

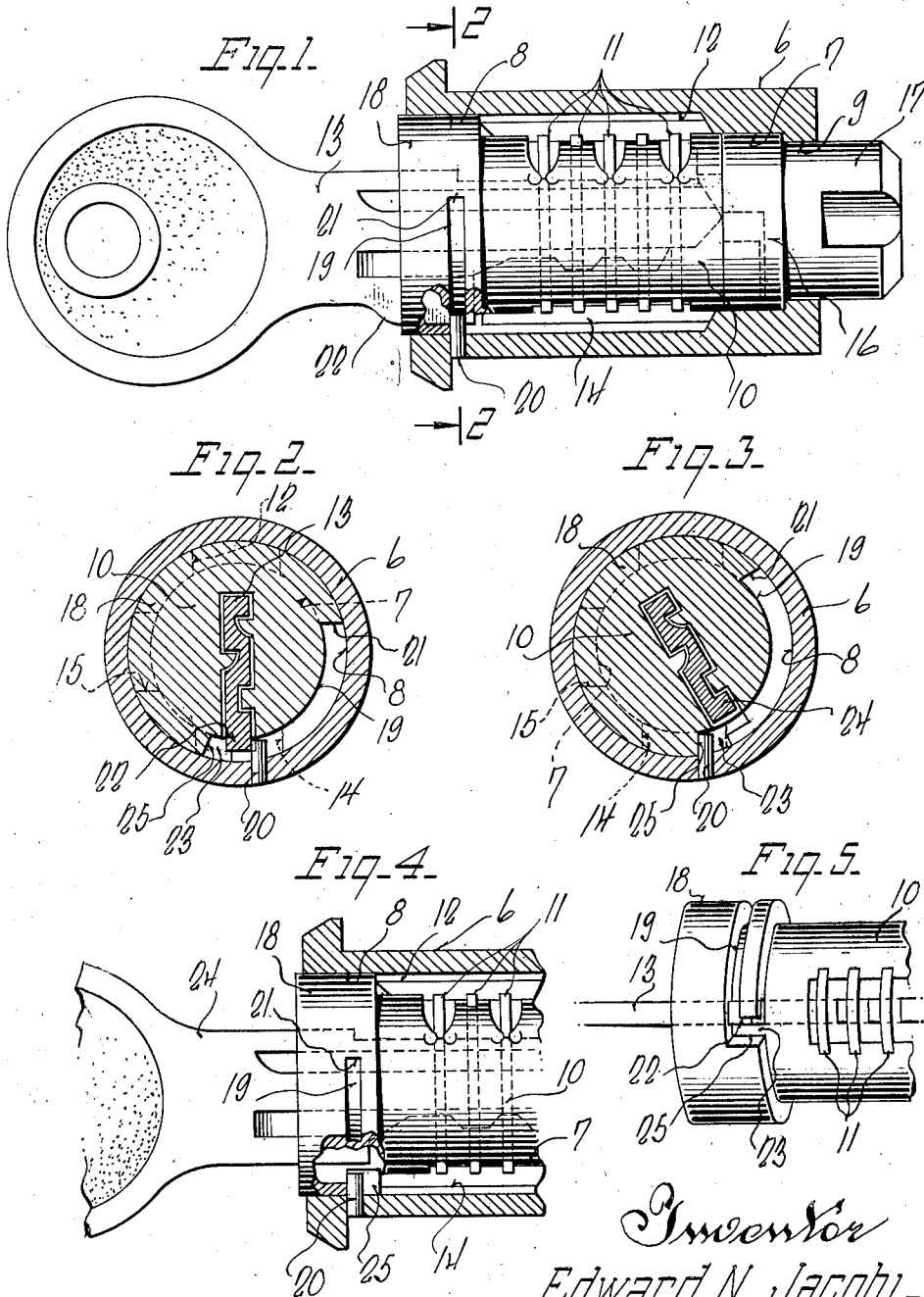
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LOCK

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LOCK

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This invention relates to certain new and useful improvements in locks and refers more particularly to a lock adapted for use with automotive vehicles handles, etc. and provided with means for removably securing the lock cylinder in position.

It is an object of this invention to simplify the construction of locks of this character and to reduce the cost of manufacture by providing a single means for simultaneously limiting the normal locking movements of the cylinder and securing the cylinder against removal.

Another object of this invention is to reduce the length of lock structures of the character described, by combining the elements to perform two functions in a single combination.

Another object of this invention resides in the provision of a lock structure of the character described wherein the usual key cooperates with a stop member to define one limit of the normal locking movement of the cylinder.

Another object of this invention resides in the provision of a special key, by the use of which the lock cylinder may be moved beyond one of its normal limits of movement to a predetermined position relative to its mounting member, at which the cylinder is removable.

And a more specific object of this invention resides in the provision of a bayonet slot engageable with a stop to normally secure the cylinder against removal one end of which forms an abutment engageable with the stop carried by the mounting member to define one limit of the normal locking movement of the cylinder, and the other limit of movement being defined by the engagement of the key with the stop.

With the above and other objects in view which will appear as the description proceeds, my invention resides in the novel construction, combination and arrangement of parts substantially as hereinafter described and more particularly defined by the appended claims, it being understood that such changes in the precise embodiment of the hereindisclosed invention may be made as come within the scope of the claims.

In the accompanying drawing, I have illustrated one complete example of the physical embodiment of my invention constructed according to the best mode I have so far devised for the practical application of the principles thereof, and in which;

Figure 1 is a view partly in elevation and partly in section of a lock structure embodying my invention.

Figure 2 is a cross-sectional view taken through Figure 1 on the plane line 2-2.

Figure 3 is a view similar to Figure 2, but with a special key inserted, and the cylinder turned to its position permitting withdrawal.

Figure 4 is a fragmentary view similar to Figure 1 and illustrating the manner in which the special key clears the stop; and

Figure 5 is a fragmentary perspective view of the lock cylinder detached from its mounting member.

Referring now more particularly to the accompanying drawing in which like numerals designate like parts throughout the several views, the numeral 6 represents a lock mounting member having a longitudinal bore 7 counterbored at its outer end 8 and provided with a reduced bore 9 at its inner end.

A lock cylinder 10 is mounted in the bore 7 of the mounting member and is normally secured against rotation by the engagement of a plurality of locking tumblers 11 in a longitudinal groove 12 communicating with the bore 7, the tumblers being retractable to permit rotation of the cylinder by the insertion of a proper key 12. A second groove 14 is provided diametrically opposite the groove 12 to receive the opposite ends of the locking tumblers 11 upon insertion and withdrawal of the key, and a third groove 15 is provided to permit the key to be withdrawn when the lock cylinder has been turned to its unlocked position, which in the present instance is approximately 90 degrees from its locked position.

A locking element 16 having an operative non-rotatable connection with the adjacent inner end of the cylinder and having an actuating extension 17 projected through the reduced bore 9, is mounted in the innermost end of the bore 7 to provide means for imparting the locking movements of the cylinder to any desired mechanism.

The outer end 18 of the cylinder is enlarged to fit the counter-bore 8 and has a groove formed in its outer periphery throughout slightly more than one fourth of its circumference, to receive the inwardly projecting end of a pin 20 carried by the mounting member and extended into the counter-bore. Engagement of the pin 20 with the groove 19 prevents longitudinal movement of the cylinder with respect to the mounting member and thus secures the same against withdrawal.

The pin 20 also forms a stop to define the normal locking movements of the cylinder, clockwise rotation being arrested by the engagement

of the end 21 of the groove 19 with the pin when the cylinder reaches its unlocked position and counter-clockwise rotation being arrested by the engagement of a projection 22 formed on the key 14, with the pin, when the cylinder reaches its locked position.

To permit the cylinder to be inserted in the mounting member bore and to be removed when necessary the end of the groove 19 opposite its end 21 is extended beyond the key slot and provided with an outlet or bayonet slot 23 communicating with the inner end of the enlargement 18 through which the pin may be passed when the cylinder is turned to properly align the outlet with the pin. However, as it is necessary to move the cylinder in a clockwise direction beyond its normal limit of movement to align the outlet 23 with the pin, and as the key 14 prevents such movement, it is obvious that one having only the usual key cannot remove the cylinder, and, therefore to permit authorized removal of the cylinder a special key 24 is provided.

The key 24 is identical with the key 14 except that the enlargement or projection 22 is omitted to allow its lower edge to clear the inner end of the pin 20 as best illustrated in Figure 4, and permit the cylinder to be turned beyond its normal locking position. The position at which the outlet or bayonet slot 23 is aligned with the pin 20, to permit withdrawal of the cylinder is indicated by the abutment of the end 25 of the groove 19 with the pin 20.

From the foregoing description taken in connection with the accompanying drawing it will be readily apparent to those familiar with the art to which this invention appertains that I have provided novel means for retaining a lock cylinder assembled with its mounting member which, by performing two functions with a single set of elements, greatly reduces the cost of manufacturing and considerably simplifies the design of the lock.

What I claim as my invention is:

1. A lock device comprising, a mounting member, a lock cylinder having tumblers and movable in the mounting member in the performance of its normal locking functions, cooperating means carried by the mounting member and the lock cylinder for releasably securing the lock cylinder in the mounting member, said means becoming inoperative upon movement of the lock cylinder to a predetermined position, and key-controlled means incorporating one of said cooperating means for preventing movement of the lock cylinder to said predetermined position.

2. In a lock device of the character described, a mounting member, a lock cylinder having tumblers and movable in the mounting member in the performance of its normal locking functions, and a single pair of cooperating means carried by the mounting member and the lock cylinder for defining said limits of movement and also releasably securing the lock cylinder against removal from the mounting member.

3. A lock device comprising, a mounting member, a lock cylinder mounted therein and adapted to be moved within predetermined limits in the performance of its normal locking functions upon insertion of a proper key, and a single pair of cooperating means carried by the mounting member and the lock cylinder and incorporating the key for defining said limits of movement and also removably securing the lock cylinder in the mounting member.

4. A lock device comprising, a mounting member, a lock cylinder mounted therein and movable upon the insertion of a proper key within predetermined limits in the performance of its normal locking functions, an abutment carried by the mounting member, an abutment carried by the lock cylinder, and engageable with the mounting member abutment to releasably secure the lock cylinder in the mounting member, said abutments being disengageable from each other upon movement of the lock cylinder to a predetermined position, said movement of the lock cylinder being prevented by the engagement of the key with the mounting member carried abutment.

5. In a lock device of the character described, a mounting member, a lock cylinder movable therein in the performance of its normal locking functions, an abutment carried by the mounting member, an abutment carried by the lock cylinder and engageable with the mounting member abutment to releasably secure the lock cylinder in the mounting member, said abutments being disengageable from each other to permit withdrawal of the lock cylinder upon movement thereof to a predetermined position relative to the mounting member, and means whereby the mounting member carried abutment normally prevents movement of the lock cylinder to said predetermined position.

6. A lock device comprising, a mounting member, a lock cylinder having tumblers and mounted therein for movement within predetermined limits in performance of its normal locking functions, and abutment carried by the mounting member, and an abutment carried by the lock cylinder and engageable with the mounting member abutment throughout movement of the lock cylinder within said predetermined limits to prevent withdrawal of the lock cylinder from the mounting member, said abutments being disengageable from each other upon movement of the lock cylinder beyond one of its normal limits of movement, the mounting member carried abutment cooperating with a key inserted into the lock cylinder to define the normal limits of movement of the lock cylinder and normally prevent its movement beyond said one limit of movement.

7. In a lock device comprising, a mounting member, a lock cylinder mounted therein and movable upon the insertion of a proper key within predetermined limits in the performance of its normal locking functions, cooperating means carried by the mounting member and the lock cylinder for preventing withdrawal of the lock cylinder from the mounting member during movement of the lock cylinder within said predetermined limits, said means being disabled by movement of the lock cylinder beyond one of its normal limits of movement, and movement of the lock cylinder beyond said normal limit of movement being prevented by the engagement of the key with the mounting member carried means for preventing withdrawal of the cylinder.

8. A lock device comprising a mounting member, a lock cylinder removably mounted in the mounting member, said lock cylinder having key operable tumblers and being movable between predetermined limits in the performance of its normal locking functions upon retraction of the tumblers by the insertion of a proper key, and means cooperating with the key for defining said limits of movement and also removably securing the lock cylinder in the mounting member.

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