June 26, 1923. 1,460,166

J. McARTHUR

DOOR LOCK

Filed Feb. 14, 1922

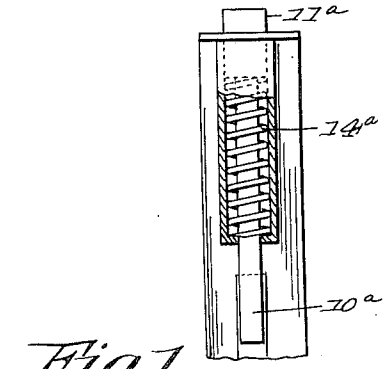


Fig. 1.

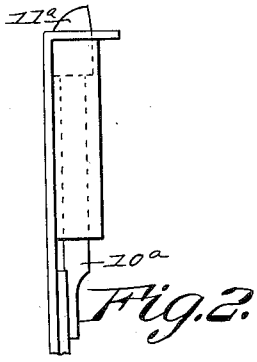


Fig. 2.

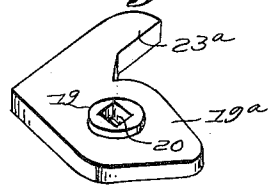


Fig. 3.

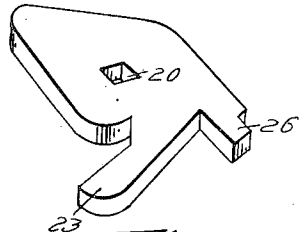
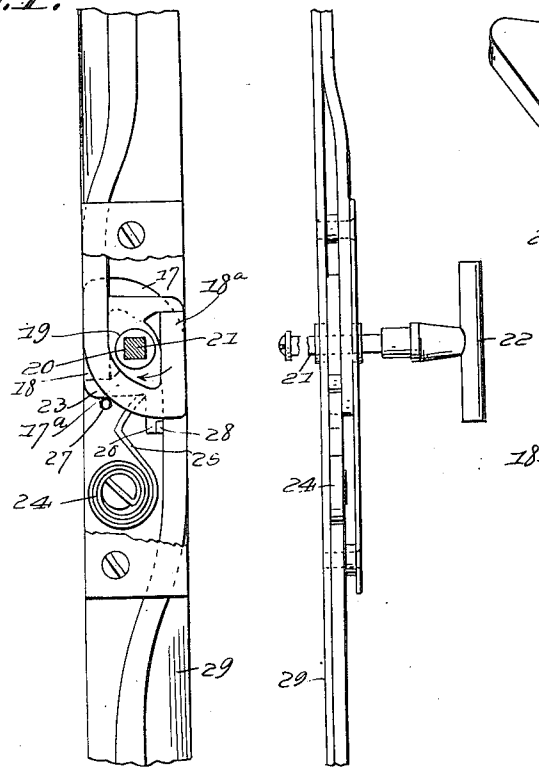


Fig. 4.



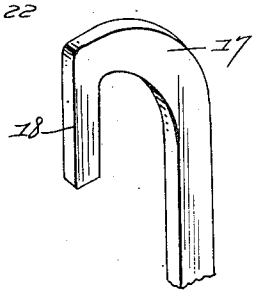
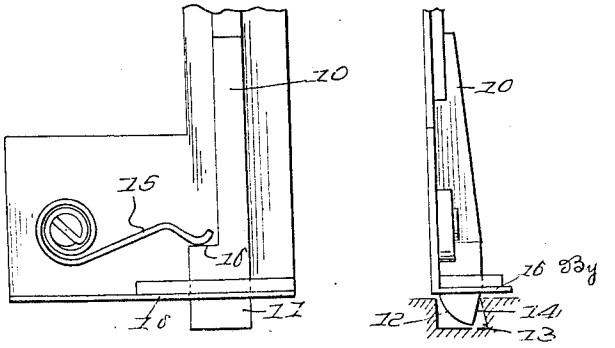


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOHN McARTHUR, OF DETROIT, MICHIGAN.

DOOR LOCK.

Application filed February 14, 1922. Serial No. 536,482.

To all whom it may concern:

Be it known that JOHN McARTHUR, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, has invented new and useful Improvements in Door Locks, of which the following is a specification.

The object of the invention is to provide a door locking mechanism for use in connection with closed vehicles of the motor driven type such as limousines, cabs, sedans, coupes, etc., whereby the looseness or rattling of the door incident to the vibration of the vehicle may be prevented and whereby lost motion incident to wear may be taken up without resorting to special means of adjustment; and furthermore to provide a locking means which may be duplicated for operation by a single actuating element for securing the door both at the top and the bottom and may be applied to the door without undue mutilation or reduction of the strength in the structure thereof and under conditions which prevent the straining of the locking means in the event that an unnecessary degree of force is used in the operation thereof; and with these general objects in view as will appear more in detail hereinafter the invention consists in a construction and combination of parts of which a preferred embodiment is shown in the accompanying drawings, wherein:

Figure 1 is a side view, and

Figure 2 is an edge view of a lock mechanism embodying the invention.

Figures 3 and 4 are detail views in perspective of the tumblers respectively used in connection with the upper and lower bolts.

Figure 5 is a similar view of the inner end or head of one of the bolts.

The device consists essentially of a bolt 10 having a nose 11 which in addition to being beveled as in the ordinary practice at 12 to act as a cam in sliding over the catch plate for engagement with the socket 13 is beveled at the opposite side as indicated at 14 to produce in connection with the bevel 12 a transverse taper which is adapted to fit snugly in the socket 13 to hold the door upon which the lock is mounted against rattling movement. By propelling and mounting the parts of the lock so that initially the bolt is under tension when the nose is seated in the socket or opening in the catch plate, it is obvious that as the nose wears it will be advanced to progressively take up any lost motion incident to the wearing of the surfaces of the nose and thus will permanently serve as a means for preventing the vibration of the door. As a means of maintaining such tension it is preferred to employ a bolt actuating or seating spring 15 which in the construction illustrated is of the coiled type with an arm arranged for bearing contact with a shoulder 16 adjacent to the bolt nose and therefore close to the point of engagement of the bolt with the catch plate.

When the locking device is used with an upper door securing bolt as well as the lower bolt, as indicated in the drawings, said upper bolt being shown at 10^a, it is desirable to construct the nose 11^a as above described and to employ a seating or bolt actuating spring 14^a for independently advancing the same to take up lost motion and prevent rattling or sound incident to the vibrations of the car.

The bolt 10 is provided with a head 17 having an outwardly directed finger 18 disposed in relation to the head to form in effect a hook which is disposed in straddling relation with the axis of the tumbler 19 provided with an angular or irregular opening 20 for the reception of the knob spindle 21. In the construction illustrated the knob spindle is shown of cross-sectionally square form and the knob 22 is located at the inner side of the door to which the lock is applied with provision at the outer end for the use of a grip of any preferred type if a handle accessible from the outside is desired. The tumbler 19 carries an operating arm 23 for engagement with the extremity of the finger 18, so that when the tumbler is turned in the direction indicated by the arrow in Figure 1 the arm 23 serves to raise the finger and thereby the bolt 10 to withdraw the nose of the latter from engagement with the catch. This movement of the tumbler, however, is yieldingly resisted by a coiled spring 24 having an arm 25 which bears laterally against a stop arm 26 which is adapted for movement with the tumbler through a path limited in opposite directions by the stops 27 and 28. The stop pin 27 limits the operative or bolt withdrawing movement of the tumbler before the arm of the spring can release the stop arm, and the stop 28 limits the return movement of the tumbler and receives the pressure incident to the tension

of the spring to prevent deflection of the shank of the bolt from its direct line of movement within the area of a face plate 29 which serves as a means of attaching the locking mechanism to the door of the vehicle.

When the lock mechanism is to be duplicated at the upper edge of the door as by the use of the auxiliary bolt 10^a it is necessary to modify the construction above described only to the extent of placing an additional tumbler 19^a on the spindle, said tumbler having the operating arm 23^a. The bolt 10^a is provided as described with reference to the main or lower bolt 10 with a head 17^a having a finger 18^a for engagement by said operating arm 23^a.

This construction of lock therefore provides for adapting it for use either at the bottom of the door alone or at both the top and the bottom of the door without any substantial modification in the construction and in fact merely by the addition, when desired for use at the top of the door, of a further bolt and a complemental tumbler of which the latter is mounted upon and actuable by the spindle used for the operation of the lower bolt.

Having described the invention, what is claimed as new and useful is:—

1. A vehicle door locking mechanism having a bolt mounted for projection at its nose beyond the lower edge of the door and movable parallel with the free edge of the door, said bolt being provided at its inner end with a hook shaped head having an outwardly directed finger, and a manually actuable tumbler straddled by said head and provided with an operating arm for engagement with the extremity of said finger, the nose being provided with a lateral shoulder and a bolt engaging spring being disposed in bolt advancing relation with said shoulder.

2. A vehicle door locking mechanism having a bolt mounted for projection at its nose beyond the lower edge of the door and movable parallel with the free edge of the door, said bolt being provided at its inner end with a hook shaped head having an outwardly directed finger, and a manually actuable tumbler straddled by said head and provided with an operating arm for engagement with the extremity of said finger, yielding means being provided for holding the tumbler and the bolt respectively in their inoperative and operative positions.

3. A vehicle door locking mechanism having a spring actuated bolt mounted for projection at its nose beyond the lower edge of the door and movable parallel with the free edge of the door, said bolt being provided at its inner end with a hook shaped head having an outwardly directed finger, and a manually actuable tumbler straddled by said head and provided with an operating arm for engagement with the extremity of said finger, said tumbler having a stop arm operating between spaced stops and being yieldingly held in its inoperative position.

In testimony whereof he affixes his signature.

JOHN McARTHUR.