Aug. 31, 1948. C. J. BERINI 2,448,293

DOOR LOCK

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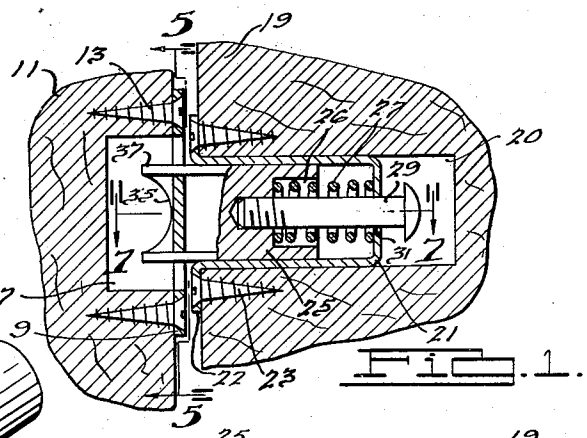


FIG. 1.

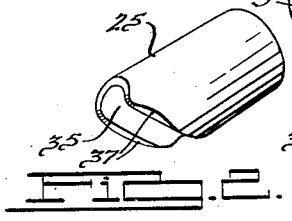


FIG. 2.

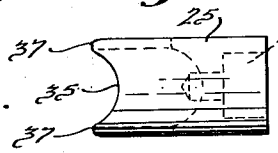


FIG. 3.

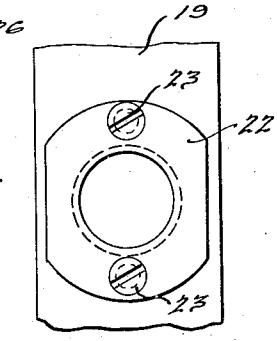


FIG. 4.

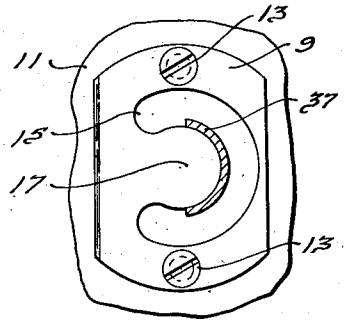


FIG. 5.

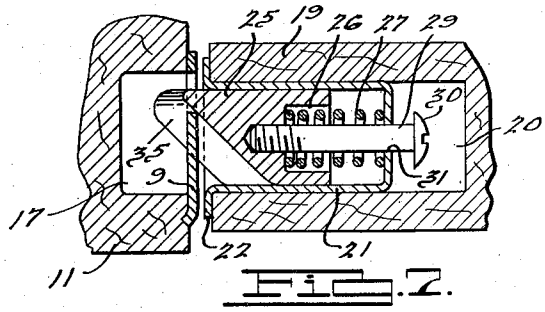


FIG. 7.

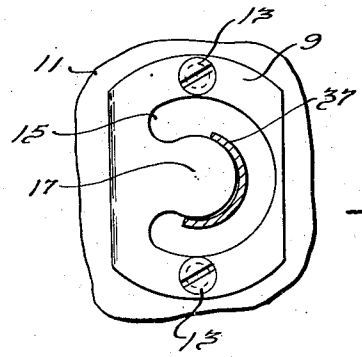


FIG. 8.

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DOOR LOCK

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5 Claims. (Cl. 292—74)

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This invention relates to a door lock.

Ordinary doors for buildings or the like often become misaligned with respect to their frames due to causes incurred both before and after installation of the door. This misalignment at the time of initial installation may be due to such causes as carpenters' tolerance variations when installing the door, while after installation it may be caused by sagging due to temperature changes, change of the season, and settling and shifting of the building itself. Also, the ordinary door used inside a house at the present time, employs a conventional manually turnable lock mechanism having a door handle on each side of the door. As the ordinary person very rarely locks these doors, there is actually no need for any sort of the more expensive and more complicated lock requiring a handle.

It is an object of this invention to provide a door lock assembly in which the plunger will engage the keeper member even though the door has sagged somewhat or becomes otherwise misaligned with respect to the frame.

It is a further object of this invention to provide a lock mechanism in which there are no manually turnable parts that require door handles which must be turned in order to open the door and swing it in or out.

It is a further object of this invention to provide a door lock mechanism employing a novel type plunger and striker plate which will provide a more satisfactory and more positive contact between the plunger and striker plate even though the door sags to a certain extent after it is in use.

These and other objects of the invention will become more apparent from the following detailed description taken in conjunction with the following drawings, in which:

Figure 1 is a cross-sectional view of the door lock mechanism and striker plate assembly;

Figure 2 is a perspective of the plunger alone;

Figure 3 is a plan view of the plunger;

Figure 4 is an end view of the plunger assembly as seen on the door when the latter is open;

Figure 5 is a cross-sectional view taken along the line 5—5 of Figure 1;

Figure 6 is a view like Figure 5 showing the relative positions of the plunger and striker plate assembly when the door has sagged; and

Figure 7 is a cross-sectional view taken along the line 7—7 of Figure 1.

Referring to Figure 1, it will be seen that a striker plate 9 is secured to a door casing 11 by means of screws 13. A slot 15, which is more

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than semi-circular in circumference but less than completely circular, is formed concentric to the center of plate 9 and this slot forms a tongue 17 having a circular end due to the shape of the slot. It will be noted that the door casing 11 is recessed as at 17 to provide a hollow portion behind the slot 15.

The complementary edge of a door or closure 19 has a bore 20 receiving a housing 21 which has a shoulder 22 abutting said door edge and which is secured thereto by screws 23. A generally cylindrical plunger 25 is rotatably mounted in housing 21 and the rear portion of the plunger is recessed as at 26 to receive one end of a spring 27. The other end of spring 27 abuts the rear of housing 21 and therefore is always urging plunger 25 outwardly from the housing. A bolt 29 is threaded into the rear portion of plunger 25 and extends through the spring 27 and an opening 31 in the rear of housing 21 and the head of the bolt, by abutting against the rear of housing 21, prevents the spring from ejecting the plunger from the housing. Other means of preventing the ejection of the plunger 25 from the housing 21 could similarly be employed.

At its opposite end the plunger 25 has a curved recess 35, the wall 37 of which is curved about an axis directed obliquely to the axis of the plunger. This curved recess may be made by drilling through the end portion of a cylindrical plunger on an angle, for example, a 45° angle to the axis of the bar or plunger 25. The plunger is drilled so as to leave the wall 37 inclined at the desired angle and provide a recess of the desired radius necessary to make the plunger substantially conform to the curvature of tongue 17 in striker 9 which it engages when the door is closed. The radius of the curved recess 35 should be slightly larger than the radius of the tongue 17 because the curved recess is at an oblique angle to the axis of the plunger. In other words, if a cross-sectional view were taken through the axis of the plunger, the curved recess would appear elongated in a somewhat elliptical fashion instead of circular and, therefore, in order to get the best contact and the most wear surface between the tongue 17 and the curved recess 35, it is necessary to enlarge the radius of the curved recess. For example, if the radius of the tongue is $\frac{1}{64}$ of an inch, it was found that by using a radius of $\frac{5}{16}$ of an inch for the curved recess, satisfactory results can be obtained.

In operation, the door or closure 19 is swung shut and if the door has no sag causing the plunger 25 and the slot 15 to be misaligned, the

end of the plunger 25 cams over the striker plate against the action of spring 27, and slides into the slot 15 and comes in contact with tongue 17. The door is then retained in closed position until it is pulled or pushed open. The force of the spring 27 is all that must be overcome in order to open the door.

If the door has sagged, so as to cause misalignment between the plunger 25 and slot 15, as shown in Figure 6, the mechanism will still operate satisfactorily. This is true because the inclined curved wall 37 on the end of plunger 25 will still contact a portion of the tongue 17 and cause the entire plunger to rotate about its own axis so that it will fit into the slot and substantially contact the tongue 17. While perfect overall engagement between the tongue 17 and the curved recess 35 may not be obtained when the door has sagged, the engagment will be sufficient to hold the plunger in place and provide a suitable contact surface.

While I have described one particular embodiment of my invention, it is to be understood that I do not wish to be restricted thereto, and that I intend to cover all modifications thereof which will be apparent to one skilled in the art and which come within the spirit and scope of the appended claims.

I claim:

1. In a lock mechanism, a striker plate having an arcuate slot therein forming a tongue having a curved edge, a reciprocatory plunger rotatable about its own axis and having a curved recess in its end adapted to engage said tongue, the wall of said recess being curved about an axis directed obliquely to the length of the plunger, resilient means to force said plunger endwise, and means to limit the endwise movement of said plunger caused by said resilient means.

2. A striker plate for use in a lock mechanism having an arcuate slot therein forming a tongue having a curved edge adapted to receive a cooperating element of said lock mechanism.

3. In a lock mechanism, a reciprocating plunger rotatable about its own axis and having a curved recess in its end, the wall of which is curved about an axis directed obliquely to the length of such plunger, resilient means to force said plunger endwise, and means to limit the outward movement of said plunger caused by said resilient means.

4. In a lock mechanism for securing a closure to a fixed member, a striker plate fastened to the member and having an arcuate slot therein forming a tongue having a curved edge, and a reciprocatory plunger in the edge of the closure and having a curved recess in its end the wall of which is curved about an axis directed obliquely to the length of said plunger, said plunger being turnable so that if said closure sags, the plunger will rotate about its own axis so as to still engage said striker plate slot and secure said closure to said fixed member.

5. In a lock mechanism, a striker plate having an arcuate slot therein forming a tongue having a curved edge, a reciprocatory plunger rotatable about its own axis having a curved recess in its end directed obliquely to the length of the plunger and adapted to engage said tongue, resilient means to force said plunger endwise, and means to prevent said plunger from being ejected by said resilient means.

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