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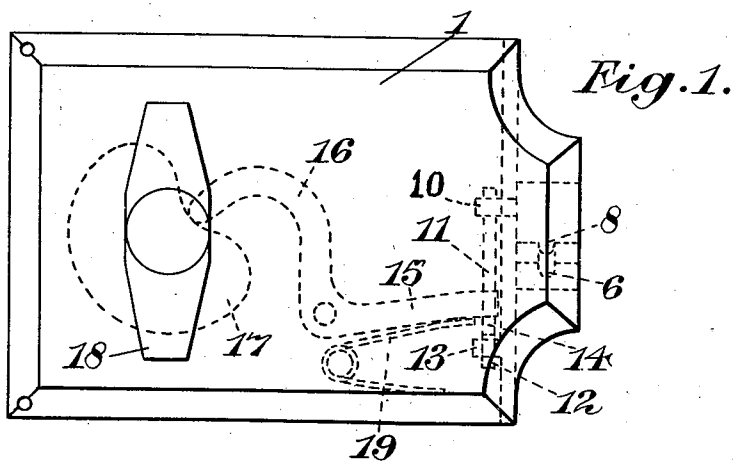
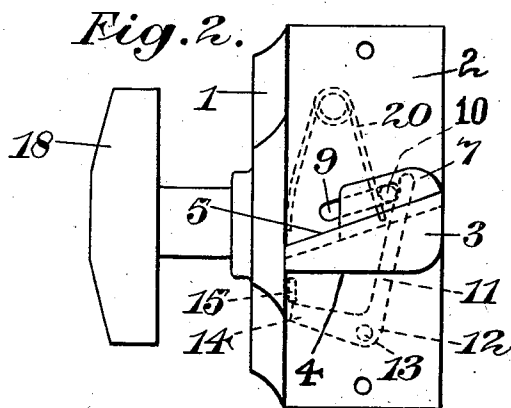
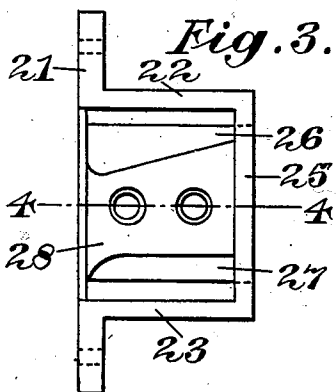
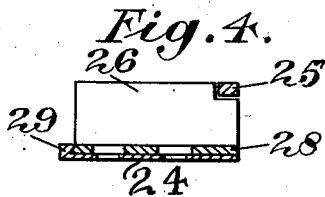
S. B. McKENZIE

2,230,409

DOOR LOCK

Filed Jan. 13, 1938

2 Sheets-Sheet 1



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Fig. 5.

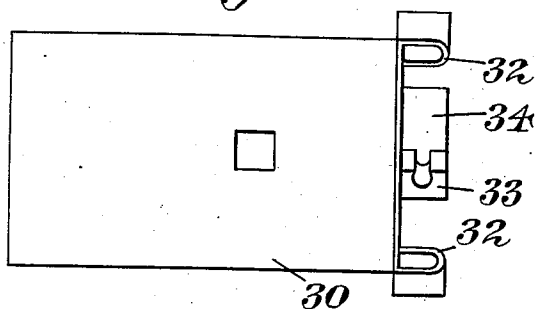
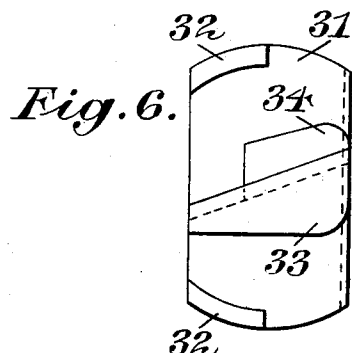
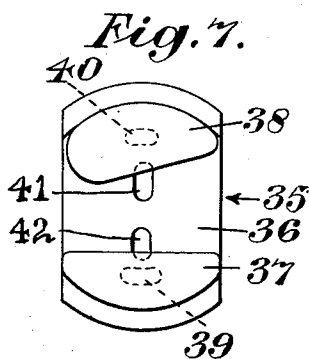
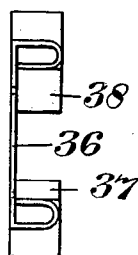


Fig. 8.



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2,230,409

DOOR LOCK

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Application January 13, 1938, Serial No. 184,786
In Great Britain January 15, 1937

6 Claims. (Cl. 292—302)

The invention relates to door and like fastenings and has for its object to provide a fastening or lock which will be silent in action, reduce or eliminate rattling and which will be simple and cheap to construct.

The invention consists in a lock for attachment to a door or the like comprising a pair of relatively movable wedge shaped blocks adapted to co-operate with a wedge shaped pocket member forming the keeper of the lock.

The invention also consists in a lock for attachment to a door or the like comprising a first wedge-shaped block secured to or formed integral with the body of the lock and a second wedge-shaped block adapted to be moved in one direction relatively to the first block by movement of an actuating handle or by engagement with a keeper, and in the other direction by resilient means, the keeper having a wedge-shaped pocket member into which said blocks are adapted to enter for locking engagement therewith, the arrangement being such that any force tending to move the blocks out of the keeper results in a tightening of the said locking engagement.

The invention also consists in the further features hereinafter described and claimed.

In order that the invention may be more clearly understood it will now be described by way of example with reference to the accompanying diagrammatic drawings in which:

Figure 1 is a side elevation of a domestic door lock the operating members being shown in dotted lines,

Figure 2 is an end elevation of the same,

Figure 3 is an end elevation of the keeper,

Figure 4 is a section of the line 4—4 of Figure 3,

Figure 5 is a side elevation of a lock suitable for automobiles,

Figure 6 is an end elevation of the same,

Figure 7 is an end elevation of the keeper and

Figure 8 is a side elevation of the keeper.

Referring now particularly to Figures 1 to 4 which show a domestic door lock of the kind known as a rim lock, 1, is the body of the lock which is hollow in order to house the operating levers and has at one end a right angled extension 2 in the form of a plate which is adapted to be flush with the edge of the door. There is secured to, or formed integrally with this plate 2 a wedge block 3 having a lower horizontal surface 4 and an inclined upper surface 5 which is preferably formed with a dovetail groove 6.

A second wedge block 7 is adapted to slide on the block 3 and is provided with a rib 8 adapted to engage in the groove 6. This dovetail connection ensures that the block 7 is maintained in sliding engagement with the block 3. An inclined slot 9 is provided in the plate 2 and a pin 10 extending from the back of the block 7 passes through this slot so as to be under the action of one arm 11 of a bell crank lever 12 carried on a pin 13 secured to the rear of the plate 2. The other arm 14 of the bell crank lever 12 is adapted to be moved by an arm 15 of a two-armed lever 15, 16, the other arm 16 of which is moved by a cam 17 in operative connection with the door handle 18. The cam 17 is of such form that rotation of the handle 18 in either direction causes the arm 16 to be raised and the arm 15 depressed against the action of spring 19 this movement also, causing a movement of the block 7 along the block 3 (to the left, Figure 2). A further return spring 20 is disposed behind the plate 2 to urge the block 7 up the wedge block 3 (to the right, Figure 2).

The keeper 21 (Figure 3) is formed as a hollow box having top and bottom walls 22 and 23 respectively and a back plate 24. The walls 22 and 23 are connected by a bridge piece 25 (Figure 4) which serves to retain the co-operating wedge blocks 26, 27, in position. These blocks 26, 27 are secured to or formed integral with a back plate 28 the front edge of which is chamfered to fit in a re-entrant angle formed between the plate 24 and the upstanding edge 29 of this plate (Figure 4). In this way the pocket member formed by the blocks 26, 27 is free to slide within the keeper 21 but cannot be disengaged therefrom.

The keeper is secured to the jamb of the door so that the narrow mouth faces in the direction in which the door opens so that in operation when the door is closed without manual operation of the handle 18 the chamfered bottom of the wedge block 3 and the chamfered upper corner of the wedge block 7 come into contact with the chamfered corners of the keeper blocks 26, 27 thereby bringing these into a position in which the block 3 may slide along the block 27. The block 7, due to the movement of the door will be moved down the block 3 against the action of the light spring 20 until it also can enter the narrow mouth of the keeper pocket. Immediately this happens the spring 20 causes the block 7 to rise up the block 3 so that the block 7 is constantly pressed against the upper keeper block 26. Any tendency for the door to open will im-

mediately result in tending to increase the locking engagement of the blocks 3 and 7 with the keeper blocks 26, 27. Any vibration of the door or door frame will cause the block 7 to tend to assume higher and higher positions on the block 3 until the door is firmly held against the door frame or rebate.

In order to ensure ease in releasing the engagement of the blocks 3 and 7 with the keeper without affecting the safety of the locking action the angles of the wedges must be suitably chosen. I have found in this connection that the angle of the wedge block 3 may be made approximately 19° whilst the angle which the upper surface of the block 7 makes with the lower surface of the block 3 may be approximately 16°. These figures are not to be taken as limiting figures since other angles can be found by experiment which may be more suitable in particular cases.

Owing to the fact that the moving locking element moves in the direction of closure of the door and not at right angles to it as in ordinary door locks I have found a very considerable diminution in the amount of noise made when the door is closed.

It will be clear that the usual lever plates may be provided to enclose the operating levers. It will also be readily understood that by allowing the pocket member of the keeper a degree of freedom in a vertical direction the door can always be closed and held firm against the door jamb or rebate even if it has warped or shrunk or expanded for example under the influence of climate changes. Further, warping or distortion of the door frame (within reasonable limits) will not prevent the silent closing and efficient locking of the door.

Referring now to Figures 5 to 8, these show the invention in a second embodiment as applied to a door lock for automobiles.

In Figure 5, 30 is the body of the lock which may for example be formed as a metal stamping or pressing. The body 30 has a right angled end face 31 the upper and lower edges of which are of part-circular shape, one half of the width of each of these edges being turned over to form a part-circular internal bearing surface 32. The wedge blocks 33 and 34 are provided in a similar manner to the corresponding blocks in the embodiment above described and the block 34 is actuated in any known or convenient manner by inside and outside door handles as is usual. This block is also under the action of resilient means, for example a spring, which tends to urge it up the block 33. The keeper 35 (Figure 7) is formed essentially of a plate 36 having turned over upper and lower edges which are of part circular shape and of such radius as to fit snugly within the surfaces 32 when the door is closed.

Wedge blocks 37, 38 are mounted upon the plate preferably by a pin and slot connection 39, 40, the outer surfaces of these blocks conforming in shape to the inner part-circular shape of the upper and lower portions of the plate 36, whilst their inner surfaces are flat for engagement with the wedge blocks 33, 34. The plate 36 is secured to the door post by screws passing through elongated holes 41, 42 so that the keeper may be adjusted to the correct position for the entry of the blocks 33, 34.

The assembly above described as will be clear allows the door to "weave" with respect to the door post without imposing an undue strain upon the locking blocks 33, 34, since the said blocks and the blocks 37, 38 with which they co-operate are

free to make small angular movements with respect to the keeper proper. The door is at all times held in engagement with the keeper plate 36 thereby eliminating rattling and squeaking but "weaving" movements of the vehicle body due, for example, to frame distortion do not affect the efficiency of the lock, the door being capable of being opened and closed even when the door or the vehicle body is badly distorted.

It will be understood that the embodiments above described are only given by way of example variations in the form and attachment of the locks and keepers being possible to suit particular cases.

What I claim is:

1. A lock for doors and the like and comprising a female part having a channel the longitudinal walls of which diverge from one another in the direction of their lengths, and a male part comprising a wedge-shaped block having one longitudinal edge adapted to engage and slide upon one of the longitudinal walls of said channel whilst the other longitudinal edge of the said wedge-shaped block is inclined to both of the said longitudinal walls of the said channels, and the maximum distance between the longitudinal edges of the wedge-shaped block is less than the minimum distance apart of the longitudinal walls of the said channel, and a further wedge shaped block slidable bodily along the said other longitudinal edge of the first named wedge shaped block and maintained in sliding engagement by a dovetail connection, and which edge engages one longitudinal edge of the said further wedge shaped block, whilst the other longitudinal edge of the latter block is adapted to engage, along its length, the opposite longitudinal wall of the said channel to that engaged by the first named wedge shaped block, when the male part of the lock is disposed within the female part, and spring means urging the second named wedge shaped block up the first named wedge shaped block towards the wider end of the said channel.

2. In a latch mechanism for a door hinged at one edge for swinging movement, a bolt mounted on the swinging edge face of the door for sliding movement in opposite directions extending generally transversely of the plane of the door and in a plane substantially parallel to the plane of the swinging edge face of the door, said bolt having a portion cooperating with a keeper to latch the door in a closed position, and means on the swinging edge face of the door cooperating with both the keeper and bolt to positively hold the door in said closed position against shifting movement in a plane substantially parallel to the plane of the door.

3. In a latch mechanism for a door hinged at one edge for swinging movement, a bolt mounted on the swinging edge face of the door for sliding movement between the inboard and outboard sides of the door in a plane parallel to the plane of the swinging edge face of the door and in a direction extending generally transversely of the plane of the door and cooperating with a keeper to latch the door in a closed position, and means under the control of the operator for retracting the bolt in a direction away from the keeper.

4. In a latch mechanism for a door hinged at one edge for swinging movement, a bolt mounted on the swinging edge face of the door for sliding movement between the inboard and outboard sides of the door in a plane substantially parallel to the plane of the swinging edge face of the door and in a direction extending generally trans-

versely of the plane of the door, means on said bolt cooperating with a keeper to latch the door in a closed position, yieldable means normally urging the bolt toward the keeper, a cam supported for rocking movement under the control of the operator, and means operatively connecting the cam to the bolt for retracting the bolt against the action of the yieldable means.

5. In a latch mechanism for a swinging closure, 5
10 a bolt mounted for sliding movement in a plane parallel to the plane of the swinging edge face of the closure along a path inclined with respect to the plane of the closure and having a portion projecting beyond the swinging edge face of the 10
15 closure cooperating with a keeper to latch the closure in a closed position, and means for actuating the bolt.

6. In a latch mechanism for a swinging closure, a latch plate secured to the swinging edge of the closure with a portion thereof extending in a plane parallel to the swinging edge face of the closure and having an elongated slot therethrough 5
inclined with respect to the plane of the closure, a bolt slidably mounted on the portion aforesaid of the latch plate and having a part extending through the slot and guiding the bolt along a path of travel parallel to the slot, and means 10
mounted on the latch plate and engageable with a portion of the bolt projecting through the slot for actuating said bolt.

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