Nov. 1, 1932. H. T. WALTON 1,885,658

WINDOW LATCH

Filed May 21, 1930

FIG. I.

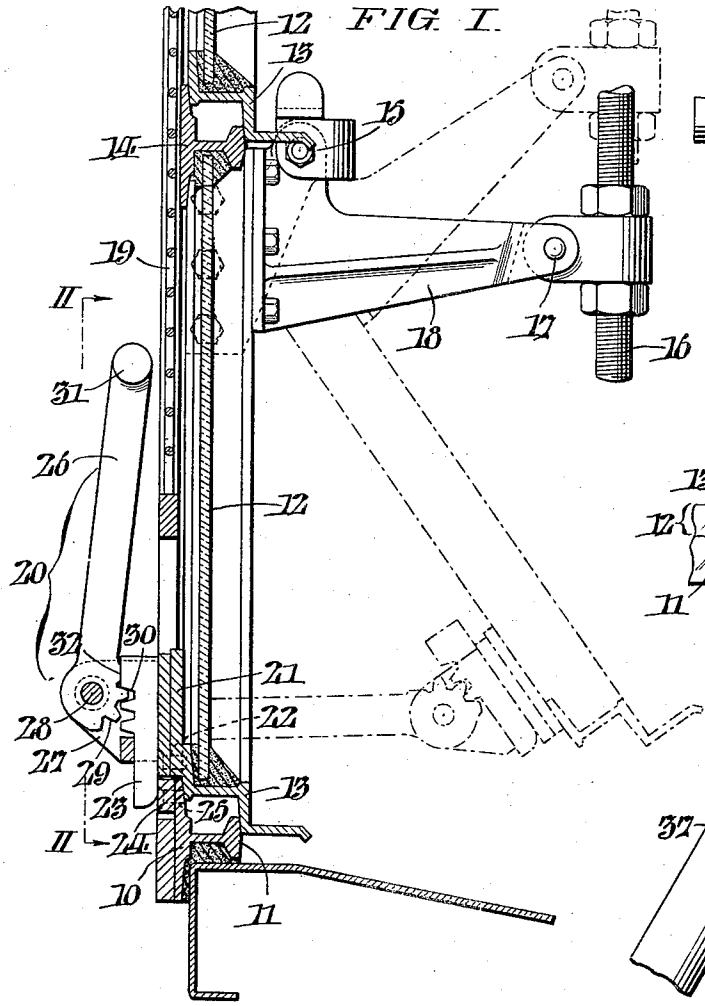


FIG. II.

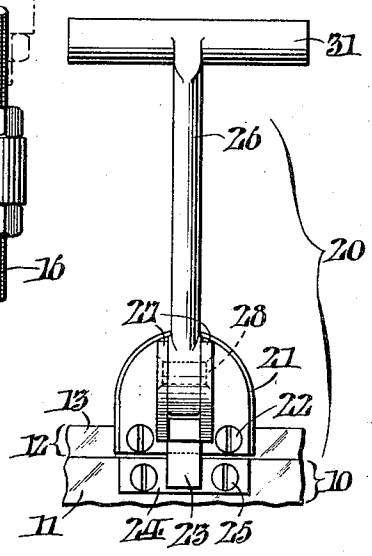


FIG. V.

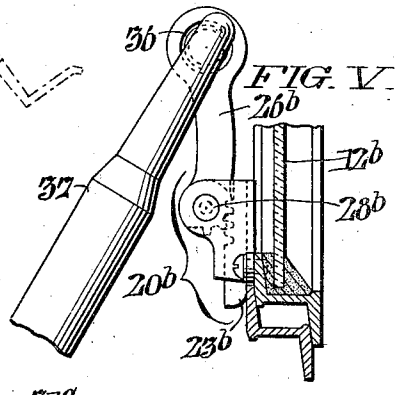
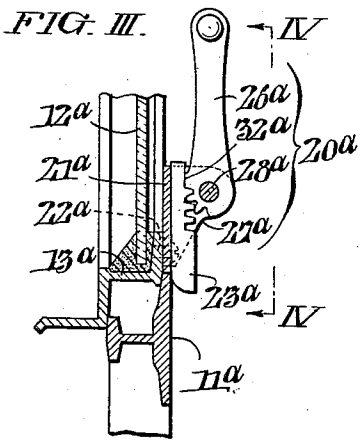
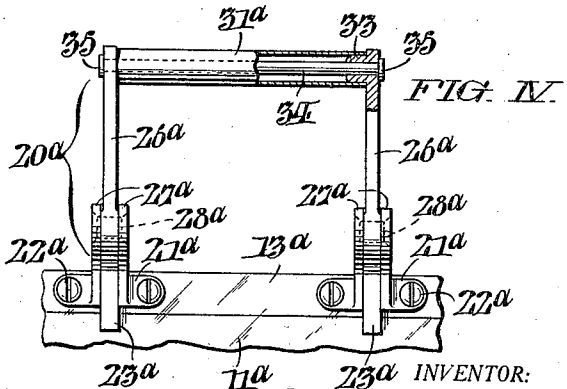


FIG. III.





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UNITED STATES PATENT OFFICE

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WINDOW LATCH

Application filed May 21, 1930. Serial No. 454,209.

This invention relates to window latches, and has more especial reference to latches designed for use with windows whereof the sashes are pivoted, as distinguished from windows of the sliding sash type.

The purpose of my invention is to provide a neat, compact and efficient latch for pivot sash windows, which is simple in construction; easy to manipulate; and which affords a grasp means for swinging the pivoted sash incident to opening and closing it.

In certain forms of embodiment such as hereinafter described, my improved latch is particularly advantageous with windows wherein a multiplicity of continuously coordinated sashes are mounted on friction hinges and entail expenditure of considerable effort to open and close them simultaneously.

In the drawing hereunto attached, Fig. I is a fragmentary vertical sectional view of a pivot sash window fitted with a latch embodying my invention.

Fig. II shows the latch as it appears when viewed as indicated by the arrows II—II in Fig. I.

Fig. III is an illustration similar to Fig. I, showing an alternative embodiment of my invention.

Fig. IV is an elevation of the latch of Fig. III, viewed in the direction of the arrows IV—IV thereon, with portions broken out and in section to better illustrate certain details of construction, and,

Fig. V is a view in part corresponding to Fig. I, but showing still another modification of my invention.

Referring first to Figs. I and II of the drawing, I have shown for convenience in illustrating my invention, a window constructed wholly of metal with a stationary frame 10 whereof the lower horizontal rail 11 is of T-cross section; and with a multiplicity of sashes 12 which are arranged to swing upwardly about their top edges, and whereof the bottom horizontal swinging rail or edge 13 in each instance is of Z cross section and closes against the top horizontal 14 of the sash immediately beneath it, said top horizontal being of T-cross section like the bottom horizontal 11 of the frame 10. The sashes 12 are hung, in the present instance, on friction hinges 15, and coordinated for simultaneous operation by a coupling rod 16 having pivotal connection at 17 with arms 18 that project laterally from the movable components of said hinges. A window of the described construction, i. e., with vertically narrow sashes 12, is especially suited for asylums, hospitals, detention houses, etc., to preclude escape of the inmates; and, for greater security in this regard, a fixedly attached screen, such as shown at 19 in Fig. I, is sometimes used in connection with them.

Still referring to Figs. I and II, the latch constituting my present invention is comprehensively designated by the numeral 20. As shown, it comprises a bracket 21 of semicircular configuration which is fastened, by means of screws 22, to the bottom swinging edge 13 of the lowermost of the sashes 12. A bolt 23, with sliding guidance in the bracket 21, is adapted to lock over a keeper block 24 attached to the bottom rail 11 of the window frame 10 by screws 25. The actuating member 26 for the bolt 23 has the form of a lever with fulcrum support, between projecting ears 27, of the bracket 21, on a transverse axis pin 28. From Fig. I it will be noted that the actuating member 26 is provided with a number of gear teeth 29 which are concentrically arranged in respect to the fulcrum axis 28 and mesh with rack teeth 30 on the bolt 23. It will further be noted that the proportioning of the actuating member 26 is such that an effective leverage is afforded to render the operation of the bolt 23 very easy in locking and unlocking the window sash 12. In addition to functioning in the capacity just explained the actuating member 26, for the bolt 23, is intended to serve as a handle to move the lower sash 12, it being accordingly provided at the outer end with a transverse grasp bar 31. Normally, with the window sash 12 locked, the actuating member 26 lies substantially parallel to the plane of the lower sash 12 out of the way, the limit of upward movement of said member to locking position being determined

through engagement of a stop at 32 thereon with the bolt 23, as clearly shown in Fig. I.

To operate the window, the actuating member 26 is grasped and swung downward about its fulcrum axis 28 to horizontal position with attendant lifting of the latch bolt 23 to clear the keeper block 24 on the window frame 10, the lowermost sash 12 being thus freed so that it may be swung outward to the position indicated by dot-and-dash lines in Fig. I. Through the coupling rod 16, corresponding movement is communicated to all the other sashes 12 of the window structure. Now since the sashes 12 are all hung on friction hinges 15, the expenditure of considerable effort is entailed to open and close the window; but by reason of the liberal proportioning of the latch actuating member 26 and provision thereon of the grasp 31, the impartation of the required thrust and pull is greatly facilitated. It will moreover be noted that since the actuating member 26 occupies a horizontal position after release of the latch 23, only a small opening—just sufficient to permit passage of the hand—is required in the screen 19.

In Figs. III and IV, I have shown a modified embodiment of my improved latch which may be used in lieu of the latch in Figs. I and II. In this case the latch is designated by the numeral 20*a*, and, as shown, comprises two duplicate brackets 21*a* which are adapted to be secured in spaced relation to the swinging edge 13*a* of the sash 12*a* by screws 22*a*. Each bracket 21*a* has associated with it a sliding bolt 23*a* and an actuating lever 26*a* which is intergeared with the bolt 23*a* in the same manner as described in connection with the form of latch in Figs. I and II. As shown in Fig. IV, the two levers 26*a* are joined at their outer ends by a cross piece 31*a* designed to serve as a grasp handle. The cross piece 31*a* may be integrally formed with the levers 26*a*, or, as shown, it may be in the form of a tube whereof the opposite ends engage aligned bosses 33 on the levers 26*a* and held in place by an axial rod 34 which is headed over on the outsides of said levers as at 35.

The modification of my latch illustrated in Fig. V is intended for use in connection with vent or transom sashes. The construction here is identical with that of the latch of Figs. I and II except as to the form of the actuating member 26*b*, which, in this case, instead of having a transverse grasp 31, is provided with an eye 36 for engagement by a hook pole 37 such as is ordinarily used with slide sash windows to move upper sashes that cannot be conveniently reached otherwise. To avoid the necessity for duplicate description, all the corresponding parts of the latch shown in Fig. V are identified with the same reference numerals previously employed with addition, however, of the subscript *b*.

Having thus described my invention, I claim:

1. A pivot sash window latch comprising a bracket with provisions for securing it to a swinging edge of the window sash; a bolt having gear teeth slidably-guided in the bracket and adapted to lock over the rail of the window frame against which the swinging edge of the sash closes, and an actuating member with gear teeth concentric to its pivot axis intermeshing the rack teeth on said bolt, said member also embodying a stop for engagement by the bolt in limiting upward movement of the actuating member.

2. A pivot sash window latch comprising a bracket with provisions for securing it to a swinging edge of the window sash; a bolt with a number of gear teeth and adapted for sliding guidance in the bracket to lock over the rail of the window frame against which the swinging edge of the sash closes; an actuating member with fulcrum connection on the bracket and having gear teeth concentric with its fulcrum axis to intermesh the rack teeth on said bolt, and said member embodying a stop at one end of the gear teeth for engagement by the bolt in limiting movement of the actuating member.

3. A pivot sash window latch comprising a bracket with provisions for securing it to a swinging edge of the pivoted sash; a bolt with consecutive gear teeth and adapted for sliding guidance in the bracket to lock over the rail of the window frame against which the swinging edge of the sash closes; an actuating member intergeared with the bolt, said member being in the form of a lever with fulcrum connection on the bracket and provided with a transverse grasp to facilitate impartation of thrust and pull on the sash incident to opening and closing it, and said member embodying a stop at one end of the gear teeth for engagement by the bolt in limiting upward movement of the actuating member.

4. A pivot sash window latch comprising a pair of brackets adapted to be secured in spaced relation to the swinging edge of the pivoted sash; bolts each embodying consecutive teeth and adapted for sliding guidance respectively in the brackets to lock over the rail of the window frame against which the swinging edge of the sash closes; actuating levers with fulcrum connection on the brackets and having gear teeth concentric with their fulcrum axes to intermesh with rack teeth on said bolts, said levers each having a stop for co-action with the associated bolt in limiting movement of actuating levers; and a transverse handle connecting the two levers at their outer ends and constituting a grasp to facilitate impartation of thrust and pull on the pivoted sash incident to opening and closing it.

5. A pivot sash window latch comprising a bracket with provisions for securing it to a swinging edge of the window sash; a bolt with consecutive gear teeth and adapted for sliding guidance in the bracket to lock over the rail of the window frame against which the swinging edge of the sash closes; an actuating member in the form of a lever with fulcrum connection on the bracket and lying parallel to the plane of the sash when the latter is locked closed, said member having gear teeth concentric with its fulcrum axis to intermesh with rack teeth on the bolt; and an integrally formed stop intermediate the lever shank and gear teeth for engagement with the bolt head in limiting upward movement of said lever to the sash locking position aforesaid.

In testimony whereof, I have hereunto signed my name at Philadelphia, Pennsylvania, this 30th day of April, 1930.

HOWARD T. WALTON.