

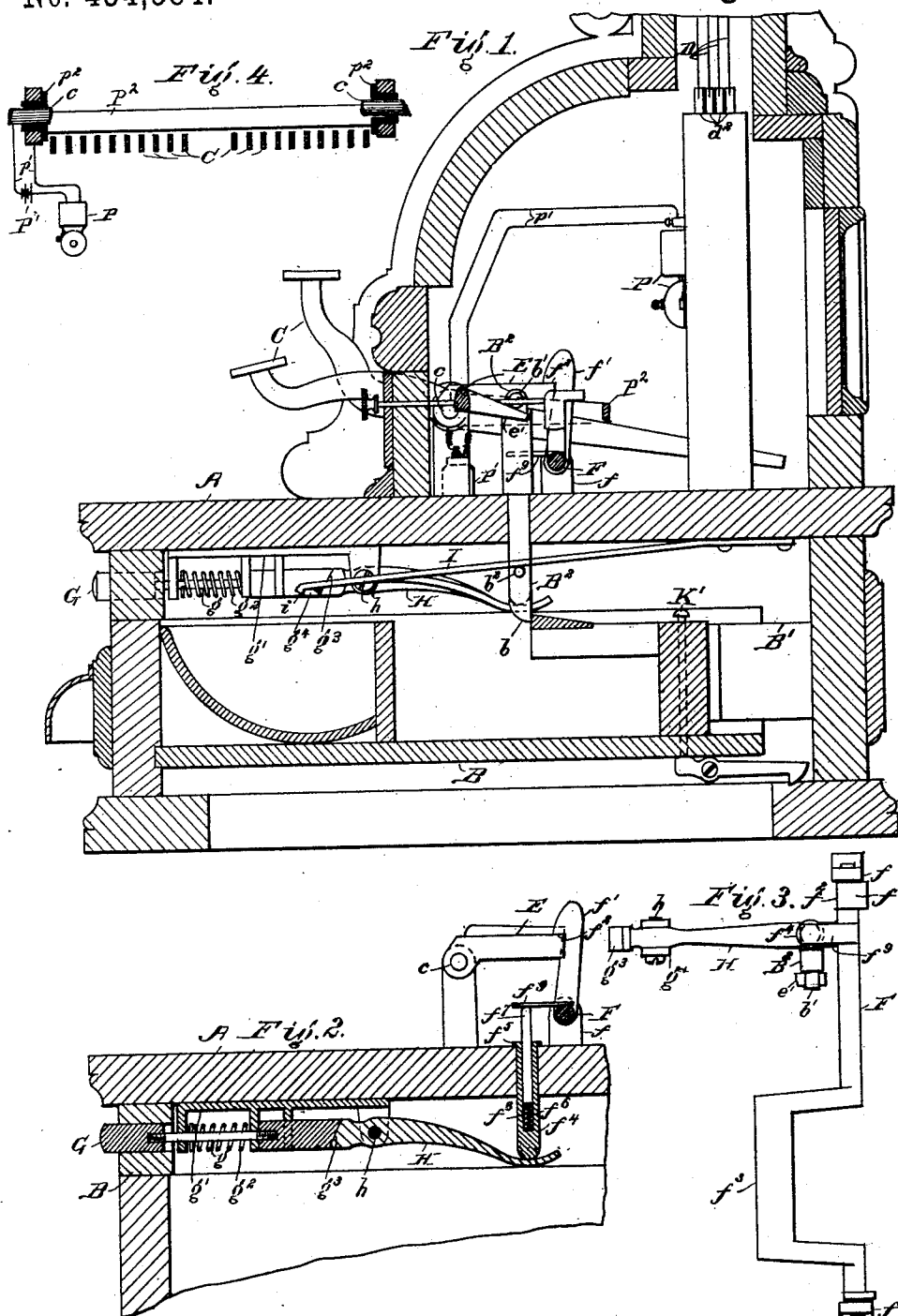
(No Model.)

2 Sheets—Sheet 1.

W. W. DREW.
CASH INDICATOR AND REGISTER.

No. 434,584.

Patented Aug. 19, 1890.



Witnesses.

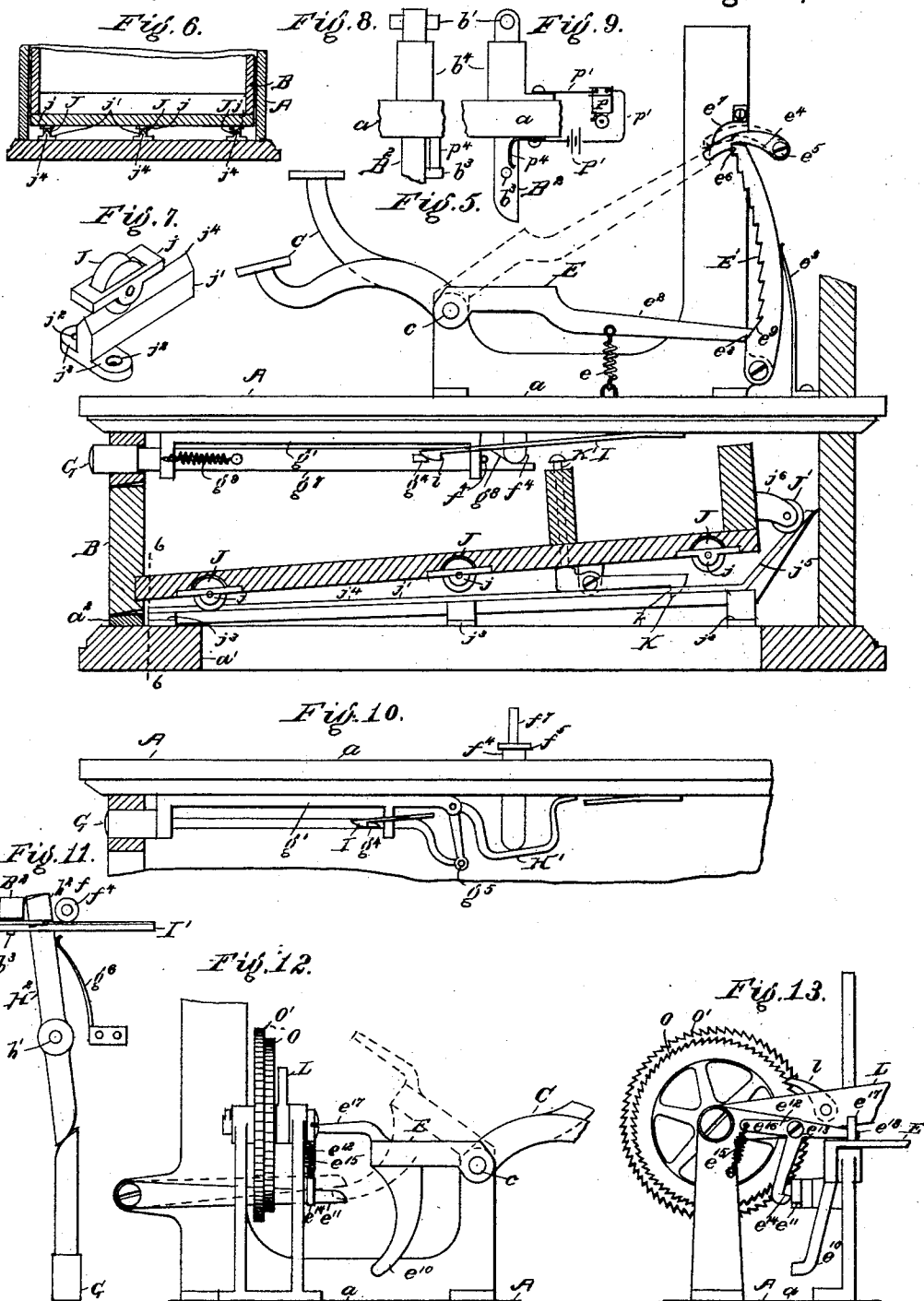
Kirkley Hyde.
Joseph W. Piper.

INVENTOR-
William W. Drew,
By Albert M. Moore,
His Attorney.

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UNITED STATES PATENT OFFICE.

WILLIAM W. DREW, OF SOMERVILLE, MASSACHUSETTS, ASSIGNOR TO THE
BOSTON CASH INDICATOR AND RECORDER COMPANY, OF BANGOR, MAINE.

CASH INDICATOR AND REGISTER.

SPECIFICATION forming part of Letters Patent No. 434,584, dated August 19, 1890.

Application filed August 19, 1889. Serial No. 321,249. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM W. DREW, a citizen of the United States, residing at Somerville, in the county of Middlesex and Commonwealth of Massachusetts, have invented a certain new and useful Improvement in Cash Indicators and Registers, of which the following is a specification.

My invention relates to cash indicators and registers; and it consists in the means hereinafter described of preventing the operation of the keys by unauthorized persons; means of closing an electric circuit by the depression of any one of the keys, and thereby ringing a bell in said circuit to call the attention of purchasers; means of preventing the depression of any key previously depressed and only partially restored to its normal position, and means of causing the drawer to open by its own gravity when said drawer is released.

In the accompanying drawings on two sheets, Figure 1 is a central vertical section of a cash-registering machine, from front to back thereof, showing in side elevation some keys, a rocking plate, the latch which engages it, means of throwing said latch out of engagement with said plate, the alarm devices, and means of preventing the drawer from being thrown entirely out of the case; Fig. 2, a vertical horizontal section of the case and of the means of disengaging the latch from the rocking plate, the rocking plate being shown in side elevation; Fig. 3, a plan of the latch-rod and its bearings; Fig. 4, a diagram of the keys, contact-bar, insulated bearings of contact-bar, electric circuit and bell, the keys and hub of contact-bar being represented in vertical section; Fig. 5, a right-side elevation of the rocking plate, keys, and their supporting-frame, and the means of preventing the keys from being depressed, except from a normal position, showing also a vertical section of the lower part of the case and the drawer, showing in elevation also the rollers and the inclined way on which the said rollers travel, means of preventing the drawer from being thrown entirely out of the case, and a modified form of means of throwing the latches out of engagement with the rocking plate; Fig. 6,

a cross-section of the drawer and the lower part of the case on the line 6 6 in Fig. 5; Fig. 7, an isometric view of a part of one of the ways on which the drawer travels and one of the pulleys secured to said drawer and running on said way; Fig. 8, a front elevation of a part of the table, the drawer-locking bolt provided with a pin, and a spring against which said pin is brought in contact when said bolt is raised, the pin and spring forming the terminals of an electric circuit; Fig. 9, a right-side elevation of the parts shown in Fig. 8, showing also a battery, an electric bell, and wires to connect said battery and bell to said spring and to the sleeve in which said bolt slides; Fig. 10, a section of a part of the case showing a modified form of the mechanism which moves the latch out of engagement with the rocking plate; Fig. 11, a plan of another modification of the latch-disengaging mechanism; Fig. 12, a side elevation of the mechanism which locks the registering-wheel when the key is depressed to its fullest extent and prevents the turning of said wheel until the key is restored to position and again depressed; Fig. 13, a front elevation of the parts shown in Fig. 12.

A is the case; B, the drawer; B', the drawer-opening spring; C, the keys; D, signals bearing numbers corresponding with numbers on the keys which operate them, respectively, and supported upon vertical tablet-rods *d*, the lower ends of which rest upon said keys, and the bolt B², beveled at its lower end at *b*, these parts being of the usual construction and as shown in patent to Jerome J. Webster, No. 377,342, dated January 31, 1888.

The rocking plate E is substantially as shown in the patent to said Webster and myself, No. 393,089, dated November 20, 1888, and has its fulcrum upon the fulcrum-rod *e*, on which the keys turn in the usual manner, and is raised by the depression of any key and is restored to position when said key is restored to position either by its own gravity or by the spring *e*, as shown in Fig. 5, said spring being connected to the table *a* or the top of the lower part of the case and to said rocking plate back of the fulcrum of said plate. The rock-

ing plate has an arm e' , which reaches under an ear b' on the bolt B^2 , and raises said bolt whenever the rocking plate is raised and allows the drawer to be opened. The latch-shaft F turns in standards or brackets f , secured to the top of the platform or table a , and is provided with as many upwardly-extending arms f' as there are rocking plates, each of said arms f' having at its upper end a forwardly-projecting hook f^2 , and having a forwardly-projecting arm or offset f^3 of sufficient weight to throw the hooks or latches f^2 over the rear edge of the rocking plate when the same is in its normal position, substantially as shown and described in an application filed by said Webster and myself, Serial No. 315,618, and now pending. The pin f^4 reaches through the table a , and is provided with a flange f^5 to prevent its dropping through into the drawer B , and has a vertical orifice f^6 , in which slides another pin f^7 , resting upon a spiral spring f^8 , the upper end of the upper pin pressing against the under side of the forwardly-projecting arm f^9 of the latch-rod F . (See Fig. 2.) These parts are all of the construction shown in said pending application, and raising the pin f^4 has the same effect, as therein stated, of rocking the latch-rod or rocking shaft F and throwing the latch backward off from the rocking plate E . The object in making the pins f^4 f^7 separate and interposing a spring between them instead of using a single pin is to prevent breaking the pins, the latch-rod, or the rocking plate when the latch is drawn forward and rocked, as therein described. In the machine shown in said application, the pins herein marked f^4 f^7 are raised by an incline on the drawers sliding under the lower pin when the drawer is being closed, so that when the drawer is closed the keys can be operated; but when the drawer is open the keys are prevented from being depressed by the latch engaging the rocking plate. In the machine shown in the present application the position of the latch is not affected positively by the opening or closing of the drawer; but the rocking plate is normally locked to prevent the operation of the keys at all times.

When it is desired to operate the keys, it is necessary to press back the button G , which projects from the front of the drawer below the table and above the drawer, said button being secured to the horizontal rod g , which is supported and slides freely in a bracket g' , secured to the under side of said table a , said button and rod g being thrown forward by a spiral spring g^2 , which surrounds said rod and is compressed between said bracket and a shoulder on said rod. (Shown in Figs. 1 and 2 as a pin thrust through said rod.) Back of the rod g is a lever H , pivoted at h on said bracket g' and extending under the pin f^4 , so that raising the rear arm of said lever raises the pins f^4 f^7 and throws the latch off from the rocking plate.

The adjacent ends of the rod g and lever H are so adapted or connected that pushing back said rod g throws down the front end of said lever and raises its rear end. In Figs. 1 and 2 these adjacent ends are represented as inclined downward and forward at g^3 , so that the rod g , when pushed backward, has a tendency to ride up over the front end of the lever, and, being guided in a straight line and prevented from rising by its supporting-bracket, pushes down the front end of said lever and raises the rear end thereof. There is a lateral projection g^4 on the push-rod g , and the front end of a spring-hook I , secured to the upper side of the table a , is bent downward at i to form the hook proper to engage said projection when the rod is pushed backward far enough to move the latch off from the rocking plate, the front side of said hook i being beveled to allow it to ride over said projection. The downward movement of the hook is limited by a pin b^2 , projecting laterally from the bolt, which prevents the front end of the hook from getting below the projection g^4 , and the front end of the hook is raised by said pin whenever the bolt is raised—that is, whenever the rocking plate is rocked by the depression of a key. When the front end of the hook is raised, the push-rod is thrown forward by the spring, and the rear end of the lever drops by its own gravity and the weight of the arm f^3 of the latch-shaft and allows the latch f^2 to engage the rocking plate. This result of restoring the lever H to position and allowing the latch to engage the rocking plate follows the complete depression of any key, whether the drawer is open or closed, because such depression always raises the rocking plate E and bolt B^2 . It follows that the button G must be pressed inward or backward before the depression of any key.

Some modifications of the latch-disengaging devices are shown, that in Fig. 10 being substantially as above described, except that the rod instead of being inclined to a point below the fulcrum of the pin-raising lever H' is bent downward and pivoted at g^5 to the front end of said lever; but obviously the pivot is unnecessary if the contiguous parts of the push-rod and lever H' are broad enough to remain in contact. The lever H' is prevented from falling by means of the spring-hook I , above described, engaging the projection g^4 .

Fig. 11 shows a push-rod and lever substantially like what is shown in Figs. 1 and 2, and above described, except that the lever H^2 turns on a vertical fulcrum h' , and is provided at its rear end with a lateral incline h^2 , which slides under the lower pin f^4 and raises it when the button G is pushed backward, the contiguous ends of the push-rod and lever being inclined or beveled laterally instead of from top to bottom, and the lever H^2 is restored to position by a spring (represented as

a leaf-spring g^6) capable of being secured to the under side of the table and pressing against the side of the rear arm of said lever, the return movement of the lever restoring the push-rod to position, thus dispensing with the necessity for a spring arranged like the spring g^2 . In Fig. 11 the spring-hook I' performs the same office as the hook I in Figs. 1, 2, 5, and 10, and is substantially like that hook in shape, but stands at right angles, substantially, to the lever H' , and hooks over said lever to retain it in position and is raised as the hook I is raised by a projection b^3 , which is like the projection b^2 , except that the former is on the front or rear of the bolt B^2 instead of on the side thereof.

In the modified unlatching device shown in Fig. 5 the push-rod g^7 , near its rear end, is beveled downward and backward at g^8 , and this beveled portion runs under the lower pin f^4 and raises the same when said push-rod is forced backward, the lever $H H' H^2$ being dispensed with and the push-rod being held back by the spring-hook I and projection g^4 , as above described, and the push-rod being restored to position by a spring g^9 , connecting the supporting devices g^7 and said push-rod, said spring contracting when the push-rod is released. The drawer may be thrown outward when the bolt is raised by a spring B' in the usual manner, as shown in Figs. 1 and 2; but I prefer to have the drawer open by its own weight, the drawer B being provided with grooved wheels J or rollers (see Figs. 5 and 7) turning in suitable boxes j , secured to the bottom of the drawer, said wheels running on inclined rails j' , secured by any convenient means within the case below said drawer, as by screws passing through holes j^2 in ears j^3 , with which said rails are provided, the tops j^4 of the rails being V-shaped to enter the grooves in said wheels and guide said wheels. The rear end portions of the rails are preferably bent upward at a greater inclination than the lower parts of the rails, as shown at j^5 in Fig. 5, and other wheels or rollers J' are journaled in brackets j^6 , attached to the back of said drawer, near the bottom of the same, and run upon said greater inclines j^5 to lift the back of the drawer when closed and raise all the rollers J , except the front ones, off from the rails and to cause the drawer to start more quickly when the bolt B^2 is raised in the usual manner.

The drawer is prevented from sliding or being thrown by the drawer-opening spring B' entirely out of the drawer by a hook K , Figs. 1 and 5, pivoted in ears secured to the under side of the drawer B , the rear end of said hook being bent downward at k and adapted to catch on the sill a' of the case, Fig. 1, or on a stop-rail a^2 , arranged on said sill, Fig. 5. When it is desired to move the drawer entirely from the case A , the rear end of the hook K may be raised sufficiently for this purpose by pressing upon the top of a

vertical pin K' , which rests upon the front arm of said hook and slides in a vertical hole in the back of the drawer or in any partition of said drawer.

To prevent a dishonest or careless salesman from registering a less amount than is indicated, as he may do when the same number is successively indicated, means described below are adopted. The registering devices consist of the registering-ratchet O and a registering-gear, each having preferably a hundred teeth, the ratchet O being turned by the depression of any key C an angular distance measured by the number of teeth corresponding to the number on said key and on the corresponding signal D , by means of a pawl l , pivoted on the registering-lever L , said lever extending over all the keys and being curved, all as described in said Patent No. 370,363. Evidently if the key, having been once fully depressed to display the proper signal, is allowed to make only a partial return to its normal position and again depressed the same signal will remain displayed, but the pawl l will not rotate the ratchet the proper amount, because in its previous backward movement said pawl has not slipped over the number of teeth indicated by the exposed signal. It is therefore desirable to prevent the keys from being operated except from their normal position. The rocking plate, therefore, is provided with a backwardly-extending arm e^2 , the rear end of which is beveled under at e^3 , Fig. 5, and an arc-shaped rack E' is pivoted at its lower end to the frame of the machine and is thrown forward by a spring e^3 , secured to the table a and pressing against the upper end of said arc-shaped rack. The rear end of the arm e^2 , when it starts to rise from its lowest position, does not engage with the teeth of said rack, which is then held back by a catch e^4 , pivoted at e^5 on the frame of the machine, said catch being provided with a hook e^6 , which reaches over the upper end of said rack and holds said rack out of the path of the arm e^2 , said catch being forced down by a leaf-spring e^7 , secured to said frame and pressing upon said catch in front of its pivot. The motion of the rocking plate is the same whichever key be depressed, as all the keys have the same angular movement, and every key acts directly upon said rocking plate. When the rocking plate is lifted to its greatest extent by the depression of any key, the arm e^2 of said plate strikes the catch e^4 and raises it and allows the rack E' to swing forward against the rear end of said arm, so that when the rocking plate is allowed to descend it engages with a tooth of said rack and is prevented from being again raised until the rocking plate is restored to position and the end of the arm e^2 strikes upon the incline e^9 and throws the rack back far enough to allow said catch to engage its upper end and hold it out of the path of said arm e^2 .

The number of teeth in the rack is equal to the number of teeth in the ratchet O, which measures the greatest angular distance through which said ratchet can be rotated by a single complete depression of any key, so that when any key is depressed to its greatest extent and allowed to return to its normal position the arm e^2 will engage the teeth of the rack E' successively as the pawl l slips back over the teeth of the ratchet O, and so that when any key, being fully depressed, is allowed to return sufficiently to allow said pawl l to slip over one or more teeth of said ratchet the key cannot be again depressed until said key and the rocking plate are both restored to their normal positions.

In Figs. 12 and 13 are shown other means for accomplishing the result of requiring the key to be restored to position before it can be made to operate the registering devices the second time, in which figure e^{10} represents a downwardly-extending arm secured to the rocking plate and adapted, when said rocking plate is raised by the complete depression of any key, to strike and raise the free end of a stop-lever e^{11} and throw it into engagement with the teeth of a stop-ratchet O', secured to the registering-ratchet concentrically therewith. When the stop-lever e^{11} is raised into engagement with the teeth of the stop-ratchet, it is there held by the three-armed lever e^{12} , pivoted at e^{13} on the frame of the machine, and provided with a hook e^{14} , which is caused by the turning of said lever e^{12} on its pivot to reach under said stop-lever, said lever e^{12} being turned by a spring e^{15} , connecting an arm e^{16} of said lever and the frame of the machine. When the rocking plate returns to position, the rear end of another arm e^{17} of said rocking plate strikes another arm e^{18} of the lever e^{12} and rocks the same in the other direction, drawing the hook e^{14} out from under the stop-lever and allowing said stop-lever to drop out of engagement with said stop-ratchet. The engagement of the stop-lever with the stop-ratchet takes place as nearly as possible simultaneously with the stopping of the registering-pawl, and its disengagement takes place as nearly as possible simultaneously with the return of the rocking plate to its lowest position. The stop-lever and ratchet will therefore prevent any registration unless the rocking plate starts from its normal or lowest position.

When the registration and indication take place in cash registering and indicating machines, it is customary to sound an alarm to call the attention of the customer to the signal displayed, and these bells are usually caused by mechanical means to give a single tap at the depression of each key. I prefer, however, to use an electric bell—such as is commonly known as a "vibrator" or "buzz" bell—and to so arrange the circuit in which the bell is placed that the bell will continue to sound as long as any key is wholly or par-

tially depressed, to insure the returning of the key to its normal condition after the depression thereof.

P is a buzz-bell.

P' is a battery.

p' are wires connecting the opposite poles of the battery, in one of which wires the bell P is arranged in the usual manner, said bell, battery, and wires being of any approved construction or operation, and said battery and bell being arranged at any convenient place, either within or without the case of the machine.

In Figs. 1 and 4 the circuit-closer consists of any key and a U-shaped contact-bar P^2 , extending over all the keys and turning on the fulcrum-rod c , a hub of said bar P^2 being connected by the wire p' to the battery through the bell, and the fulcrum-rod c being connected by said wire directly to the opposite pole of the battery, and the fulcrum-rod being insulated from the journals of the bar P^2 by vulcanite p^2 or other insulating material. The keys all turning upon the fulcrum-rod and being in electrical contact therewith, it is evident that any depression of any key sufficient to raise the rear arm of said key into contact with the contact-bar P^2 , will close the circuit through the bell, and that the bell will continue to ring until the key is allowed to return to its normal position, at which time the keys are slightly out of contact with said bar P^2 .

In Figs. 8 and 9 the circuit-closer consists of the drawer-locking bolt provided with a laterally-projecting pin b^3 , said bolt and pin being metallic, and said bolt sliding in a metallic sleeve b^4 , secured to a table a of the machine, and being connected through the bell to the battery, and a spring p^4 being secured to the under side of said table a above the pin b^3 , but slightly out of contact therewith, and connected to the other pole of the battery, the table a serving as an insulator between said spring and said sleeve. A very slight depression of any key will rock the rocking plate and raise the pin b^3 into contact with the spring b^4 and close the circuit, and the bell will ring until the circuit is broken by the restoring of the key to its normal position and allowing the bolt to drop to its lowest position.

I claim as my invention—

1. The combination of the case, the keys, the rocking plate adapted to be rocked by the depression of any key, a latch within said case normally engaging said plate and preventing the rocking of the same, a rod provided with a lateral projection or shoulder projecting beyond said case and connected to said latch to move said latch out of engagement with said plate and to permit the depression of any key, a spring to return said rod, a hook to engage said rod and prevent its return to position, and means, substantially as described, of throwing said hook out of en-

gagement with said rod upon the rocking of said plate, as and for the purpose specified.

2. The combination of the case, the keys, the rocking plate adapted to be rocked by the depression of any key, a latch-rod provided with an arm and provided with a latch normally engaging said rocking plate and preventing the operation of said rocking plate and keys, a pin arranged under said arm and adapted when lifted to disengage said latch from said plate, and a movable rod arranged to extend outside of said case and by its movement to raise said pin and throw said latch out of engagement with said rocking plate, as and for the purpose specified.

3. The combination of the case, the keys, the rocking plate adapted to be rocked by the depression of any key, a latch-rod provided with an arm and provided with a latch normally engaging said rocking plate and preventing the operation of said rocking plate and keys, a pin arranged under said arm and adapted when lifted to disengage said latch from said plate, and a movable rod arranged to extend outside of said case and provided at its rear end with an incline arranged under said pin and adapted to raise said pin by the sliding of said incline under said pin, as and for the purpose specified.

4. The combination of the case, the keys, the rocking plate adapted to be rocked by the depression of any key, a latch-rod provided with an arm and provided with a latch normally engaging said rocking plate and preventing the operation of said rocking plate and keys, a pin arranged under said arm and adapted when lifted to disengage said latch from said plate, and a movable rod arranged to extend outside of said case, and a lever adapted to be turned upon its fulcrum by the movement of said rod, one arm of said lever being arranged below said pin and to raise said pin and thereby disengage said latch, as and for the purpose specified.

5. The combination of the case, the keys, the rocking plate adapted to be rocked by the depression of any key, a latch-rod provided with an arm and provided with a latch normally engaging said rocking plate and preventing the operation of said rocking plate and keys, a pin arranged under said arm and adapted when lifted to disengage said latch from said plate, and a rod arranged to extend outside of said case and provided with a projection, a hook to engage said projection on said rod, a lever adapted to be turned upon its fulcrum, the rear arm of said lever being arranged below said pin and adapted to raise said pin when said lever is turned, a bolt adapted to be raised by the rocking of said rocking plate and provided with a pin arranged to extend under said hook and to raise said hook out of engagement with the projection of said movable rod, and a spring to restore said rod to its normal position, as and for the purpose specified.

6. The combination of the keys, the rocking plate arranged to be rocked by the depression of any key and provided with an arm, a pivoted rack adapted to engage said arm and prevent the rising of the same, a catch adapted to hold said rack out of engagement with said arm until said arm in rising passes all the teeth of said rack, and then to be struck by said arm and raised out of engagement with said rack, and a spring to throw said rack into engagement with said arm when said catch is raised, as and for the purpose specified.

7. The combination of the keys, the rocking plate arranged to be rocked by the depression of any key and provided with an arm, a pivoted rack adapted to engage said arm and prevent the rising of the same, a catch adapted to hold said rack out of engagement with said arm until said arm in rising passes all the teeth of said rack, and then to be struck by said arm and raised out of engagement with said rack, and a spring to throw said rack into engagement with said arm when said catch is raised, said rack being provided below its teeth with an incline adapted to be struck by the rear end of said arm to throw said rack into engagement with said catch when said rocking plate returns to position, as and for the purpose specified.

8. The combination of the registering-ratchet, a stop-ratchet secured thereto concentrically therewith, a stop-lever provided with a hook, and a spring to throw said hook under said stop-lever, the registering-lever provided with a pawl, the keys arranged under said registering-lever, the rocking plate adapted to be rocked by the depression of any key and provided with an arm adapted, when said plate is rocked, to raise said stop-lever into engagement with said stop-ratchet, and provided with another arm arranged to rock said hook-lever and to disengage said hook from said stop-lever when said rocking plate is returned to its normal position, as and for the purpose specified.

9. The combination of the case, the drawer sliding in said case, a hook pivoted to the under side of said drawer, the rear end of said hook being bent downward and adapted to catch on a transverse portion of said case to prevent said drawer from being accidentally thrown from said case, said hook having a front arm and a pin passing through the bottom of said drawer and resting upon the front arm of said hook to enable the rear portion of said hook to be raised and said drawer to be removed from said case, as and for the purpose specified.

10. In a cash indicator and register, the combination of a series of keys, an electric circuit, a vibratory bell arranged in said circuit, and a circuit-closer arranged in said circuit and adapted to be closed by the depression of any one of said keys, as and for the purpose specified.

11. The combination of the case provided
with inclines of greater and less inclination,
the drawer arranged to slide upon said in-
clines, and a lock to retain said drawer in
5 said case and partly upon said greater incline,
the keys, said lock being adapted to be un-
locked by the operation of any of said keys
and to allow said drawer to acquire a greater
initial velocity by descending said greater in-
10 cline, as and for the purpose specified.

In witness whereof I have signed this speci-
fication, in the presence of two attesting wit-
nesses, this 12th day of July, A. D. 1889.

WILLIAM W. DREW.

Witnesses:

ALBERT M. MOORE,
KIRKLEY HYDE.