Sept. 19, 1944. E. C. BIXEL 2,358,554

LOCK MECHANISM

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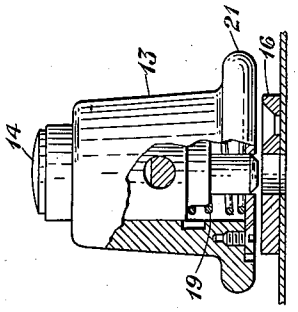


Fig. 3

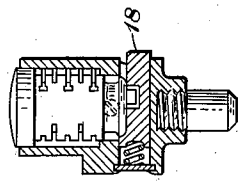


Fig. 4

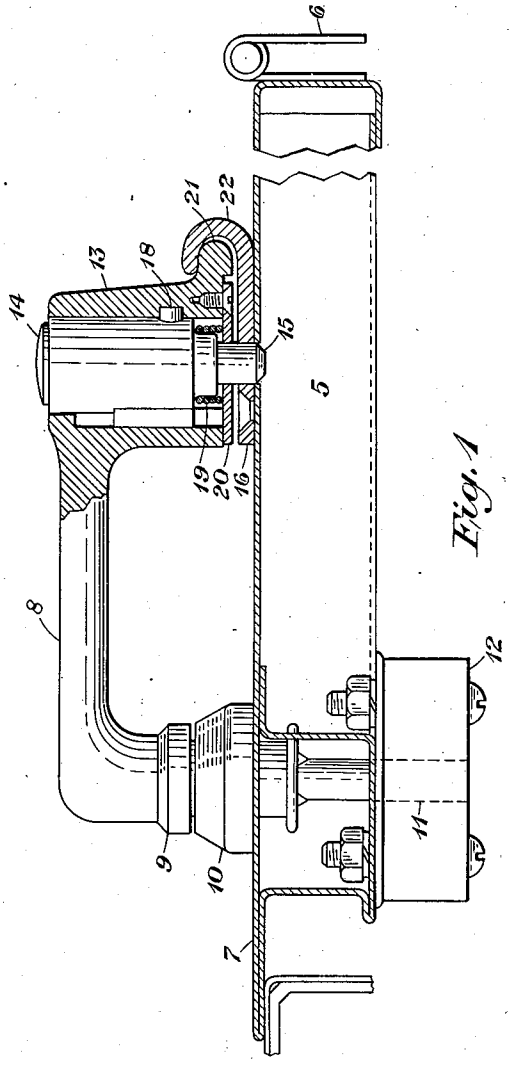


Fig. 1

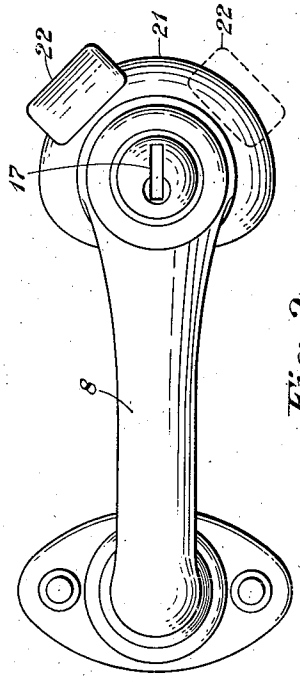


Fig. 2

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LOCK MECHANISM

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4 Claims. (Cl. 70—215)

This invention relates to locks of the push bolt type which are particularly adapted for use on doors of vehicle bodies.

The handles for locks of the above character have their center portions bored for the insertion of a lock cylinder. It has been found that the handles are thus weakened at this point, and have a tendency to break when leverage is applied thereto. It is one of the objects of this invention to overcome this difficulty and provide a lock so constructed as to minimize the breakage of its handle.

Another object of the invention is to arrange the parts of the lock structure so as to provide visual indication of the direction in which the handle of the structure should be rotated to open the door to which the structure is connected.

Still another object of the invention is to arrange the parts of the lock structure so that the lock bolt may not be forced out of its socket.

These and further objects will be apparent from the following description, when considered in connection with the accompanying drawing in which one modification of the invention is illustrated. In the drawing, Figure 1 is a side elevation of the improved lock structure, shown partly in section and mounted upon a door with its cylinder in pushed-in or locked position; Fig. 2 is a plan view of the lock; Fig. 3 is an end elevational view, partly in section, of the structure showing its lock cylinder in extended or unlocked position; and Fig. 4 is a sectional view of the cylinder and associated elements.

The lock structure, as more particularly shown in Fig. 1 of the drawing, is mounted upon a door 5. This door is hinged at one end to a casing as shown at 6, and at the other end is provided with a lip or flange 7 which covers the opening at the opposite side of the casing. The lock structure includes a handle 8 which is angularly bent at one end. This bent end connects with a shoulder portion 9 which is rotatably mounted upon an escutcheon 10, and the escutcheon is properly anchored on the outer surface of the door 5. A shank 11 is connected to rotate with the handle 8, and this shank extends to a lock case 12. The lock case encloses well-known mechanical elements. It is especially noted that the handle 8 is solid throughout its length and is of uniform density throughout its cross-section.

The opposite end of the handle 8 carries a push bolt type of lock 13. By locating the lock 13 in this position at the one extremity of the handle 8 the tendency of breakage of the handle upon the application of leverage or shearing is greatly minimized. This represents one of the features of the disclosed lock structure. The lock 13 is provided with a cylinder 14, which has a pin or lock bolt 15 adapted to enter openings in a stop 16 and in the door 5. The cylinder 14 and its pin 15 are adapted to be moved back and forth in a chamber in the lock 13. Movement of the cylinder in one direction is controlled by the insertion of a key in the keyhole 17 (see Fig. 2). The insertion and rotation of the key causes the cylinder 14 to rotate and thereby retract the locking pin 18. This permits the cylinder to move outwardly under the pressure exerted by the spring 19 in the usual manner.

To lock the cylinder 14 in position it is pressed inwardly, causing the compression of the spring 19 and moving the locking pin 18 so that it is permitted to snap into a locked position. A retaining cover plate 20 is attached to the under surface of the lock 13 adjacent the stop 16 and serves to provide a seat to maintain the spring 19 in position. The retaining cover plate 20 also serves to retain and restrict the movement of the cylinder 14.

The lock 13 is also provided at its bottom with a substantially annular flange 21, as shown, for example, in Fig. 3. This flange engages within the grooved or bent portion 22 of the stop 16. The engagement of the grooved portion of the stop 16 with the annular flange 21 counteracts any outward movement of the lock 13. The grooved portion 22 of the stop 16 is seated in a predetermined position depending upon the direction in which it is desired to rotate the handle 8 for opening the door. If it is desired to rotate the handle in clockwise direction, the grooved portion 22 will be set in a position indicated by full lines in Fig. 2. If it is desired to rotate the handle in the opposite or counterclockwise direction, the grooved portion 22 will be set in the position indicated by dotted lines in Fig. 2. The grooved portion 22 functions as a stop for limiting the rotation of the handle in the closing operation in accordance with the direction in which the grooved portion is set. The grooved portion also functions as a visual indication of the direction in which the handle should be rotated. Thus in Fig. 2 the positioning of the portion 22 in full lines indicates that the handle should be rotated in a clockwise direction, and as indicated by dotted lines, that the handle should be rotated in a counterclockwise direction. The various well-known elements inside the casing of the lock structure are set so as to control the rotation of the handle in a clockwise or counter-

clockwise direction. The arrangement of the annular flanged portion 21 of the lock 13 and the overlying grooved portion 22 of the stop 16 comprises another feature of this invention.

Although Fig. 2 shows the grooved portion 22 of the stop member 16 positioned on one side or the other of the centerline of the handle 8, to indicate that the handle 8 should be rotated either in a clockwise direction or a counterclockwise direction, whichever is desired, the grooved portion 22 of the stop may also be positioned along the centerline of the handle rather than to one side of the centerline. In the latter case the handle 8 may be rotated in either direction for unlocking the door. In any event, however, the grooved portion 22 of the stop 16 is employed not only as an indicator but also to retain the lock 13 in its closed position until the key is operated to open the lock. The lock 13 will be held by the grooved portion 22 until the flanged portion 21 has been removed from the grooved stop member 16.

It will be obvious that the general principles herein disclosed may be embodied in many other organizations widely different from those illustrated without departing from the spirit of the invention as defined in the following claims.

What is claimed is:

1. A door locking structure comprising a U-shaped handle pivoted perpendicular to the door at one end and having a lock incorporated integrally in said handle at the other end, said lock having a cylinder therein which is also positioned perpendicular to the door, said handle of said locking structure being solid and of uniform density throughout its entire cross-section from end to end, said lock having an annular portion, and a stop mounted on said door and having a grooved portion curved so as to overlie the annular portion of said lock.

2. A door locking mechanism including an inverted substantially U-shaped structure having a pivoted shank portion at one end insertable in the door and a lock having a flanged portion at the other end of said structure, said lock enclosing a cylinder having a bolt slidably mounted therein, said shank portion and said cylinder together with its bolt all being positioned perpendicular to the door, a handle portion integral with and extending between said shank portion and said lock, said handle portion being solid and of uniform density throughout its cross-section, and a stop mounted on said door and having a flanged portion curved so as to overlie the flanged portion of said lock.

3. In a lock structure for a door, said lock structure having a handle pivoted at one end and a flanged lock enclosing a rotatable cylinder at the other end, said handle being solid and of uniform density throughout its entire cross-section and from end to end, and means including a stop mounted on the door and curved so as to overlie the flange of said lock for preventing the lock from being opened, said stop being positioned on the door for restricting the direction in which the handle may be rotated.

4. In a lock structure suitable for doors, comprising a long rod-like handle, a pivot at one end of said handle about which said handle may rotate, a lock having a rotatable cylinder member at the other end of said handle, said lock having a flanged portion, and a stop which is grooved to overlie said flanged portion to restrict the direction in which the handle may be rotated.

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