Feb. 25, 1941. G. HAGSTROM 2,233,078

LATCH FOR SCREEN DOORS OR THE LIKE

Filed April 25, 1940

Fig. 1.

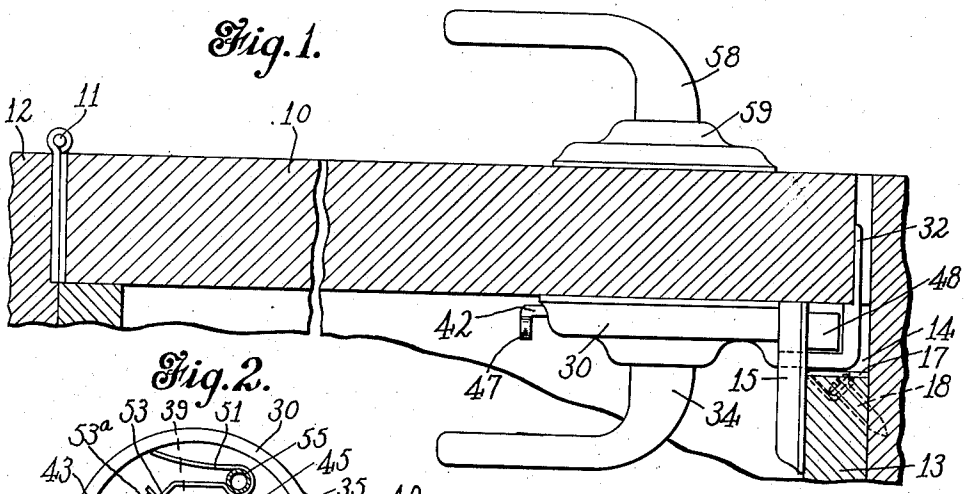


Fig. 2.

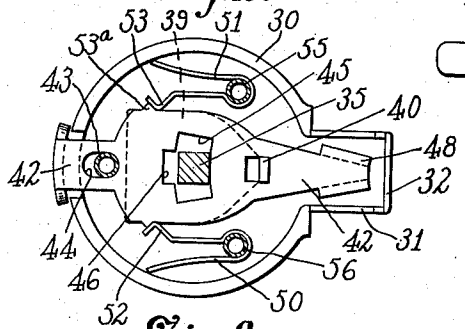


Fig. 3.

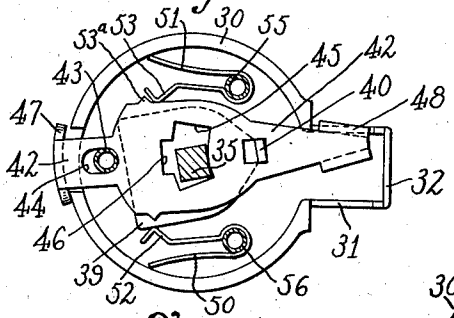


Fig. 4.

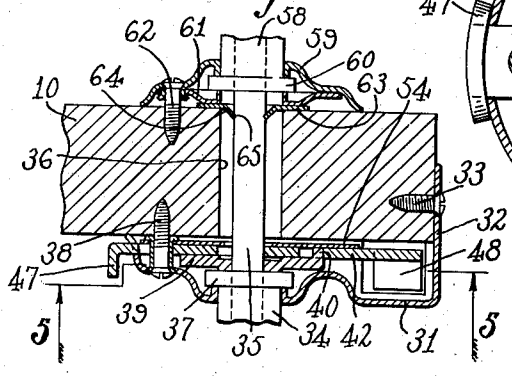


Fig. 6.

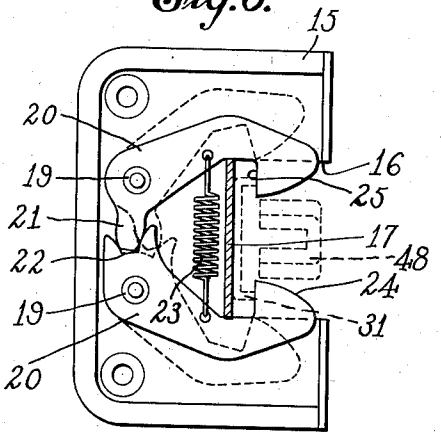
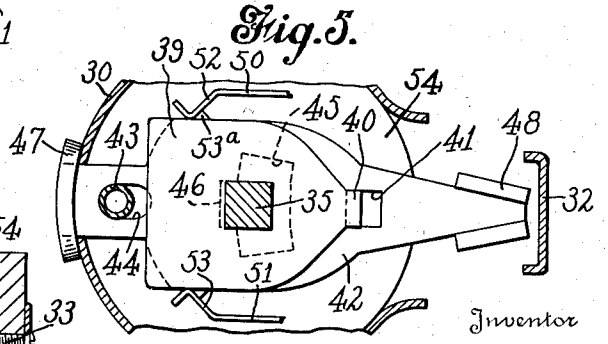


Fig. 5.



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LATCH FOR SCREEN DOORS OR THE LIKE

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Application April 25, 1940, Serial No. 331,546

10 Claims. (Cl. 292—254)

This invention relates to door latches, and more particularly to a latch of light and inexpensive character, particularly for use for light doors such as screen doors, for example.

Latches for this purpose are not required to be heavy or expensive, and it is also desirable that they be so made as to be installed with a minimium of labor, such, for example, as mortising operations. It is contemplated by the present invention to provide a latch mechanism for screen doors which shall have the appearance of a mortise latch in that there will be little mechanism exposed upon the door aside from the roses ordinarily surrounding the operating spindles, while at the same time the latch will in reality be a rim latch, in that it will mounted upon the exterior surface of the door, and no mortising will be required. It may, therefore, be installed with a minimum of labor, and at the same time present an attractive appearance after installation.

One object of the invention is the provision of a screen door latch wherein the operating mechanism will be mounted mostly within the rose surrounding the latch-operating spindle, which mechanism will occupy a minimum of space and require little room upon the outside of the door.

Another object of the invention is the provision of a door latch of the character described, in which the latching members will be mounted upon a bracket or housing upon the jamb of the door, and a small casing will be mounted at one face of the door, which casing will be provided with a keeper or member to be engaged by the latch members, and within which casing will be mounted a latch-operating member actuated by a knob or handle at the outside of the door to move the latch members out of engagement with the keeper. In other words, in the arrangement disclosed, while the latch members are mounted upon the door jamb, the latch-operating member is mounted upon the door itself, an arrangement which is the reverse of the usual arrangement in connection with door latches.

Still further objects of the invention are to provide latch-operating mechanism which will occupy a minimum of space and may be mounted within the usual rose upon the outside of the door whereby it will not be unsightly in appearance and will not require mortising operations; to provide a novel method of dead-locking or dogging the spindle to prevent unauthorized operation of the latch; to provide novel means of securing the handles in place upon the end of the spindle; and to provide a latch-operating member in the casing upon the door which will cooperate with latch members mounted in a bracket upon the door jamb, and which latch-operating member may be rotated in either direction to effect release of the latch members to permit the door to be opened.

To these and other ends the invention consists in the novel features and combinations of parts to be hereinafter described and claimed.

In the accompanying drawing:

Fig. 1 is a horizontal sectional view of a door having my improved latch applied thereto, the latch being shown in top plan view;

Fig. 2 is an inside face view of the rose or casing applied to the door, with the inner cover removed to show the operating parts;

Fig. 3 is a view similar to Fig. 2 but showing the latch-operating member in the position in which the latch members are disengaged from the keeper;

Fig. 4 is a horizontal sectional view through the operating spindle when the mechanism is applied to the door;

Fig. 5 is an enlarged partial sectional view on line 5—5 of Fig. 4, and

Fig. 6 is a rear face view of the latch housing applied to the door jamb, with the latching members exposed.

To illustrate a preferred embodiment of my invention, I have shown a door 10, which door may be hinged at 11 to the door frame 12, and at its other end swing against a jamb 13. The jamb 13 may have a notch or recess 14 cut therein to accommodate a part of the latch mechanism, as will be more fully described hereinafter.

Secured to the jamb 13 is a housing or casing structure 15, shown in Fig. 6. In the front edge of this housing, facing the door 10, is a recess 16 at the rear of which is a transverse plate 17 through which may be inserted the screw 18 to secure the housing 15 in place.

Pivotally mounted in this housing at 19 are a pair of latch members 20 of similar shape, except at their rear ends one is provided with a tooth 21 and the other with a groove or valley 22 in which the tooth 21 is engaged, so that the latch members when moved will move in opposite directions and the movement of one will effect the movement of the other. These latch members are urged toward each other about their pivots 19 by any suitable means such as the spring 23, and normally rest upon the plate 17, the upper and lower edges of which

serve as stops to limit the movement of the latch members under influence of the spring. The outer ends of the latch members are provided with cam surfaces 24 so that they may be automatically spread apart by the movement of a keeper therebetween, and behind these surfaces are hooks 25 to engage with and secure the keeper in place, as will be hereinafter described.

Mounted upon the inner face of the door 10 is a casing or housing 30, which in form and appearance is similar to the usual rose mounted upon the outside of the door. The housing is of slightly greater depth than the average rose so as to contain the latch mechanism to be hereinafter described. Projecting toward the edge of the door from the housing 30 is an L-shaped keeper or latch engaging member 31, the forward leg 32 of which extends across the edge of the door to be secured thereto by the screw 33. The part of this member designated by the numeral 31 is spaced from the door and is designed to enter the recess 16 between the latch members 20 and by engagement with the cam surfaces 24 force these latch members apart in order that when the member 31 has reached the position beyond the latch hooks 25 the latter may be brought together by the spring 23 to engage the keeper and hold the door in closed position.

Means for moving the latch members 20 to position to disengage keeper 31 will now be described. Mounted in an opening in the rose or case 30 is a handle member 34 within which is received a non-circular spindle 35 mounted within a bore 36 through the door, with sufficient clearance for rotation of the spindle. Upon the end of the handle 34 within the rose is an annular enlargement 37 which, when the rose is secured to the door by the screw 38, will hold the handle in place.

Mounted non-rotatably upon the spindle adjacent the enlargement 37 is a rollback 39 of the form shown more especially in Fig. 5. This rollback has a non-circular opening which slidably but snugly fits the spindle and is provided adjacent its forward end with a lug 40 received in a somewhat elongated opening 41 in a latch operating member 42.

The shape of the latch operating member 42 is shown more particularly in Figs. 3 and 4. Adjacent its rear end this member is pivoted upon a rivet 43 in the rose by means of an elongated slot 44, so that the member 42 will enjoy a slidable as well as a pivotal motion within the housing. Adjacent its intermediate portion, the member 42 is provided with a slot 45 through which the spindle 35 passes with sufficient clearance above and below the spindle to permit rotation of the latch-operating member about its pivot 43. Adjacent the rear side of the slot 45 is a recess 46 adapted to snugly receive the spindle when the member 42 is moved forwardly or to the right, as shown in Fig. 5, in which position the latch-operating member 42 will be locked against movement. This result will be obvious when it is considered that this member moves about the pivot point 43 and therefore must swing relatively to the spindle 35. When it is moved to the position shown in Fig. 5 it is locked to the spindle and therefore cannot be moved by the lug 40 of the rollback 39. The member 42 projects at its rear end from the housing 30 and is there provided with a turned end portion 47 to be manually engaged by the fingers, so that it may be reciprocated to locked or unlocked position.

At its forward end the member 42 is provided with laterally turned latch engaging flanges 48 adapted when the door is closed, as shown in Fig. 1, to lie between the forward ends of the latch members 20. It will be apparent that when the latch-operating member 42 is swung to the position shown in Fig. 3, the latch members 20 will be spread apart so that they will no longer engage the keeper or latching member 31, and the door will be free to open. Due to the connection at 21 and 22 between the latch engaging members movement of one of these members will effect movement of the other, and therefore the spindle and latch-operating member may be turned in either direction to effect the disengagement of the latch members from the keeper.

In order to maintain the rollback 39 and latch engaging member 42 in their neutral positions, springs 50 and 51 are provided, which springs react at one end against a part of the housing 30 and have their other ends bent into V-shaped form, as shown at 52 and 53, and engaged respectively with the lower and upper surfaces of the rollback and latch-engaging member which are of substantially equal width at this point. It will be apparent from inspection of Figs. 2 and 3, that regardless of the direction in which the rollback is moved both of these springs resist this movement and tend to restore the parts to their neutral positions, for if the latch-engaging member is swung upwardly as shown in Fig. 3, one spring acts against this member tending to move it downwardly while the other spring acts against the edge of the rollback tending to restore it to its original position. The reverse action takes place when the rollback is moved in the opposite direction. An inner closure member or cover plate 54 may be disposed at the inside of the rose to hold the parts in assembled relation and secured thereto by means of the eyelet 43 and the additional eyelets 55 and 56, which support the springs 50 and 51. The latch operating member 42 is provided with V-shaped ridges 53a against which the ends 52 and 53 of the springs 50 and 51 engage to hold this member either in operative position, as shown in Figs. 2 and 3, or in inoperative position, shown in Fig. 5. This engagement is, of course, releasable upon pressure in either direction on the member 47 to permit the movement of the member 42 to the desired position.

The spindle 35 projects from the outer face of the door, as shown in Fig. 4, and mounted on this end of the spindle is a handle 58 rotatably mounted in the rose 59 and held in assembled position therewith by means of the annular enlargement 60 which lies between the rose 59 and an inner plate 61. The rose may be secured in position by means of the screw 62.

The spindle 35 is not secured to either of the handles 34 or 58 and, therefore, adjustment is freely provided for these handles longitudinally of the spindle, to provide for doors of different thicknesses. In order to prevent longitudinal movement of the spindle, a spring metal plate 63 surrounds the spindle at the outside of the door and has inwardly bent edges 64 received in shallow grooves 65 within the spindle. This member may be adjusted on the spindle after the latter is inserted in the door in the proper position and after the outer rose has been secured to the door the spindle will, as is obvious, be prevented from longitudinal movement.

It will be obvious that the latch herein de-

scribed is of very simple construction and may be secured upon a door with a minimum of labor and without mortising. At the same time it will have the appearance of a mortised latch as most of the mechanism on the door is housed within the usual roses.

It will also be apparent that rotation of either of the handles **34** or **58**, regardless of the direction of rotation, will by means of the rollback **39** move the latch-engaging member **42** about its pivot **43**, and engaging one of the latch members **20** will effect movement of both of these members in a direction to spread them until the keeper **31** will be released and the door permitted to open.

While I have shown and described a preferred embodiment of my invention, it will be understood that it is not to be limited to all of the details shown, but is capable of modification and variation within the spirit of the invention and within the scope of the appended claims.

What I claim is:

1. In a door latch, a housing to be attached to the door, a second housing to be attached to the jamb, a pair of latch members movably carried by the jamb housing and having spaced ends, said first housing having an integrally formed latch engaging member in position to lie between and be engaged by the spaced ends of the latch members when the door is closed, a latch operating member pivoted within the door housing and projecting therefrom to a point between the ends of the latch members to move the latter to disengaging position.

2. In a door latch, a housing to be attached to the door, a second housing to be attached to the jamb, a pair of latch members movably carried by the jamb housing and having spaced ends, a latch engaging member formed integrally with the first housing and positioned to be engaged by the spaced ends of the latch members when the door is closed, a latch operating member pivoted within the door housing, and said latch members being interconnected for movement in opposite directions, and said operating member projecting from its housing to engage one of said latches and move both thereof.

3. In a door latch, a housing to be attached to the door, a second housing to be attached to the jamb, a pair of latch members movably carried by the jamb housing and having spaced ends, a latch engaging member carried by the first housing in position to be engaged by the spaced ends of the latch members when the door is closed, a latch operating member carried by the door housing, said latch operating member being pivoted to the door housing and having a slot at an intermediate portion thereof, a spindle passing through said slot, and a rollback carried on said spindle and connected to said latch operating member to actuate the same.

4. In a door latch, a housing to be attached to the door, a second housing to be attached to the jamb, a pair of latch members movably carried by the jamb housing and having spaced ends, a latch engaging member carried by the first housing in position to be engaged by the spaced ends of the latch members when the door is closed, a latch operating member carried by the door housing, said latch operating member being pivoted to the door housing and having a slot at an intermediate portion thereof, a spindle passing through said slot, and a rollback carried on said spindle and connected to said latch operating member to actuate the same, and said latch operating member being slidably movable on its pivot to a position wherein it is locked against pivotal movement.

5. In a screen door latch, supporting members adapted for attachment to the door and door casing respectively, latch members having hook ends carried by one of said supporting members and separable one from the other by the insertion of a keeper therebetween, means carried by the other supporting member to extend between said latch members and engage the hook end of one thereof to move both members to keeper-disengaging position.

6. In a screen door latch, supporting members adapted for attachment to the door and door casing respectively, latch members having hook ends carried by one of said supporting members and separable one from the other by the insertion of a keeper therebetween, and means carried by the other supporting member to extend between said latch members and engage the hook end of either thereof selectively and move both members to keeper-disengaging position.

7. In a screen door latch, supporting members adapted for attachment to the door and door casing respectively, latch members having hook ends carried by one of said supporting members and separable one from the other by the insertion of a keeper therebetween, means carried by the other supporting member to engage the hook end of either of said latch members selectively and move both thereof to keeper-disengaging position, said means comprising a pivoted latch-operating member, a spindle, and a rollback carried by the spindle and engaged by said operating member.

8. In a screen door latch, supporting members adapted for attachment to the door and door casing respectively, latch members having hook ends carried by one of said supporting members and separable one from the other by the insertion of a keeper therebetween, means carried by the other supporting member to engage the hook end of either of said latch members selectively and move both thereof to keeper-disengaging position, said means comprising a pivoted latch-operating member, a spindle, and a rollback carried by the spindle and engaged by said operating member, said operating member being slidably movable to a position wherein it is locked against pivotal movement.

9. In a screen door latch, supporting members adapted for attachment to the door and door casing respectively, latch members having hook ends carried by one of said supporting members and separable one from the other by the insertion of a keeper therebetween, means carried by the other supporting member to engage the hook end of either of said latch members selectively and move both thereof to keeper-disengaging position, said means comprising a pivoted latch-operating member, a spindle, and a rollback carried by the spindle and engaged by said operating member, a pair of springs acting in opposite directions on said rollback to normally hold it in a neutral position, and both said springs acting to resist movement of the rollback from said position.

10. In a screen door latch, supporting members adapted for attachment to the door and door casing respectively, latch members having hook ends carried by one of said supporting members and separable one from the other by the insertion of a keeper therebetween, means carried by the other supporting member to engage the hook end of either of said latch members selectively and

move both thereof to keeper-disengaging position, said means comprising a pivoted latch-operating member, a spindle, and a rollback carried by the spindle and engaged by said operating member, said operating member being slidably movable to a position wherein it is locked against pivotal movement, a pair of springs acting on said rollback to hold it in a neutral position, and said springs releasably holding said latch-operating member against sliding movement.

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