Oct. 23, 1934. L. L. TOLLE 1,977,901

DOOR LATCHING MECHANISM

Filed Jan. 31, 1934

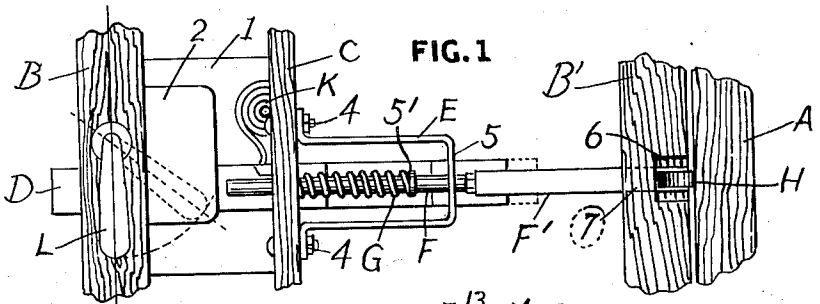



FIG. 1

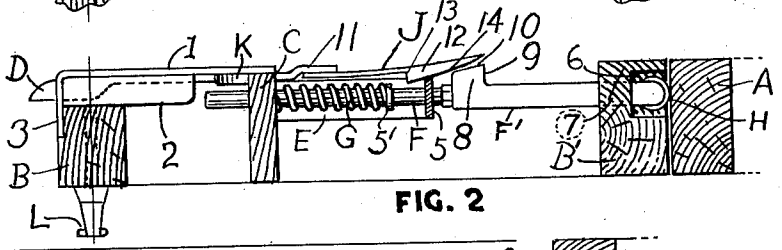



FIG. 2

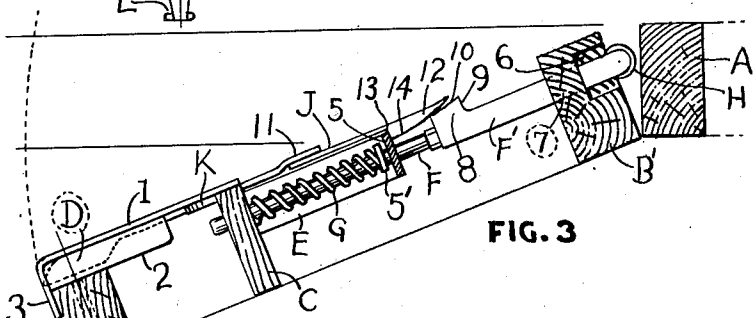



FIG. 3

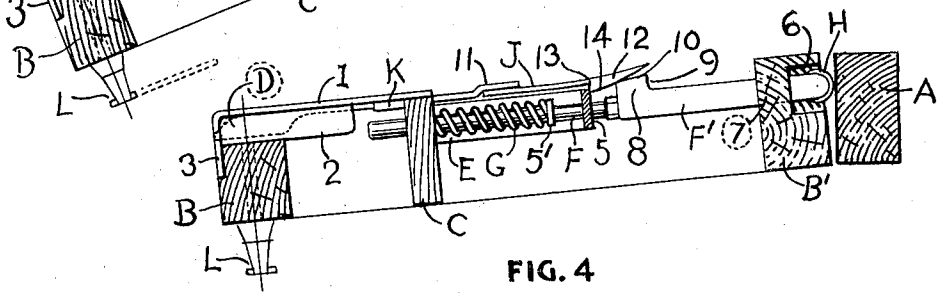



FIG. 4

*INVENTOR.*

*Leonard L. Tolle*

BY

*ATTORNEY.*

Patented Oct. 23, 1934 1,977,901

# UNITED STATES PATENT OFFICE

1,977,901

## DOOR LATCHING MECHANISM

Leonard L. Tolle, St. Louis, Mo., assignor of one-half to Otto C. Hanser, St. Louis, Mo.

Application January 31, 1934, Serial No. 709,057

5 Claims. (Cl. 292—173)

This invention relates to a certain new and useful improvement in door or closure latching mechanisms and has for its chief object the provision of an efficient, durable latching mechanism which comprises few readily assembled parts and is relatively simple and inexpensive in structure, which may be conveniently operatively installed in connection with a door and its frame, in which the catch-member of the mechanism may be easily shifted to retracted position for permitting opening of the door, in which the catch-member is automatically retained in retracted position when and while the door is in open position, and in which the latch-member is automatically released and shifted to projected door-retaining position on the door being closed.

And with the above and other objects in view, my invention resides in the novel features of form, construction, arrangement, and combination of parts presently described and pointed out in the claims.

In the accompanying drawing,—

Figure 1 fragmentally illustrates a door or other such closure and its frame equipped with a latching mechanism of my invention, the catch or latch proper being shown in normal or projected door latching position;

Figure 2 is a similar view taken approximately at right angles to Figure 1;

Figure 3 is a view similar to Figure 2, but showing the catch releasably retained in retracted position and the door in open position; and

Figure 4 is also a view similar to Figure 2, but showing the door approaching fully closed position and the catch about to be released for engagement with its co-operable keeper.

Referring now more in detail and by reference characters to the drawing, which illustrates a preferred embodiment of my invention, the latching mechanism may be employed with any standard door or other such closure and its frame, both fragmentally here shown, A designating the frame, B, B', the opposite side marginal portions of the door, and C an intermediate block or bar forming part of the door.

Upon their inner face and suitably intermediate their respective ends, the door-portions B and B' are recessed to accommodate a catch-shell comprising suitably connected spaced parallel plates 1, 2, the former having a flange-extension, as at 3, engaging an end face of the door-portion B and suitably apertured for permitting free movement of the catch-member therethrough. The plate 1 is also suitably oppositely extened, as shown, for securement to the block or bar C.

Disposed for lengthwise slidable movement intermediate the plates 1 and 2 and outwardly through the aperture of plate-portion 3 for latching engagement with a suitable keeper, not shown, cooperably arranged on the door-frame, is a catch or latch-member proper D.

Securely fastened at its ends, as at 4, upon a side face of the block C and extending in the plane of the door, is a rigid approximately U-shaped frame or abutment E, and having a bearing for endwise slidable or shiftable movement in the block C and in the bight 5 of frame E, is a rod F yieldingly held in normal projected position toward the inner door-margin B' by means of a suitable spring G coiled on the rod F and abutting at its opposite ends against the block C and a collar 5' fixed on the rod F.

Provided in the door-portion B' and opening to the outer face thereof, is a recess 6, and communicating with recess 6 and extending through the door-portion B' in alignment with the rod F, is a slot 7 for slidably accommodating a rigid bar F' suitably fixed at its inner end to, and forming substantially a continuation of, rod F, the bar F' at its outer end being suitably bifurcated, as shown, for supporting for rotation a suitable roller H normally, that is to say, when the door B is in closed position, approximately housed in the recess 6. For purposes presently appearing, the bar F' at its opposite or inner end has an enlargement, as at 8, providing a shoulder, as at 9, and having a cam or beveled face, as at 10.

Forming substantially a part of the catch D, is an inwardly presented tail-portion 11, suitably fixed at an end to which, is an inwardly extending flat spring J formed at its free end with an enlargement, as at 12, providing a shoulder, as at 13, and having a cam or beveled face, as at 14.

Suitably mounted and fixed at an end on the plate 1 and having engagement at its free end with the catch-extension 11, is a coiled spring K for yieldingly retaining the catch D in normal projected position for keeper-engagement, and suitably mounted for swingable movement on the door-member B and having suitable connection with the catch D for manual actuation thereof to retracted position against the tension of spring K, is a crank or handle L.

In use and operation and the latch-mechanism being installed on a door as described, the door will normally, under engagement of catch D with its keeper, be releasably retained in closed position.

Crank L being suitably swung or manipulated, the catch D will be retracted out of keeper engagement. In such movement, its connected or carried spring J will be shifted inwardly and its shoulder 13 shifted passed and engaged with the frame-bight 5. The catch D is thereby retained in retracted position against the resiliency or tension of spring K, and when in such position, it will be evident, accidental engagement of the clothes or fingers with the catch, and possible injury thereof by the catch, are entirely eliminated.

The door may now be freely opened, and when swung to open position is marginally moved away, as it may be said, from the frame A, whereupon the rod F and its extension F' and carried roller H automatically move inwardly under the tension of the correspondingly released spring G to the freed position thereof illustrated in Figure 3.

On the door being again swung to closed position, the roller H is brought into engagement with the frame-member A as shown in Figure 4, whereupon the rod F and its extension F' are caused to move outwardly against the tension of spring G, the enlargement 9, in such movement, engaging at its cam-face 10 with the cam face 14 of the enlargement 12 of the spring J and releasing the spring J at its shoulder 13 from the frame-bight 5, whereupon the catch D automatically again, under the tension of spring K, moves outwardly into keeper-engagement for retaining the door in closed position.

The latch-mechanism is exceedingly efficient in the performance of its intended functions and fulfills in every respect the object stated, and it is to be understood that changes in the form, construction, arrangement, and combination of the several parts of the mechanism may be made and substituted for those herein shown and described without departing from the nature and principle of my invention. I may add that, under the normal tension of the spring G, the roller H and its associated members function in their engagement with the frame A when the door is closed as a check in stiffening the door and its hinges, as it may be said, against rattling.

Having thus described my invention, what I claim and desire to secure by Letters Patent is,—

1. In a door latch-mechanism, a shiftable catch-member, means for yieldingly retaining the catch-member in projected position for keeper-engagement, and means for releasably retaining the catch-member in retracted position, said last means including a fixed rigid abutment, an elongated yielding member having connection with the catch-member and lengthwise movable in a path approximately parallel with the plane of the door, and a shoulder on said yielding member for engagement with the abutment when the catch-member is shifted to retracted position.

2. In a door latch-mechanism, a shiftable catch-member, means including a coiled spring for yieldingly retaining the catch-member in projected position for keeper-engagement, and means for releasably retaining the catch-member in retracted position against the tension of said spring, said last means including a fixed rigid abutment, a tail-extension on the catch-member, a flat spring fixed at an end to said extension and lengthwise movable in a path approximately parallel with the plane of the door, and a shoulder on the free end of said spring for hookwise engagement with the abutment when the catch-member is shifted to retracted position.

3. Latch-mechanism for a door the same comprising a catch-member shiftable on the door, a spring mounted on the door for yieldingly retaining the catch-member in projected position in engagement with a keeper for retaining the door in closed position, a fixed rigid abutment on the door, means actuable on movement of the catch-member from keeper-engagement for hookwise engagement with the abutment for releasably retaining the catch-member in retracted position against the tension of said spring when the door is in open position, and means including a cam-rod lengthwise movable in a path approximately parallel with the plane of the door and operable on the door being moved to closed position for automatically releasing said second retaining means for permitting the catch-member to reversely move to projected door-retaining keeper-engagement.

4. Latch-mechanism for a door, the same comprising a catch-member shiftable on the door, a spring on the door for yieldingly retaining the catch-member in projected position in engagement with a keeper for retaining the door in closed position, a fixed rigid abutment on the door, a yielding-extension on the catch-member operable on movement of the catch-member from keeper-engagement for hookwise engagement with the abutment for releasably retaining the catch-member in retracted position against the tension of said spring when the door is in open position, and means for automatically releasing said retaining means, on the door being closed, for automatically permitting the catch to move to projected door-retaining keeper-engagement, said releasing means including a rod lengthwise movable in a path approximately parallel with the plane of the door, said rod being yieldingly shiftable in one direction for frame-engagement on the door being opened and reversely shiftable under frame-engagement on the door being closed, and a cam-member on the rod engageable with said extension for disengaging the same from the abutment on reverse shifting movement of the rod.

5. Latch-mechanism for a door, the same comprising a catch-member shiftable on the door, a spring on the door for yieldingly retaining the catch-member in projected position in engagement with a keeper for retaining the door in closed position, a rigid U-shaped frame fixed at its legs on the door, an elongated yielding-hook-extension on the catch-member lengthwise shiftable in the plane of the door on movement of the catch-member from keeper-engagement for engagement with the bight of the frame for releasably retaining the catch-member in retracted position against the tension of said spring when the door is in open position, and means for automatically releasing said extension, on the door being closed, for automatically permitting the catch to move to projected door-retaining keeper-engagement, said releasing means including a rod longitudinally yieldingly shiftable in the plane of the door and through the bight of the frame for engagement with the door-frame on the door being opened and reversely shiftable in the plane of the door under engagement with the door-frame on the door being closed, and a cam-member on the rod engageable with said extension for disengaging the same from the frame on reverse shifting movement of the rod.

LEONARD L. TOLLE.