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LOCK

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Fig. 1.

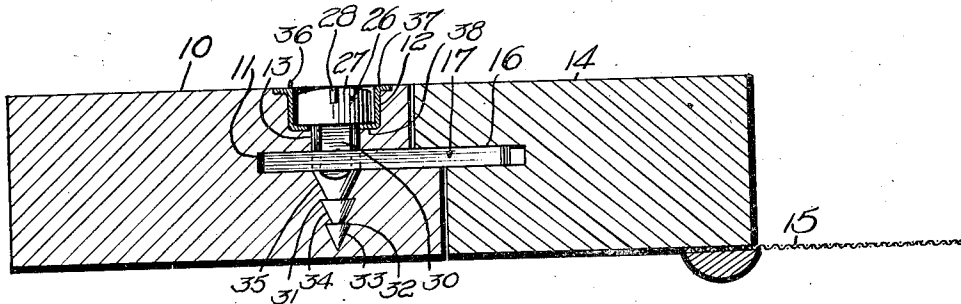


Fig. 2.

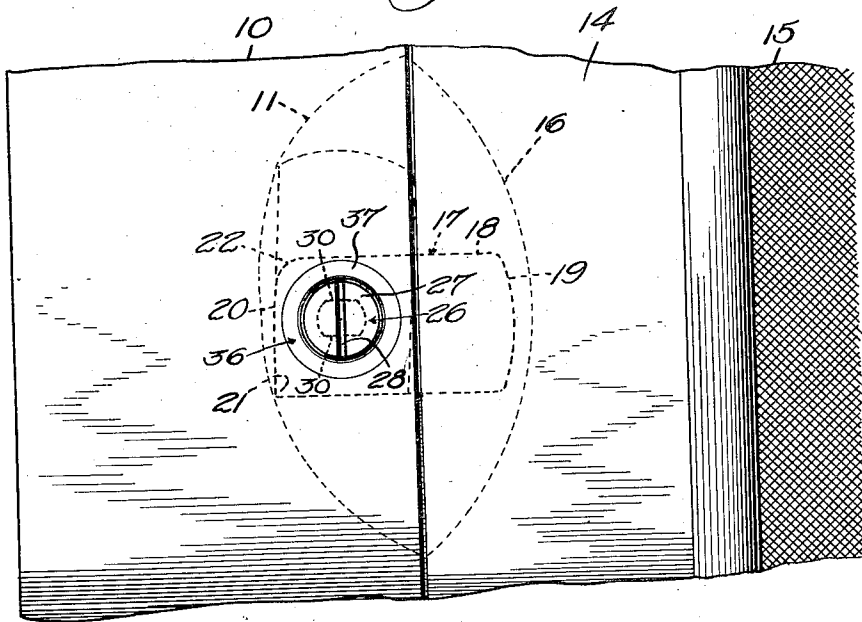
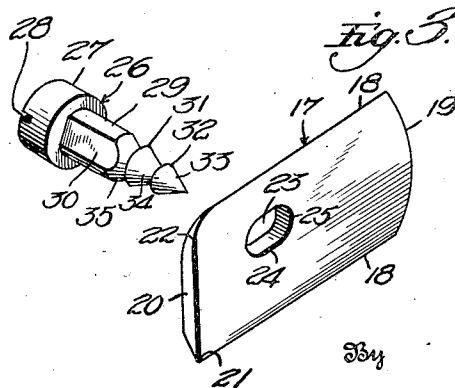


Fig. 3.



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LOCK

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4 Claims. (Cl. 70-14)

This invention relates to locks and is an improvement over the structure disclosed in my prior Patent No. 1,796,490 granted March 17, 1931.

In my prior construction referred to, a locking member or tongue is arranged within a substantially U-shaped frame inserted in the edge of a door or similar structure, and the frame is provided with teeth engageable with the material of the door when driven in position therein to retain the frame and locking member against displacement. The locking member is rotatable by means of a key, screw driver or the like. The prior construction required no fastening elements to retain the locking structure in position with respect to the door or other structure to which it was connected.

The present device is an improvement over my prior structure referred to in that it eliminates the substantially U-shaped lock holding frame, and accordingly may be manufactured more economically.

An important object of the present invention, therefore, is to provide a novel lock structure for use with screen doors, storm doors and the like, and wherein the lock is extremely simple in construction and economical to manufacture, and is adapted to be readily attached to a door or similar structure.

A further object is to provide a lock of the character referred to wherein the locking element is adapted to be turned between locked and unlocked positions by means of a suitable rotatable element which operates to retain all of the elements of the lock in proper position without the use of fastening elements.

A further object is to provide a lock which consists of only two essential parts, namely a locking element and a rotatable element, and to form the rotatable member in such a manner as to prevent its removal from the door once it has been placed in position, without interfering with its rotation when it is desired to operate the lock.

Other objects and advantages of the invention will become apparent during the course of the following description.

In the drawing I have shown one embodiment of the invention. In this showing,

Figure 1 is a horizontal sectional view through a door frame and associated elements showing the invention in operative position,

Figure 2 is an enlarged fragmentary face view of the same, and,

Figure 3 is a detail perspective view of the lock-

ing member and rotatable element shown separated.

Referring to Figure 1, the numeral 10 designates a door frame of the usual type having an arcuate slot 11 cut in the edge thereof. This slot may be formed in any suitable manner, but it has been found that the easiest and most economical way is merely by the use of a circular saw moved inwardly against the edge of the door frame. One face of the door frame is provided with a circular opening 12 which communicates with an inner somewhat smaller circular opening 13 for a purpose to be described. The opening 13 communicates with the slot 11 as shown in Figure 1.

A door 14 is associated with the door frame in the usual manner, and in the present instance the door is illustrated as being a screen door provided with the usual wire screen 15. It will be apparent however that the present device is not in any sense limited in its use to a screen door but may be employed with any structure of the same general type wherein it is desired to prevent lateral movement of one element with respect to another. The door is provided with an arcuate slot 16 which also may be formed by a circular saw, and the slot 16 is arranged in registration with the slot 11 when the door is in closed position.

A tongue or locking member 17 is adapted to be arranged in the slot 11 and to have one end turned into the slot 16 in a manner to be described to lock the door in closed position. The locking member is preferably formed of heavy flat metal stock having parallel upper and lower edges 18. The end portion of the lock which moves into the slot 16 may have its extremity curved as at 19, while the opposite end of the locking member is preferably arranged at right angles with respect to the edges 18 and is straight throughout the greater portion of its length as indicated at 20. The lower corner of the lock formed between the end 20 and lower edge 18 is preferably square, as shown in Figure 2, and indicated by the numeral 21, while the upper extremity of the end 20 may be curved as at 22 to permit the lock to swing freely between locked and unlocked positions. The locking member is provided adjacent one end with an opening 23 having parallel opposite edges 24 and curved ends 25. The opening 23 may be formed by punching the locking member, and while it preferably is of the shape indicated, it may be of any desired non-circular shape as will become apparent.

Referring to Figures 1 and 3, the numeral 26

designates a rotatable lock operating member as a whole including a head 27 having a screw driver slot 28 in its outer end. Inwardly of the head, the operating member is provided with a shank 29 flattened on opposite sides as at 30 whereby it coincides in cross-sectional shape to the shape of the lock opening 23. Inwardly of the shank 29, the operating member is provided with a plurality of barbs two of which are indicated in the present instance and are designated by the numerals 31 and 32. These barbs are circular and they preferably progressively increase in size from the end of the operating member toward the shank 29. The outermost barb, that is, the barb 32, tapers as at 33 substantially to a point. The operating member is preferably tapered as at 34 between the barbs 31 and 32, and also is preferably tapered as at 35 between the barb 31 and the shank 29.

A ferrule 36 may be employed in the opening 12, as shown in Figure 1, and this ferrule may have a finishing flange 37 lying against the door frame around the head 27. The ferrule serves to improve the appearance of the device, and it is provided with a base portion 38 seating in the bottom of the opening 12 to limit the inward movement of the operating member when the latter is inserted in a manner to be described.

The operation of the device is as follows:

The two grooves 11 and 16 are cut respectively into the door frame and door, whereupon the openings 12 and 13 are drilled in the door frame. These openings obviously are coaxial, as shown in Figure 1. The lock member 17 is then inserted into the slot 11 with the opening 23 aligned with the opening 13. The pointed end of the operating member is then inserted through the openings 12 and 13 with its point arranged against the solid wood at the opposite side of the slot 11 coaxial with respect to the opening 13. The operating member is then driven into the door frame by striking the head 27 with a hammer or other suitable tool. The inward movement of the head 27 will be limited by the portion 38 of the ferrule, as previously stated, and when the operating member is in operative position, the shank 29 will project through the opening 23.

By oscillating the operating member several times through the medium of a screw driver having its end inserted in the slot 28, the operating member may be loosened sufficiently to permit it to be readily turned. In this connection, it will be noted that the barbed portions of the operating member are circular in cross-section and accordingly do not interfere with the rotating or oscillating action of the operating member. At the same time, the barbs obviously prevent removal of the operating member, and since the locking member 17 cannot be removed while the operating member is in position, the latter member serves to retain the locking member in proper position. The head of the operating member obviously prevents removal or displacement of the ferrule 36. Accordingly it will be apparent that the device is readily assembled without the use of any separate fastening elements, the entire device being held in assembled relation by the operating member 26.

The door obviously is unlocked when the locking member is in the vertical dotted line position shown in Figure 2. When the lock is in the horizontal dotted line position shown in Figure 2, the door is locked, and the square corner 21 contacts with the inner wall of the slot 11 to limit turning movement of the bolt beyond locked position.

The device is very simple in construction and economical to manufacture, only a minimum number of parts being required. As a matter of fact, the device comprises only two essential elements, namely the locking member and the operating member, since the ferrule can be dispensed with. The use of the ferrule however, is desirable to improve the appearance of the device and to more positively limit the inward movement of the operating member when the latter is driven into position.

While the lock is illustrated as being applied to the frame of the door, it will be obvious that the parts of the device may be reversed so that the lock will be carried by the door and the locking member will be turned into a slot formed in the door frame. None of the parts of the device in the latter case would project outwardly beyond the faces of the door, and thus screen doors equipped with the device may be shipped in the usual manner by placing one on top of another, and there will be no projecting hardware carried by a door to mar an adjacent door. It also will be apparent that the device is not limited to use with a screen door, but may be used also with window screens and storm doors, or with any pairs of structures which it is desired to lock together against lateral displacement.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred example of the same and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

I claim:

1. A device of the character described comprising a flat elongated locking member having an opening therethrough adjacent one end, and an operating member for rotating said locking member provided with a shank portion intermediate its ends corresponding substantially in shape and size to said opening to project there-through, said operating member having a smooth conical driving point terminating in a circular shoulder facing toward the other end thereof.

2. A device constructed in accordance with claim 1 wherein the last named end of said operating member is provided with an enlarged head having a slot in its outer face, and a ferrule adapted to surround said head and having an inner face arranged adjacent the inner face of said head.

3. A device of the character described comprising a locking member having an opening therethrough, and an operating member for rotating said locking member provided with a portion intermediate its ends corresponding substantially in shape and size to said opening and projecting therethrough, said operating member being provided at one end with an operating head, the opposite end portion of said operating member having a smooth conical driving point terminating at its inner end in an inwardly facing annular shoulder, said operating member being provided inwardly of said conical portion with a second conical portion tapered to decrease in size toward the first named conical portion and terminating in the plane of said shoulder.

4. The combination with a pair of structures having slots adapted to register when said structures are brought into adjacent relationship, of a locking member arranged in the slot of one structure and movable to project a portion thereof into the slot of the other structure, said locking member having an opening therethrough, and

an operating member for said locking member having one end smoothly tapered to a driving point to be driven through a portion of the first named structure and having a portion corresponding in shape to and adapted to be received in the opening in said locking member when driven

into position, said operating member being provided inwardly of the pointed end thereof with an annular shoulder facing toward the other end of said operating member, said operating member having an operating head at its other end.

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