Nov. 27, 1962 G. J. FRIEDMAN 3,065,624

DOOR LOCK

Filed Oct. 6, 1960 2 Sheets-Sheet 1

FIG. 1

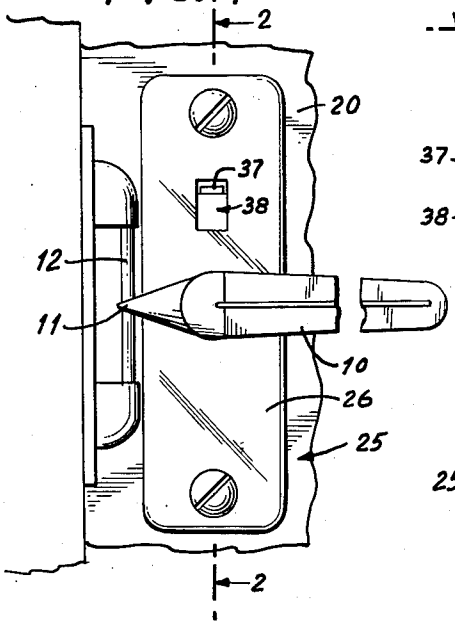


FIG. 2

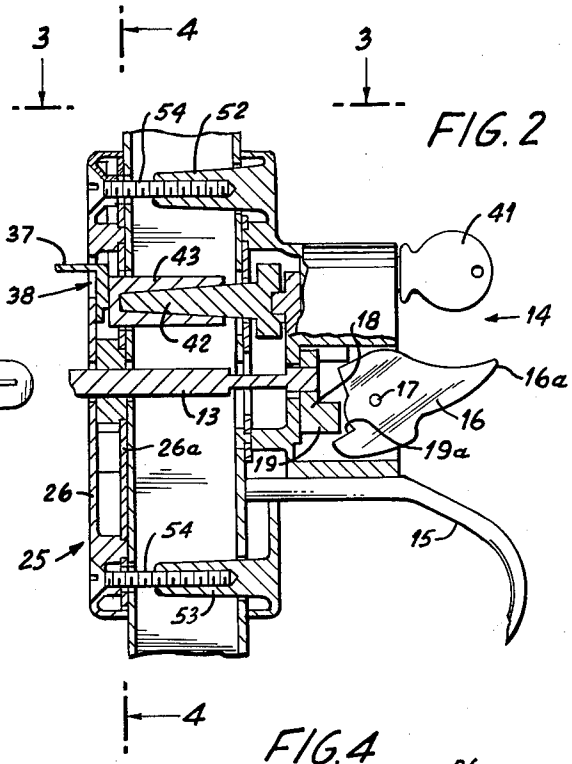


FIG. 3

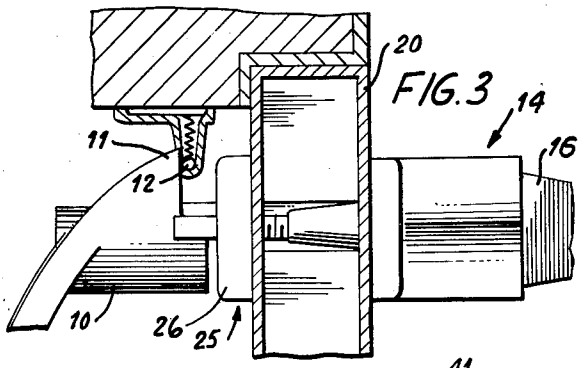


FIG. 4

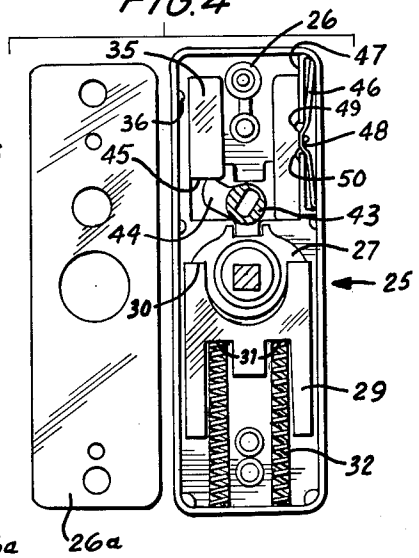
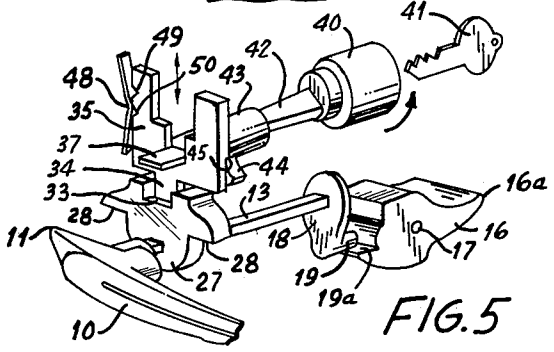


FIG. 5



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FIG. 6

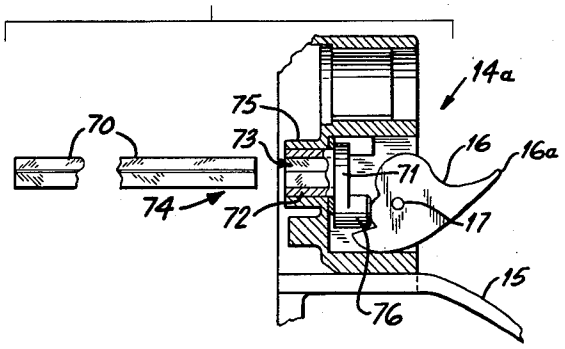


FIG. 7

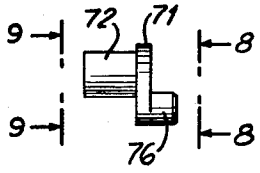
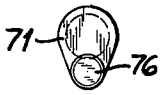


FIG. 8



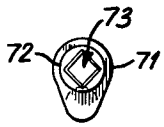


FIG. 9

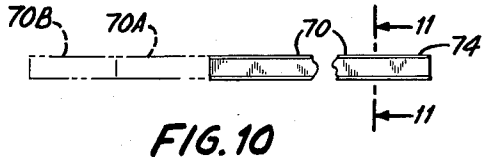


FIG. 10

FIG. 11



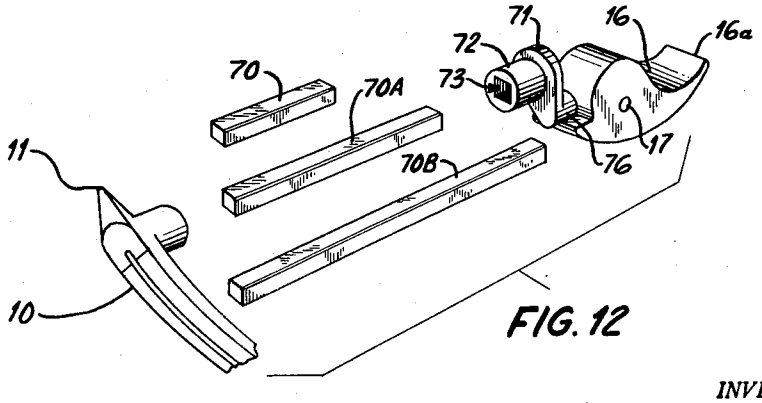


FIG. 12

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DOOR LOCK

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Filed Oct. 6, 1960, Ser. No. 60,985
4 Claims. (Cl. 70—153)

This application is a continuation-in-part of my application for Sectional Lock Set, filed August 24, 1959, Serial No. 835,460, now abandoned, and Door Closure, filed January 20, 1960, Serial No. 3,564, now abandoned.

My invention relates to a new type of door closure particularly one having a thumb operated latch.

It is an object of my invention to provide such a door closure with a thumb operated latch which is fool-proof, easy to install and simple to operate.

A further object of my invention is to provide such a door closure especially suited to be adapted for use on outside screen doors and storm doors which are in common use today. Further objects and advantages of my invention will appear in the drawings and specifications hereinbelow.

I attain the objects and advantages of my invention in the door closure illustrated in the accompanying drawings in which:

FIG. 1 is a side plan view of my device, mounted on the inside of door and door frame with portions of the handle, door and frame cut away;

FIG. 2 is a cross-section along lines 2—2 in FIG. 1;

FIG. 3 is a top plan view as seen through a cross-section of the door along the lines 3—3 in FIG. 2, with part of the door and handle cut away and a portion of the strike bar housing shown in section;

FIG. 4 is an inside plan view of the inner frame of the device with the cover plate removed and placed alongside;

FIG. 5 is a perspective of some of the moving parts of the door closure to show their relative positions;

FIG. 6 is a portion of a view similar to FIG. 2 showing an alternate form of construction, comprising shaft 70 and crank fitting 71;

FIG. 7 is an elevational view of crank fitting 71;

FIG. 8 is an elevation of crank fitting 71 as seen along lines 8—8 in FIG. 7;

FIG. 9 is an elevation as seen along lines 9—9 in FIG. 7;

FIG. 10 is an elevation of shaft 70;

FIG. 11 is a cross-sectional view of shaft 70 and,

FIG. 12 is an exploded perspective of the door handle 10, the shaft 70, the crank fitting 71, and the thumb operated lever 16, showing how shafts of relatively different lengths, such as 70A and 70B may be used in place of shaft 70, to adapt the door closure to doors of different thicknesses.

Similar numerals throughout the several views of the drawings refer to similar parts of the invention.

The door closure operates on a principle comprising a door handle 10 having a latch portion 11 adapted to engage a strike bar 12. The latch portion 11 may be disengaged from the strike bar 12 by rotating the door handle approximately 45 to 90 degrees. The device is constructed around a shaft 13 which has keying means, such as a square cross-section, which is keyed to the components to which it is connected, as will be described hereinbelow.

The shaft 13 is connected to an outer assembly frame 14 which comprises a handle 15, a thumb operated lever 16, pivoted on a shaft 17, and a crank 18 having an operating bearing 19 at one of its ends and being connected to the shaft 13 at its other end. The outer assembly frame 14 fits on the outer side of the door 20.

The mechanism is contained in an inner frame assembly 25, in a housing or frame 26, which is attached to the inner side of the door 20, and which fits over the shaft 13. A stop ferrule 27 goes over the shaft 13 and fits within the frame 26. The stop ferrule 27 has a pair of shoulders 28. A stop slide 29 slides within the frame 26, and has stop faces 30 and spring seats 31, and is forced by springs 32 against the stop ferrule 27.

The spring forced pressure of the stop slide 29 against the stop ferrule 27 maintains the shaft 13 in position as shown in FIG. 4 of the drawings. The frame 26 has a cover plate 26*a*.

If either the thumb operated lever 16 or the handle 10 is actuated to disengage the latch 11, it causes the stop ferrule 27 to rotate on the shaft 13 and press against the stop slide 29 depressing the springs 32. As soon as the pressure is removed from the thumb lever 16 or the door handle 10, the shaft 13 is returned to normal position by the stop slide 29. When the shaft 13 is maintained in normal position as aforesaid, the operating bearing 19 of the crank 18 will normally depend in a downward position as shown in FIG. 2 of the drawings and will rest on a shoulder 19*a* of the thumb operated lever 16. Finger pressure on the outer part 16*a* of the thumb operated lever 16, in a downward direction, will cause the shoulder 19*a* to move up and the bearing 19 will be forced upward either to the left or to the right, and cause the crank 18 to rotate the shaft 13 in one direction, or another, respectively. It is immaterial in which direction the shaft is rotated by this means because either way the handle 10 will rotate and the latch portion 11 will move away from the strike 12 to permit the door 20 to be swung open.

I provide the following locking means: At the top of the stop ferrule 27, there is a seat 33 which receives the tip 34 of a lock catch mechanism 35.

The lock catch mechanism 35 slides on beads 36 inside the frame 26 and it is actuated by a finger control lever 37 which protrudes from the frame 26 through the opening 38. The lever 37 may be moved up and down within the limits of the opening 38 pushing the lock catch mechanism 35 up and down and moving its tip 34 within the seat 33 of the stop ferrule 27 and out again thereby locking and unlocking the lock.

There is a retaining spring 46 which is seated within a pocket 47 within the frame 26, and has a pressure point 48 which bears against the lock catch mechanism 35 and fits within notches thereof 49 and 50, respectively, as the mechanism 35 is moved up and down. This holds the lock catch mechanism 35 in place in either the up or down position.

I also provide means to unlock the closure from outside the door. These means comprise a tumbler lock 40, a removeable, operating key 41, a male operating rod 42, and a female operating tube 43, having a camming projection 44. The lock catch mechanism 35 is provided with a shoulder 45 which may be engaged by the camming projection 44.

The tumbler lock 40 and the male connecting rod 42 are comprised as components of the outer assembly frame 14 and the female connecting tube 43 and cam 44 are components of the inner frame assembly 25. The outer assembly 14 has four projections, namely, an upper screw receiving portion 52, a lower screw receiving portion 53, the male connecting rod 42 and the shaft 13. The door closure is installed by drilling four relatively small holes in a door 20 at proper distances apart to accommodate the elements 52, 42, 13 and 53 are then inserted through the mentioned holes from the outside of the door and the inner assembly 25 with its female connecting tube 43 is placed against the inside of the door with the connecting tube 43 inserted into the hole in which the male connecting rod 42 has been inserted. These elements (42

and 43) will then mesh to make a connecting linking means between the tumbler lock 40 and the cam 44.

Screws, or bolts 54, are then inserted into the upper 52, and lower 53, screw receiving means to fasten the door closure components to the door 20. In this position the shaft 13 will of course extend through the frame 26 and will be keyed through the square center of the stop ferrule 27 and through the center of the handle 10. Thus, the shaft 13 may be operated either by the handle 10 inside the door or the thumb-piece 16 outside the door.

The handle 10 may be swedged on to the frame 26 so that when the frame 26 is placed against the door and against the outer frame 14, a square cross-section center of the handle will automatically fit over the square cross-section shaft 13. This may be accomplished because the relative measurements of the width of the shaft and the opening in the handle correspond so that the handle will fit over the shaft.

The door may be locked or unlocked from the inside by means of the lever 37. In order to lock the door from the outside of the door frame, it is necessary, first, to lock the door closure by sliding down the lever 37 and seating the tip 34 in the seat 33 of the lock catch mechanism 35. This makes it impossible to turn the door handle 10 and it also prevents turning the shaft 13 by means of the outside thumb-operated lever 16. The door is thus locked from the inside while it is ajar. It is then pulled to from the outside. The latch 11 will then engage the strike 12. This effectively locks the door 20 with the person, or operator, outside the building.

To open the door 20 from the outside, the key 41 is inserted in the lock 40 and turned. This turns the male operating rod 42, the female operating tube 43, and causes the camming projection 44 to move up against the shoulder 45, which is provided to raise the lock catch mechanism 35 to raise tip 34 from the seat 33, thereby placing the door closure in an unlocked condition. It is then a simple matter to depress the thumb-operated lever 16 and disengage the latch 11 from the strike 12, as set forth hereinabove.

In an alternate form of my invention, which is shown in FIGS. 6 through 12 inclusive of the drawings, the shaft 13 and the crank 18, the combination of the shaft 13 and the crank 18 are replaced with a separable shaft 70 and a separable crank fitting 71. The purpose of making this modification to the invention is to provide a construction in which shafts such as shaft 70, shaft 70A and shaft 70B of different lengths may be selectably and easily incorporated in the installation procedure for the door closure, so that it will be a simple matter to accommodate the closure to doors of differing thicknesses. Thus, in the alternate form of the invention, the shaft 70 is not permanently connected to the crank fitting 71, in the manner of the shaft 13 and the crank 18, but the components are separable so that a shaft of varying lengths, such as 70, 70A or 70B can be shifted to the crank fitting 71. In this form of the invention, the outer assembly frame 14*a* is complete without the shaft 70. The crank fitting 71 has a portion 72 having a hollow keyed interior 73 into which an end 74 of the shaft 70 may be slide fitted. The end 74 is keyed to the interior 73 of the crank fitting portion 72. In the components listed in the drawings, the keying means is the square cross-section of the shaft 70 and the interior 73 of the crank fitting 71. The crank fitting portion 72 is adapted to slide fit into a circular extension 75, so that it will rotate when the operating bearing 76 is actuated by the thumb operated lever 16.

It will readily be seen that when the outer assembly frame 14*a* is completely assembled, with all of its components in place, a shaft 70, 70A, 70B or of any length may be fitted into the crank fitting 71. This alternate form of door closure is installed in the same manner in the first described form of closure, with the exception that the shaft of desired length is first fitted into the outer

assembly frame 14*a* prior to the final installation of the closure on the door.

The advantage of the alternate form of this invention is that the closure may be sold with alternate shafts 70 of different lengths, such as 70A and 70B to fit varying door thicknesses. A door closure with a fixed shaft, such as shaft 13 would be of limited application.

While I have described the preferred forms of my invention, there may be other forms in which it may be constructed without leaving the scope and spirit of the invention, and I do not want to be limited to the exact details as set forth herein, but wish to be protected for all constructions within the limitation of the claims following.

Wherefore, I claim:

1. A closure for a door comprising an outer assembly and an inner assembly; said outer assembly having a frame placed outside the outer side of the said door, comprising a shaft with a crank, said shaft extending from the said outer assembly frame through an opening in the said door; a lever associated with the said outer assembly frame having a portion adapted to engage the said crank, and a key operated means associated with said frame comprising a projection extending from the said outer assembly frame through an opening in the said door, toward said inner assembly; said inner assembly having a frame placed outside the inner side of said door, comprising a stop ferrule with a seat, associated with resilient means to maintain the said stop ferrule in normal position, a door handle with a latch portion, a lock catch mechanism having an operating tip adapted to be removably placed in the said seat, a first operating means comprising means extending from the said inner assembly frame to operate the lock catch mechanism, and a second operating means to operate the lock catch mechanism, comprising a projection extending from the said inner assembly frame and through an opening in the said door, toward the said outer assembly; said stop ferrule having central keying means and said shaft having keying means corresponding with the keying means of the said stop ferrule and being adapted to be in contacting relation therewith, said projection of said second mentioned operating means having keying means and said projection of said key operated locking means having keying means to fit the keying means of the said projection of the said second mentioned operating means; and means to secure the said outer assembly frame and the said inner assembly frame to the outer and inner sides, respectively, of a door.

2. The device as defined in claim 1, in which the lock catch mechanism has a shoulder and the second mentioned operating means, a camming projection, which is adapted to engage and bear against the said shoulder.

3. The device as defined in claim 1 in which the said shaft with a crank, comprises a shaft slide-fitted into a crank fitting associated with keying means to provide for keyed rotation of the said shaft and the said crank fitting.

4. The device as defined in claim 1 in which the said shaft with a crank, comprises a shaft slide-fitted into a crank fitting associated with keying means to provide for keyed rotation of the said shaft and the said crank fitting, in which the said lock catch mechanism has a shoulder and the said second mentioned operating means, a camming projection which is adapted to engage and bear against the said shoulder.

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