March 3, 1936. S. F. ROLPH 2,032,765

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Fig. 2

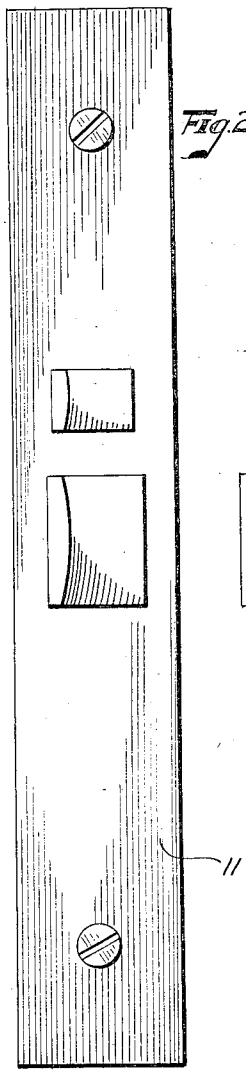
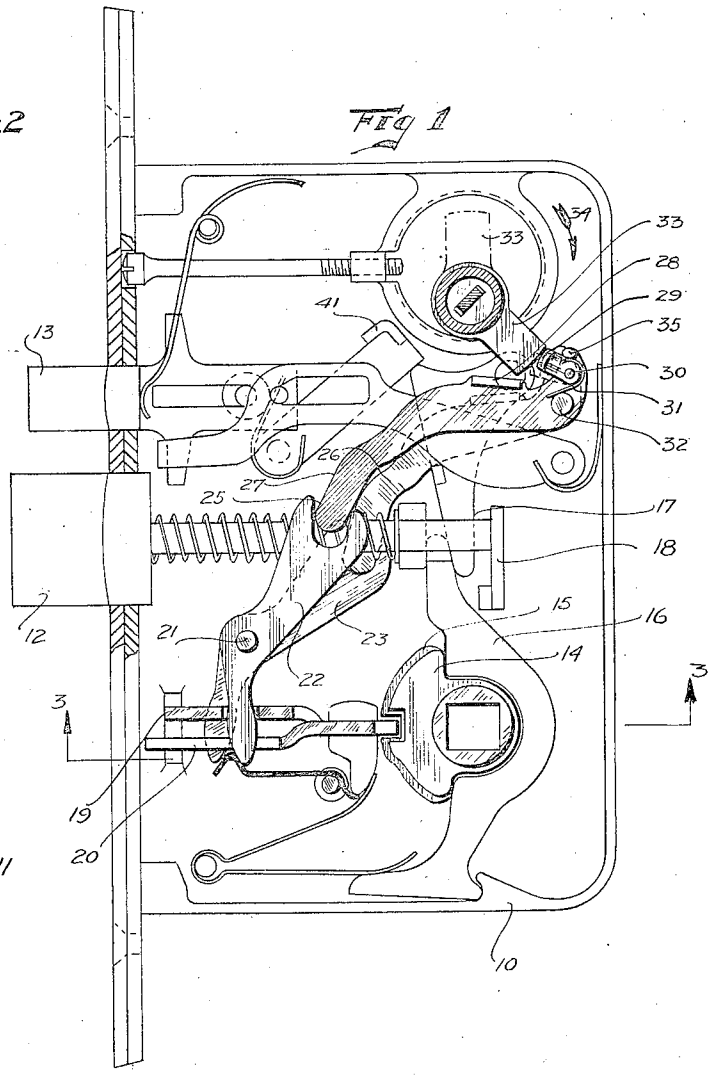


Fig. 1



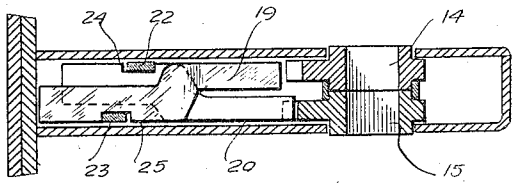


Fig. 3

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Fig. 4

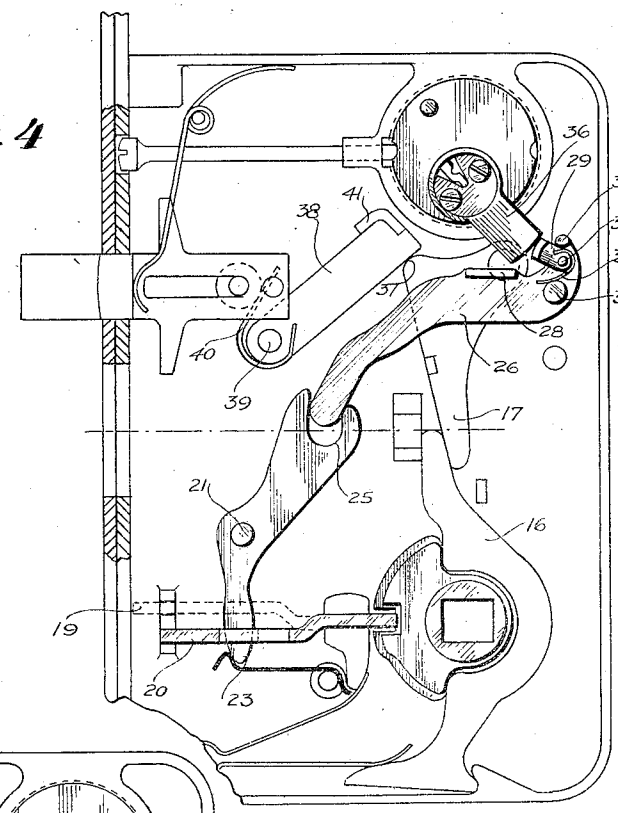


Fig. 5

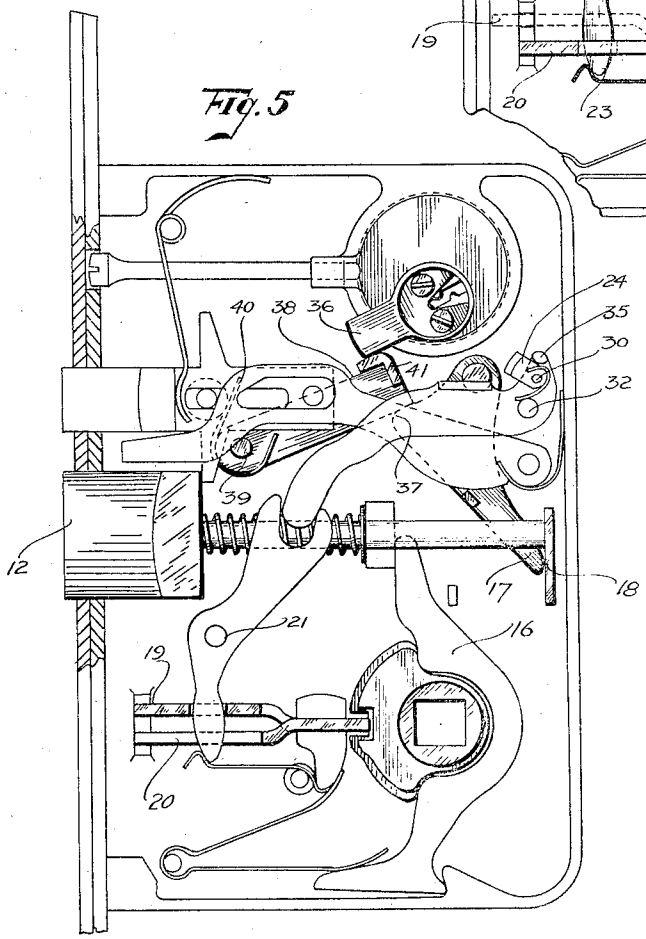
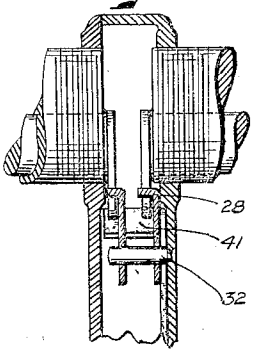


Fig. 4A



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Fig. 6

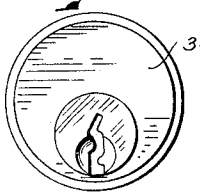


Fig. 7

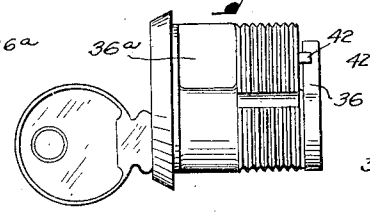


Fig. 8

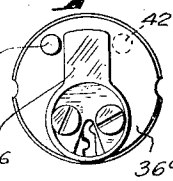


Fig 9

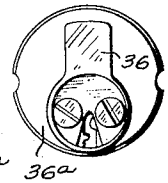


Fig. 10

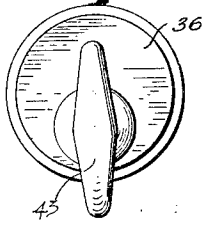


Fig. 11

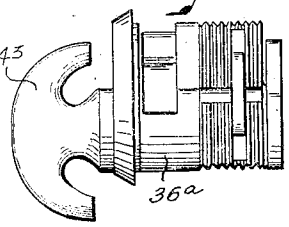


Fig 12

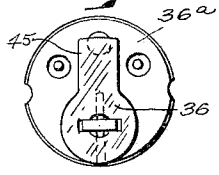


Fig. 13

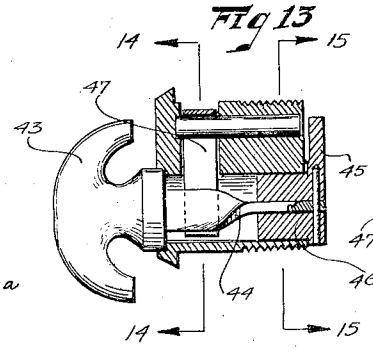


Fig. 14

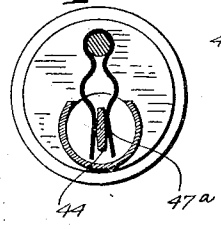


Fig 15

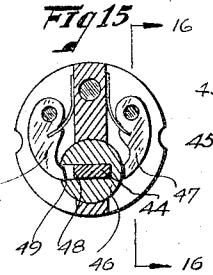


Fig 16

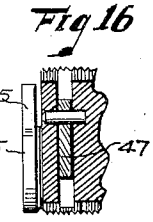


Fig 17

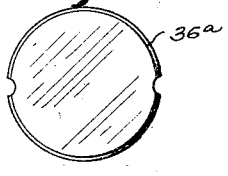


Fig. 18

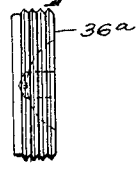
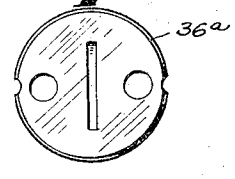


Fig 19



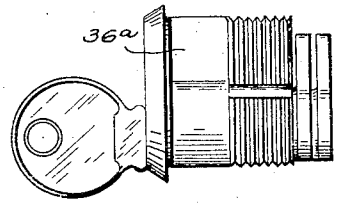


Fig. 20

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UNITED STATES PATENT OFFICE

2,032,765

LOCK

Samuel F. Rolph, Stamford, Conn., assignor to The Yale & Towne Manufacturing Company, Stamford, Conn.

Application July 1, 1930, Serial No. 465,148
Renewed July 30, 1935

15 Claims. (Cl. 70—29)

This invention relates to locks of the type adapted for use in office buildings, hotels or homes where certain definite operations are required.

It is the object of this invention to devise a single lock which by simple changes in the type of operating mechanism, may be adapted to one of a plurality of uses which may at the moment be desired.

The fundamental principle of my invention resides in the feature wherein a single lock is equipped with the usual types of locking mechanisms and has its lock operating mechanism so positioned relatively to a pair of cylinder openings on the outside and the inside plates of the lock, that different cylinders, thumb turns, or other operating devices, fitted to the inside or outside plates of the lock will be capable of operating the mechanism in a predetermined manner. Thus, I simply change the type of operating cylinder or thumb turn, selecting one whose movement is limited in extent and in the direction of its turning, or unlimited in either, or any other well known type of operating mechanism, and thus obtain any one of a plurality of operations for which the lock is constructed.

For a further description of my invention, I refer to the drawings wherein Fig. 1 is a plan view of my lock with the cover plate removed. Fig. 2 is a side elevation of the front plate of the lock. Fig. 3 is a section along the lines of 3—3 of Fig. 1. Figs. 4 and 5 are views similar to Fig. 1, showing some of the parts in various operating positions, and some of the parts omitted. Fig. 4A illustrates the relation of several of the parts. Figs. 6 and 7 are front and side views of a cylinder which may be used in the lock. Figs. 8 and 9 are end views of the cylinder and a modification. Figs. 10, 11 and 12 are front, side and end views of a thumb turn adapted for the particular lock. Fig. 13 is a section of the thumb turn of Fig. 11. Fig. 14 is a section along the line 14—14 of Fig. 13. Fig. 15 is a section along the line 15—15 of Fig. 13. Fig. 16 is a section along the line 16—16 of Fig. 15. Figs. 17, 18 and 19 are front, side and end views of the plug device usable with the lock of the present construction. Fig. 20 is a side view of a two cam cylinder which may be used with this invention.

Referring now more particularly to the drawings, and especially to Figs. 1 and 2, I show a usual type of lock casing, designated by the reference numeral 10, having the usual type of front plate 11, the usual type of latchbolt 12 and a regulation type of latchbolt deadlocking mechanism 13, all of which are of the type well known in the art. For retracting the latchbolt 12, I use a pair of roll-backs 14 and 15, shown more particularly in Fig. 3. These roll-backs operate on a lever device 16 which in turn operates on a lever 17 which operates on the rear extension plate 18 of the latchbolt 12 to retract the same, when either of these roll-backs 14 and 15 is rotated by a knob or other device. This mechanism is also of the usual type, quite well known in the art.

Cooperating with these roll-backs 14 and 15, are a pair of stop-work slides 19 and 20. The inside knob roll-back 14 is controlled by the slide 19, whereas the outside roll-back 15 is controlled by the slide 20. Mounted on a pin 21 carried by the lock, are a pair of levers 22 and 23. The lever 22 fits in a notch 24 in the outside stop-work slide 20 for controlling the same as is readily seen in the drawings. The lever 23 fits in a notch 25 in the inside stop-work slide 19 and operates the same in a similar manner. Each of these levers 22 and 23 is equipped with a cut-out portion 25 for operation by a pair of levers 26 and 27. Each of these levers 26 and 27 is equipped with a ledge 28 and a spring-pressed tumbler 29, pivoted thereto at the point 30. Each of these levers 26 and 27 is mounted on a pin 32 against which the spring 31 of the tumbler 29 is adapted to press to urge the tumbler into an upward position against the lug 36 as is shown clearly in Figs. 1, 4 and 5.

From the relationship of the parts so far described, it will be quite apparent that the stop-work for the inside operated roll-back 14 is operated by the slide 19, and the lever 23, and the upper lever 26, this upper lever 26 being situated on the side opposite the inside roll-back 14; in other words, on the outside plate of the lock. On the other hand, the outside operated roll-back 15 is operated by the slide 20, the lever 22, and the upper lever 27, this upper lever being situated for operation by a cylinder on the inside plate of the lock.

For operating the stop-work for the outer roll-back, I use a thumb turn cam 33, the action of which is illustrated in Fig. 1. On the downward swing of this cam 33, from the dotted line position in the direction of the arrow 34, it will by-pass the spring pressed tumbler 29 and will act on the ledge 28 to depress the same, thereby rotating the lever 22 about its pivot 21 in a clockwise direction and moving the slide 20 out of roll-back stopping position. When this thumb turn cam 33 is moved in a direction reverse to the arrow 34, it will impinge upon the tumbler 29,

and since that tumbler cannot move freely relatively to lever **27** in a reverse direction, due to the lug **35**, it will act to move the lever **27** back to its position of Fig. 1 and lock the roll-back **15**.

Fig. 4 shows the action of a special outside cylinder roll-back cam **36** relatively to the slide **19**, and inside roll-back **14**, the action being exactly the same as in regard to the thumb turn cam **33**, except that the inner stop-work is actuated from the outside, instead of the outer stop-work being actuated from the inside.

In addition to the latchbolt retracting roll-backs **14** and **15**, I utilize a second latch-retracting mechanism which may be mounted independently relatively to the roll-backs **14** and **15**. This retracting mechanism consists of the lever **17** which is utilized in the retraction of the latch-bolt by the roll-backs **14** and **15** as has been previously described. This lever **17** is equipped with a portion **37** which is acted upon by a lever **38**, pivoted to the case at the point **39**, and spring pressed by a spring **40** in a downward direction against the portion **37** (Figs. 4 and 5). The lever **38** is equipped with a cam actuated portion **41**, which extends the entire breadth of the lock and is operable by either the outside cylinder cam **36** shown in Fig. 4 or the inside thumb turn cam **33**, shown in Fig. 1. Rotation of either one of these cams in a counter-clock-wise direction will cause the same to strike the head **41** of the lever **38** as is seen in Fig. 5, which will in turn act upon the portion **37** of lever **17** to retract the latch-bolt **18** as is clearly seen.

From the above description, it has been shown that my lock consists essentially of a lock having a latch-bolt, inside and outside roll-backs for retracting said latch-bolt, stop-work mechanism for each of these roll-backs, the stop-work for the inside roll-back being operable from the outside and the stop-work for the outside roll-back being operable from the inside. It has also been apparent that the mechanisms for operating this stop-work are so positioned relatively to the cylinder lock mountings of the lock, that they are available for operation by axially aligned cams carried by any type of cylinder which may be put into these mountings. It has been further apparent that my lock is equipped with a latch-bolt, the operating mechanism for which may be quite independent of the latch-bolt retracting mechanism, aforementioned, this latch operating mechanism being also positioned near the cylinder mountings of the lock so that the cams of any cylinders mounted in the lock may operate the same, provided those cams are capable of the proper amount and direction of rotation.

As will be readily understood by one skilled in the art, and as is further apparent from the drawings, the inside and outside plates of the lock; in other words, the casing and the cover, are each equipped with cylinder mounting means of the usual type. In Figs. 6 to 20 inclusive, I illustrate various cylinders which may be mounted in these cylinder mounting means for securing various operations and for variously controlling my universal lock.

In Figs. 6 to 9 inclusive, I illustrate a cylinder lock **36a** of the usual type, having a regular cam **36** such as is shown in the previously described figures. This cam may either have unlimited movement in any direction as in Fig. 9 or may cooperate with a stop pin **42** located for limiting the direction of rotation in a clock-wise direction only. It will be quite apparent from Figs. 1 and 4 that a cam having the limited movement of the cam of Fig. 8 will be capable of operating the stop-work mechanism, but will be incapable of operating the latch operating lever **38**, as illustrated in Fig. 5. The pin **42** may be shifted to the right of the cam **36** as shown in dotted lines in Fig. 8 and will then permit operation of the lever **38** but will prevent operation of the stop-work mechanism.

Figs. 10 to 16 illustrate a thumb turn usable with this invention. As may be seen from these figures, the thumb turn is equipped with a handle **43** secured to a body member **44**, upon which is secured the cam **45** and the cam body **46**. A spring **47a** is adapted to cooperate with the body **44** for urging the same into a vertical position, with the cam **45** in either a downward position or in an upward position.

Cooperating with the cam body **46** are a pair of spring pressed pawls **47** which operate in the slot **48** of the cam body **46**. There may be only one of these pawls, if certain other action is desired, as will be readily understood. As will be readily understood from Fig. 15, the left member **47** will prevent rotation of the cam in a clock-wise direction, due to its sharp point **49** fitting into slot **48**, but will permit rotation in a counter-clock-wise direction since the cam body **46** will then be able to cam the member **47** outwardly from slot **48** against its spring pressure, so as to permit rotation of the member **46**. The right hand pawl will of course prevent more than 180 degrees of rotation of the thumb turn. It will be readily understood that a thumb turn of this type will also be incapable of operating the independent latch operating mechanism and will be operable only to control the stop-work mechanism should the slot **49** be placed on the right hand side of the member **46** in Fig. 15, it would naturally be possible to control the stop work only.

If desired, the inside or outside cylinder may be replaced by merely a plug **50** as indicated in Figs. 17, 18 and 19 which will simply plug up the cylinder mounting holes in the lock casing, and so prevent operation from the particular side in which it is inserted. Also a master-key cylinder **51** having a pair of cams **53** and **52** as shown in Fig. 20 may be used to obtain still other operations, depending upon the control of the cylinder cams which is determined. Those skilled in the art will readily appreciate the number of operating conditions which may be obtained in this way.

With the arrangement I have shown, it is possible to have any one of a plurality of actions by simply inserting predetermined cylinders in the cylinder mounting means. That is why I call my new lock, a universal lock. It can be adapted for an office door, a school-house door, a communicating door, a hotel door, or other type of door by simply using the proper cylinders, etc.

Essentially, my invention, therefore, consists in having a latch bolt, latch operating means operable by roll-backs controlled by stop-work, and an additional latch operating means, the stop-work mechanism and the additional latch operating means all being arranged for operation by a plurality of predetermined arranged cylinder cams, capable of predetermined operations. While I have shown but one modification of the invention, it should be understood that my invention is of broad scope and many variations of the same within the scope of the appended claims will readily occur to anyone skilled in the art.

What is claimed is:

1. In a lock, a latchbolt, rollbacks for retracting said latchbolt, stopwork for said rollbacks, means independent of said rollbacks for retracting said latchbolt, means for operating said stopwork, a plurality of axially aligned cams, and portions of said independent latch retracting means and said stopwork operating means arranged for operation by said axially aligned cams.

2. In a lock, a casing, front and back plates for said casing, bearing portions on each of said plates for cylinders equipped with cams, a latchbolt in said lock, predetermined cylinders and cams adapted to be mounted in said bearing portions, rollbacks for retracting said latchbolt, stopwork for said rollbacks, additional means for retracting said latchbolt, portions of said additional means and of the means for operating said stopwork arranged for predetermined operation by said predetermined cylinder cams mounted on said plates.

3. In a lock, a latchbolt, inside and outside rollbacks for operating said latchbolt, stopwork mechanism for said rollbacks, means for operating said stopwork mechanism, additional means for operating said latchbolt, said latchbolt operating means and said stopwork operating means being arranged for movement by a plurality of axially aligned cams.

4. In a lock, a casing having inside and outside plates, a latchbolt, inside and outside rollbacks for retracting said latchbolt, stopwork mechanism for said rollbacks, means for actuating said stopwork mechanism, additional means for retracting said latchbolt, cylinder mounting means carried by said lock casing on the inside and outside plates, said additional latchbolt operating means and rollback stopwork operating means being arranged relatively to said cylinder mounting means for operation by predetermined cylinders which may be mounted in said means.

5. In a lock, a casing having inside and outside face plates, cylinder mounting means on each of said plates, a latchbot in said lock, rollbacks for retracting said latchbolt, stopwork means for said rollbacks, latchbolt retracting means in addition to said rollbacks, said lachbolt retracting means and said stopwork means being arranged relatively to said cylinder mounting means for operation by predetermined cylinders which may be mounted therein.

6. In a lock, a casing having inside and outside plates, a latchbolt, rollbacks operable from the inside and outside plates of said lock for retracting said latchbolt, stopwork mechanism for said rollbacks, a cylinder carried by the outside plate of said lock, and a cylinder carried on the inside plate of said lock, stopwork for the inside rollback operable by said outside cylinder, stopwork for the outside rollback controlled by said inside cylinder, and latchbolt retracting means in addition to said rollbacks arranged for operation by either of said cylinders.

7. In a lock, a casing for said lock, front and back plates for said casing, a bearing portion on each of said plates, cylinders of predetermined operation adapted to be fitted into said bearing portions, latchbolt operating means and stopwork operating means in said lock, portions of said latchbolt operating means and said stopwork operating means being arranged for operation by said cylinders.

8. In a lock, a casing, front and back plates for said casing, axially aligned cylinder mountings on each of said plates, cylinders of predetermined operation adapted to be fitted into said mountings, a plurality of inside and outside bolt operating means in said lock, stopwork means for certain of said plurality of bolt operating means, others of said inside and outside bolt operating means and said stopwork means being arranged for operation by the cylinders mounted in said plates depending upon their predetermined operation.

9. In a lock, a latchbolt, inside and outside operated rollbacks for retracting said latchbolt, stopwork mechanism for each of said rollbacks, means for operating said stopwork mechanisms, a latchbolt retracting mechanism independent of said inside and outside rollbacks, a cylinder mounted on each side of said lock and equipped with a cam, control means for said cams adapted to limit the same in movement and direction, said stopwork mechanism operating means and said independent latchbolt operating means being arranged relatively to said cams to permit the control of said means by said cams dependent upon the direction and extent of movement of the same.

10. In a lock, a latchbolt, inside and outside operated rollbacks for retracting said latchbolt, independent stopwork mechanism for each of said rollbacks, means for operating each of said stopwork mechanisms, a latchbolt retracting mechanism independent of said inside and outside rollbacks, a cylinder mounted on the inside and a cylinder mounted on the outside of said lock, cams on said cylinders, control means for said cams for limiting movement of one of said cams in one direction, the other of said cams being unlimited in movement in either direction, said unlimited cam being adapted to operate one of said stopwork mechanism operating means and said latchbolt retracting means, said limited movement cam being adapted to operate the other of said stopwork mechanism.

11. In a lock, a latchbolt, independent outside and inside operated rollbacks for retracting said latchbolt, stopwork mechanism for each of said rollbacks, means for operating said stopwork mechanism, a latchbolt retracting means independent of said inside and outside rollbacks, a cylinder mounted on the inside of said lock and a cylinder mounted on the outside of said lock, cams on said cylinders, means in said cylinders for controlling the movement of said cams, said outside stopwork mechanism operating means being arranged to be operated by an inside cylinder cam, said inside stopwork operating means being arranged for operation by an outside cylinder cam, said latchbolt retracting means being arranged for operation by a cam of either of said cylinders depending upon the direction and extent of their movement.

12. In a lock, a latchbolt, independent inside and outside operated rollbacks for retracting said latchbolt, independent stopwork mechanisms for each of said rollbacks, means for operating each of said stopwork mechanisms, a latchbolt retracting mechanism independent of said inside and outside rollbacks, a cylinder mounted on each side of said lock and equipped with cams, said cams having control means for limitation in movement and direction, said stopwork mechanism operating means and said latchbolt retracting means being arranged relative to said cams to permit control of said means by said cams dependent upon the direction and extent of movement of the same.

13. In a lock, a latchbolt, independent inside and outside operated rollbacks for retracting said

latchbolt, independent stopwork mechanisms for each of said rollbacks, means for operating each of said stopwork mechanisms, a latch retracting mechanism independent of said inside and outside rollbacks, a cylinder mounted on each side of said lock and equipped with cams, said cams having control means for limitation in movement and direction, each of said stopwork mechanism operating means being arranged for operation by one of said cams, said latch retracting means being arranged for operation by either of said cams depending upon the extent and direction of their permissible movement.

14. In a lock, a latchbolt, independent inside and outside operated rollbacks for retracting said latchbolt, independent stopwork mechanisms for each of said rollbacks, means for operating each of said stopwork mechanisms, a latch retracting mechanism independent of said inside and outside rollbacks, a cylinder mounted on each side of said lock and each equipped with cams, said cams having control means whereby they are limited in movement and direction, each of said stopwork mechanism operating means being arranged for operation by one of said cams, said latch retracting means being arranged for possible operation by proper predetermined operation of either of said cams.

15. In a lock, an inside and an outside plate, cylinder mounting portions in each of said plates, cylinders mounted in said bearing portions, said lock having stopwork mechanism and bolt operating mechanism, and means for operating each of the mechanisms arranged to extend into the operating range of the cams of the cylinders which are mounted in said inside and outside plates.

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