March 11, 1941. R. MARPLE 2,234,872

LOCKING DEVICE

Filed Feb. 16, 1939

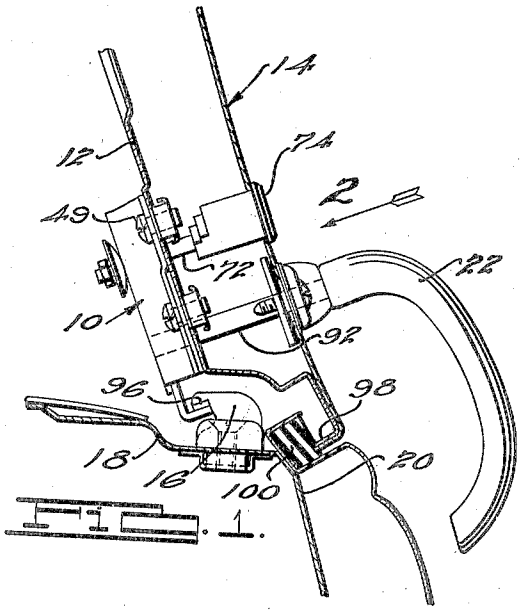

FIG. 1.

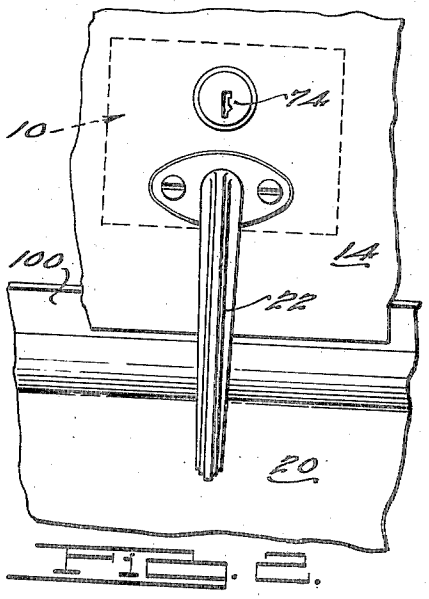

FIG. 2.

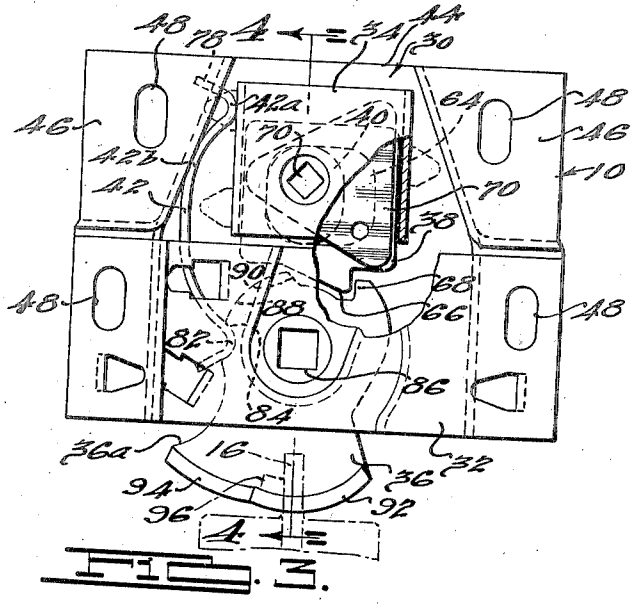

FIG. 3.

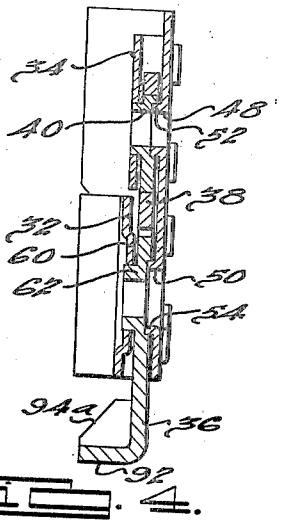

FIG. 4.

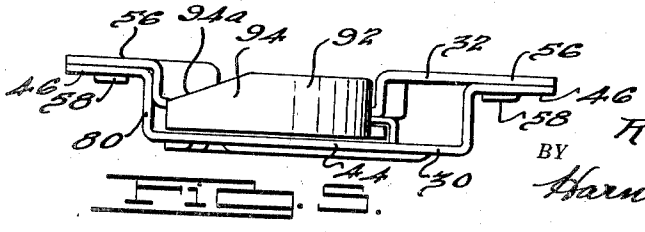

FIG. 5.

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Patented Mar. 11, 1941 2,234,872

UNITED STATES PATENT OFFICE

2,234,872

LOCKING DEVICE

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Application February 16, 1939, Serial No. 256,763

1 Claim. (Cl. 70—111)

The present invention relates to locking devices for closures and in particular, is directed to the provision of an extremely simple and efficient automobile deck lock.

The principal objects of the present invention are to provide an improved locking device, particularly adapted for, but not limited in its application to, automotive vehicles; to provide such a locking device comprising a swingable bolt adapted to cooperate with a keeper and having camming action thereon so as to hold the closure in closed position, and comprising means to yieldably hold the bolt in either a locking or a retracted position; to provide such a locking device wherein the bolt is adapted for direct connection to an operating spindle, and wherein a locking member is provided for movement into the path of a part of the bolt, so as to restrain it in the locking position; and to provide such a locking device which is extremely simple in its manufacture and assembly, and which is efficient and reliable in operation.

With the above as well as other objects in view, a preferred but illustrative embodiment of the invention is shown in the accompanying drawing, throughout the several views of which corresponding reference characters are used to designate corresponding parts, and in which:

Figure 1 is a view in side elevation of the improved locking device, as applied to the rear deck of an automotive vehicle;

Fig. 2 is a view in front elevation, taken along the line A of Fig. 1;

Fig. 3 is a view in rear elevation of the locking device of Figs. 1 and 2;

Fig. 4 is a view in section, taken along the line 4—4 of Fig. 3; and,

Fig. 5 is a top plan view of the lock shown in Fig. 3.

Referring to the drawing, the lock, designated as a whole as 10, is secured to the inner panel 12 associated with the rear door or deck 14 and the companion keeper member 16 is secured on a shelf 18 which extends inwardly from the body portion 20 which defines the marginal edge of the opening with which the deck 14 is associated. It will be understood, of course, that the deck 14 may be hingedly secured to the vehicle body adjacent its upper portion (not shown) so that, by grasping the handle 22 and releasing the lock 10, as hereinafter described, the deck 14 may be swung upwardly and to the right (Fig. 1.).

Referring particularly to Figs. 3, 4 and 5, the locking device 10 comprises generally a main case plate member 30, supplemental case plate members 32 and 34, a swingable bolt 36, a bolt locking member 38, a lock operating cam 40, and a bolt holding spring 42.

The case plate member 30 has a generally planar mid-section 44, and spaced flanges 46 which lie generally parallel to but in offset relation to the mid-section 44. The flanges 46 are provided with mounting openings 48 to receive studs such as 49 (Fig. 1) which secure the locking device to the inner face of the previously mentioned inner deck panel 12.

The mid-section 44 of the main case plate member 30 is provided with a pair of spaced spindle openings 48 and 50 associated, respectively, with the lock operating cam 48 and the swingable bolt 36. The opening 48 is provided with an inwardly extending annular rim 52, over which the lock operating cam 40 is seated, so as to afford a rotatable bearing therefor, and the opening 50 is provided with a similar rim 54 which provides a rotatable bearing for the swingable bolt 36. It is noted that the inner faces of the cam 40 and the bolt 36 are recessed to accommodate the rims 52 and 54.

The swingable bolt 36 is retained in proper bearing relation to the rim 54 by the supplemental case plate member 32. The member 32 is generally complemental in shape to the main case plate member 30, and is provided with flanges 56 which overlie the flanges 46 and are connected thereto by the tongues 58. The base of the case plate member 32 is provided with a depressed portion 60, which abuts the face of the swingable bolt 36, and a neck 62 formed on the bolt 36 projects through a corresponding opening provided therefor in the case plate member 36, so as to complete the bearing support for the bolt.

The locking member 38 is generally rectangular in shape, and is provided with a rectangular central opening 64, within which the locking cam 40 is received. The lower edge of the locking member 38 is provided with a projecting nose 66, which is adapted to cooperate with a nose 68 formed on the bolt 36 to prevent counterclockwise or unlocking movement of the latter.

The locking member 38 and the locking cam 40 are retained in assembled relation relative to the case plate member 30 by means of the generally U-shaped supplemental case plate member 34, and, in order to prevent rattling of these parts, a relatively light leaf spring 70 is interposed between the back of the casing member 34 and the base of the locking cam 40 and the lock-

ing member 38. With this relation, it will be appreciated that the locking member 38 is vertically slidable within the casing member 34 from the lower or locking position shown in Fig. 3 to an upper position in which the nose 66 is out of operative relation to the bolt 36. The sliding movements of the locking member 38 are controlled by the locking cam 40, the squared opening 70 wherein is adapted to receive a usual lock operating spindle 72 (Fig. 1). The spindle 72 may, of course, be controlled by a conventional key assembly 74, which is adapted to be secured to the outer panel of the deck. In addition to preventing rattling of the parts, the leaf spring 70 serves to lightly hold the locking member 38 in either the upper or the lower position.

The bolt 36 is yieldably held in either the locking position shown in Fig. 3 or in a retracted position by means of the spring 42, one end 78 whereof is hooked through an opening provided therefor in the leg 80 of the main case plate member 30 and the adjacent portions 42*a* and 42*b* whereof bear respectively against one leg of the case plate member 34 and the just mentioned leg 80 of the main case plate member 30. With this relation, it will be appreciated that the spring 42 is wedged in place. The free end of the spring 42 is provided with a dwell 82, which, in the position of the parts shown in Fig. 3, is seated in a notch 84 provided therefor in one edge of the bolt 36. With this relation, the dwell 82 yieldably prevents such a rotation of the bolt 36 as would tend to move the dwell 82 out of the notch 84. By introducing the usual spindle into the squared opening 86 of the bolt 36, however, it will be appreciated that the latter may be rotated in a counter-clockwise direction, during which rotation the spring 42 is stressed so as to remove the end 82 thereof from the notch 84, after which the end 82 slides along the arcuate portion 88 of the bolt. At the conclusion of this movement, the dwell 82 of the spring 42 drops behind the shoulder 90 formed on the bolt 36, and so yieldably retains the latter in such retracted position, from which it may be withdrawn by rotation of the spindle in a clockwise direction. The handle 22 (Fig. 1) is, of course, provided with a conventional spindle 92, which may be introduced into the squared opening 86 in the bolt so as to swing the same.

The free end of the bolt 36 is provided with a laterally turned foot, having the spaced keeper engaging portions 92 and 94. The keeper engaging portion 92 is of generally arcuate form, and directly engages the under side of the keeper 96, when the parts are in the fully locked position. The keeper engaging portion 94 is of slightly arcuate form, and is also of tapering width. It will be understood that in swinging the bolt 36 from an unlocked or retracted position to the locked or projected position shown in Fig. 3, the leading and narrow end of the foot 94 first engages the under side of the keeper nose 96. Continued locking movement of the bolt, enables the portion 94 to apply a vertically downward pull upon the deck 14. Also, by virtue of the tapered edge 94*a* of the foot 94, the latter is enabled to wedge the deck to a more fully closed position. These downward and inward wedging forces act to tightly seal the marginal edge 98 of the deck 14 to the buffer 100 (Fig. 1) which, as will be understood, may extend entirely around the marginal edge of the deck opening. The foot portion 92 of the bolt 36 is of generally arcuate form, and with the parts in the fully locked position, the keeper 96 occupies a position generally mid-way between the ends of the foot portion 92.

It will be understood that in the normal position of the parts, the bolt is in the locked position, and the locking member 38 is in the lower position, in which the nose 66 thereof lies in blocking relation to the nose 68 of the bolt. With this relation, the bolt 36 is locked against movement in an unlocking direction. In order to release the parts, so as to permit the deck 14 to be opened, the spindle 72 may be rotated, so as to rotate the locking cam 40 in a counter-clockwise direction, as viewed in Fig. 3, which action lifts the locking member 38 vertically, to bring the nose 66 out of cooperative relation to the nose 68. Following this action, the handle 22 may be rotated in a counter-clockwise direction, as viewed in Fig. 3, so as to retract the bolt 36 from cooperative relation to the keeper 96. In closing the deck and locking it, the reverse action occurs, the foot 94 first engaging the keeper 96 and camming the deck 14 downwardly and inwardly slightly so as to form an effective seal thereof with the buffer 100, after which the continued movement of the bolt brings the foot 92 beneath the keeper 96. At the conclusion of the locking movement of the bolt, the spring 42 snaps in place and yieldably holds the bolt in the locking position. Finally, the key slide 38 may be moved downwardly into locking position.

Although only a single specific embodiment of the invention has been described in detail, it will be appreciated that various modifications of the form, number, and arrangement of parts thereof may be made within the spirit and scope of the invention.

What is claimed is:

In a latching device, having an enclosing housing, the combination of a bolt having a body portion and a keeper engaging nose, means pivotally mounting said bolt with the body thereof within the housing in such relation that when the bolt is swung from a retracted to a projected position the nose projects from the housing for cooperation with the said keeper, handle operated means operatively connected with said bolt for swinging the same between said positions, locking means positioned within the housing and directly engageable with the bolt body for holding the bolt in the projected position, means for guiding said locking means, spring means positioned within the housing and having a detent connection with said bolt in each of said positions so as to releasably hold the bolt in each of said positions, and means comprising said guiding means for holding said spring means in place relative to said housing.

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