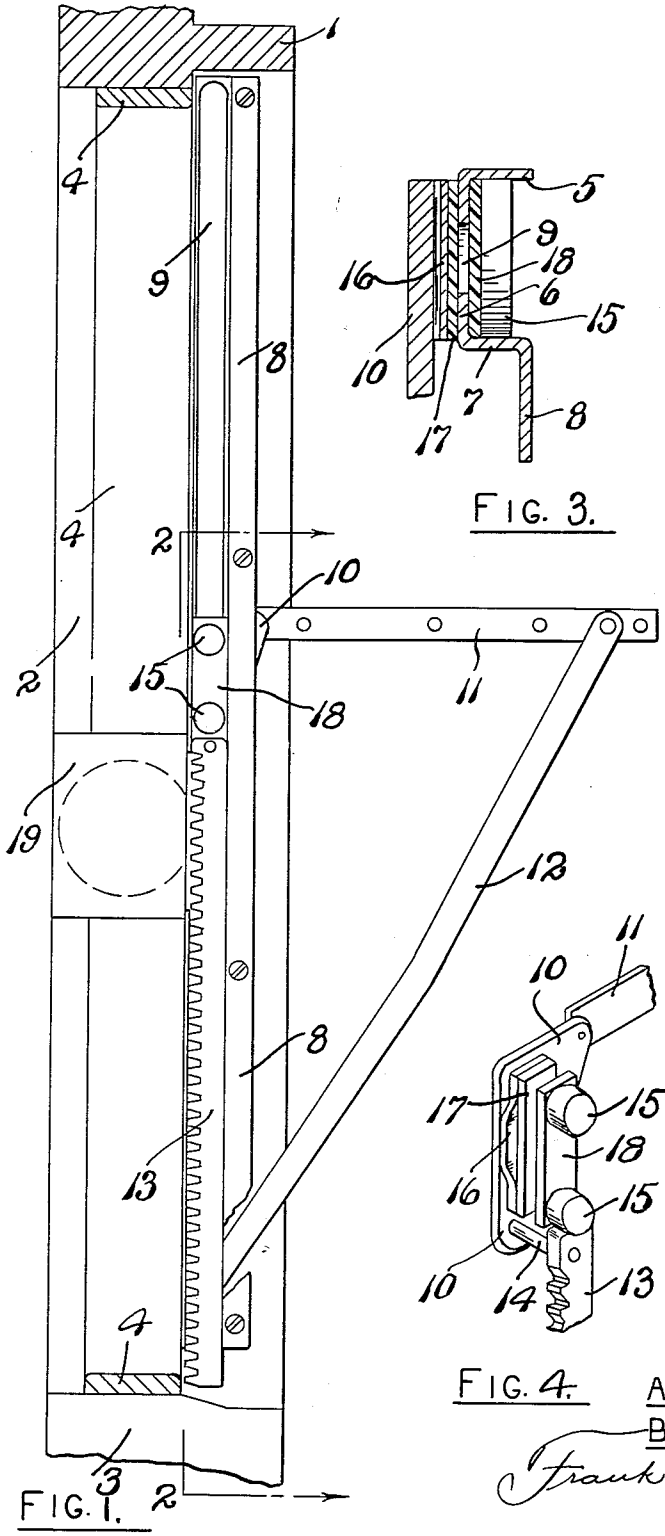


FIG. 1.

FIG. 3.

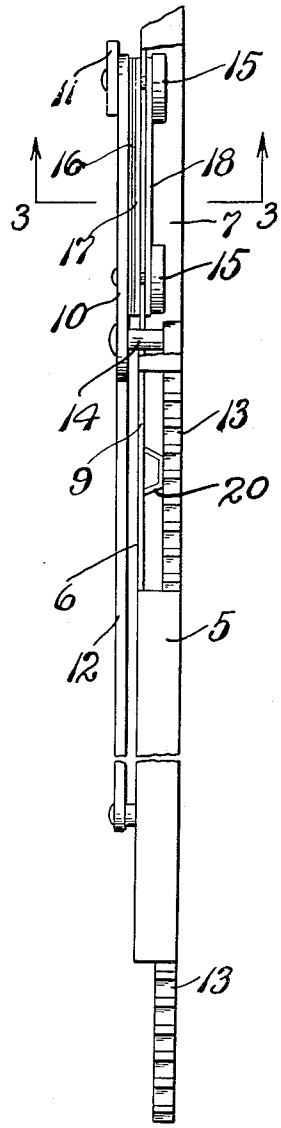


FIG. 2.

FIG. 4.

INVENTOR
ALBERT F. LICKTEIG
BY
Frank E. Liverance, Jr.
ATTORNEY

United States Patent Office 2,746,101 Patented May 22, 1956

2,746,101

FRICTION HINGE

Albert F. Lickteig, Grand Rapids, Mich., assignor, by mesne assignments, to Durable Products Company, Grand Rapids, Mich., a corporation of Michigan

Application September 13, 1954, Serial No. 455,591

5 Claims. (Cl. 20—42)

The present invention relates to awning type windows and is more particularly concerned with a novel window mounting including a friction type hinge connection of the swinging window sash, and its novel mounting upon vertical guide supports therefor, one at each vertical side of a window frame at the inner side thereof.

There has heretofore been filed an application, Serial No. 362,217, filed June 17, 1954, by myself and Henry R. Dickinson with respect to which the present novel structure is a marked improvement.

It is an object and purpose of the present invention to provide a very practical, simple, sturdy and durable connection between the window sash and its supports which are at the sides of the window frame in which, through the friction hinging means used, rattling is avoided, ease of operation is maintained and because of the simplicity of the structure an especially practical mechanism is provided.

An understanding of the invention may be had from the following description, taken in connection with the accompanying drawing, in which,

Fig. 1 is an elevation of a vertical side of the window frame and a guide and support for a window sash at said side, the window sash removed.

Fig. 2 is a rear elevation of the novel mechanism for carrying the window sash, the view being taken from the plane of line 2—2 of Fig. 3 looking in the direction indicated.

Fig. 3 is a transverse horizontal section substantially on the plane of line 3—3 of Fig. 2 looking upwardly, and

Fig. 4 is a perspective view of one form of friction hinge structure which may be used in my invention.

Like reference characters refer to like parts in the different figures of the drawing.

The window frame in which the awning type sash is mounted is of rectangular form, having a horizontal upper frame member 1, two spaced vertical sides 2 and a lower horizontal sill 3. Within this frame back stop strips 4 at the inner sides of both the upper frame member 1, the vertical sides 2 and the sill 3 are secured, against which the sash is brought when it is closed.

Elongated sheet metal guide members are secured at the inner side of each of the vertical sides 2 of the frame outwardly of the stop 4. Each guide made from flat metal is stamped, rolled or otherwise shaped into channel form, having an inside flange 5, a web 6 at right angles thereto which will be spaced from the adjacent vertical side of the window frame a distance equal substantially to the width of the flange 5, a second and outer flange 7 paralleling the flange 5, which terminates in a terminal flange 8 at right angles thereto lying flat against the inner side of a vertical side 2 of the window frame and is permanently secured thereto by screws as shown in Fig. 1.

From the upper portion of the web 6 and reaching nearly, if not entirely, to the middle point in the length of such channel guide is a vertically positioned slot 9 closed at both ends. Two sash carrying and hinging members 10

are used one at each end edge of the window sash. Such members 10 are in the form of generally right angle triangular plates of metal, and one is located at the outer side of each web 6 of each of the guide members used, one at the inner side of each of the vertical frame members 2. Bars 11 are pivotally connected at one end adjacent the upper outer corner of each plate 10 and between said bars the awning window sash is located and permanently secured. A brace 12 pivotally connected to the web part 6 at its lower end adjacent the lower end of the frame 2 to which it is connected, extends upwardly to and has a pivotal connection at its upper end near the outer end of the bar 11 with which associated, there being two of said braces one at each side of the window frame for the two bars 11 one at each end of the window sash.

A rack bar 13 is located within the channel formed by the flanges 5 and 7 and the connecting web 6 therefor. A pin 14 pivotally connects the upper end of said rack bar with the lower end of the plate 10 with which it is associated (Fig. 4). Two headed pins 15, the heads of which may be of the short cylindrical form shown, or may be of other forms such as square or other polygonal outline, have the shanks thereof secured one above the other to each of the plates 10, such shanks passing through the slot 9 of the channel guide with the heads within the channel guide. A bowed leaf spring 16 has its bowed portion located against the inner side of each plate 10 and at the opposite side preferably has a thin rectangular length of nylon fabric, or equivalent braking material, as at 17 secured, the shanks of the headed pins 15 passing therethrough and through the ends of the spring 16. Selectively, as may be desired, a second nylon strip 18 is at the inner sides of the heads 15 of such pins, however such strip is not necessarily used and may not be used. In Fig. 4 the nylon members 17 and 18 are exaggeratedly shown as to their thickness. Such strips one at the outside of the web 6 of the channel and one at the inside thereof ride frictionally against the web of such channel at the edge portions of slot 9 under pressure of the spring 16. In accordance with normal practices the tension of the spring 16 may be increased or diminished by the usual screw engaging thereagainst threaded through the plate 10.

It is apparent that while the spring 16 and its facing 17 are on the outer side of the web 6 of the channel, a reversal of position so as to locate the spring at the inner side of the channel and with its ends against the heads 15 may be used as a direct equivalent of the structure shown in Fig. 4.

In operation, the elongated rack member 13 is moved lengthwise of the channel by a suitable mechanism therefor housed in a housing indicated at 19, the detail of which is not shown as it forms no part of the present application and is fully shown and described in the previously mentioned application.

The construction described is very practical and useful and serves the purposes for which it has been produced in a particularly effective manner.

The invention is defined in the appended claims and is to be considered comprehensive of all forms of structure coming within their scope.

I claim:

1. A mounting for an awning window comprising, a vertical channel guide having spaced flanges and a connecting web between one of the edges of said flanges, said channel being adapted to be secured, one at the inner side of each of the vertical sides of a window frame with said web spaced from the adjacent side of the vertical side of the frame to which connected, said web at its upper portion having an elongated vertical slot therein, a sash carrying plate located at the outer side of the web of said guide and over said slot, spaced headed pins connected one above the other to said plate, the heads of the pins

being located in said channel guide and the shanks of the pins passing through said slot, and a spring pressed member between the plate and web, said member frictionally moving lengthwise of the web in up and down movements of said plate, and said plate adjacent its upper end being adapted to have a window sash pivotally connected thereto.

2. A mounting for an awning window comprising, an elongated channel having spaced flanges and a web connecting said flanges, said web having an elongated slot lengthwise of one end portion thereof, a plate at the outer side of said web over said slot, headed pins having heads within said channel between its flanges spaced in the direction of the length of said slot and having shanks passing through said slot connected to said plate, a friction strip member against the outer side of the web between said web and plate, and yielding spring means between said plate and friction member.

3. A mounting for an awning window comprising, an elongated channel having spaced flanges and connecting web, said web having an elongated longitudinal slot therein at one end portion thereof, a plate at the outer side of said web over the slot therein, headed pins having shanks permanently secured to the plate, said shanks passing through said slot and the heads of the pins being located within the channel between its flanges, said shanks of the pins being spaced from each other in the direction of the length of said slot, a fabric strip located against the outer side of said web through which said shanks of the pins pass, and a bowed spring member having end portions bearing against the fabric strip and its intermediate portion against said plate, the shanks of said pins passing through said spring member.

4. A mounting for an awning window comprising, an elongated channel having spaced flanges and connecting web, said web having an elongated longitudinal slot therein at one end portion thereof, a plate at the outer side of said web over the slot therein, a fabric strip between the plate and web located against said web, headed pins connected to said plate spaced from each other, having shanks passing through said slot and heads within the channel between the flanges thereof, and yielding spring means associated with the plate, pins and web for pressing said fabric strip against the web to provide frictional braking pressure thereagainst.

5. A mounting for an awning window comprising, an elongated channel having spaced flanges and connecting web, said web having an elongated longitudinal slot therein at one end portion thereof, a plate to which a window sash is adapted to be pivotally connected located at the outer side of said web over the slot therein, spaced pins connected to the plate passing through said slot, means at the inner ends of said plate within said channel covering the slot in said web at its inner side, a braking member lying against the outer side of the web between said web and plate, and means for maintaining said braking member and plate in pressure engagement to provide frictional resistance against movement of the plate lengthwise of said channel.

References Cited in the file of this patent

UNITED STATES PATENTS

2,115,656	Thompson	Apr. 26, 1938
2,366,815	Soule	Jan. 9, 1945
2,700,800	Lichteig et al.	Feb. 1, 1955