

June 3, 1930.

W. KROPFF

1,761,571

CASH REGISTER

Filed July 5, 1928

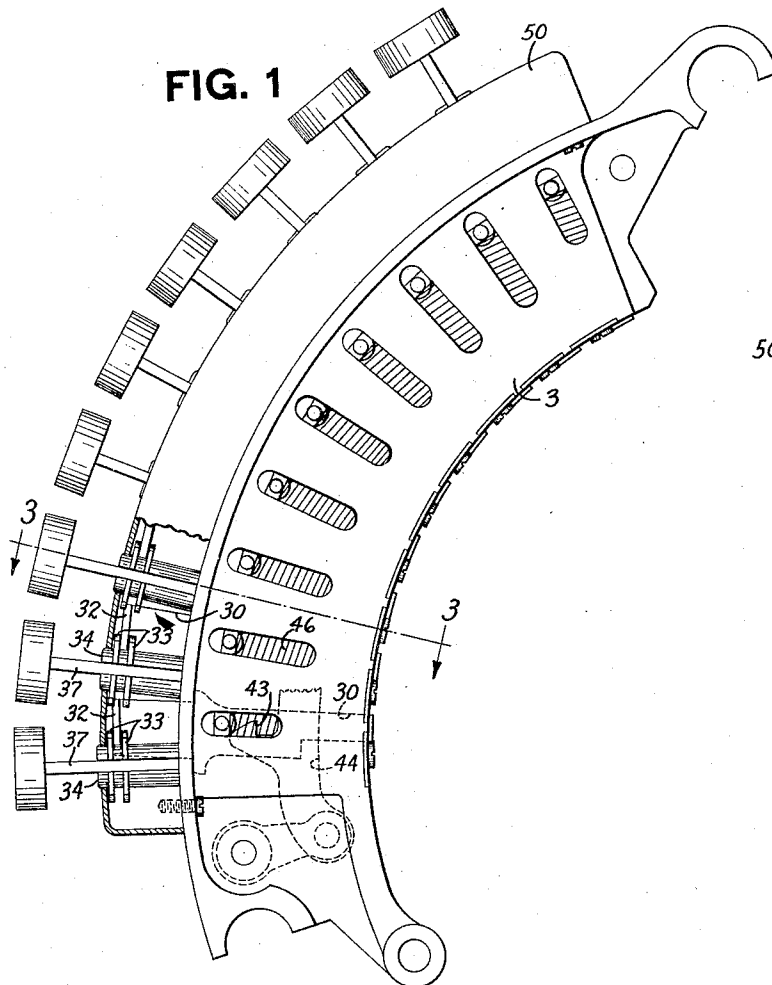


FIG. 2

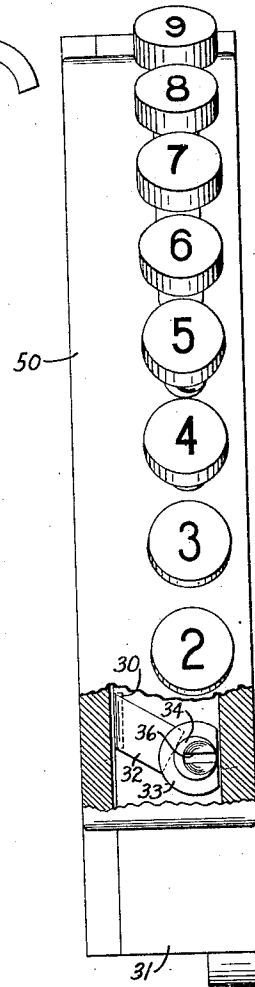


FIG. 3

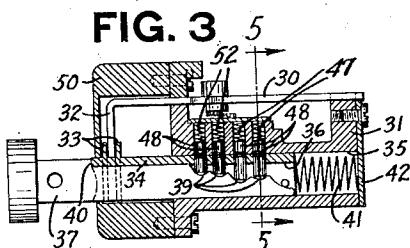


FIG. 5

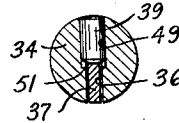
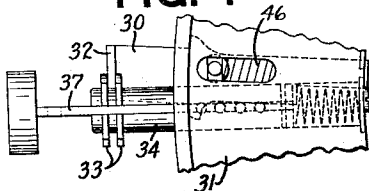


FIG. 4



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CASH REGISTER

Application filed July 5, 1928, Serial No. 290,543, and in Germany August 4, 1927.

This invention relates to cash registers and like machines, and is more particularly directed to registering keys equipped with individual locks rendered effective or ineffective by the withdrawal or insertion of removable keys.

The invention herein shown is applied to a bank of keys, such as is used in a machine of the type disclosed in Letters Patent of the United States, No. 1,242,170, issued to F. L. Fuller, October 9, 1917, and No. 1,619,796, issued March 1, 1927, to B. M. Shipley.

Machines having locked register keys are desirable, for example, when a plurality of waiters are employed and enter their respective sales on a register used in common.

By providing such a machine with a row or bank of clerk's keys, one key of which is assigned to a particular waiter or operator, the proprietor will have a separate record of the sales of each waiter. In other words, operation of the machine for any purpose by any of the waiters or operators identifies the waiter and the kind of operation or transaction, providing the operator depresses the key assigned to him.

And in order to enforce the depression of his own key and prevent the operator from depressing any other key, each operator's register key is provided with a lock rendered effective or ineffective by a removable key individual to the particular lock.

Such mechanisms are disclosed in the U. S. Letters Patent to Cleal, No. 688,827, patented December 17, 1901; and to Heinitz, No. 801,237, patented October 10, 1905, for instance, and the present invention is an improvement on the structures shown in the above mentioned patents.

Heretofore, it was necessary for the operator to perform several movements in conditioning for operation the particular key assigned him.

Thus, in the patent to Cleal, it is necessary to first insert the removable key in the locking barrel, then turn the key to release the lock, and finally to push inwardly on the

inserted key after having turned it, to set the register key in effective position.

Other structures require insertion and rotation of the removable key to effect the desired results.

In either event, the time consumed in operating such locked mechanisms was much longer than that required to depress the ordinary register key, particularly when it is remembered that a reversal of the above movements is necessary to effect the locking of the register key and the withdrawal from the lock of the removable key, whereas the ordinary register key is returned automatically without requiring any attention on the part of the operator.

The time required to operate these individual waiter's or clerk's keys slowed up the system of taking care of the customers, and more rapidly operated locks were desired.

It is, therefore, an object of this invention to provide a lock whereby but one movement is required to insert the removable key, unlock the lock and depress the register key to thereby save the time of the operator and enable him to complete his operation of the machine in shorter time so that others may use it. Obviously the removable key is withdrawn from the lock by only a single movement.

Another object is to provide a lock of the nature described, so constructed that it may be easily installed on machines already in use.

Still another object is to prevent tampering with the lock and the depressible register key, which may be attained by enclosing the mechanism in such a manner that only the ends of the lock cylinders are accessible.

With these and incidental objects in view, the invention includes certain novel features of construction and combinations of parts, the essential elements of which are set forth in appended claims and a preferred form or embodiment of which is hereinafter described with reference to the drawings which accompany and form a part of this specification.

In the accompanying drawings:

Fig. 1 is a view in side elevation of one of the key banks to which the invention has been applied, the casing being partly broken away.

Fig. 2 is a view in front elevation of the key bank shown in Fig. 1, partly broken away.

Fig. 3 is a sectional view taken on line 3—3 of Fig. 1.

Fig. 4, is a fragmentary view of one of the locks, together with the register key stem associated with and controlled thereby, and the removable key.

Fig. 5, is a transverse sectional view through the lock cylinder on line 5—5 of Fig. 3.

In the present invention, the register keys 30 each comprise a key stem slidably mounted in a key frame 31, suitably supported in the machine in which it is desired to make use of the invention.

A single row or bank of depressible keys is illustrated, each of which keys in the row may be assigned to a particular clerk, or for a particular transaction, or what not, it being understood that the inner ends of the row of keys control the excursions of a differentially movable member in the customary manner.

The outer end of each of the key stems 30 is laterally bent, the outer end of the bent portion 32 entered between two annular flanges 33 formed on a lock cylinder 34 slidably mounted in a bore 35 in the key frame 31. As viewed in Fig. 2, the lock cylinders 34 are located to the right of and slightly below the key stems 30.

A longitudinal slot 36 (Fig. 3) formed in each of the lock cylinders 34 receives the blade 37 of a removable key appropriate to the particular cylinder. Normally, spring-pressed tumbler pins 48 slidable in guide pockets 47 formed in the body of the key frame 31, as shown in Fig. 3, enter registering apertures 49 formed in that wall of the lock cylinder 34 constituting the inner closed edge of the longitudinal slot 36 to lock the cylinder against both longitudinal and rotatable movement.

The apertures 49 are continued partway into the longitudinal key slot 36, as shown in Fig. 5, terminating in shoulders 51. Aligning tumbler pins 39 rest on the shoulders and arrest the travel of the locking tumblers 48 in locking direction.

The key 37 is given the necessary shape so that when inserted into the longitudinal slot 36 in the lock cylinder 34, it will intersect the apertures 49 and shift the aligning tumbler pins 39 out of the slot and towards the periphery of the lock cylinder, until the outer ends of the aligning tumbler pins 39 lie substantially flush with the periphery of the lock cylinder.

The aligning tumbler pins, in turn, shift the locking tumbler pins 48 out of the apertures 49 in the lock cylinder 34 and hold their lower ends substantially flush with the bore 35 of the key frame, to thereby release the lock cylinder for longitudinal sliding movement in the bore, against the tension of a restoring spring 41. In this position, a shoulder 40 (Fig. 3) on the blade of the key 37 contacts the outer end of the cylinder 34 and continued pressure applied to the detachable key 37 slides the cylinder axially inward in the bore 35, compressing the spring 41, which is retained in the bore 35 by a plate or keeper 42 secured to the bottom of the key frame 31. As the removable key 37 and the cylinder 34 are depressed, the flanges 33 carry the register key 30 therewith against the tension of the usual key restoring spring 46, to its depressed position in which it is latched by a hook 43 on the usual locking detent bar 44, which engages a stud 45 on the key stem 30. The hook 43 by locking the registering key 30 in its depressed position, operates through its laterally bent outer end 32 and the flanges 33, to hold the lock cylinder 34 in depressed position, so that the operator may use both hands in manipulating the machine.

Also, the lock cylinder 34, when thrust inwardly by pressure against the removable key 37 transmitted through the shoulder 40 to the lock cylinder, shifts the aligning tumbler pins 39 along the bore 35 out of register with the pockets in the key frame 31, so that the concealed ends of the aligning tumblers abut the imperforate periphery of the bore and unyieldingly lock the detachable key 37 in the lock cylinder 34 against withdrawal relatively to the cylinder prior to the restoration of the lock cylinder to its normal position.

The detent bar 44 is shifted downwardly during the ensuing operation of the machine by mechanism not shown, but which is fully disclosed in the above mentioned Fuller and Shipley patents, to release the register key 30, whereupon the spring 46 restores the registering key to its normal outward position, and at the same time, the spring 41 restores the lock cylinder 34 with the removable key 37 therein.

After the lock cylinder 34 restores to the position shown in Fig. 3, the detachable key 37 may be removed therefrom. As the key 37 is removed, the springs 52 urge the locking tumbler pins 48 into the registering apertures 49 in the cylinder 34, thus locking it against longitudinal movement.

Fig. 1 shows all of the detachable keys 37 inserted in their respective locks. In practice, however, only one key would be inserted at a time, that is, the key of the clerk about to operate the register.

A cover or casing 50 is provided for two

purposes, to conceal the mechanism from view, and to prevent the lock cylinders from rotating. With the cover in place, only the ends of the lock cylinders 34 project through it, the remainder of the mechanism being concealed thereunder. As viewed in Fig. 2, it can be seen that on one side the flanges 33 are flattened or mutilated. When the cover 50 is in place, the side wall thereof lies alongside the flattened peripheries of the flanges 33, to prevent rotation of the cylinders 34, the flattened peripheries traveling along the side wall of the casing 50 during the axial shifting of the lock cylinder 34 in opposite directions.

The cover 50 may be secured to the frame 31 by any suitable means, preferably by screws, as illustrated.

While the form of mechanism herein shown and described is admirably adapted to fulfill the objects primarily stated, it is to be understood that it is not intended to confine the invention to the one form or embodiment herein disclosed, for it is susceptible of embodiment in various forms all coming within the scope of the claims which follow.

What is claimed, is:

1. In a machine of the class described, the combination with a register key stem shiftable into and out of effective position; of a slidable lock cylinder arranged parallel with the key stem; means to lock the cylinder in normal position; means to connect the key stem and the cylinder; a casing enclosing the key stem and cylinder and apertured to expose the end of the cylinder; the means which connects the key stem and cylinder adapted to coact with the casing to prevent rotation of the cylinder; and a removable key insertable in the lock cylinder to release the locking means and shift the lock cylinder to depress the key stem.

2. The combination with a depressible key; a non-rotatable lock member mounted adjacent said key; a connection between said lock member and said key; means to lock the lock member in its normal position; a detachable key for said lock member insertable in the lock member to release the latter for operation, and to depress the depressible key; and a casing for enclosing said lock and said depressible key, and effective to prevent rotation of said lock member.

3. The combination with a depressible register key having a lateral projection; of a shiftable member mounted apart from said depressible key; means to lock the shiftable member in its normal position; flanges on said shiftable member to prevent rotation thereof, said flanges also embracing the lateral projection; and a detachable key, insertable into the shiftable member to release the locking means; and slide said shift-

able member and the depressible key to their depressed positions.

4. The combination with a depressible key having a lateral projection; of a shiftable lock cylinder mounted adjacent said depressible key; means to lock the shiftable cylinder; flanges on said lock cylinder to embrace the lateral projection; a detachable key insertable into the lock cylinder to release the cylinder and to shift the depressible key to its depressed position; and a casing for the depressible key and the lock cylinder, said casing adapted to cooperate with the flanges to prevent rotation of the lock cylinder.

5. The combination with a depressible key; and a non-rotatable lock member mounted adjacent thereto; of means to hold the lock member in normal position; an operative connection between said depressible key and said lock member; a detachable key insertable in said lock member to release and depress the latter; and a removable casing to enclose the depressible key and the lock member to render accessible only the end of the lock member; and means to coact with said casing to prevent rotation of said lock member.

In testimony whereof I affix my signature.

WILHELM KROPFF.