July 5, 1955 F. R. COLLAR ET AL 2,712,464

DOOR LOCK

Filed Feb. 27, 1951

Fig. 1.

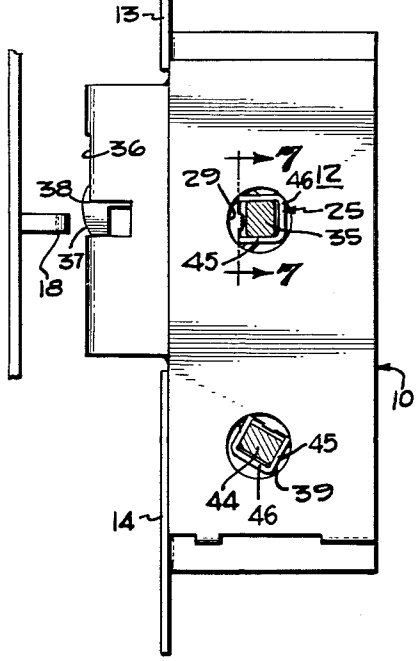


Fig. 2.

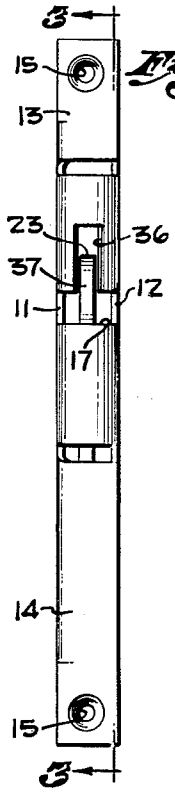


Fig. 3.

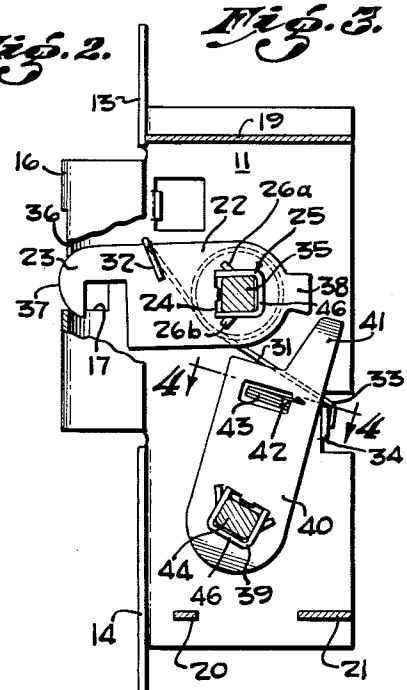


Fig. 4.

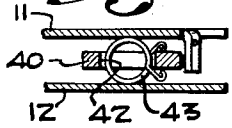


Fig. 5.

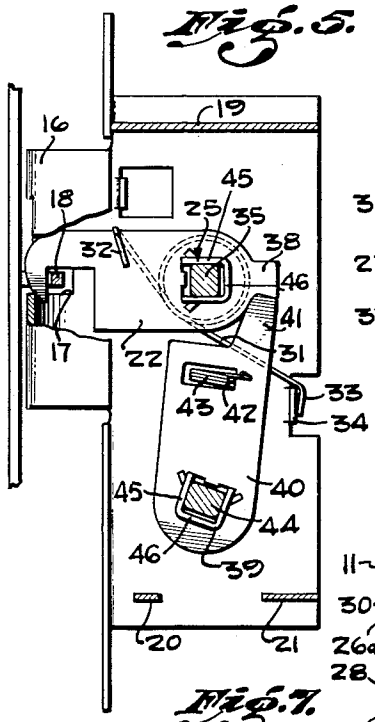


Fig. 6.

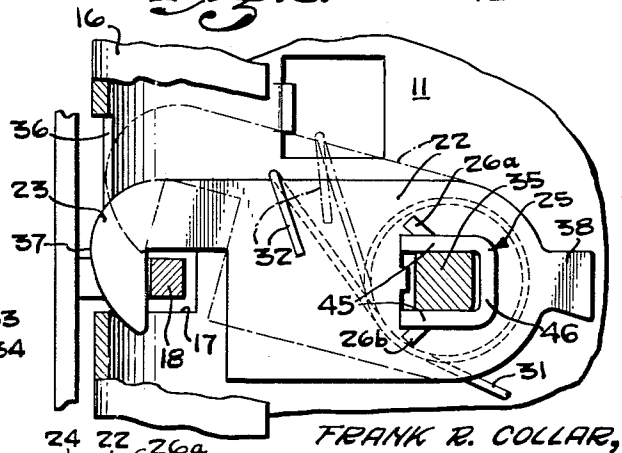
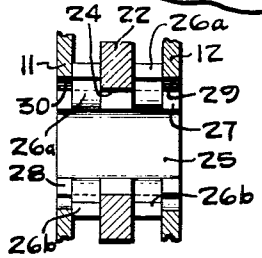


Fig. 7.



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DOOR LOCK

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5 Claims. (Cl. 292—128)

The present invention relates generally to locks, and is more particularly concerned with a door lock suitable for use with folding accordion type doors, sliding doors, and the like.

It is one object of the present invention to provide a lock of simple, compact construction, composed of a small number of movable parts, and which in the main may be constructed from plate materials.

Still another object is to provide a novel pivotal mounting for one of the lock elements, and means for retaining the element in proper operating position intermediate the walls of the lock casing.

Further objects of the invention will be brought out in the following part of the specification, wherein detailed description is for the purpose of fully disclosing the invention without placing limitations theeron.

Referring to the accompanying drawings, which are for illustrative purposes only:

Fig. 1 is a side elevational view of a lock embodying the features of the present invention, and a cooperatively associated keeper;

Fig. 2 is an edge elevational view of the lock casing;

Fig. 3 is a sectional view taken through the lock casing, and showing the association of the lock parts with the locking bar in unlocked bolt position; taken substantially on line 3—3 of Fig. 2;

Fig. 4 is a detailed sectional view, taken substantially on line 4—4 of Fig. 3;

Fig. 5 is a view similar to Fig. 3, except that the lock bar is shown in bolt locking position;

Fig. 6 is an enlarged fragmentary view illustrating the movement of the lock bolt from keeper engaged to keeper released position; and

Fig. 7 is a fragmentary sectional view, taken substantially on line 7—7 of Fig. 1, but with the shaft 35 removed.

Referring generally to the drawings, the present invention is illustrated as comprising a lock structure which is particularly adapted for utilization with sliding doors, folding doors and similar door arrangements wherein it is desired to move the door edgewise to closed and opened positions.

The lock structure is contained within an enclosing casing, generally indicated by the numeral 10. This casing is fabricated from plate material which is deformed to form spaced walls 11 and 12. The wall 11 has an upturned marginal edge portion which defines face mounting flanges 13 and 14 having screw receiving openings 15 therein for mounting screws by which the casing and the operatively associated lock parts therein may be mounted on the door.

Intermediate the mounting flanges 13 and 14, the wall 11 is extended beyond the flanges and turned back upon itself to form a projecting U-shaped portion 16 which forms a shield and is provided with a transversely extending slot 17 in the bridging portion thereof adapted to receive edgewise therein a keeper part 18. The wall 12 forms a cover plate, this wall having deflected end portions 19, 20 and 21 for engaging the wall 11 and spacing these walls in proper relationship.

As clearly shown in Fig. 3, a bolt 22 is swingably mounted for movement between the spaced walls 11 and 12, this bolt having a hooked end 23 positioned within the projecting portion 16 so as to engage the keeper part 18 and retain it in the slot 17 when the door is closed.

Referring to Fig. 7, it will be observed that the bolt 22 is of plate material and is provided with a multi-sided opening 24 which in this instance has been shown as substantially rectangular. The pivot hub for the bolt, as generally indicated by the numeral 25, is formed by bending or otherwise shaping a plate material so as to form a substantially U-shaped pivot member which may be positioned in the opening 24, and by virtue of face engagement of its sides will be held against relative rotative movement.

The pivot hub 25 consists of a metal plate bent so as to form a channel having spaced wings or flanges 45. In the present embodiment of the invention these wings are disposed in substantially parallel planes and are joined by a transverse whip 46. Fingers 26*a* and 26*b* are struck out from the edges of the wings 45, one set of these fingers lying on one side of the bolt, and the other set lying on the opposite side of the bolt so that the pivot hub and bolt are now rigidly secured together. By spacing the fingers 26*a* and 26*b* inwardly from the ends of the pivot hub, undeflected end portions 27 and 28 of the wings or flanges 45 remain which project into aligned wall openings 29 and 30 respectively contained in the walls 12 and 11. The fingers 26*a* and 26*b* therefore serve a dual purpose of securing the pivot hub to the bolt, and also as spacers for retaining the bolt properly spaced from the casing walls 11 and 12.

The bolt 22 is normally biased in a counterclockwise direction by a spring 31 which is coiled around the pivot hub and has one end 32 hooked over the bolt, and its other end 33 hooked over a turned up lug 34 carried by wall 11. Movement of the bolt 22 in its biased direction is arrested by abutment of the free end of the bolt against the bridging portion of projecting portion 16. The bolt may be actuated in a clockwise direction by the manual manipulation of a shaft 35 which extends through the pivot hub and is connected to a suitable handle or knob. The projecting portion 16 is vertically slotted as shown at 36 to permit upward swinging movement of the hooked end of the bolt. It will be observed that the exposed edge of this hooked end as indicated by the numeral 37 is curved so that when the keeper part 18 is moved thereagainst, the resulting cam action will raise the bolt hooked end and permit movement of the keeper part to a position back of the hook, whereupon the spring 31 acts to lock the hook in a position retaining the keeper against retraction from the slot 17.

In order to provide for locking the bolt in keeper engaged position, or in order to prevent movement of the keeper into the slot 17, a projection 38 is formed on the opposite side of the pivot hub from the hooked end 23 of the bolt. Below the pivotal hub mounting of the bolt 22, there is similarly mounted a pivot hub 39 which supports a lock bar 40 for swinging movement to position a projecting end 41 thereof in the path of travel of projection 38. This will prevent a clockwise movement of the bolt until the lock bar is moved to such position that the projecting end 41 will not impede the movement of projection 38.

The lock bar 40 is preferably made of plate material, as by stamping or otherwise, and adjacent its free end is provided with an elongate slot 42 in which a coiled spring 43 is edgewise disposed with its end portions respectively overlying opposite sides of the lock bar, as

shown in Fig. 4. The coil spring is of such diameter that the edges of the coil will resiliently bear against the walls **11** and **12**. This will impart a friction drag on the lock bar so that it will be retained against inadvertent movement from any position to which it is moved. The lock bar **40** is arranged to be manually moved to locked and unlocked positions by rotation of a shaft **44** disposed in the pivot hub **39**. This shaft may be fitted with a suitable handle or knob for manual actuation.

Various modifications may suggest themselves to those skilled in the art without departing from the spirit of the herein described invention, and, hence, we do not wish to be restricted to the specific form shown or uses mentioned, except to the extent indicated in the appended claims.

We claim:

1. In door locking mechanism for use in a casing including spaced wall members having aligned circular openings therein for receiving the projecting ends of a pivot member: a swingable lock member of plate material having a multi-sided opening therein; a pivot member positioned in said multi-sided opening, said pivot member beng deformed from plate material so as to define wing portions arranged to nonrotatably engage said opening; fingers struck from said wing portions on opposite sides of the lock member for retaining the pivot member against removal from the lock member opening, and said fingers being inwardly spaced from the ends of the pivot member, whereby the ends of the pivot member may be positioned respectively in the openings of said wall members with the adjacent fingers acting to retain the lock member in position between said walls.

2. A swingable part for use between a pair of spaced wall members having aligned pivot receiving apertures therein: a plate having an opening therein; and a pivot member for said plate, said pivot member comprising a metal plate bent into form of a channel having wings, the edges of which wings are spaced apart, said channel being extended through said opening of said plate so as to project from the opposite sides thereof and into said apertures, said wings lying respectively adjacent spaced portions of the wall of said plate defining said opening, the edges of said wings being deformed outwardly on opposite sides of said plate so as to retain said pivot member in said opening.

3. A swingable part for use between a pair of spaced wall members having aligned pivot receiving apertures therein: a plate having an opening therein; and a pivot member for said plate, said pivot member comprising

a metal plate bent into form of a channel having wings, the edges of which wings are spaced apart, said channel being extended through said opening of said plate so as to project from the opposite sides thereof and into said apertures, said wings lying respectively adjacent spaced portions of the wall of said plate defining said opening, the edges of said wings having fingers struck outwardly therefrom on the opposite sides of said plates so as to retain said pivot member in said opening, said fingers being inwardly spaced from the ends of said pivot member and providing shoulders for engagement with the wall members when the ends of said pivot member are disposed in said apertures.

4. In a mounting for a swingable part, in combination: a pair of spaced wall members having aligned pivot receiving apertures; a pivoted member mounted for movement between said wall members; a shaft extending through said pivoted member, the shaft having means bent around it having fingers extending therefrom between the pivoted member and the wall members, the ends of the shaft extending into said apertures to provide a pivotal mounting; and said fingers forming retainers for the pivoted member and spacers between the pivoted member and the wall mambers.

5. In a mounting for a swingable part, in combination: a pair of spaced wall members having aligned pivot receiving apertures therein; a pivoted member mounted between said wall members; a shaft extending through said pivoted member for moving the member; means comprising a member bent around the shaft so as to engage a plurality of sides of the shaft, the ends of the shaft and said means extending into said apertures and journaled therein, said means having finger portions extending therefrom between the pivoted member and the side walls and in engagement therewith so as to provide spacers therebetween and to retain said pivoted member in position between said wall members.

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