

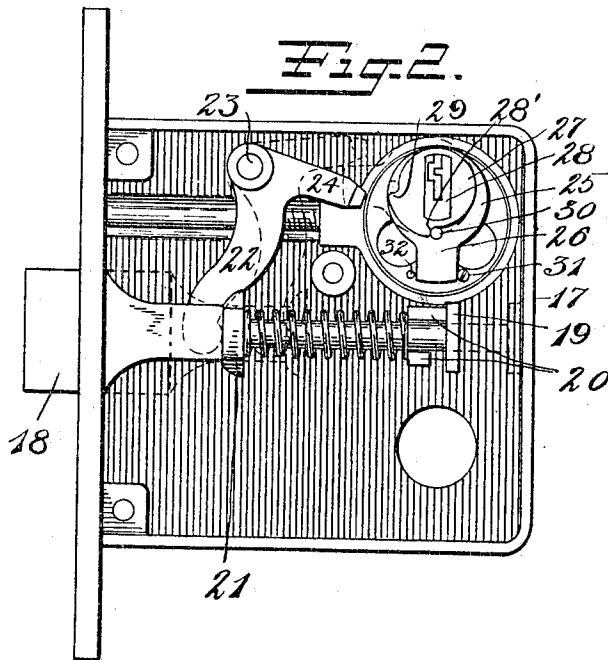
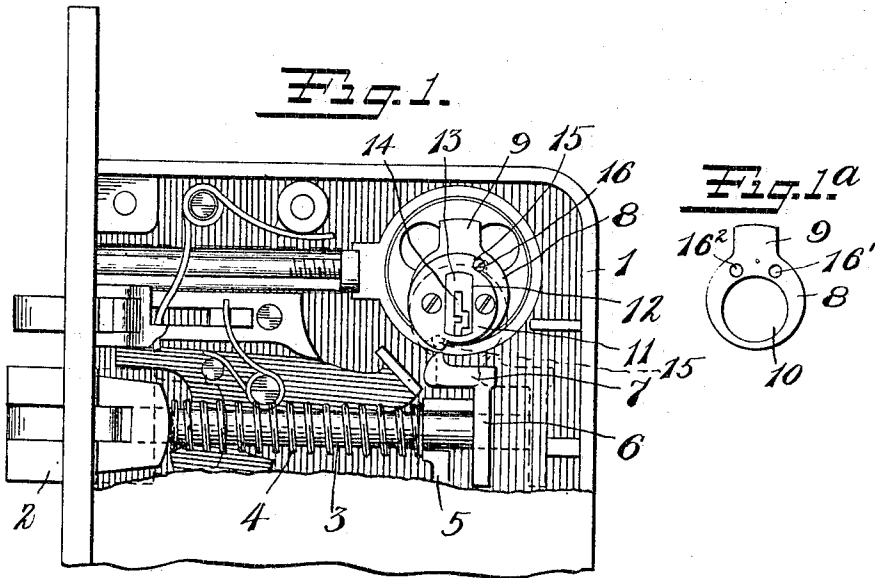
E. L. TEICH.
LOCK.

APPLICATION FILED APR. 26, 1909.

956,000.

Patented Apr. 26, 1910.

3 SHEETS—SHEET 1.



Witnesses:
Chas. A. Reid
Fred M. Dannenfelser

Inventor:
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By his Attorneys
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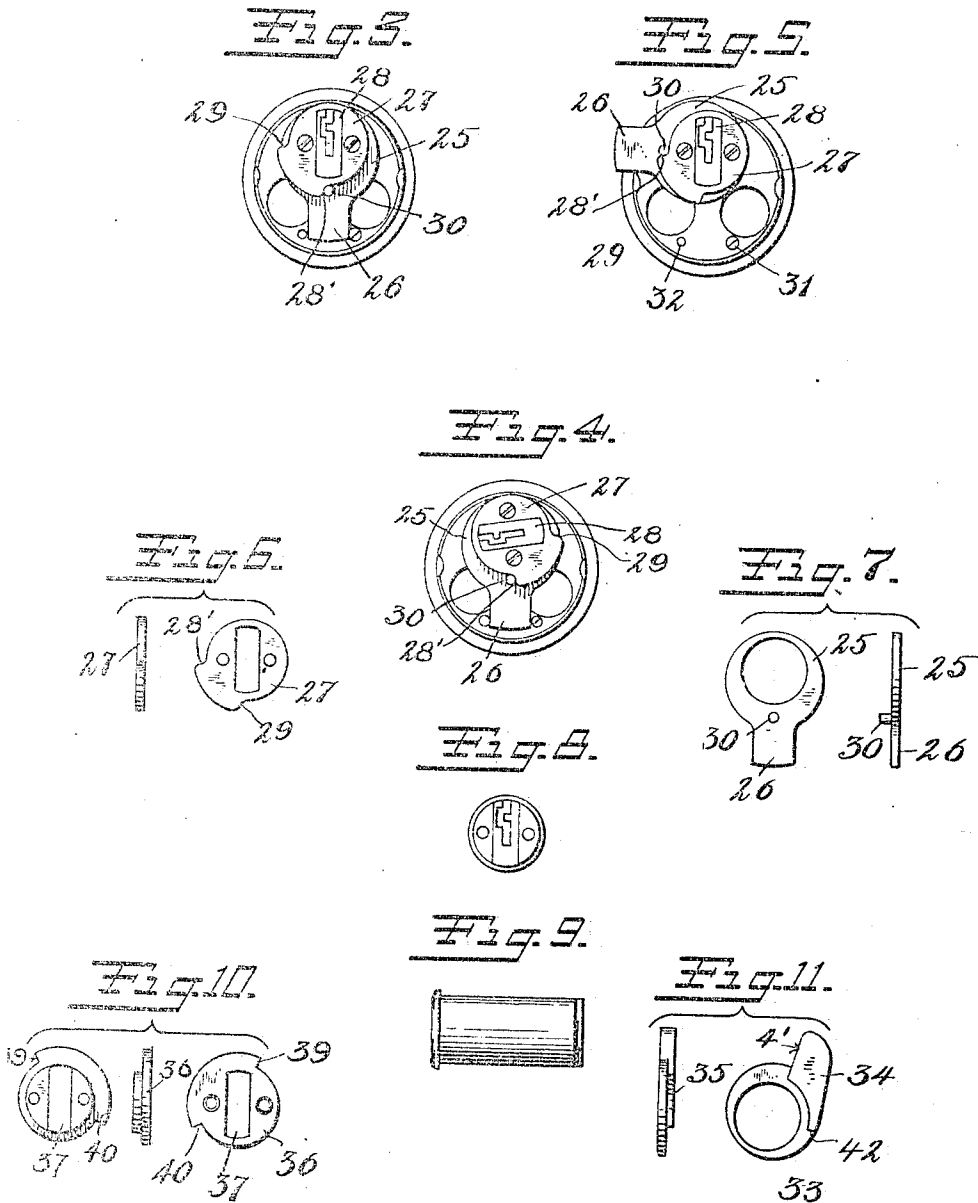
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Witnesses:
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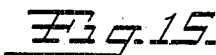
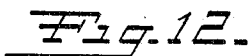
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LOCK.

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3 SHEETS—SHEET 3.



Witnesses

Inventor

E. L. TEICH

By his Attorney

UNITED STATES PATENT OFFICE.

ERNEST L. TEICH, OF NEW BRITAIN, CONNECTICUT, ASSIGNOR TO P. & F. CORBIN, OF NEW BRITAIN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

LOCK.

956,000.

Specification of Letters Patent.

Patented Apr. 26, 1910.

Application filed April 26, 1909. Serial No. 492,171.

To all whom it may concern:

Be it known that I, ERNEST L. TEICH, a citizen of the United States, residing at New Britain, county of Hartford, State of Connecticut, have invented certain new and useful Improvements in Locks, of which the following is a full, clear, and exact description.

My invention relates to improvements in locks and is particularly concerned with improved mechanism for holding a spring-projected locking bolt or latch in retracted position by means of the key bolt operating mechanism.

In devices of this character, as ordinarily constructed, the latch or bolt, usually the spring-actuated knob latch, is held in retracted position by means of a pair of push buttons extending through the face plate of the lock and arranged to operate in such manner that when the latch is retracted, the pressing in of one of said buttons will retain the latch in its retracted position, whereas the pressing in of the other of said buttons will serve to release the latch and permit it to be projected by means of its spring. In these cases, however, it is necessary to retract the latch by means of the knob and then operate one of the buttons to retain the same in such retracted position. This, of course necessitates also the opening of the door, inasmuch as these buttons are arranged in the face-plate of the lock.

It is in some cases desirable that the door be provided with a stationary knob on the outside and that the opening of the door from the outside may only be effected by means of a key, whereas opening from the inside may be effected by means of a knob which actuates the usual roll-back and spring-latch, and it is also desirable to have, in conjunction with such construction of lock, means for retracting the spring locking bolt by means of a key in such manner that the key may be withdrawn and the latch retained in retracted position. By this means, in the case, for example, of schools, the janitor may unlock the door from the outside at opening of school and, while the latch is still retracted, withdraw the key, leaving the door free to be opened from both the inside and the outside. On the other hand, in case it is desirable that the door, for example, of a schoolroom, may be opened only from the inside, the latch may be left in projected po-

sition, whereby the door may only be opened from the outside by means of a key, while at the same time it may be readily opened from the inside by the means of the usual rotating knob.

The invention further contemplates a latch retracting and retaining mechanism operable by means of a key so constructed that the parts may be readily reversed so that the locking mechanism may be positioned upon and operated from either side of the door, as desired.

The invention further contemplates so constructing this lock operating mechanism that it may be adapted to be used either with a so-called "handed" lock or "right and left-hand" lock.

With these and other objects in view, the invention consists in the construction and arrangement of parts, preferred embodiments of which are illustrated in the accompanying drawings in which,

Figure 1 is a view of a portion of a so-called "handed" lock, the cover-plate being removed to disclose the lock mechanism. Fig. 1^a shows in detail a part employed in this lock mechanism. Fig. 2 is a corresponding view of a so-called "right and left-hand" lock. Figs. 3, 4 and 5 illustrate three different steps in the movement of the locking cams, which are employed in the lock construction shown in Fig. 2. Fig. 6 comprises edge and face views respectively of one of the locking cams shown in Figs. 2 to 5 inclusive. Fig. 7 comprises an edge and face view of another of the locking cams, illustrated in Figs. 2 to 5 inclusive. Fig. 8 is an end view of the cylinder plug of a so-called "cylinder" lock. Fig. 9 is a side elevation thereof. Fig. 10 comprises an edge view and opposite face views of a modified form of locking cam. Fig. 11 comprises an edge and face view of another form of locking cam employed in conjunction with that illustrated in Fig. 10. Fig. 12 is a view similar to Fig. 1 of a modified form of my invention as applied to a so-called "handed" lock and in which the locking cams are not reversible. Figs. 13, 14 and 15 illustrate three different steps in the movement of the locking cams employed in the construction illustrated in Fig. 12.

In the embodiment of my invention herein selected for illustration, I employ the so-called "cylinder" type of lock having a

latch operating cam arm, which is actuated from the cylinder plug, which in turn is operated or rotated by means of the key.

Referring particularly to the construction illustrated in Fig. 1, the lock comprises the casing 1, having suitably mounted therein a spring latch-bolt 2, including a bolt shank 3 and a spring 4, said spring being interposed between the head of the bolt and the usual abutments 5 on the casing. The rear end of the bolt shank 3 carries a cross head 6 having a beveled forward extension 7 adapted to be engaged and actuated by the locking cam arm of the cylinder lock. In the ordinary construction of cylinder lock at present in use, a single locking cam arm is fixed upon the inner end of the cylinder plug, so that, upon turning the plug by means of the key, said arm will operate to retract the latch. In so doing, however, the cylinder plug does not make a complete revolution, and hence the key can not be withdrawn from the lock until the cylinder plug has returned to its initial position. In the construction herein described, on the contrary the locking cam is made in two parts, so arranged that the cylinder plug is permitted some considerable lost rotary motion before beginning the actuation of the cam arm, which operates the bolt, so that when said cam arm has completed its travel for retracting the bolt, the cylinder plug will have made one complete revolution, thereby returning to its initial position, and, by bringing the pin-tumbler mechanism into alinement, permitting the withdrawal of the key while at the same time the locking cam is held in latch retracted position. In the construction particularly illustrated in Fig. 1, this two part locking cam comprises a rotary member 8, which is illustrated in detail in Fig. 1^a, and consists of a body portion having a cam locking projection 9. The body portion has an aperture 10 adapted to fit over the end of the cylinder plug of the lock, the latter being made to project slightly beyond the rear of the cylinder casing. The second portion of the locking cam consists of the member 11, having an oblong opening 12, which fits over a corresponding projection 13 on the rear end of the cylinder plug, through which projection 13 the keyhole 14 extends. Said member 11 is provided with peripheral shoulders 15—15 adapted to engage a pin or projection 16 upon the cam member 8 when the second member 11 is properly operated from the cylinder plug by the key.

Inasmuch as the cam member 8 is rotatably mounted upon the cylinder plug, it is obvious that when said plug is rotated by means of the key, the member 11 will rotate independently of the cam member 8 until the lower shoulder 15, as shown in Fig. 1, has been brought into engagement with the

projection 16 on the member 8. Continued rotation of the cylinder plug will thereafter cause the member 8 to rotate in unison until the cam arm 9 of said member has been brought into engagement with the extension 7 of the latch bolt and has retracted the latch to dotted line position, as illustrated in Fig. 1. When the cam member 9 has retracted the latch, as described, the cylinder plug will have made one complete revolution, and hence will be in position to permit removal of the key, and upon such removal of the key, the pin tumblers of the lock will serve to hold the cam projection 9 in the path of the projection 7 of the retracted latch bolt and consequently hold the bolt retracted against its spring 4. The shoulders 15 of the member 11 in the construction just described are so positioned and proportioned with respect to the projection 16 upon the member 8 that this cylinder locking mechanism may be so assembled as to permit its use upon the reverse sides of the casing 1. This is effected by detaching the member 11 from the cylinder plug and reversing its position thereon, while at the same time the projection 16 on the member 8 is shifted from its threaded aperture 16', as illustrated in Figs. 1 and 1^a, to 16², by which construction the cam member 9 may be actuated in the opposite direction when the cylinder lock casing is inserted in a suitable aperture in the opposite side of the main lock casing.

In Fig. 2 is illustrated a form of the invention in which it is employed with a so-called right or left hand lock, or one which may be so attached that the door may be closed in either direction. In this construction the lock comprises the usual casing 17 having suitably mounted therein a locking bolt 18, the shank of which bolt has upon its rear end a cross head 19 to limit the outward throw of the bolt by coming in contact with projections 20—20 on the casing. The bolt shank also is substantially symmetrical in cross section and is provided with a collar 21 adapted to be engaged by one arm 22 of the bell crank lever pivoted at 23 upon the casing, said lever having a second arm 24 arranged to lie in the path of the cam arm of the cylinder locking cam. In this construction also the locking cam is formed in two parts and comprises the cam member 25, which is substantially the same in general form as the member 8, illustrated in Fig. 1^a, and has a cam arm 26. Said member is rotatable upon the projecting end of the cylinder plug of the cylinder lock. A second or cam actuating member 27 is fitted over the key hole projection 28 of the cylinder plug, which member 27 is provided with shoulders 28' and 29 adapted to engage a pin or projection 30 fixed on the member 25. Since the member 27 is fixed to the cylinder

plug, when the plug is turned by means of the key, said member 27 will be simultaneously rotated until its shoulder 29 is brought into engagement with the pin 30 upon the cam member 25. Further rotation of the member 27 will cause the cam arm 26 to be brought into engagement with the arm 24 of the bell crank bolt actuating lever, whereby said lever and bolt will be moved to the dotted line position illustrated in Fig. 2. At the same time, when the parts are in this position, the cylinder plug of the cylinder lock will have accomplished a complete rotation and will be in a position to permit of the withdrawal of the key, and such withdrawal will serve to retain the cam arm 26 in contact with the lever arm 24, to hold the bolt 18 in retracted position. This form of lock also may be used on reverse sides of the lock casing, so that the cylinder lock may project from either side of the door as desired. To this end the member 27 is made removable and reversible to position its shoulder initially upon the opposite side of the pin or projection 30, and at the same time, the pin 31, against which the cam arm 26 rests when in normal position, may be shifted to the opposite side of the cylinder lock casing and mounted at the point 32 thereof, whereupon the parts will be assembled in a manner to permit the cylinder lock to be inserted within the opposite side of the main lock casing 17.

In order to fully illustrate the operation of the locking cam members 25 and 27 illustrated in Fig. 2, the same are shown in different positions in Figs. 3, 4 and 5.

Fig. 3 illustrates the initial position of the cam members with the shoulder 28' of the member 27 against the pin or projection 30.

Fig. 4 illustrates the relative positions of the members 25 and 27 after the cylinder plug has been given a partial rotation and the second shoulder 29 of the member 27 has been brought around and into engagement with the pin or projection 30 on the member 25.

Fig. 5 illustrates the final position of the locking cams when the cam projection 26 is moved to actuate the lever and consequently to retract the latch. By comparison between Figs. 3 and 5, it will be seen that the position of the key hole in both figures, is the same, and that the cylinder plug is in position to permit insertion or removal of the key.

Figs. 6 and 7 illustrate in detail in detached views the members 25 and 27 respectively, employed in Fig. 2.

In Fig. 12 is illustrated a form of my invention which is adapted to be used with a so-called "handed" lock and which is not reversible as in the case of the constructions heretofore described. This construction, however, is of advantage for the reason that

it provides for the compact positioning of the parts within the periphery of the cylinder lock casing, while at the same time, by reason of the peculiar form and mounting of the cam locking member, very considerable leverage is secured in the actuation of the locking bolt.

Referring to the parts illustrated in Fig. 12, the lock comprises the casing 1' having mounted therein a locking bolt 2', which bolt has a shank 3' and a spring 4' interposed between the head of the bolt and suitable retaining projections 5' on the casing. The shank 3' is also provided with a cross head 6', having an extension 7' adapted to be engaged by the locking cam of the cylinder lock. The cam member in this form of my invention consists of the ring like body portion 33, Fig. 11, having a cam projection 34 extending substantially tangentially therefrom, which projection may be offset or raised above the plane of the body portion 33, if desired, as illustrated at 35, to provide the requisite thickness for the cam projection 34. The cam actuating member consists of a body portion 36, Fig. 10, having an elongated opening 37 adapted to fit over the key hole projection 38 at the rear end of the cylinder plug, Fig. 12. The member 36 has the shoulders 39 and 40 adapted to engage the front edge 41 and rear end 42 respectively of the cam finger 34 during the actuation thereof. In the operation of this form of my invention, the cam actuating member 36 is rotated by means of the rotation of the cylinder plug until the shoulder 40 is brought into contact with the rear 42 of the cam finger 34. This position of the parts is illustrated in Fig. 14, wherein it will be seen that the cylinder plug has already made a partial rotation before the latch actuating cam finger 34 has begun its movement. Further rotation of the cylinder plug will bring the cam finger 34 around to the position illustrated in Fig. 15, or in dotted outline Fig. 12, at which time it will have engaged the projection 7' upon the cross head of the latch bolt and will have withdrawn the latch to its retracted position, as shown in Fig. 12. By comparison between Figs. 13 and 15, it will be seen that the initial and final positions of the cylinder plug in the retraction of the latch are the same, and consequently the key may be removed or inserted in the cylinder lock at said final position of the cylinder plug. Consequently, when the key is withdrawn, the latch will be retained by the cylinder lock in its retracted position.

While I have shown the various parts such as the cam members and the cylinder plug as so constructed that in some instances these parts are prepared for assembling by milling or otherwise, it is to be understood that these parts may be so constructed that

they may be merely stamped up out of metal blanks.

While I have illustrated and described particular embodiments of my invention, it is to be understood that the same may be varied in detail and relative arrangement of parts without departing from the spirit or scope thereof.

What I claim is:

1. In a lock mechanism, the combination with a casing and a cylinder lock mechanism mounted therein, of a spring protracted latch bolt adapted to be retracted by said cylinder lock mechanism and to be retained in retracted position by the locking mechanism of said cylinder lock mechanism.
2. In a lock mechanism, the combination with a casing, of a spring protracted latch bolt mounted therein, a cylinder lock mechanism mounted on said casing, a locking cam in said cylinder lock mechanism, and a lost motion connection between the cylinder plug and said cam whereby said plug may be rotated to retract said bolt and to permit withdrawal of the key while said bolt is held in retracted position.
3. In a lock mechanism, the combination with a casing and a spring protracted latch bolt mounted therein, of a cylinder lock mechanism mounted in said casing and having a cam arm adapted to retract said bolt, a cylinder plug and a lost motion connection between said plug and said cam arm arranged to permit the turning of said cylinder plug to initial position upon retraction of said bolt whereby the key may be withdrawn and the bolt retained in retracted position.
4. In a lock mechanism, the combination with a casing having a spring protracted latch bolt mounted therein, of a cylinder lock mechanism mounted in said casing and having means to retract said bolt, said means being arranged to permit a complete rotation of the key whereby the same may be withdrawn, and to hold the latch bolt at the end of such complete rotation and upon withdrawal of the key in retracted position.
5. In a lock mechanism, the combination with a casing having a spring-protracted latch bolt mounted therein, of a cylinder lock mechanism mounted in said casing, a bolt retracting cam pivotally mounted upon the cylinder plug of said mechanism, and a shouldered member rotatable with said plug to actuate said cam to retract said bolt, the connection between said fixed member and said cam member being such as to permit a complete rotation of the cylinder plug during the retraction of said bolt whereby the key may be withdrawn and the bolt held in retracted position by said cam.
6. In a lock mechanism, the combination with a casing having a spring protracted latch bolt mounted therein, of a cyl-

inder lock mechanism mounted in said casing, a bolt retracting arm pivotally mounted on the cylinder plug of said cylinder lock mechanism, and means carried by said plug to actuate said arm, said means being arranged to permit partial rotation of said plug before movement of said arm is begun, whereby, when said arm has reached the limit of its retracting position, said plug shall have made a complete revolution whereby the key may be withdrawn and said latch bolt retained in retracted position by said arm.

7. In a lock mechanism, the combination with a casing having a spring protracted latch bolt mounted therein, of a cylinder lock mechanism mounted in said casing, having means to retract said bolt, said bolt retracting means being so arranged as to require a complete revolution of the cylinder plug to completely retract said bolt, whereby, upon withdrawal of the key, the bolt will be retained in retracted position by said bolt retracting means.

8. In a lock mechanism, the combination with a casing having a spring protracted latch bolt mounted therein, of a cylinder lock mechanism mounted in said casing, a bolt retracting arm pivotally mounted upon the cylinder plug of said lock, a stop on said arm, a shouldered member fixed upon said cylinder plug and having shoulders arranged to engage said stop to actuate said arm to and from bolt operating position, said shoulders being so arranged as to permit a certain amount of lost motion of said cylinder plug during the actuation of said arm, whereby said plug may be permitted a complete revolution during the retraction of the bolt to permit withdrawal of the key while said arm retains said bolt in retracted position.

9. In a lock mechanism, the combination with a casing having a spring protracted latch bolt mounted therein, of a cylinder lock mechanism mounted in said casing, having means to retract said bolt and to retain said bolt retracted when the cylinder plug is rotated to initial position and upon withdrawal of the key, said bolt retracting and retaining means being reversible to adapt it to right and left-hand locks.

10. In a lock mechanism, the combination with a casing having a latch bolt mounted therein, of a cylinder lock mechanism mounted in said casing, a bolt retracting arm pivotally mounted upon the cylinder plug of said cylinder lock mechanism, a shouldered actuating member fixed upon said cylinder plug to actuate said bolt retracting member, said bolt retracting member and said fixed member being so constructed as to permit reversal thereof to adapt the cylinder lock mechanism to right and left-hand locks.

11. In a lock mechanism, the combination
with a casing, having a spring protracted
latch bolt mounted therein, of a cylinder
lock mechanism mounted in said casing and
5 having a two-part cam mechanism to retract
said bolt, said two-part mechanism com-
prising a bolt retracting arm pivotally
mounted upon the cylinder plug, and an
arm actuating member fixed upon said cyl-
10 inder plug, said parts being so arranged as
to permit a partial rotation of the cylinder

plug before the actuation of the bolt re-
tracting arm is begun, whereby, upon com-
pletion of the bolt retracting operation, the
cylinder plug will return to initial position 15
to permit withdrawal of the key whereby
the bolt may be retained in retracted posi-
tion by said retracting arm.

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