Sept. 6, 1949. G. H. WHITNEY 2,481,459

DOOR LOCKING MECHANISM

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Fig. 1.

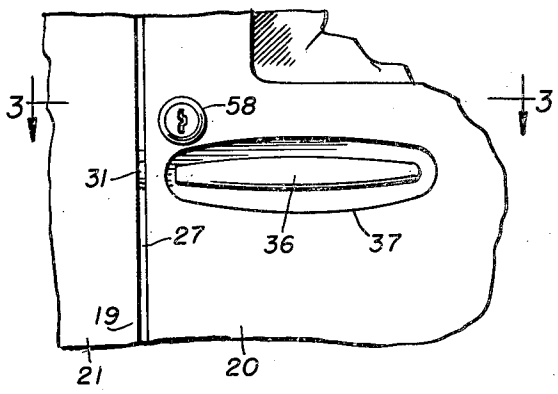


Fig. 2.

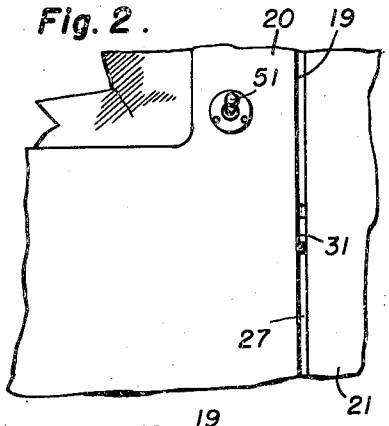


Fig. 6.

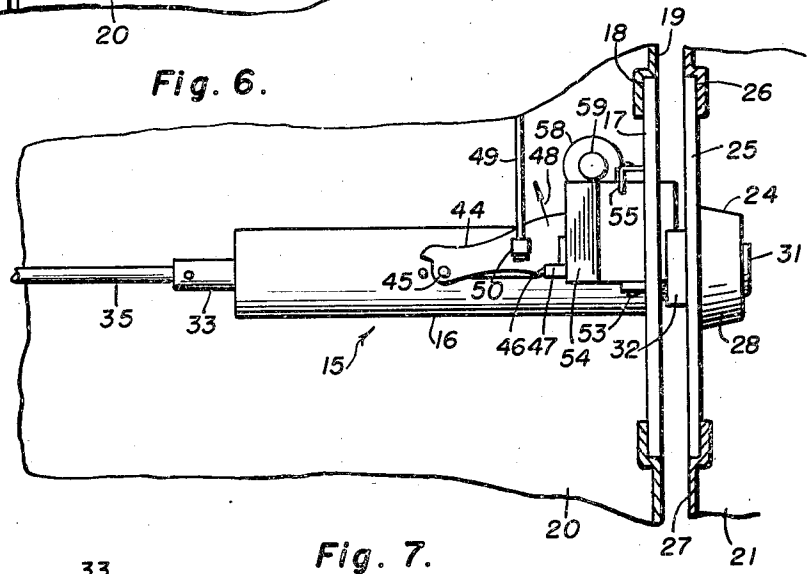


Fig. 7.

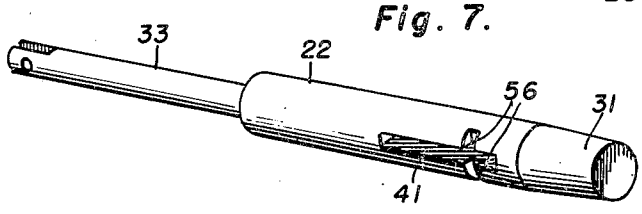
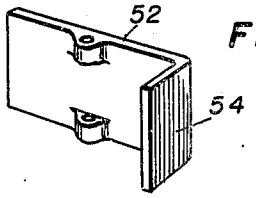


Fig. 8.



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Fig. 3.

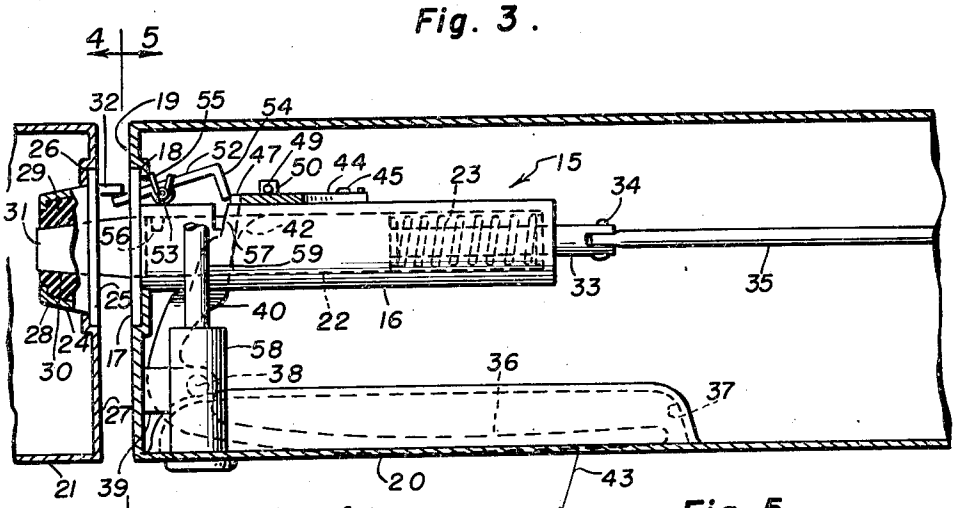
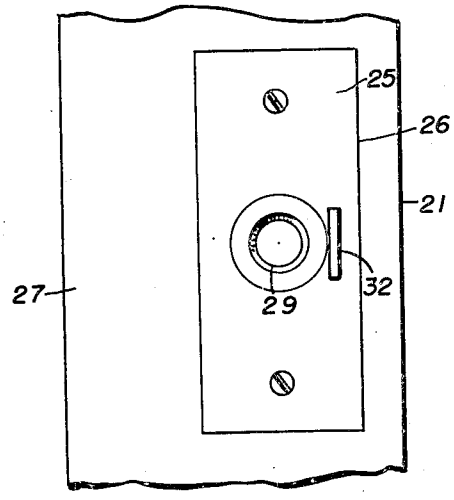


Fig. 4.

Fig. 5.



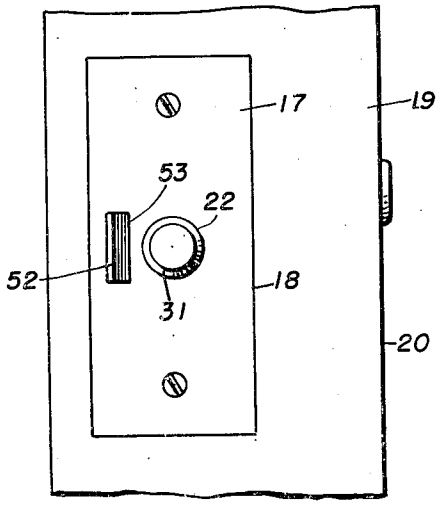
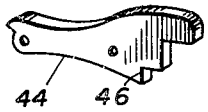


Fig. 9.



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DOOR LOCKING MECHANISM

Guy H. Whitney, Bangor, Maine

Application February 24, 1947, Serial No. 730,314

1 Claim. (Cl. 292—153)

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This invention relates to new and useful improvements and structural refinements in door locking mechanisms, and the principal object of the invention is to provide a device of the character herein described, which is particularly adapted for use in association with automobile doors.

A further object of the invention is to provide a door locking mechanism which is simple in construction and operation, and which will not easily become damaged.

Another object of the invention is to provide a door locking mechanism which will maintain the door in proper alignment and which will eliminate the frequently experienced squeaks, rattles and other noises, such as are usually associated with the use of locks of conventional design.

An additional object of the invention is to provide a door locking mechanism which may be readily disassembled for purposes of cleaning, inspection or repair.

A still further object of the invention is to provide a door locking mechanism which will readily lend itself to economical manufacture and which is otherwise well adapted for the purpose for which it is intended.

With the above more important objects in view, and such other objects as may become apparent as this specification proceeds, the invention consists essentially of the arrangement and construction of parts as illustrated in the accompanying drawings, in which:

Figure 1 is an outside elevational view of a door and door frame, showing the invention embodied therein;

Figure 2 is an inside elevational view of the subject shown in Figure 1;

Figure 3 is a horizontal cross sectional view on an enlarged scale, taken substantially in the plane of the line 3—3 in Figure 1;

Figure 4 is an elevational view, taken substantially in the plane of the line 4—4 in Figure 3, but with the locking bolt removed for sake of clearness;

Figure 5 is an elevational view, taken substantially in the plane of the line 5—5 in Figure 3, including an end view of the locking bolt;

Figure 6 is an inside elevational view of the device shown in Figure 3;

Figure 7 is a perspective view of the locking bolt;

Figure 8 is a perspective view of a trigger, and

Figure 9 is a perspective view of a keeper used in the invention.

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Like characters of reference are used to designate like parts in the specification and throughout the several views.

Referring now to the accompanying drawings in detail, the invention consists of a door locking mechanism designated generally by the reference character 15, the same embodying in its construction a substantially cylindrical sleeve 16 provided at one end thereof with a mounting plate 17, whereby it may be conveniently secured in a depression 18 formed in the edge 19 of a door 20, adjacent the door frame 21.

A projectable and retractable locking bolt 22 is slidably positioned in the bore of the sleeve 16 and a suitable compression spring 23 is interposed between the bolt and the inner end of the sleeve, whereby the bolt is normally urged outwardly into a catch 24 provided in the door frame 21. This catch includes in its construction a mounting flange 25 secured in a depression 26 provided in the edge 27 of the door frame adjacent the door 20, the flange or plate 25 carrying a housing 28 for a resilient insert 29.

The insert 29 is, in turn, formed with a frusto-conical recess or socket 30 which is adapted to removably receive a frusto-conical nose 31 provided at the outer end of the bolt 22. It will be noted that the plate 25 is also equipped with an outwardly projecting lug 32, the purpose of which will be hereinafter more fully described.

The aforementioned locking bolt 22 is formed at the inner end thereof with a reduced shank 33, the latter extending through the inner end of the sleeve 16 and being pivotally connected as at 34 to a remote control rod 35. The latter, in turn, is operatively connected to an inside door handle (not shown) and matters are so arranged that the nose 31 may be withdrawn from the catch 24 by the manipulation of this handle, as will be clearly understood.

The conventional, downwardly depressible outside door handle is substituted in the invention by an outwardly swingable handle 36 which is normally disposed in a recess 37 formed in the outer surface of the door 20 and is pivotally mounted as at 38 on a bracket 39 provided in the door structure. The handle 36 is equipped with an inwardly extending finger 40 which engages a transverse slot 41 formed in the locking bolt 22. It should, of course, be understood that the frame 16 is provided with a suitable opening (not shown) to facilitate the reception of the finger in the slot, and it will be noted that the rear end or edge of the slot assumes the form of a cam surface 42, such as may be effectively engaged

by the finger 40. Accordingly, when the handle 36 is pulled in the direction of the arrow 43, the nose 31 will be disengaged from the catch 24 in a similar manner as if the locking bolt is actuated by means of the remote control rod 35, as has been already explained.

Means are provided for preventing the sliding of the locking bolt under the actuation of the handle 36, and at the same time, facilitating the manipulation of the locking bolt by the remote control rod 35. This means consists of a keeper 44, configurated substantially as shown in Figure 9, the same being pivotally attached as at 45 to the sleeve 16. Matters are so arranged that the keeper notch 46 formed in the keeper 44 normally engages the end portion 47 of the aforementioned finger 40 and thereby prevents movement of the finger and of the associated handle 36, as will be clearly apparent. Of course, at the same time, the bolt 22 may be slid by means of the rod 35, this action being facilitated by virtue of the slot 41. In other words, the slot 41 will permit the sliding movement of the bolt 22, while the finger 40 remains stationary.

It should be understood that the gravitational effect of the keeper 44 will normally retain the notch 46 in engagement with the end portion 46 of the finger 40. However, the keeper may be disengaged from the end portion by being lifted upwardly (the direction of the arrow 48) by means of an upwardly extending control rod 49 which is pivotally connected to the keeper as indicated at 50. The upper end of the rod 49 is operatively connected to a control button, or the like, 51, provided on the inside of the door 20. It will be noted that by simply depressing the button 51, the keeper 44 will be disengaged from the finger 40, thereby facilitating the actuation of the bolt 22 by means of the handle 36.

Finally, the invention includes means for releasably retaining the locking bolt in the withdrawn position, said means comprising a trigger 52 which is suitably mounted medially of its length in the door structure as indicated at 53. One end portion of this trigger projects outwardly through an opening provided in the aforementioned mounting plate 17, while the remaining end portion of the trigger is laterally angulated and constitutes what may be referred to as a detent 54.

A suitable spring 55 is employed for normally urging the detent 54 into a slot or recess 56 formed in the locking bolt 22. To this end, the sleeve 16 is formed with a suitable opening 57, and it will be noted that the recess or slot 56 is disposed substantially at right angles to the aforementioned slot 41.

When the invention is placed in use, the door 20 will be securely held in its locked position by the engagement of the nose 31 with the catch 24, as illustrated in the accompanying Figure 3. The door may be opened by means of either the outside handle 36 or the inside remote control 35, in both instances the nose being disengaged from the catch by the sliding of the locking bolt 22.

Matters are so arranged that as soon as the locking bolt is fully withdrawn, the spring 55 will urge the detent 54 into engagement with the recess 56 and the locking bolt will thus be retained in the fully withdrawn position as long as the door remains open.

However, when the door is closed, the engagement of the lug 32 with the trigger 52 will automatically disengage the detent 54 from the recess 56 and the bolt 22 will be projected into engagement with the catch 24 by the resiliency of the spring 23.

It will be apparent that one of the major advantages of the invention resides in the fact that unlike in locks of conventional design, the locking bolt will not be scraped against the door frame when the door is being closed and furthermore, the door, when closed, will be maintained in proper alignment by the self-centering nature of the co-acting nose and catch 31 and 24 respectively.

It should be also pointed out that since the nose 31 is engageable with the resilient insert 29, so-called metal-to-metal contact of the co-acting parts will be avoided, thus resulting in the elimination of squeaks, rattles, and other noises, incident to the operation of locks of conventional design.

Finally, if desired, the invention may include in its construction a conventional, key-actuated lock cylinder designated collectively by the reference character 58. The shank 59 of this cylinder may be operatively connected to the locking bolt 22, whereby the actuation of the latter by means of the handle 36 is prevented. It is felt that the operating connection of the cylinder 58 is more or less a matter of mechanical expediency, such as will be clearly apparent to those skilled in the art to which the invention pertains. Accordingly, a further description thereof at this point is considered unnecessary.

While in the foregoing there has been shown and described the preferred embodiment of this invention it is to be understood that minor changes in the details of construction combination and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as claimed.

What I claim as my invention is:

In a locking mechanism for a door provided in one side thereof with an elongated recess, a tubular sleeve secured in said door and formed with diametrically opposed openings, a spring-pressed locking bolt slidable in said sleeve and provided with a transverse slot, an outwardly swingable handle pivoted in said recess, an inwardly projecting finger provided on said handle, said finger extending through the openings in said sleeve and being engageable with an edge of said slot in said bolt, a keeper pivoted to said sleeve and formed with a notch engageable with said finger, and means on said door for disengaging said keeper from said finger.

GUY H. WHITNEY.

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