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COMBINATION LOCK BANK.

APPLICATION FILED MAY 20, 1907.

Fig. 1.

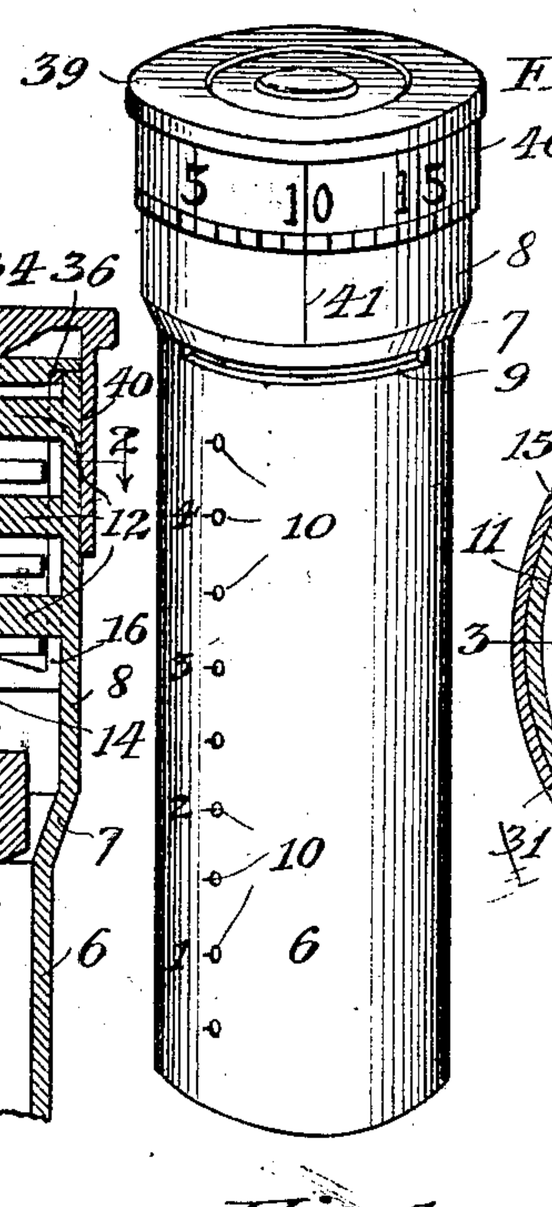


Fig. 3.

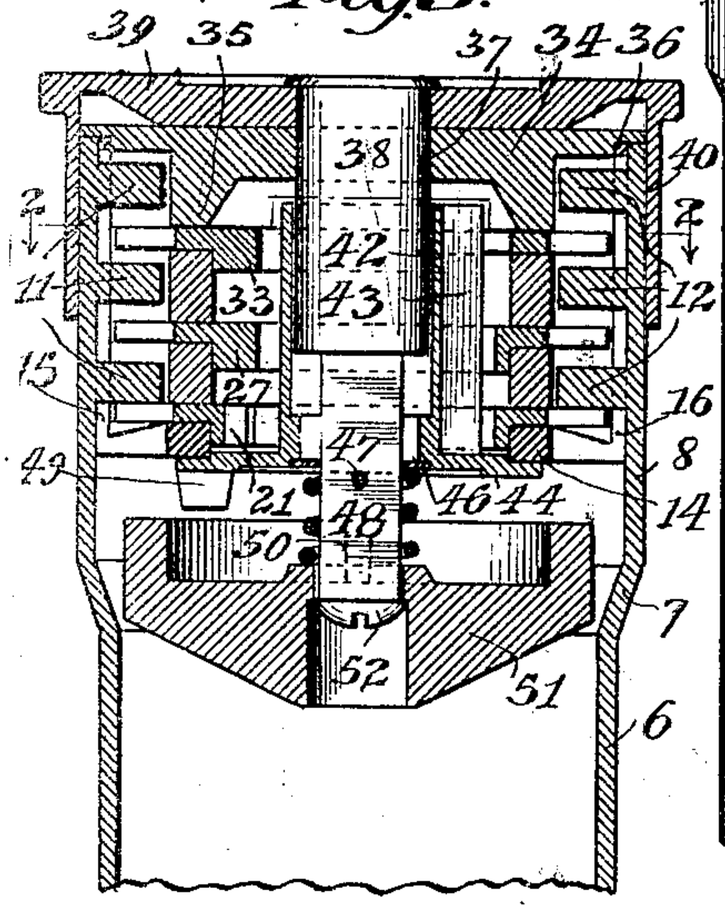


Fig. 2.

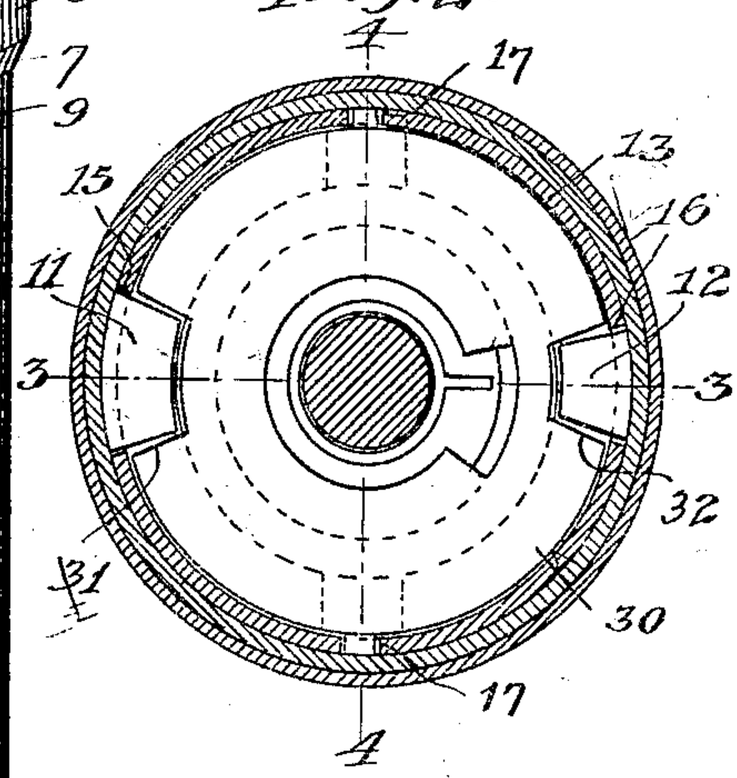


Fig. 4.

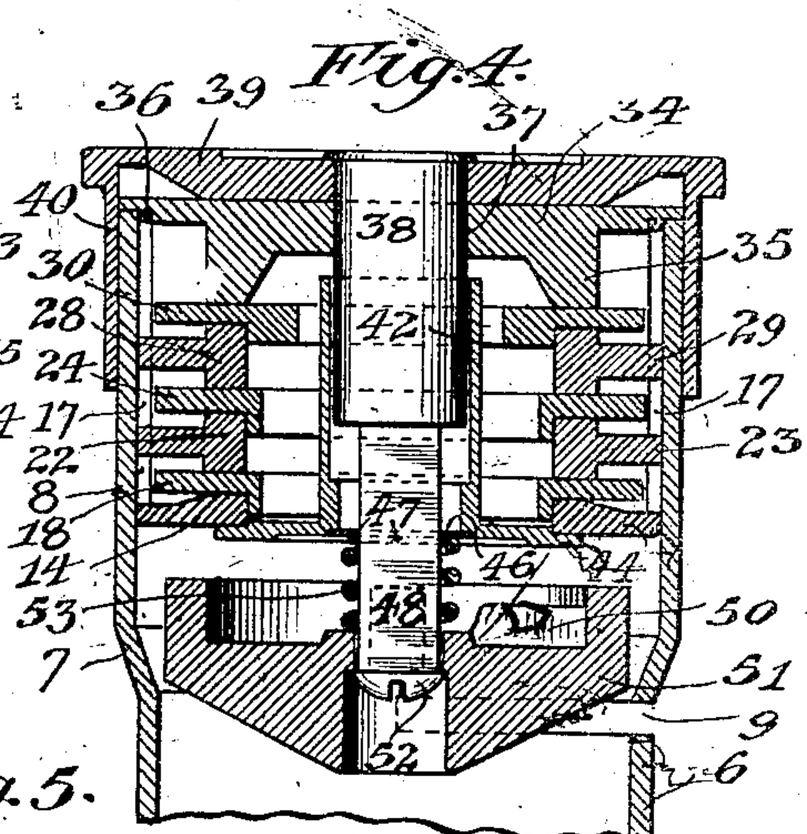


Fig. 6.

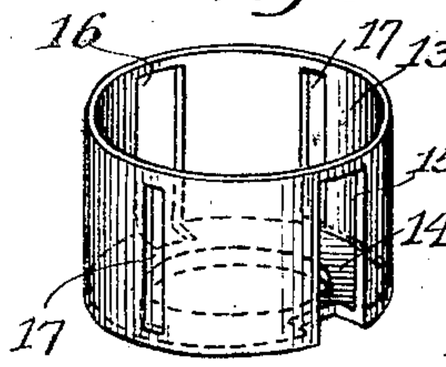


Fig. 7.

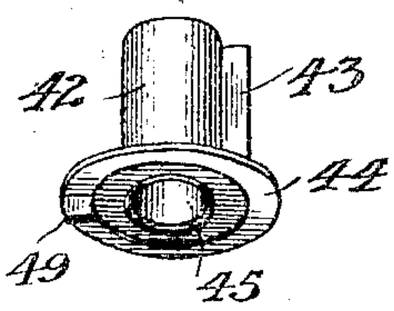
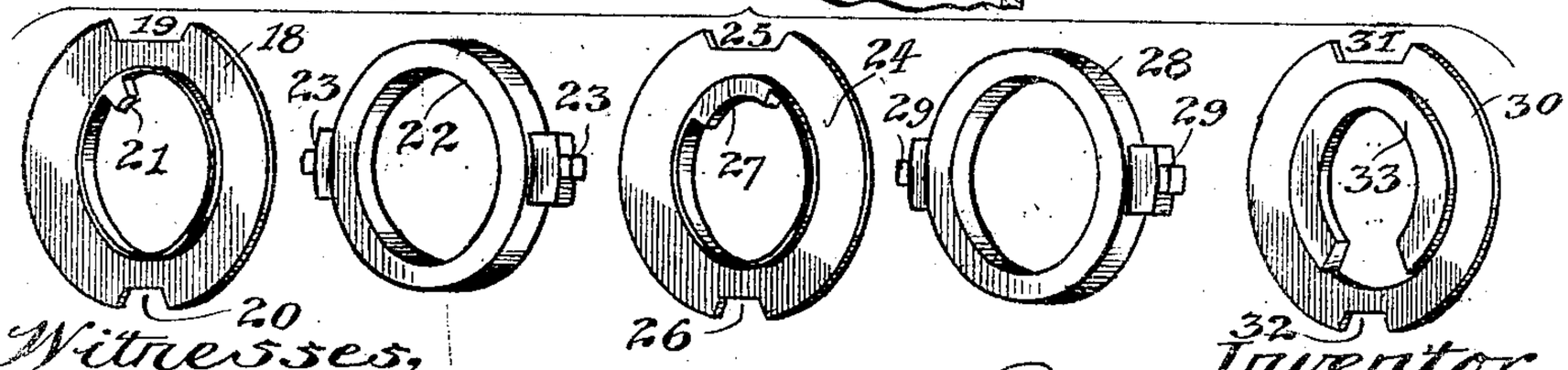


Fig. 5.



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UNITED STATES PATENT OFFICE.

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COMBINATION-LOCK BANK.

No. 879,602. Specification of Letters Patent. Patented Feb. 18, 1908.

Application filed May 20, 1907. Serial No. 374,597.

To all whom it may concern:

Be it known that I, EUGENE R. WALKER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Combination-Lock Banks, of which the following is a specification.

This invention relates to coin banks, and more particularly to that kind or class of banks which are provided with a closure or cover locked to the body of the bank and capable of being withdrawn so as to open the bank only when the latter has been filled.

The invention further relates to a bank of this character wherein the cover or closure contains or includes a combination lock; and the leading novel feature of the invention resides in a separable or two-part combination lock mechanism which can be operated to open the bank only when the separable parts of the lock mechanism have been brought together by the insertion of the last coin which the bank is capable of holding, so as to place the locking mechanism in a condition in which the combination can be operated to open the bank.

The invention is intended principally for use in connection with small pocket banks adapted to hold small coins, such as pennies, nickels, dimes, quarters and the like; but the principle of the invention is applicable to any type of savings bank.

The invention will be readily understood when considered in connection with the accompanying drawing illustrating a preferred mechanical embodiment thereof, in which,—

Figure 1 is a perspective elevational view of the complete bank. Fig. 2 is an enlarged horizontal sectional view through the lock mechanism on the line 2—2 of Fig. 3. Fig. 3 is an enlarged vertical sectional view through the lock mechanism on the line 3—3 of Fig. 2. Fig. 4 is a similar vertical sectional view in a plane at right angles to that of Fig. 3, on the line 4—4 of Fig. 2. Fig. 5 is a group view showing in perspective the series of alternating ring tumblers and spacers or washers constituting elements of the combination lock. Fig. 6 is a perspective view of the tumbler-containing cage or shell; and Fig. 7 is a detail perspective view of the tumbler-actuating key.

Referring to the drawing, 6 designates the cylindrical body-member or shell of the bank which is closed at its lower end, and near its upper end is outwardly flared or tapered as shown at 7, thereby forming an upper portion 8 of somewhat enlarged diameter, and open at its upper end. Just below the tapered or flared portion 7 the body of the bank is provided with a horizontal slot 9 adapted for the insertion of the coins. The cylindrical body 6 of the bank may be further provided with a series of uniformly spaced holes 10 which enable the owner or user of the bank to observe the height of the coins deposited therein at any given time, and, in association with numerals placed opposite the same, as indicated, form a scale to indicate the value of the deposited coins according to the height of the latter in the bank: the bank herein illustrating having a capacity of fifty dimes or five dollars.

Referring now more particularly to the closure for the upper end of the bank, and the combination lock mechanism incorporated therein, 11 and 12 designate, respectively, two series of vertically spaced inwardly projecting lugs diametrically opposite each other on the inner wall of the upper enlarged portion 8 of the bank body, the locking lugs of the series 11 being somewhat wider than those of the series 12, as shown in the sectional view, Fig. 2. Slidingly fitting the end portion 8 of the cylinder is a cylindrical shell 13 shown in detail in Fig. 6, the cylindrical wall of said shell having on its lower end an internal horizontal flange 14, and the cylindrical wall and flange being provided with diametrically opposed vertical slots 15 and 16, which slide over the locking lugs 11 and 12, respectively, of the outer casing. The cylindrical wall of the shell 13 is further provided with a pair of oppositely disposed narrower slots 17 disposed ninety degrees from the slots 15 and 16, for the purpose hereinafter described. This shell 13 is loaded with alternately arranged ring tumblers and washers, as follows.

In the bottom of the shell, resting on the flange 14 thereof, is placed a ring tumbler 18 having at diametrically opposite points in its outer periphery notches 19 and 20 adapted to be brought into registration with the locking lugs 11 and 12 when the combination lock is manipulated to open position. The ring tumbler 18 is further provided on its inner periphery with a narrow inwardly projecting lug or tooth 21. Above and resting on the ring tumbler 18 is a ring washer 22, which has a smooth internal periphery of

equal diameter to the internal periphery of the ring tumbler 18, and is provided at diametrically opposite points on its outer periphery with projecting lugs 23, the tips of which slidingly engage the slots 17 of the shell or cage 13, as best shown in Fig. 4, whereby said washer is prevented from turning relatively to the cage. Above and upon the washer 22 rests another tumbler 24 provided with oppositely disposed notches 25 and 26 corresponding to the notches 19 and 20 of the tumbler 18, and having on its inner periphery an inwardly projecting lug 27 of greater angular extent than the lug 21. Above the tumbler 24 rests another ring washer 28 having radially projecting lugs 29 corresponding in all respects to the washer 22 and its lugs 23, and above this washer is located a third ring tumbler 30 having outer peripheral nothes 3 and 32, corresponding to the similar notches of the tumblers 18 and 24, and having on its inner periphery a lug 33 occupying approximately three-fourths of the internal periphery of the tumbler. Above the tumbler 30 the upper open end of the cage 13 is closed by a cap or cover 34 having a depending flange 35 that rests upon the top tumbler, and further having an annular marginal undercut indicated at 36 adapted to snugly fit the upper ends of the cage and of its containing wall of the bank body 8, as clearly shown in Figs. 3 and 4. The cap 34 has a central circular aperture 37 through which passes the circular portion 38 of the stem or spindle of an external cap 39 that is fast with said spindle and has an annular depending marginal flange 40 telescoping over the upper end 8 of the cylinder, said flange 40 being graduated, as shown in Fig. 1, after the manner common in combination locks of this type, the graduated scale shown being adapted to coöperate with a fixed line or other mark 41 on the cylinder.

42 designates the cylindrical body-member of the tumbler-actuating key which is inserted through the lower end of the shell or cage 13 and series of ring tumblers and washers, embracing the central spindle 38, and is provided with a radially projecting rib 43 adapted, as the key is turned in the manner hereinafter described, to strike the ends of the several lugs 21, 27 and 33 of the respective tumblers, and thereby successively turn said tumblers to positions in which their respective peripheral notches on the same sides register with each other and with the locking lugs 11 and 12 of the casing. The key 42 is further provided on its lower end with a radially projecting flange 44 that rests against the lower side of the flange 14 of the shell 13, and is countersunk on its lower face, as shown at 45, to receive a small washer 46 and a cotter-pin 47 passing through a hole in the lower reduced and squared portion 48 of the spindle, whereby said key is supported and held within the tumblers. The flange 44 of the key is further provided with a depending lug 49 that coöperates, when the bank is filled with coins, with a corresponding lug 50 formed on the upper face of a clutch-member 51 that is slidably mounted by means of a central square aperture on the squared portion 48 of the spindle, being confined thereon by a screw 52 countersunk in the lower face of the clutch-member and threaded onto the lower end of the portion 48 of the spindle. The clutch-member 51 is normally maintained separated from the coöperating clutch-member represented by the flange 44 and lug 49 by a coiled compression spring 53 that surrounds the squared portion 48 of the spindle, and abuts at its ends against the washer 46 and the upper face of the clutch-member 51, respectively. It will be observed that the lower element of the lock mechanism represented by the member 51 is thus normally separate and disconnected from the superposed parts of the lock mechanism and, being of an external diameter substantially equal to the internal diameter of the main cylinder 6 of the bank body, normally closes the latter directly above the coin-admitting slot 9, which prevents the insertion of a wire or other device for improper manipulation of the tumblers or tumbler-actuating key.

In the use of the device, the coins are inserted edgewise through the slot 9, each coin as it is inserted forcing upwardly the movable member 51 against the spring 53 sufficiently to permit the insertion of a coin, whereupon the coin drops to the bottom of the cylinder, or onto other coins previously deposited. So long as the bank remains incompletely filled, any turning of the cap 39 in either direction will merely idly rotate the lock member 51 without turning or otherwise affecting the tumblers, so that the locking lugs 11 and 12, through engagement with the unnotched portions of the peripheries of the several tumblers, prevent the withdrawal of the end closure of the bank, thus making it impossible to extract the coins. When, however, the bank is filled with the predetermined number of coins represented by its capacity, the last coin inserted, being pushed in between the last preceding coin deposited and the under side of the clutch-member 51 which, it will be observed, is convex or inclined and directly opposite the slot 9, forces upwardly the clutch-member 51 against the spring 53, until the lug 50 carried thereby lies in the same horizontal plane with the depending lug 49 of the tumbler-actuating key 42. Accordingly the turning of the cap 39, which is rigid with the spindle 38, 48, transmits to the key 42, as soon as the lugs 50 and 49 come into contact, a turning movement; and the turning of the key 42 through the predetermined distance in one direction, according to the particular combination to which the lock is set, brings

one of the tumblers to a position in which its notches register with the locking lugs 11 and 12. The subsequent turning movement of the cap 39 in the opposite direction, and to the predetermined extent required by the combination, brings a second tumbler with its notches into corresponding registration with the locking lugs 11 and 12. A final turning of the cap 39 in the reverse direction, and to the predetermined extent required by the combination; brings the third tumbler into similar registration with the corresponding lugs, whereupon the cap with the underlying parts of the locking mechanism can be removed bodily from the end of the cylinder, and by inverting the latter the coins may be removed. It will be observed that the tumblers are provided on their lower sides with shallow flanges that fit into the underlying flange 14 of the cage and the ring washers, thereby accurately centering the tumblers relatively to the cage and washers; the washers being themselves accurately centered relatively to the shell through the engagement of their radial lugs with the slots 17 of the shell.

The key 42 is centered in a similar manner through engagement with the under side of the flange 14.

It will thus be seen that my invention presents a combination lock for the closure of the bank that includes two normally separated parts that require to be brought together before the combination can be worked to release the lock and open the bank. So far as I am aware my invention is broadly new in these features. Should it be required to open the bank before it is filled, this may be accomplished by inserting the blade of a pen knife or similar tool through the slot 9 and pushing the clutch 51 up into operative relation to the key 42 and then turning the cap 39 through the movements required by the combination. The tumblers can obviously be set to operate any one of a large variety of combination movements, as is well understood in locks of this character.

The device as shown and described can be readily carried about in the pocket of the owner or user, occupies but small space, and constitutes a convenience, as well as affording an incentive to the saving and accumulation of small coins. It will be obvious to those skilled in the art that the mechanism as shown and described might be considerably varied with respect to details without departing from the spirit or sacrificing any of the advantages of the invention.

I claim:

1. In a combination-lock bank, the combination with a casing having an open end and a slot for the insertion of coins, and further provided with one or more locking lugs, of a closure for said casing including a normally inoperative combination-lock mechanism adapted to interlock with said lugs, said mechanism being rendered operative to unlock the closure when the bank is filled with coins, substantially as described.

2. In a combination-lock bank, the combination with a casing having an open end and a slot for the insertion of coins, and further provided with one or more locking lugs, of a closure for said casing, said closure carrying a combination-lock mechanism adapted to interlock with said lugs, coöperating parts whereof are normally separated rendering the mechanism inoperative, said parts being brought together to render the lock operative by the last coin inserted to complete the filling of the bank, substantially as described.

3. In a combination-lock bank, the combination with a cylindrical casing open at one end and transversely slotted for the insertion of coins, of internal locking lugs carried by said casing, and a rotatable closure carrying a normally inoperative combination lock mechanism adapted to interlock with said lugs and having normally separated coöperating parts, said lock mechanism being rendered operative upon the connection of said normally separated parts by the insertion of the last coin introduced to complete the filling of the casing, substantially as described.

4. In a combination-lock bank, the combination with a cylindrical casing open at one end and transversely slotted for the insertion of coins, of internal locking lugs carried by said casing, a rotatable closure for the open end of said casing, a series of ring tumblers carried by said closure adapted to interlockingly engage said lugs, a rotatable key adapted to actuate said tumblers, a spindle carried by and rotatable with said closure, and normally separated clutch devices carried by said spindle and key, respectively, said clutch devices being forced into coöperative relation whereby to turn said key from the turning of said closure by the last coin introduced to complete the filling of the casing, substantially as described.

5. In a combination-lock bank, the combination with a cylindrical casing open at one end, and transversely slotted below said open end for the insertion of coins, of internal locking lugs on the inner wall of said casing above said transverse slot, a rotatable closure for the open end of said casing, a series of ring tumblers carried by said closure adapted to interlockingly engage said lugs, an axially bored rotatable key extended through and adapted to actuate said tumblers, a spindle fast with said closure and extending loosely through said key, and normally separated clutch devices carried by said spindle and key, respectively, said clutch devices being forced into coöperative relation whereby to turn said key from the turning of said closure

by the last coin introduced to complete the filling of the casing, substantially as described.

6. In a combination-lock bank, the combination with a cylindrical casing open at one end and transversely slotted below said open end for the insertion of coins, of external locking lugs on the inner wall of said casing above said transverse slot, a rotatable externally graduated closure for the open end of said casing, a series of ring tumblers carried by said closure adapted to interlockingly engage said lugs, an axially bored rotatable key extended through and adapted to actuate said tumblers, a spindle fast with said closure and extending loosely through said key, a clutch member on the lower end of said key, a coöperating clutch member rotatable with and slidable longitudinally of the lower portion of said spindle, said last-named clutch member having a convex lower surface lying opposite the slot of the casing, and a spring between and normally separating said clutch members, substantially as described.

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