Nov. 4, 1941. F. LA MERE 2,261,652

DOOR FIXTURE

Filed Oct. 31, 1938 2 Sheets-Sheet 1

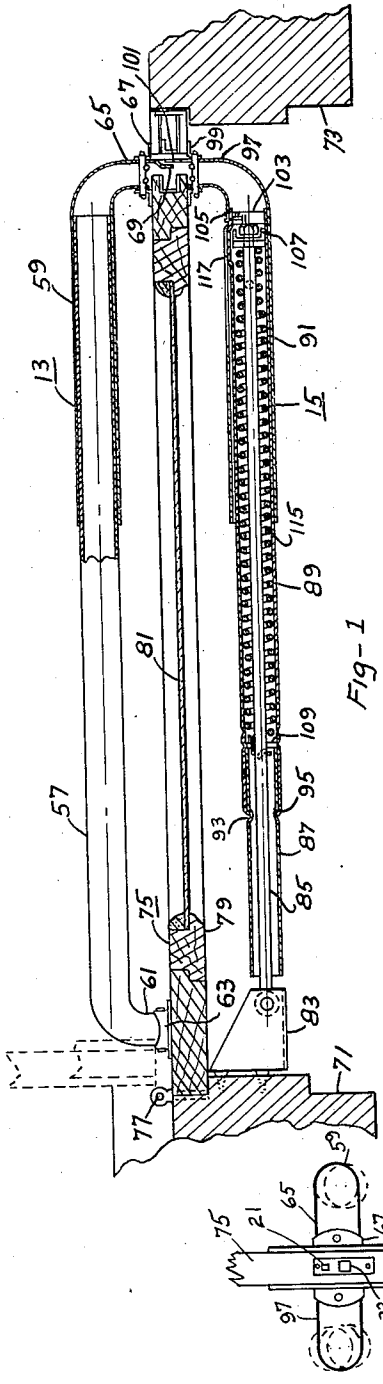


Fig-1

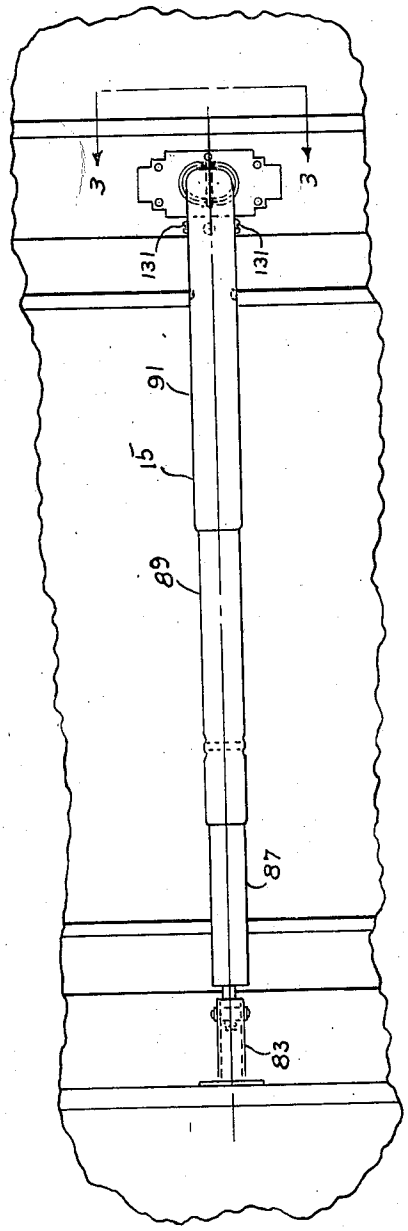


Fig-2

Fig-3

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DOOR FIXTURE

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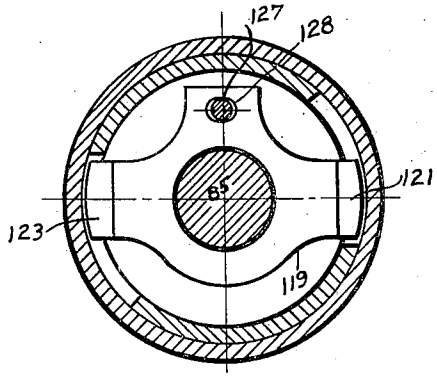


Fig-4

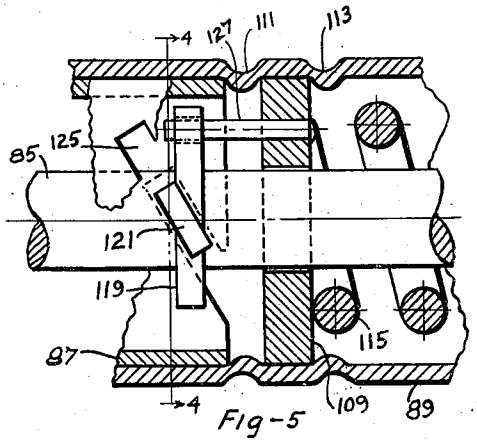


Fig-5

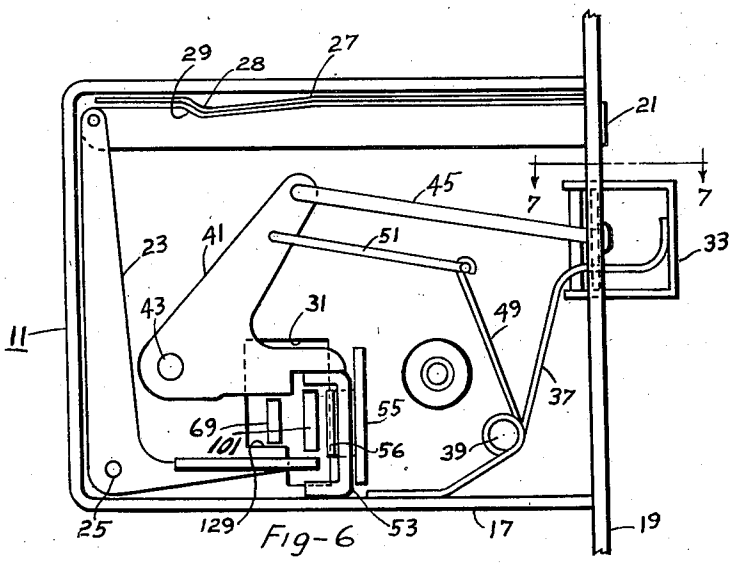


Fig-6

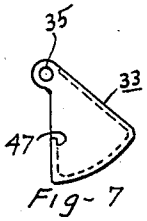


Fig-7

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UNITED STATES PATENT OFFICE

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DOOR FIXTURE

Frank La Mere, Minneapolis, Minn.

Application October 31, 1938, Serial No. 237,797

7 Claims. (Cl. 292—92)

My invention relates to door fastenings and to operating means therefor.

An object of my invention is to provide a relatively simple means for operating a door latch from either side of a door.

Another object of my invention is to provide a unitary means for causing locking and unlocking of a bolt, unlocking of a latch, for holding a door in partially opened position, for reclosing an opened door and for acting as a check against too sudden opening or closing of a door.

Another object of my invention is to provide a bolt and latch actuating means extendible across substantially the entire width of a door at the inside thereof and a latch-actuating means extendible across substantially the entire width of a door at the outside thereof, both means being pivotally mountable on a door.

Another object of my invention is to provide a relatively simple means for holding a door in a partially opened position, said means being actuable from the inside only of a door.

Other objects of my invention will either be clearly apparent from a description of that form of my invention now preferred by me or will be pointed out in the course of such description and will be set forth in the appended claims.

In the drawings,

Figure 1 is a view partially in plan and partially in horizontal section, of a door fixture embodying my invention and shown as applied to a door,

Fig. 2 is a view, in front elevation, of that part of my device mounted on the inside of a door,

Fig. 3 is a fragmentary view, in end elevation according to the line 3—3 of Fig. 2,

Fig. 4 is a view, in lateral section, showing particularly a door-holding gripping plate and the adjacent and surrounding tubes, taken on the line 4—4 of Fig. 5,

Fig. 5 is a fragmentary view in longitudinal section of a rod and tube structure showing the door-holding means.

Fig. 6 is a view showing the internal construction of the lock constituting a part of my invention, with the cover plate removed, and,

Fig. 7 is a fragmentary plan view showing a latch and taken on the line 7—7 of Fig. 6.

The main parts of the device embodying my invention are a lock 11, a view of the interior of which is shown in Fig. 6, an outside actuating member 13 and an inside actuating member 15, the latter two being shown more particularly in Fig. 1 of the drawings.

The lock 11 is provided with a casing 17 and a front plate 19 together with a cover which is not shown in the drawings since it is of the usual kind employed in locks which are countersunk in the body of a wooden door with the front plate 19 substantially flush with the swinging edge of the door. The lock includes a bolt 21, the outer end of which is guided in an opening in plate 19 and the inner end of which is pivotally connected to the upper end of a bell crank lever 23 which is pivotally mounted in the lock as at 25. The vertically extending leg of lever 23 may be made slightly longer than the substantially horizontally extending leg thereof in order that any movement of the outer end of the horizontal arm shall be somewhat magnified. The bolt 21 is yieldingly biased to unlocked position as by the cooperation of a leaf spring having a bent portion 28 normally fitting into a recess 29 in the upper edge of the bolt, the configuration of the spring and of the recess being substantially as shown in Fig. 6 of the drawings.

Both casing 17 and its cover are provided with registering openings 31 therein, which openings are of substantially rectangular outline but with their lower left hand corners filled in, as shown for one of the openings in Fig. 6. The lock includes also a latch 33 which may, for example, be of the shape shown in Figs. 6 and 7 and be pivotally mounted in suitable bearings within the lock by a pivot pin 35. A biasing spring 37 has a portion thereof wound around a fixed projection 39, one end engaging and abutting against the lower wall of the casing and the other end thereof being so shaped as to extend into the latch 33 to thereby yieldingly bias it to locking position. Means for causing opening movement of the latch may include a bell crank lever 41 mounted inside the casing 17 and pivotally supported at 43 and a connecting rod or link 45 extending between the upper end of bell crank lever 41 and an inner perforated wall 47 of the latch. As it is desirable to bias the bell crank lever 41 into a position where it will permit spring 37 to bias the latch to locking position, I may use a second spring 49 also bent around pin 39 which engages with a link 51, the other end of which pivotally engages with the upper arm of bell crank lever 41.

I provide further a member 53 of flat channel or U-shape which is adapted to move vertically upwardly or downwardly, walls 55 and 56 being

provided to guide the member 53 when it is moved as will be hereinafter set forth.

The outside actuating member 13 comprises two sections of tubular members 57 and 59, each of which has a relatively long portion extending parallel to and spaced from the outside of a door and a shorter portion which is numbered 61 for tube 57, this shorter portion being pivotally connected with a pivot plate member 63 adapted to be screwed against the outside of a door adjacent to the hinged edge thereof. Tube 59 is provided with a short portion 65 bent at substantially right angles thereto, this short end portion being pivotally mounted in and supported by a pivot plate member 67 adapted to be screwed against the outside of a door adjacent to the swinging edge thereof. The end 65 is provided with an inwardly extending finger 69 which finger extends into the lock hereinbefore described through one of the openings 31 thereof. It will be noted that portions 57 and 59 telescope each other and the lengths of these portions are such that the length of this actuating member can be varied if desired to adapt it to doors of different widths. Any suitable means (not shown) may be used to hold the tubes in their normal position.

The two sides of a door jamb are indicated at 71 and 73 respectively and the door itself is indicated by numeral 75, the hinges being indicated by 77 in Fig. 1 of the drawings. I have shown the door 75 as being a so-called "storm door" and provided with an inner frame 79 having one or more panes of glass 81 therein. The device embodying my invention is not limited to such doors, but is applicable to any door.

The inside actuating member 15 includes a hinge member 83, adapted to be screwed against the inside of door jamb 71. If desired the part of hinge member 83 engaging the door jamb may be made such that it will act as its own gauge, by aligning the outer edge thereof with the outer edge of the jamb 71. A rod 85 has one end pivotally connected to the hinge member 83 and extends into a plurality of coaxial nested tubes 87, 89, and 91. Tube 87 is relatively short and has a circularly depressed portion or groove 93 therein intermediate its ends. It telescopes with one end of tube 89, the left hand end of which is turned inwardly as shown at 95 in Fig. 1 of the drawings, whereby relative rotary or turning movement of tubes 87 and 89 is permitted, but no relative axial movement of the two tubes is permitted.

The outermost tube 91 has a short end portion 97, which end portion is pivotally mounted on a pivot plate 99, and has a finger 101 extending through one side of the door and into the lock assembly. It will be noted that the plural tube and rod structure may move pivotally relatively to the member 83 in a substantially horizontal plane, while the right hand end of the tube structure may move pivotally in a vertical direction as will be hereinafter set forth in greater detail. Any desired means, either spring or friction, may be provided in the pivot plate 99 to hold the tube in its normal intermediate position.

The right hand end of intermediate tube 89 is provided with a disc 103 fitting therein in an airtight manner, means being provided in the shape of an opening therein and an adjusting screw 105 whereby to vary the size of the opening.

The right hand end (as seen in Fig. 1 of the drawings) of rod 85 has mounted thereon a piston washer 107 together with supporting discs to cause washer 107 to act as an air piston in intermediate tube 89. A second disc 109 is fitted in a substantially airtight manner in tube 89 just beyond the right hand end of tube 87. This part of the inside actuator is shown on an enlarged scale in Fig. 5 of the drawings from which it will be noted that disc 109 may be held in position between two grooves 111 and 113 rolled into intermediate tube 89.

A compression spring 115 surrounds rod 85 and extends between piston washer 107 and disc 109. It will be noted, from Fig. 1 of the drawings, that the diameter of the coils of spring 115 is greater at one end thereof than at the other end thereof to provide different degrees of resiliency in the different portions of the spring. Thus on opening the door and compressing the spring the greater portion of the spring having coils of the larger diameter will be compressed first and when these turns engage each other, or nearly so, that end of the spring having coils of the smaller diameter will be compressed.

I provide also a bypass 117 in the form of a bent-out portion in tube 89 in order to more quickly release the compressed air toward the end of the closing movement of the door. It will be noted that the outer tube 91 is also provided with a bent-out portion to provide clearance for the bent-out portion in tube 89 to facilitate assembly. Tube 91 may be slotted for a portion of its length to give access to screw 105 in any longitudinally adjusted position of tubes 89 and 91 as when used on doors of different widths. It will be noted that piston washer 107 cooperates with disc 109 to act as a dashpot when opening the door and cooperates with disc 103 to act as a dashpot when the door is closing. The adjusting screw 105 in disc 103 permits of varying the dashpot effect obtained when the door is closing.

The device embodying my invention provides also means for holding the door in any desired partially open position. This means includes a rod gripping plate 119 positioned within tube 87 near its right hand end and near disc 109. Plate 119 has two diametrally extending end portions 121 and 123 (see Fig. 4) which are bent angularly relatively to the main part of the plate and fit into elongated and angularly extending slots 125 in tube 87. Turning movement of plate 119 on rod 85 is prevented by a pin 127 fitting tightly in disc 109 and loosely in an opening 128 in plate 119. The design and construction of the inner end of tube 87 and particularly of the slots 125 therein as well as of gripping plate 119 is such that if tube 87 is manually turned through a small angle in either direction from its normal intermediate position, it will cause a tilting movement of gripping plate 119 whereby it will jam on rod 85, gripping the same tightly and thereby preventing any axial movement of rod 85 relatively to the plural tube structure. It is therefore only necessary to slightly turn tube 87 relatively to tube 89 to thereby hold the door in any desired partially open position. While I have shown the slots 125 of such length as to permit the plate 119 to grip the rod 85 because of relative turning movement in either direction, I may use shorter slots, one wall of each of which is engaged by arms 121 and 123 when in normal position, permitting relative turning movement of the two tubes in only one direction.

It may here be noted that the design and construction of the outside actuating member 13 and its pivotal supports is such that the plural

tube structure 57 and 59 can be moved in a vertically downward direction only. Reference to Fig. 6 of the drawings will show that extension 69 of tube 65 will then move upwardly, engaging the lower substantially horizontally extending arm of bell crank lever 41 to move it upwardly and cause inward or opening movement of latch 33. The design and construction of the inside door actuator 15 is such that the right hand end thereof may be moved in a vertically upwardly direction or in a vertically downwardly direction. When the plural tube structure, and particularly that end portion thereof adjacent the swinging edge of the door is moved upwardly, the extension 101 will move downwardly within the lock 11 engaging the outer end of the lower arm of bell crank lever 23, causing outward or closing movement of bolt 21. It will be noted that even were the outside actuator member 13 so designed, constructed and mounted that its extension 69 could be moved downwardly the shoulder 129 in opening 31 would prevent its being moved down far enough to engage the horizontal arm of bell crank lever 23. Opening 31, however, is made deep enough below finger 101 so that this member can be moved downwardly far enough to force the bell crank lever 23 to move bolt 21 outwardly to locking position.

If on the other hand inside actuator 15 is moved downwardly, finger 101 will be moved upwardly and engage the upper end portion of member 53 forcing it upwardly against the outer end of the lower arm of bell crank lever 41 while its lower end engages the outer end of the lower arm of bell crank lever 23, causing turning movement of both bell crank levers 23 and 41 in a counterclockwise direction (as seen in Fig. 6) to thereby cause unlocking movement of both the bolt and the latch at the same time.

The device embodying my invention thus provides a relatively simple door fixture having an outside actuator extendible in a substantially horizontal direction substantially across the entire width of and close to a door, which outside actuator is effective to cause unlocking movement of a latch by a simple downward pressure on any part of the actuator either at the swinging edge of the door or farther over toward the hinged edge of the door. If desired in certain cases, the outside actuator may be simplified and made in the shape of a thumb latch.

I provide also an inside actuator comprising a coaxial rod and plural tube structure in which the outer end of the rod is pivotally mounted on a door jamb adjacent the hinge edge of the door while the other end of the plural tube structure is pivotally mounted at the swinging edge of a door. This plural tube and rod structure serves not only to cause locking movement of a bolt when moved in an upwardly direction, but also to cause simultaneous unlocking movement of a bolt and a latch, when moved in a downwardly direction. It serves also as a dashpot means both when opening and when closing a door, also as a means to hold the door in any desired partially open position, provides a varying degree of resistance to the opening movement of the door and permits of reducing the dashpot effect when closing the door.

Both the outside and the inside actuator members may be easily and quickly adjusted for different widths of doors, this means being shown, for the inside actuator as including screws 131 extending through selected openings in tube 91 into tube 89.

I claim as my invention:

1. A door control apparatus for a swinging door comprising a latch, a movable latch operating member therefor, a pair of elongated juxtaposed members guided for longitudinal movement relative to one another, one of said elongated members being connected to said latch operating member and movable therewith, means for anchoring the other of said elongated members to the door frame, said last named means guiding said elongated members for movement conforming to the movement of the door and for movement conforming to the movement of the latch operating member, and means acting between said elongated members for controlling the relative longitudinal movement therebetween.

2. A door control apparatus for a vertical hung swinging door comprising a latch, an operating member for the latch movable in an up and down direction, a pair of elongated juxtaposed members extending crosswise of the door and guided for longitudinal movement relative to one another, one of said elongated members being connected to the latch operating member and being movable therewith, means for pivotally connecting said other elongated member to the door frame for swinging movement in conformity with the movement of the door, and means acting between said elongated members for controlling the relative longitudinal movement therebetween.

3. A door control apparatus for a vertical hung swinging door comprising a latch, an operating member for the latch movable in an up and down direction, a panic bar extending across the door, and constructed with two elongated parts guided for longitudinal movement relative to one another, one of said parts being connected to the latch operating member and being movable in an up and down direction therewith, means for pivotally connecting the other of said parts to the door frame, said means guiding said panic bar for movement conforming to the movement of the door and for movement in an up and down direction, and means acting between said parts of the panic bar for controlling the relative longitudinal movement therebetween.

4. A door control apparatus for a swinging door comprising a latch, a movable latch operating member therefor, a pair of elongated juxtaposed members guided for longitudinal movement relative to one another, one of said elongated members being connected to said latch operating member and movable therewith, means for anchoring the other of said elongated members to the door frame, said last named means guiding said elongated members for movement conforming to the movement of the door and for movement conforming to the movement of the latch operating member, and door closing and check means acting between said elongated members for controlling the movement of the door.

5. A door control apparatus for a vertical hung swinging door comprising a latch, an operating member for the latch pivoted for swinging movement about a horizontal axis, a pair of elongated juxtaposed members extending crosswise of the door and guided for longitudinal movement relative to one another, one of said elongated members being connected to the latch operating member and being movable therewith, pivot means for pivotally connecting said other elongated member to the door frame for swinging movement about a vertical axis, and means acting between

said elongated members for controlling the relative longitudinal movement therebetween.

6. A door control apparatus for a swinging door comprising a latch, a movable latch operating member therefor, an elongated tubular member extending transversely of the door and connected at one end to said latch operating member and movable therewith, another elongated member disposed partly within said tubular member, means for anchoring said second named elongated member to the door frame, said last named means guiding said elongated members for movement conforming to the movement of the door and for movement conforming to the movement of the latch operating member, and a piston carried by said second named elongated member and movable within said tubular elongated member, said tubular elongated member having a partly closed end controlling relative movement between said elongated members in one direction.

7. A door control apparatus for a swinging door comprising a latch, a movable latch operating member therefor, an elongated tubular member extending transversely of the door and connected at one end to said latch operating member and movable therewith, another elongated member disposed partly within said tubular member, means for anchoring said second named elongated member to the door frame, said last named means guiding said elongated members for movement conforming to the movement of the door and for movement conforming to the movement of the latch operating member, and a piston carried by said second named elongated member and movable within said tubular elongated member, said tubular elongated member having a partly closed end controlling relative movement between said elongated members in one direction, and resilient means acting between said elongated members for procuring relative movement therebetween in such direction.

FRANK LA MERE.