

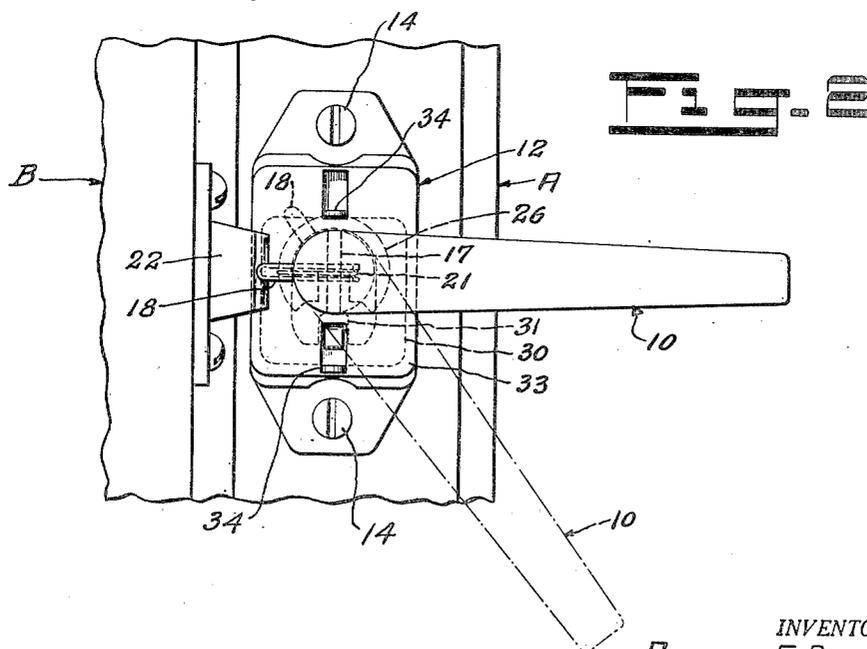
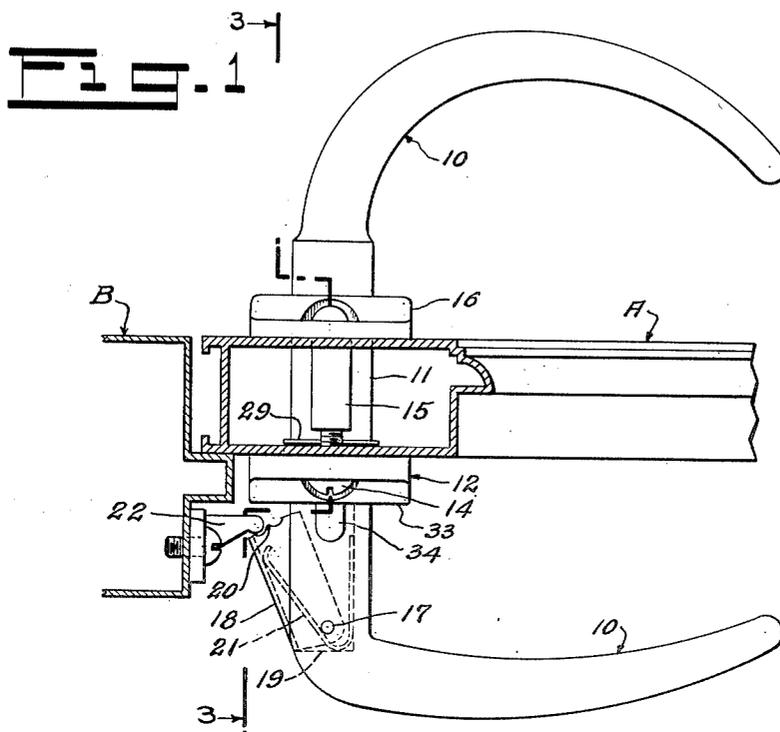
April 26, 1955

A. F. BEHNKE
SCREEN DOOR LATCH

2,707,121

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2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 3

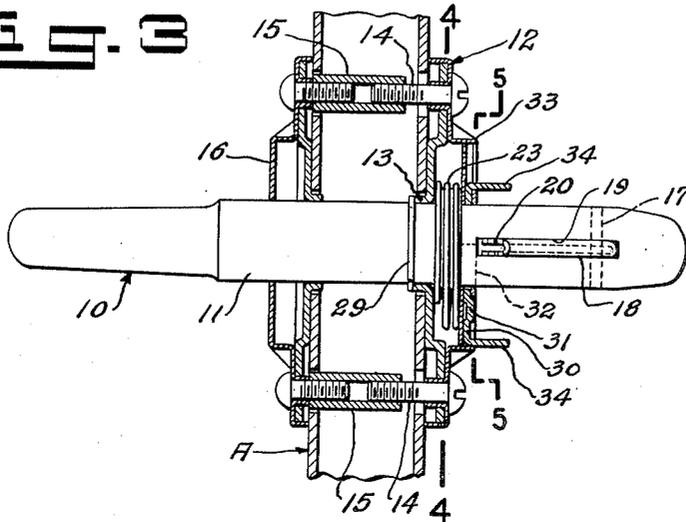


Fig. 4

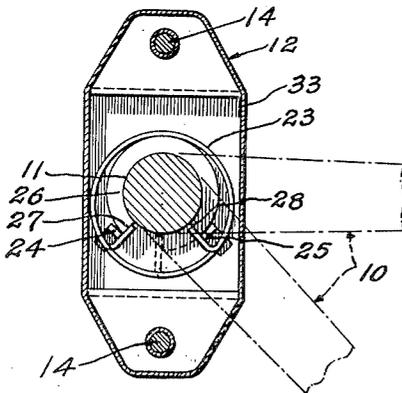
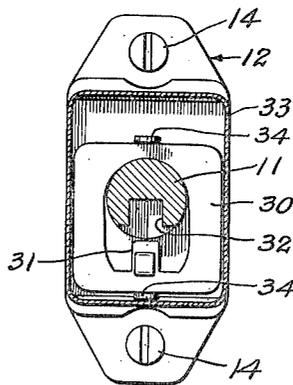


Fig. 5



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SCREEN DOOR LATCH

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7 Claims. (Cl. 292—228)

This invention relates to a latch that is adapted for use in screen or storm doors, and more particularly to a latch of the class that is shown in Ledin Patent No. 2,435,180.

As a feature of my invention, I have provided in a latch of this general class a construction that requires for the mounting of the latch a relatively small opening in the stile of the door. In the Ledin patent, the hand grip is mounted to swing about a vertical axis located within the door so that the pivot shaft and its related parts, as well as the characteristic horizontal swinging movement of the handle, require that an opening of considerable size be formed in the door. I have accomplished a reduction in the size of this opening by removing from that part of the latch that is mounted within the door all of the parts excepting the spindle portion of the hand grip, and by arranging this spindle portion to rotate about its own horizontal axis.

As in the Ledin patent, the latchbolt is mounted upon the hand grip outwardly of one face of the door so as to coact with a strike, but instead of moving horizontally away from the strike during the operation of the hand grip, the latchbolt according to my invention now rotates bodily with the hand grip about a horizontal axis so as to move away from coaction with the strike. Because of the relatively small opening that is required for mounting my novel latch in a door, the latch is particularly well adapted for application to hollow metal door stiles of relatively thin section, such as those commonly found in combination doors that are assembled from extruded sections. My improved latch is equally suitable, however, for doors of wood or other construction.

I have thus outlined rather broadly the more important features of my invention in order that the detailed description thereof that follows may be better understood, and in order that my contribution to the art may be better appreciated. There are, of course, additional features of my invention that will be described hereinafter and which will form the subject of the claims appended hereto. Those skilled in the art will appreciate that the conception on which my disclosure is based may readily be utilized as a basis for the designing of other structures for carrying out the several purposes of my invention. It is important, therefore, that the claims be regarded as including such equivalent constructions as do not depart from the spirit and scope of my invention, in order to prevent the appropriation of my invention by those skilled in the art.

Referring now to the drawings:

Fig. 1 is a plan view of my novel screen door latch and its coacting strike as they appear when installed. Fig. 2 is a front view of the same. Fig. 3 is a longitudinal sectional view taken on the line 3—3 of Fig. 1. Fig. 4 is a cross-sectional view taken on the line 4—4 of Fig. 3. Fig. 5 is a cross-sectional view taken on the line 5—5 of Fig. 3.

In order to afford a clear understanding of the invention, I have shown my novel screen door latch in the drawing as assembled in a door A that closes against a door frame B. The hand grip that I utilize in my invention is designated by the numeral 10 and is similar in form to the hand grip shown in the above-mentioned patent, but with certain important changes that will appear as the description proceeds. The hand grip 10 may be formed in one piece or may be assembled from two or more parts, as may be found convenient for manufacturing purposes, but is nevertheless a single integral

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member when complete. The central part of the hand grip 10 that extends through the door A constitutes a spindle 11, at least a part of which is cylindrical in form, and the proportions of the hand grip are such that the hand grip can be inserted into a door through apertures that are but little larger than the spindle 11, as will be observed in Fig. 3.

For supporting the hand grip 10 in the door A, a mounting member 12 is preassembled with the spindle 11. This mounting member has a central bearing 13 in which the spindle 11 turns, and, when installed in the door, is assembled through screws 14 and female screws 15 with an outer escutcheon 16. The outer escutcheon 16 provides an outer bearing for the spindle 11 and, because of the screws 14 and 15, is adjustable axially of the spindle 11 according to the thickness of the particular door in which the latch is installed. Some distance away from the mounting member 12 on the inner end of the spindle 11 is a vertical pivot pin 17 upon which a latchbolt 18 swings in such a manner as to move toward and away from the horizontal axis of the spindle. The latchbolt 18 extends from the pivot pin 17 toward the door and preferably is supported by the pin within a longitudinal slot 19 in the spindle. Upon the end of the latchbolt 18 toward the door is a latching surface 20, and this surface may be serrated as shown, although this is not essential. A latchbolt spring 21 within the slot 19 presses the latchbolt outwardly of the slot, thereby placing the latchbolt and its latching surface 20 in position to coact with a strike 22 mounted on the door frame.

It will be appreciated, of course, that the latchbolt 18 will normally be held in a horizontal plane in which it may coact with the strike 22, and in order to accomplish this I provide within the mounting member 12 a coil spring 23, shown in Figs. 3 and 4. This spring 23 encircles the spindle 11 and is retained in a predetermined position by inturned ends that engage limiting lugs 24, 25 on the mounting member 12. A flange 26 extends part way around the spindle 11, preferably about 270°, and the ends of this flange form abutments 27, 28 that act selectively upon either of the inturned ends of the spring 23 so that the spindle 11 when rotated in either direction from a medial position will always be returned by the spring to this position. It will be observed at this point that the flange 26 coacts with a snap ring 29 in a groove in the spindle to retain the spindle in a predetermined axial position relatively to the mounting member 12. Through the described arrangement, the latchbolt 18 will rotate integrally with the hand grip 10 about the horizontal axis of the spindle 11 so as to move the latchbolt toward and away from the position in which it coacts with the strike 22. This rotation may occur in either direction, and the spring 23 will always return the latchbolt to its normal horizontal position.

I may provide also a locking slide 30 in the mounting member 12, this slide having a dog 31 adapted to enter a recess 32 in the spindle 11 so as to prevent rotation of the spindle and consequent movement of the latchbolt 18 away from its latching position. In the preferred construction, the mounting member 12 has as a part thereof a cover plate 33 that encloses both the coil spring 23 and the locking slide 30, and that has slots through which projects ears 34 that serve as means for operating the slide 30.

It is believed that the construction of my novel screen door latch will now be clearly apparent, and that its operation and advantages will be clearly understood by those skilled in the art.

I now claim:

1. In a lock of the class described, a hand grip, a part on said hand grip through which the hand grip is mounted at one side of a door to rotate relatively to the door on a horizontal axis perpendicular to the door, a latchbolt pivoted on said hand grip part at a pivot point displaced outwardly from the door and extending from said pivot point at one side of said horizontal axis toward said door, a latching surface formed on the portion of said latchbolt between said door and said pivot point and coacting with a strike on the door frame through movement of said latchbolt about said pivot point relatively to said hand grip, and surfaces whereby the hand

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grip rotates said latchbolt bodily about said horizontal axis to move said latching surface into and out of coaction with said strike.

2. In a lock of the class described, a hand grip, a mounting member applied to a door, a spindle portion through which the hand grip is mounted to rotate on said mounting member relatively to said door on a horizontal axis perpendicular to the door, a latchbolt, pivot means mounting said latchbolt on said spindle portion whereby said latchbolt rotates integrally with said hand grip on said horizontal axis, a latching surface formed on a portion of said latchbolt, a spring pressing said latchbolt relatively to said spindle portion to move said latching surface into contact with a strike on the frame relatively to which said door is mounted, said latchbolt moving on its pivot means through contact with said strike as when said door swings to closed relation to said frame, and said latching surface rotating vertically away from contact with said strike through rotation of said latchbolt with said spindle portion on said horizontal axis.

3. In a lock of the class described, a hand grip at one side of a door rotating relatively to the door on a horizontal axis perpendicular to the door, a latchbolt, a pivot mounting said latchbolt on said hand grip to move pivotally relatively to said hand grip about an axis that is transverse to the horizontal axis of said hand grip and displaced outwardly from the door, said latchbolt extending from said transverse axis toward said door, a latching surface formed on the portion of said latchbolt between said door and said pivot, and a spring pressing said latchbolt on its pivot away from said horizontal axis for moving said latching surface into contact with a strike on the frame relatively to which the door is mounted, said latchbolt rotating integrally with said hand grip on said horizontal axis to move said latching surface into and out of coaction with said strike.

4. In a lock of the class described, a mounting member applied to a door, a hand grip at one side of said door, means mounting said hand grip for rotation on said mounting member relatively to the door on a horizontal axis perpendicular to the door, an opening in said hand grip outwardly of the door, a latchbolt, means pivotally mounting said latchbolt on said hand grip in said opening for pivotal movement relatively to said hand grip transversely to said horizontal axis and for rotation integrally with said hand grip about said horizontal axis, a latching surface formed on said latchbolt, a spring pressing said latchbolt outwardly of said opening in said hand grip to move said latching surface into contact with a strike on the frame relatively to which said door is mounted, said latchbolt moving on its mounting means relatively to said hand grip through contact with said strike as when said door moves to closed relation to said frame, and said latching surface moving away from said strike through rotation of said latchbolt with said hand grip on said horizontal axis.

5. In a lock of the class described, a hand grip at one

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side of a door rotating relatively to the door on a horizontal axis perpendicular to the door, a latchbolt, pivot means mounting said latchbolt on said hand grip for movement relatively to said hand grip about an axis displaced outwardly from the door, said latchbolt extending from said pivot axis toward said door, a latching surface formed on the portion of said latchbolt between said door and said pivot axis, a spring pressing said latchbolt relatively to said hand grip to move said latching surface into contact with a strike on the door frame, said latchbolt rotating integrally with said hand grip about said horizontal axis to move said latching surface away from said strike, and a second spring rotating said hand grip on its horizontal axis whereby to return said latching surface to position for contact with said strike.

6. In a lock of the class described, a hand grip, means mounting said hand grip at one side of a door for rotation relatively to the door on a horizontal axis perpendicular to the door, a latchbolt, pivot means mounting said latchbolt on said hand grip at said one side of the door for pivotal movement relatively to said hand grip about an axis transverse to said horizontal axis and for rotation integrally with said hand grip about said horizontal axis, a latching surface formed on said latchbolt, a spring pressing said latchbolt outwardly away from said hand grip on said pivot means whereby said latching surface coacts with a strike on the door frame, said latching surface moving out of coaction with said strike through rotation of said latchbolt with said hand grip on said horizontal axis.

7. In a lock of the class described, a mounting member applied to a door, a spindle rotating on said mounting member relatively to said door on a horizontal axis perpendicular to the door, a latchbolt, pivot means displaced outwardly from said door mounting said latchbolt on said spindle whereby said latchbolt swings relatively to said spindle about an axis transverse to said horizontal axis and rotates integrally with said spindle about said horizontal axis, a latching surface on a portion of said latchbolt between said transverse axis and said door, a spring pressing said latchbolt relatively to said spindle about said transverse axis to move said latching surface into contact with a strike on the frame relatively to which said door is mounted, said latchbolt moving on its pivot means through contact with said strike as when said door moves to closed relation to said frame, and said latching surface moving away from said strike through rotation of said latchbolt with said spindle on said horizontal axis.

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