Sept. 3, 1940. E. N. JACOBI 2,213,814

LOCK

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Fig. 1.

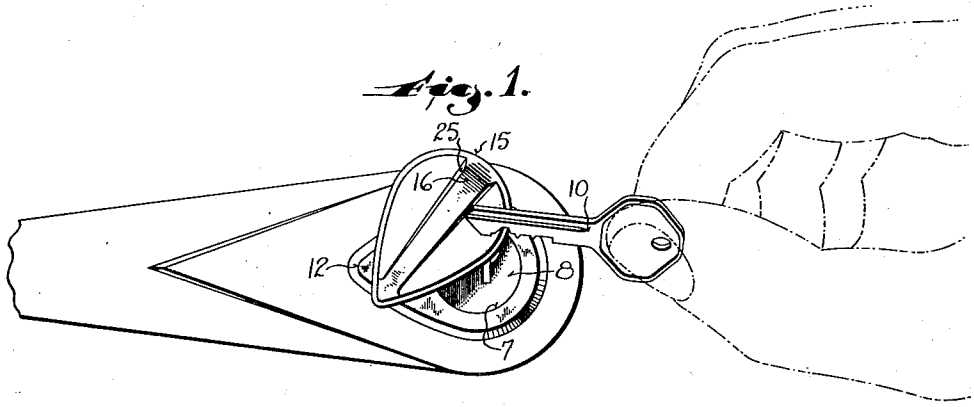


Fig. 2.

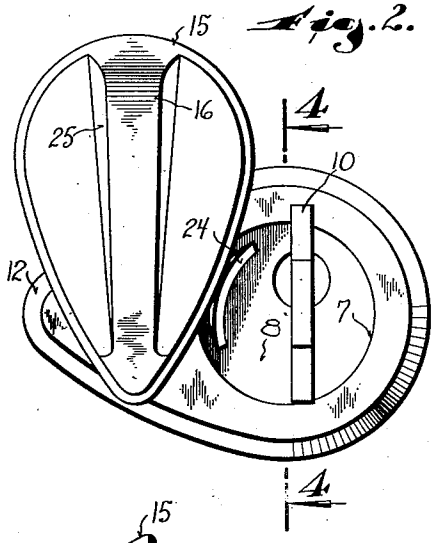


Fig. 3.

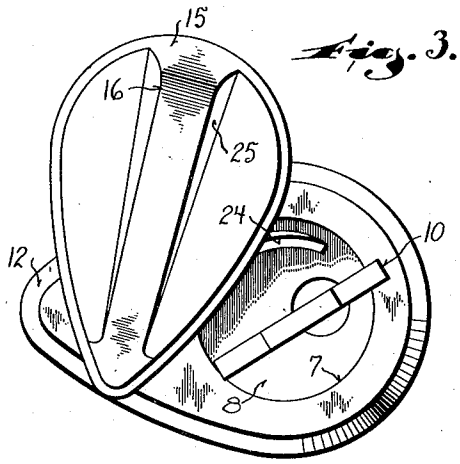
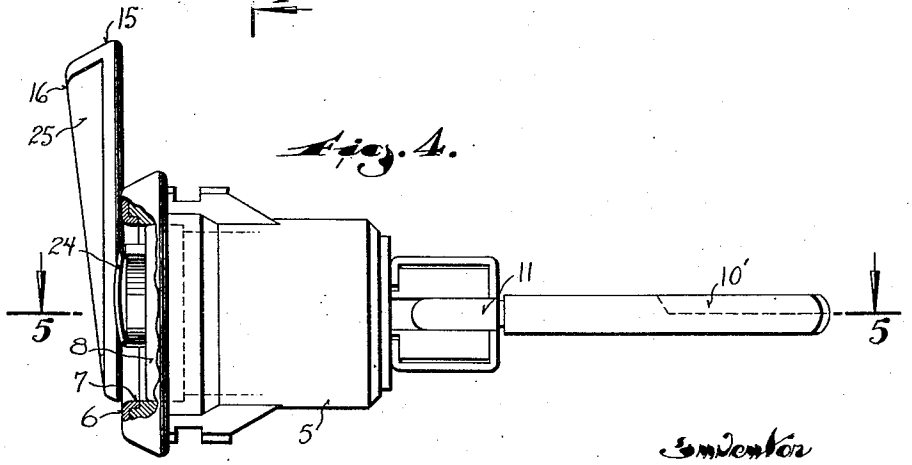


Fig. 4.



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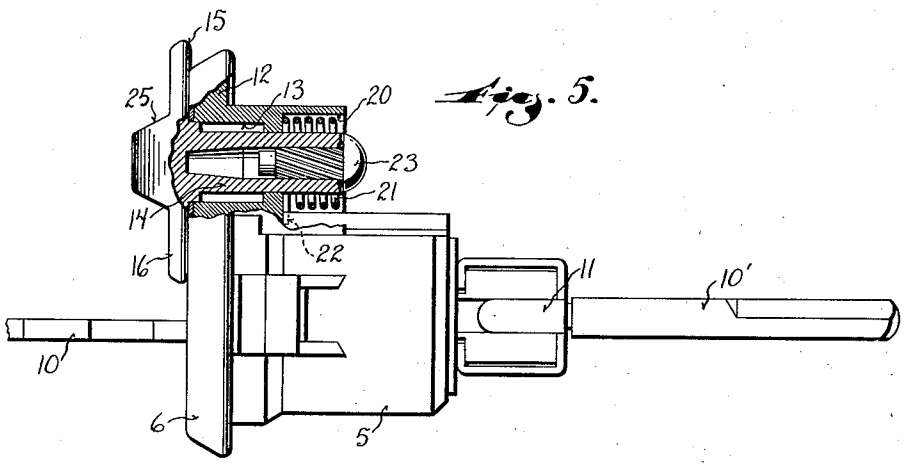


Fig. 5.

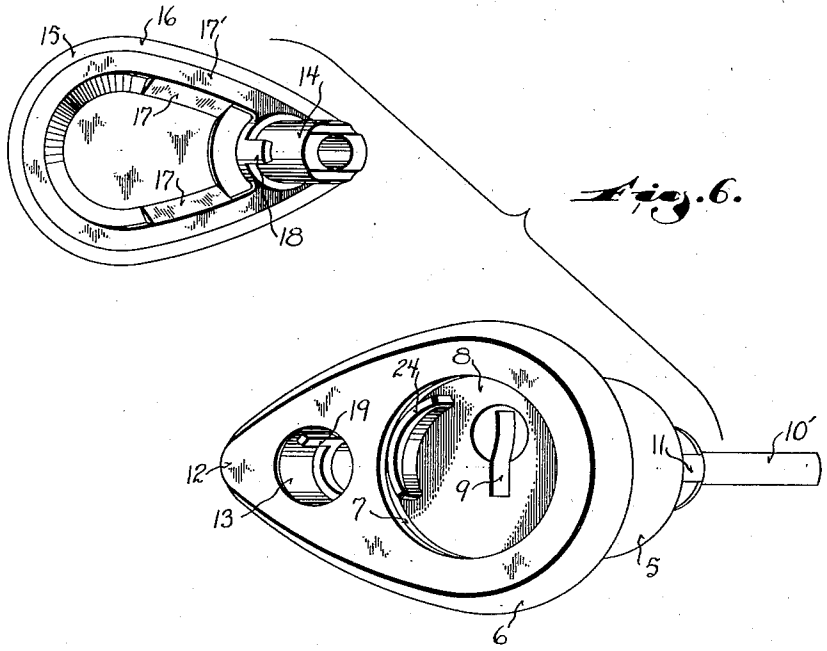


Fig. 6.

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LOCK

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Application December 11, 1939, Serial No. 308,665

14 Claims. (Cl. 70—455)

This invention relates to locks and refers particularly to cylinder locks of the type used in automobile door and deck handles. Such locks are exposed to all sorts of weather, which makes it desirable to provide them with covers, generally termed "dust covers." To be effective, these covers must close not only the keyway but the entire mouth of the cylinder bore.

The covers heretofore in use for this purpose may be roughly divided into two classes: the automatically closing type wherein the cover is yieldingly urged to its closed position; and the type wherein the cover remains open (after being opened) permitting access to the keyway but necessitating manual closure. The objections to this latter type are obvious, for almost invariably the cover is left open.

The automatically closing type of cover heretofore in use also has objections. These arise from the fact that the cover must be held open manually during insertion of the key which, unless the operator is unusually ambidextrous, means that he must use two hands in opening the lock. The disadvantage of this construction will be readily appreciated by any one who has been faced with the necessity of opening such a lock during inclement weather, as in a rain storm, and with both arms loaded with packages and bundles.

Such an unfortunate individual possibly may succeed in extricating his keys from his coat pocket without setting down the packages and bundles, and through skillful balancing might be able to insert the key in the keyhole, but the closed cover must be first opened and held open. Consequently, there is no alternative but to set down his precariously perched load and with one hand hold the cover open, while the key is inserted with the other hand.

It is, therefore, an object of this invention to provide a lock of the character described equipped with a dust cover so designed that it may be opened by pushing thereon with the key, to be held open by a detent which permits the key to be inserted, and whereby rotation of the cylinder from its locked position and subsequent withdrawal of the key releases the cover for closure.

With the above and other objects in view, which will appear as the description proceeds, this 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.

The accompanying drawings illustrate one complete example of the physical embodiment of the invention constructed according to the best mode so far devised for the practical applications of the principles thereof, and in which:

Figure 1 is a front view of a lock embodying this invention mounted in an automobile door handle and showing the manner in which its dust cover may be opened with one hand;

Figure 2 is an enlarged front view of the lock showing the cover held open;

Figure 3 is a view similar to Figure 2 and illustrating the manner in which the cover is released for closure by rotation of the cylinder out of its locked position;

Figure 4 is a side view of the lock with parts broken away and in section, said view being taken on the plane of the line 4—4 in Figure 2;

Figure 5 is a view partly in longitudinal section and partly in elevation taken on the plane of the line 5—5 of Figure 4; and

Figure 6 is a perspective view of the cover and front end of the lock showing the inside or undersurface of the cover.

Referring now particularly to the accompanying drawings, in which like numerals indicate like parts, the numeral 5 designates the body of the lock which is preferably a die casting having a plated and polished escutcheon cap 6 covering its exposed front end. A bore 7 in the lock body rotatably receives a lock cylinder 8 which is of customary construction having a keyway 9 to receive a proper key 10 by which the tumblers of the cylinder are retracted to release the cylinder for rotation.

In the lock illustrated, rotation of the cylinder is transmitted to the latching mechanism controlled by the lock through a stem 10′ having a non-rotatable but oscillatable connection 11 with the inner end of the cylinder.

At its front end, the lock body has a lateral extension 12 over which the escutcheon cap also extends. A bore 13 through this lateral extension receives the stem 14 of a dust cover 15. The cover and its stem, like the body, are preferably a die casting with the outer surface of the cover provided with an escutcheon cap 16 of plated and polished sheet metal. The undersurface of the cover is hollowed out and has opposite inclined surfaces 17 at the inner periphery of its marginal rim 17′ for a purpose to be later described.

The cover is of such size as to extend over the mouth of the bore 7 in its closed position which

is defined by cooperating stops 18 and 19 on the stem and the wall of the bore 13, respectively.

At its inner end, the bore 13 is enlarged to provide a spring pocket 20 in which a coiled spring 21 is received. This spring is both a torsion spring and a compression spring. Its inner end rests on the bottom of the spring pocket and is secured against rotation by projecting into a recess 22 opening to the side of the spring pocket 20, while its outer end is secured to the adjacent end of the stem by looping the outer convolution around a drive screw 23 or other suitable fastening means secured in the stem.

During assembly, the spring is placed under tension so that it yieldingly urges the cover edgewise across the face of the lock body to its closed position and flatwise down onto the face of the lock body.

Projecting from the front end of the lock cylinder 8, which is preferably below the front face of the body, is a cam or detent 24. This cam or detent comprises substantially an arcuate wall projecting edgewise from the front face of the cylinder. The outer edge thereof is curved convexly in the longitudinal direction so that the wall is high enough at its medial portion to project beyond the plane of the front face of the lock body while the ends thereof are flush with or slightly beneath this plane.

This curvature of the outer edge of the cam and the arcuate formation of the wall gives the cam an outward radial inclination, which together with the incline 17 enables the rim 17' on the cover to ride up and over the cam or detent during opening of the cover. The edge of the cover which engages the detent to hold the cover open may be said to constitute an abutment which cooperates with the detent to releasably hold the cover open.

To facilitate opening of the cover and to enable the same to be opened by pushing thereon with the key, as illustrated in Figure 1, a rib 25 projects from the face of the cover. When the cover is closed, the cam 24 is received in the hollow undersurface of the cover. This permits the cover to snugly engage the face of the lock body about its entire periphery.

During opening of the cover and its engagement behind the cam or detent in the manner described, the tension of the spring 21 in the torsional direction is obviously increased; and as the cover rides up over the cam, it is deflected out of its opening and closing path in which the spring tends to maintain it so that it moves away from the face of the body to snap down onto the body when the edge of the cover, hereinbefore referred to as an abutment cooperating with the detent, crosses the point of the cam or detent. When this occurs, the cover is fully open to expose the keyhole.

Upon turning the cylinder in either direction from its locked position, the high medial portion or point of the cam or detent is carried away from its position obstructing closure of the cover; and when the cylinder has been rotated far enough, the trailing low end of the cam moves under the adjacent edge of the cover, thus allowing the spring to swing the cover across the cam toward its closed position. Generally, the cover swings toward closure until it strikes the key, but closure may be arrested in a medial position by the friction between the cover rim and the cam.

In either instance, upon return of the cylinder to its position illustrated in Figure 2 which is the only position at which the key can be withdrawn, the cam rides under the rim of the cover and into the hollow of the cover so that only the key obstructs its full closure. Consequently, upon withdrawal of the key, the cover snaps to its fully closed position.

It is, of course, also possible to effect closure of the cover, if it has been opened, without turning the cylinder by merely applying a light closing force on the edge of the cover. This is possible by virtue of the fact that the shoulder or "point" of the cam behind which the edge of the cover engages to be held open, is inclined at an angle of about sixty degrees (60°) to the plane of the front face of the lock body. Hence, a slight closing force applied to the cover causes the leading rim of the cover to jump over the cam.

From the foregoing description taken in connection with the accompanying drawings, it will be readily apparent that this invention provides a so-called dust cover for cylinder locks, having many advantages over past devices of this type.

What I claim as my invention is:

1. In a lock: a body having a bore; a lock cylinder rotatable in the bore; a cover for the mouth of the bore; means mounting the cover on the front face of the body for edgewise pivotal movement about a fixed axis to and from a closed position and for flatwise movement toward and from the front of the body; spring means yieldingly urging the cover toward its closed position and down onto the front of the body; and a detent on the front end of the cylinder adapted to have an edge of the cover engage therewith for holding the cover in an open position, said detent being movable by rotation of the cylinder to an inoperative position freeing the cover for spring propelled closure so that turning of the cylinder as in opening the lock releases the cover for closure.

2. In a lock having a body provided with a bore opening to its front face; a cylinder mounted in the bore and rotatable upon the insertion of a proper key into the cylinder; a dust cover for the mouth of the bore; means mounting the cover for edgewise motion across the face of the body to and from its closed position; means yieldingly urging the cover to its closed position; and a cam on the front end of the cylinder positioned to engage an edge of the cover to hold the same open when the cylinder is in its locked position of rotation, such engagement necessitating relative motion between the cover and the cylinder in a direction axial to the cylinder, and said cam being so shaped and positioned on the cylinder as to release the cover for closure upon turning of the cylinder away from its locked position by a proper key whereby rotation of the cylinder as in unlocking the lock and withdrawal of the key automatically effects closure of the cover.

3. In a lock of the type used in automobile handles: a body having a bore opening to the front face thereof; a cylinder rotatable in the bore; a dust cover movably mounted on the front face of the body biased to closed position and movable to opened position at all times; and means on the cylinder for holding the cover open after the cover has been moved to its open position, said means being movable to an inoperative position by rotation of the cylinder out of its locked position to release the cover for closure.

4. In a lock of the character described: a body having a bore opening to its front face; a lock cylinder rotatable in the bore; a cam on the front end of the cylinder have a part projecting beyond the plane of the front face of the body adjacent to the mouth of the bore, said part having a surface inclined in an outward radial direction to an abrupt shoulder on the outer edge of the cam; a dust cover pivotally mounted on the lock body so as to be movable edgewise across the front face thereof to and from its closed position over the mouth of the bore; and means yieldingly urging the cover to its closed position and down toward the face of the body, said cam being so positioned on the cylinder that the cover in opening rides up the inclined surface of the cam and snaps back of the abrupt shoulder of the cam to be held in open position until the cylinder is turned out of its locked position.

5. In a lock of the character described: a body having a bore opening to its front face; a lock cylinder rotatable in the bore; a cover for the mouth of the bore mounted from the body for edgewise motion to and from closed position and for limited flatwise motion toward and from the plane of the front face of the body; a spring yieldingly urging the cover closed and down onto the front face of the body; and a cam on the front end of the cylinder having a shoulder behind which the cover is engageable when the cylinder is in its locked position of rotation, whereby the cover is held open, said cam having an inclined surface leading to the shoulder which permits opening of the cover in the locked position of the cylinder and which permits closure of the cover when the cylinder is turned out of its locked position of rotation.

6. In a lock of the character described: a body having a bore opening to the front face thereof and having a lateral extension provided with a bore parallel to the first named bore; a cylinder rotatable in the first named bore; a cover for the mouth of said first named bore; a cover mounting stem in the second named bore and connected with the cover so that the cover is movable edgewise to and from its closed position by swinging about the axis of said stem and flatwise toward and from the front face of the body; a spring connected with said stem and the body for yieldingly urging the cover edgewise to its closed position and flatwise down onto the lock body; and a cam on the front end of the cylinder having an inclined surface leading to a shoulder, said cam being so positioned as to enable edgewise motion of the cover to open position whereupon the cover engages behind said shoulder and whereby rotation of the cylinder out of its locked position releases the cover for closure.

7. In a lock of the character described: a body having a bore opening to the front face thereof and having a lateral extension provided with a bore parallel to the first named bore; a cylinder rotatable in the first named bore; a cover for the mouth of said first named bore; a cover mounting stem in the second named bore and connected with the cover so that the cover is movable edgewise to and from its closed position by swinging about the axis of said stem and flatwise toward and from the front face of the body; a spring connected with said stem and the body for yieldingly urging the cover edgewise to its closed position and flatwise down onto the lock body; a cam on the front end of the cylinder having an inclined surface leading to a shoulder, said cam being so positioned as to enable edgewise motion of the cover to open position whereupon the cover engages behind said shoulder and whereby rotation of the cylinder out of its locked position releases the cover for closure; and cooperating means on said stem and the lock body for limiting swinging movement of the cover and defining its closed position.

8. In a lock of the type used in automobile handles: a body having a bore opening to the front face thereof; a cylinder rotatable in the bore; a cover for the mouth of the bore; means mounting the cover on the body for edgewise pivotal motion about an axis spaced from the bore and parallel thereto and for flatwise movement toward and from the front face of the body; and a spring connected with the cover and the body for yieldingly urging the cover to its closed position and for yieldingly drawing the cover down onto the front face of the body.

9. In a lock of the type used in automobile handles: a body having a bore opening to the front face thereof; a cylinder rotatable in the bore; a cover for the mouth of the bore; means mounting the cover on the body for edgewise pivotal motion about an axis spaced from the bore and parallel thereto and for flatwise movement toward and from the front face of the body; a spring connected with the cover and the body for yieldingly urging the cover to its closed position and for yieldingly drawing the cover down onto the front face of the body; and a detent on the lock cylinder engageable by the cover for holding the cover open, said detent being movable to an inoperative position releasing the cover for closure upon rotation of the cylinder out of its locked position.

10. In a lock: a body having a bore opening to the front face thereof; a key operable lock cylinder rotatable in the bore; a cover for the front face of the cylinder movable at all times to an open position; a spring yieldingly urging the cover closed; a detent on the cylinder so positioned with relation to the motion of the cover during opening thereof that the cover automatically engages the detent upon being moved to its open position, to be held thereby in a position enabling insertion of a key, said detent being movable by means of the key inserted into the cylinder to release the cover for closure.

11. In a lock: a body having a bore opening to its front face; a cylinder rotatably mounted in the bore; a movable cover for the face of the cylinder; spring means yieldingly uring the cover toward its closed position; a detent cooperating with said spring means to automatically hold the cover in an open position upon movement of the cover to said position so that insertion of a key into the cylinder may be effected without the necessity of manually holding the cover against the closing force of its spring; and means to disable the detent.

12. In a lock: a body having a bore opening to its front face; a key operable cylinder rotatable in the bore; a movable cover for the face of the cylinder; spring means yieldingly urging the cover toward its closed position; a detent and an abutment cooperating to restrain the cover against closing when moved to its open position, said detent and abutment being arranged to deflect past each other during opening movement of the cover and to snap into cover holding engagement directly in response to opening of the cover; and a cam actuated by key operation of

the cylinder to deflect said detent and abutment out of engagement for releasing the cover for closure by the spring means.

13. In a lock: a body having a bore opening to its front face; a key operable cylinder rotatably mounted in the bore; a movable cover for the face of the cylinder; spring means yieldingly urging the cover toward closed position; and a detent engageable by the cover to retain the same in its open position; said spring means yieldingly constraining the cover to a defined path from which it may be deflected against the force of the opening means to allow opening movement of the cover past the detent, and said detent being movable to an inoperative position enabling spring propelled closure of the cover, by key operation of the cylinder.

14. In a lock: a body having a bore opening to its front face; a key operable cylinder rotatable in the bore; a cover for the face of the cylinder; a spring for yieldingly urging the cover to its closed position; means automatically rendered operable by the single act of opening the cover while the cylinder is in its key inserting and removing position of rotation for retaining the cover in its open position against the force of said spring; and means to disable said retaining means upon rotation of the cylinder away from its key inserting and removing position.

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