(No Model.) 3 Sheets—Sheet 1.

E. T. TAYLOR.

CASH REGISTER AND INDICATOR.

No. 510,622. Patented Dec. 12, 1893.

Fig. 4.

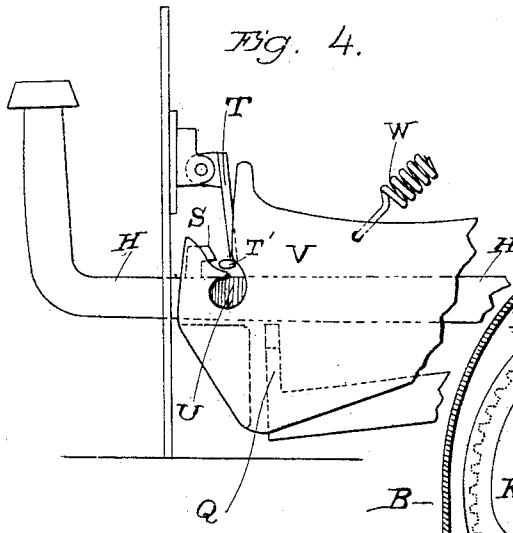

Fig. 1

Fig. 5.

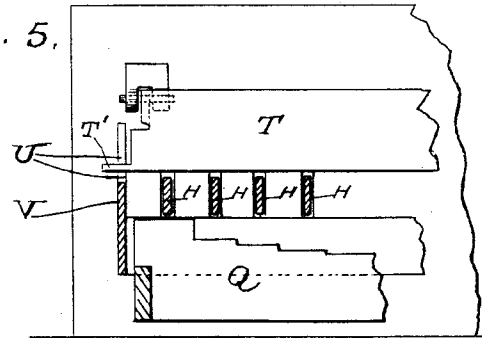

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Fig. 6.

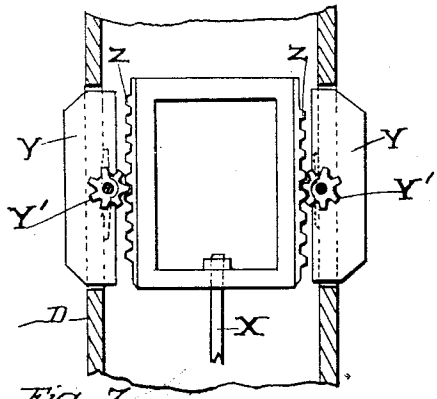


Fig. 7

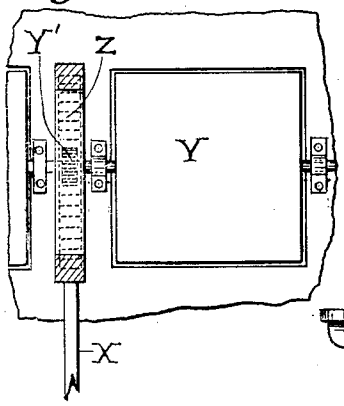
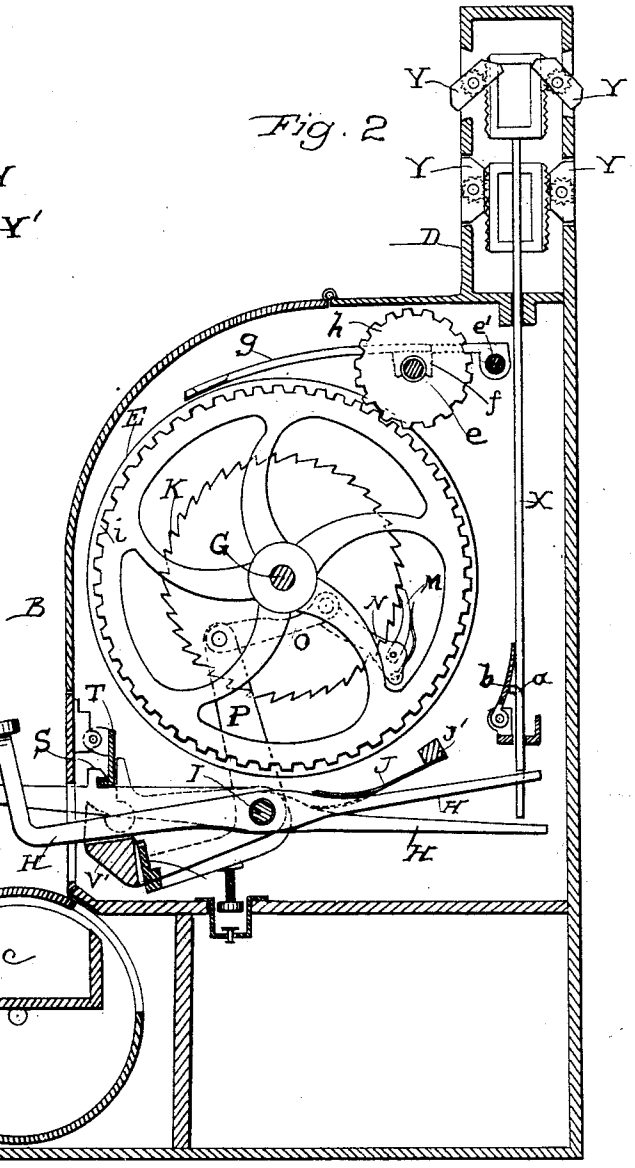


Fig. 2



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CASH REGISTER AND INDICATOR.

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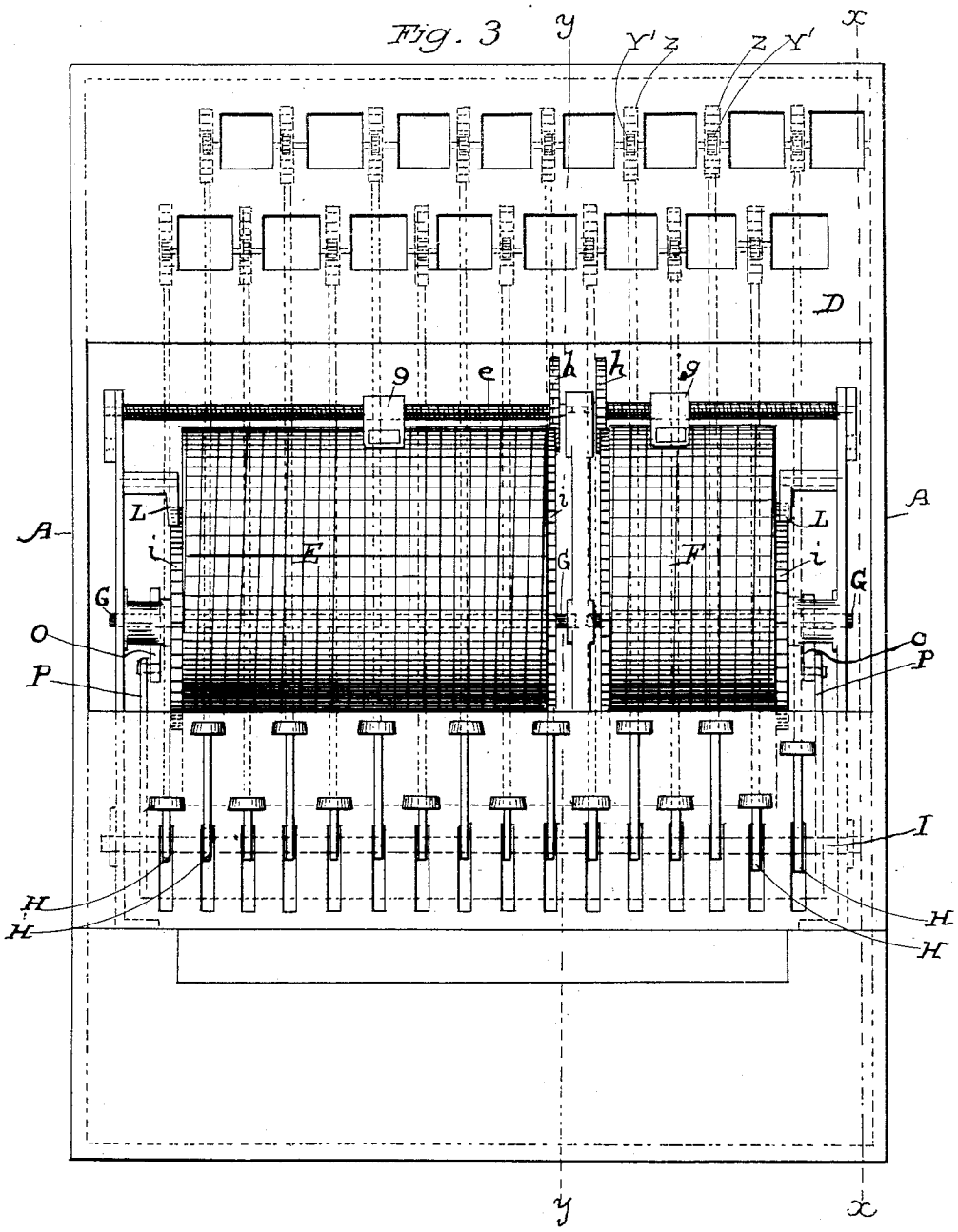
Fig. 3



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UNITED STATES PATENT OFFICE.

EDWARD T. TAYLOR, OF OAKLAND, CALIFORNIA.

CASH REGISTER AND INDICATOR.

SPECIFICATION forming part of Letters Patent No. 510,622, dated December 12, 1893.

Application filed February 24, 1893. Serial No. 463,616. (No model.)

To all whom it may concern:

Be it known that I, EDWARD T. TAYLOR, a citizen of the United States, residing in Oakland, Alameda county, State of California, have invented an Improvement in Cash-Registers; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to a register by which the amount of cash received is indicated, and by which the consecutive amounts are added up so that the total may be observed at any time.

It consists in certain details of construction which will be more fully explained by reference to the acompanying drawings, in which—

Figure 1 is a vertical section of my apparatus, taken through line *x*—*x* of Fig. 3, showing the interior mechanism, with the key levers in their normal position. Fig. 2 is a vertical section through line *y*—*y* of Fig. 3, showing one of the key levers depressed. Fig. 3 is a front elevation with the cover removed to show the cylinders. Fig. 4 is an enlarged end sectional view showing a key lever and the locking mechanism. Fig. 5 is an enlarged front sectional view of the same, and the stops by which the movement of the keys is arrested. Fig. 6, is an enlarged end view of the indicating plates, and Fig. 7, is a similar view taken at right angles to Fig. 6.

A is the casing within which the mechanism is contained having a removable cover B, and also at the lower part in front a horizontal stationary receptacle *c* for cash, and a rotary semi-cylindrical cover *d'* which is turned so as to inclose the cash receptacle, or to expose it as will be hereinafter described.

D is a rectangular extension of the upper rear portion of the casing, having openings upon opposite sides through which the figures indicating the amount of any purchase are exposed.

In this apparatus I employ two cylinders E and F. One of these cylinders has marked spirally around its periphery, figures indicating cents, with any desired interval between the amounts. In the present case I have shown intervals of five cents, so that five, ten, fifteen cents, &c., are indicated up to any desired amount up to ninety-five cents. The other cylinder is in like manner divided to indicate dollars, with similar intervals between, and may indicate from one to ten or twenty dollars, or other amount. These cylinders are mounted to rotate upon a shaft or shafts G, suitably fixed in supporting standards, so that either of the cylinders may be turned independently of the other by the operating mechanism.

Along the front of the machine are indicating buttons or keys having marked upon them figures representing the sub-divisions which are indicated upon each of the cylinders, those connected with the first cylinder representing cents from five to ninety-five, with intervals of five cents, as previously described, and those representing dollars indicating from one dollar to ten and twenty. These indicating keys are fixed upon the upper ends of levers H which are fulcrumed upon the shaft I extending horizontally through the lower part of the case and below the two cylinders. The front ends of the levers which project outside of the inclosing case are normally held up by weights or springs. In the present case I have shown springs J fixed to a bar J' extending through the apparatus from side to side, with suitable relation to the levers so that each spring acts upon one of the levers, and when the key has been released, after being depressed, the spring will return the lever to its normal position.

Upon each of the indicating drums is fixed a ratchet-wheel K, in the present case shown as concentric with the drum. Pawls L supported from the standards or frame-work engage the ratchet-wheels to prevent the drums from being turned backward when any key and lever is depressed. Other pawls M are pivoted upon the ends of radial levers N, the inner ends of which are supported and turn about the drum shaft, while the outer ends carry the pawls as stated. Each of these pawl carrying levers is connected by a link O with one arm of a lever arm P. This lever is a bell crank lever, the angle being fulcrumed upon the shaft I, to which the key levers are fulcrumed below the drums, and the other end of the lever is connected with a bar Q extending along the front within the case and be-

neath the key levers, so that when any one of the key levers beneath which this bar extends, is depressed, it will engage the bar and press it downward, thus tilting the lever P about its fulcrum, and by means of the link O, the pawl carrying lever N is caused to rotate about the shaft and move the pawl a certain distance. This movement of the link is transmitted to the pawl carrying lever which is thus rotated about the central shaft and the pawl is moved over the teeth of the ratchet-wheel K in the direction which allows the pawl to move without turning the ratchet. By this construction the ratchet and drum remain stationary while the key lever is being depressed, but when the key lever is returned by the action of its spring, previously described, a spring R which is connected with the rotating pawl carrying lever, draws the latter up to its normal position, and as the pawl is engaged with the teeth of the ratchet wheel, the latter and the drum will be rotated for a distance depending upon the previous movement of the pawl over the ratchet teeth. The distance which the pawl thus moves and the correspondent amount of subsequent rotation of the drum depend upon which key lever has been depressed. If the key lever indicating the smallest amount be depressed, the pawl will be moved over only one tooth of the ratchet, and the subsequent advance of the drum by the return of the pawl and its lever will correspond to the movement of one tooth of the ratchet, and for any higher amounts the pawl will be moved a corresponding greater number of teeth in its first movement and the return will rotate the drum a similarly greater distance. These differences of movement are effected by inclining or slotting the bar Q, as shown in Fig. 5, so that the key lever indicating the lowest amount does not strike the bar until it has nearly reached the lowest point of depression, and the key lever indicating the highest amount strikes the bar at such a point that the latter commences to move as soon as the depression of the key lever commences, thus moving the pawl over the distance which is necessary to produce a rotation of the drum which will carry it forward and indicate a sum equal to that marked upon the key lever.

Each of the key levers has an upwardly projecting hook lug S, at a point just within the case, and these hooks are adapted to be engaged by a swinging plate T fulcrumed as shown in the present case above the hooks S. This plate has a little extension T′ at each end which is engaged by a slot U made in the side plate V. These side plates are connected by a bar V′ so that when a key lever is depressed, the first movement causes the slot U to act upon the swinging plate and force it inward so as to engage the hooks of all the key levers except the one which is being depressed, and which has already passed below the edge of the locking plate. The remainder of the key levers are thus locked so that they cannot be moved as long as the first one remains depressed. As soon as this lever is allowed to return to its normal position, the slotted side plate V which acts upon the swinging locking plate is returned to its position by a spring W, and the action of the slot upon the lugs of the swinging plate T, moves the latter outwardly and disengages it from the locking lugs of the key levers. The rear ends of the key levers engage vertically sliding rods X which extend upwardly through suitable guides and into the rear upward extension D of the case previously described and which contains the indicating devices. These indicating devices consist of rectangular plates Y having figures marked upon them corresponding with the figures upon the key levers which actuate them. One of these plates, corresponding with each key, is pivoted in an opening on the same side with the key levers, and a corresponding one in the opening upon the back, so that the amount registered can readily be seen from each position. These rectangular plates have pivots projecting centrally from their sides upon which they turn and they have also pinions Y′ fixed upon these pivot shafts which are engaged by the teeth of a rack bar Z. This rack bar slides in vertical guides, and is actuated by the vertical rod X which is moved by the key lever as before described.

The operation will then be as follows:—When the key lever is depressed, the vertical rod X is moved upwardly and it moves the sliding rack bar Z, the teeth of which engage those of the pinions Y′, of the two oppositely placed indicators. These indicators normally present a plain surface outwardly which may correspond in appearance with the remainder of the case, and they close the openings which are made through it. When the upwardly moving rack bars act upon the pinions of these indicator plates, they rotate them and turn the plates about their axes until the opposite sides which contain the figures, are presented outwardly within the opening in which they turn. The vertically moving rods have projecting lugs or hooks *a* at some point in their length which, when the key lever has been depressed, and the rod has been raised so as to show a pair of the indicator figures in their respective openings, will engage the edge of a swinging plate *b* which may be constructed in any way to allow it to move easily out of the way while these lugs are passing it, and fall back immediately after they have passed so as to engage them and prevent the rods and rack bars from falling. In the present case I have shown the plate as extending along the rear part of the casing, having its lower edge pivoted in suitable boxes and so weighted that the tendency of the upper edge is to fall outward, and the plate thus stands at a slight incline toward the rear. Whenever one of the rods is moved upwardly,

it pushes the plate inwardly until the hook has passed the upper edge and the plate falls beneath it, and retains it in this position, thus leaving the indicator permanently exposed. As soon as any other key lever is depressed so that its indicator rod is moved upwardly, the lug *a* of that rod pushes the plate inwardly, and thus releases the lug of the one previously exposed, and allows it to drop to its normal position, either by gravitation, if it is sufficiently heavy, or if desired by the aid of a spring. The new indicator rod X which has thus been raised to place is in the same manner retained by the plate until the next one is raised, and thus any amount remains exposed until a new one is shown.

My device for receiving and holding the cash consists of a stationary receiver *c* preferably fixed along the front of the casing and just beneath the key levers. This receiver is not moved from its position, but is inclosed by a segmental rotary case *d*. This case is closed at the ends and has the one side cut away to a sufficient extent so that when that side is uppermost, it leaves the whole or any desired portion of the length of the cash receiver exposed, but when it is rotated so as to bring the closed side uppermost, the cash receiver is covered so that no access can be had thereto. This rotary case is moved either independently of the movement of the key levers or it may be rotated simultaneously with the movement of either of the key levers by a suitable connection. In the present case I have shown a hook lever *m* so fulcrumed that its hook engages a projection *n* upon the rotary case and retains it in position to inclose and conceal the cash drawer. When either of the key levers is depressed, it moves the bar connecting the plates V downward, and this engages the lever *m* and unlatches it from the lug *n*, thus allowing the case *d* to be turned to expose the cash receptacle. I have shown a weight *o* so fixed to the case as to rotate it as soon as it is released. After the key has returned to its normal position the case may be returned to cover the receiver by hand.

At some point, in convenient relation with each of the drums, is journaled a screw *e* which extends parallel with the drum and is threaded to correspond with the spiral arrangement of the figures upon the drum, that is the threads of the screw bear such relation to the spiral upon the drum that when the drum has made one revolution the nut *f*, which carries the indicator plate *g* will have advanced along the screw so far that the indicator will have advanced one of the spiral spaces upon the drum and will thus always stand above the line of figures which are arranged around the drum. In the present case I have journaled the screw shafts just above and behind the drums so that the indicator plate extending forward from the screw on which it travels, will project above the top of the drum, and expose one set of figures through a slot or opening made through it suitable for the purpose. Upon each screw shaft is a pinion *h* which is engaged by a corresponding gear-wheel *i*, which rotates with the drum with which it is connected, so that the rotation of either drum advances its indicator plate *g* along the spiral line of figures upon the drum, so that it always registers the sum of all the amounts that have been received and indicated by the drum during a day or other period of time within its capacity.

The nut *f* is open at the bottom, and the rear end of the indicator plate *g* extends behind the screw and slides freely upon a guide rod *e'* parallel with the screw. When the plate *g* has traveled across the face of the drum, and it is desired to return it to the opposite side, it is done by turning the plate *g* up until the nut is free from the screw, and then sliding the plate along the guide rod *e'* until it reaches the desired point when it is again dropped and the nut engaged with the screw.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is--

1. The combination with a numbered drum having a ratchet wheel and the key levers, of a bell crank lever pivoted at its angle below the drum and provided at the outer end of its outwardly extending members with a cross bar extending beneath the key levers and having notches of varying depth in its upper edge, a pawl carrying arm mounted loosely on the axis of the drum and provided at its free end with a pawl engaging the said ratchet, a link connecting the upper end of the upwardly extending member of said bell crank lever with said pawl carrying arm, and a spring secured to some fixed part of the frame and extending down to and connected with the pawl carrying arm, substantially as herein described.

2. A cash register, consisting of one or more drums having figures imprinted spirally thereon, indicator plates adapted to be advanced transversely to the rotary movement of the drums so as to follow the lines of figures, means for rotating the drums to indicate different amounts, consisting of key levers, a single bar extending beneath the entire bank of levers with stops to be engaged by each lever at a different point of depression, ratchet-wheels connected with the drums, oscillating levers carrying pawls which engage the ratchet teeth, said levers being connected with the depression bar so as to move the pawl over a number of teeth corresponding with the amount of movement of the bar, and springs by which the pawl levers are returned to a normal position, and the drums rotated correspondingly by the engagement of the pawls and ratchet-wheels plates figured on one side to show corresponding amounts and fixed to central transverse shafts so as to revolve in corresponding openings in the upper part of

the case, vertically moving rods actuated by the key levers, and intermediate mechanism whereby the movement of a rod in one direction will rotate the indicator plate within its opening to expose the figures and its movement in the opposite direction will reverse the plates and conceal the figures substantially as herein described.

3. A cash register consisting of rotary and spirally imprinted drums with indicators movable transversely across their faces to follow the spiral lines of figures as the drums rotate, a single bar extending entirely across the machine, and key levers by which it is depressed to varying distances by the key levers engaging it at different points when they are depressed, ratchet-wheels fixed to rotate with the drums, pawls engaging the ratchet-wheels to prevent their rotating backward when the levers are depressed, and other pawls mounted upon levers fulcrumed to turn about the drum shaft, connections between said levers and the depression bar whereby the levers are moved and the pawls advanced over the ratchet teeth when the bar is depressed, and springs by which the pawls engage the ratchet wheels and turn the drums forward when the depression bar is allowed to rise, plates figured on one side to show the amounts corresponding to those inscribed upon the keys, and fixed to central transverse shafts so as to revolve in corresponding openings in the upper part of the case, vertically moving rods actuated by the key levers and intermediate mechanism whereby the movement of a rod in one direction will rotate the indicator plate within its opening to expose the figures and its movement in the opposite direction will reverse the plates and conceal the figures substantially as herein described.

4. A cash register consisting of rotary and spirally imprinted drums with indicators movable transversely across their faces to follow the spiral lines of figures as the drums rotate, pawl and ratchet mechanisms, depression and key levers connected therewith so that a reciprocation of a lever will advance the ratchet drum and indicator a distance and number of figures corresponding with the key which is depressed, plates figured on one side to show corresponding amounts, and fixed to central transverse shafts so as to revolve in corresponding openings in the upper part of the case, vertically moving rods actuated by the key levers, and intermediate mechanism whereby the movement of a rod in one direction will rotate the indicator plate within its opening to expose the figures and its movement in the opposite direction will reverse the plate and conceal the figures, substantially as herein described.

5. In a cash register, the combination with the case having openings in the opposite sides thereof, a pair of companion plates journaled in said openings, having corresponding figures upon one side which are normally turned inward and concealed from view, pinions upon their pivot shafts, vertically reciprocating racks engaging the pinions, and connections between the racks and the key levers, whereby the depression of the key levers acts to turn the plates and expose the figures, substantially as herein described.

6. In a cash register, the revolving indicator plates journaled in openings in the case having figures upon one side which are normally concealed from view, key levers having rods connected with them so that the depression of a lever moves the rod, mechanisms intermediate between the rod and the revoluble plate whereby the movement of the rod turns the plate and exposes the figures, a hinged swinging plate extending along the line of the key actuated rods and inclined against them, studs projecting from the rods and engaging the plate to move it away from the rods when the latter are raised, said plates swinging back beneath the lugs after they have passed above the edge of the plate so as to prevent the rods from falling when the key lever is released, whereby the figures remain exposed until the upward movement of another rod moves the plate away and releases the lug to allow the rod to fall, substantially as herein described.

7. In a cash register the combination of key levers provided with fixed lugs, a bar movable with reference to the lugs, slotted plates secured to said bar, a locking plate hinged above the key levers and provided with extensions which are engaged by the walls of the slots and forced with its plate under the lugs of the keys at rest when one key is being operated thereby locking all but the operated key, and springs for retracting said slotted plate and its bar when the key is released, substantially as herein described.

8. The combination with the numbered drum, the bell crank lever pivoted at its angle below the drum, a pawl and ratchet mechanism connecting the upwardly extending member of the said lever with the drum, a notched cross bar connected with the forward end of the outwardly extending member of said lever, and the key levers crossing the notched bar, of a lever-locking plate crossing the upper edges of the key levers, said plate and key levers having normally disengaged locking connections at their adjacent edges, a vertically swinging cross bar under the key levers parallel with the notched bar and provided with an upwardly extending arm having pin and slot connection with the said locking plate to move it into and out of locking engagement with all of the key levers save the one depressed, substantially as herein described.

9. The combination with a cash register provided in its lower forward corner beneath the key levers with a compartment open at its upper side, and a stationary trough-like drawer crossing the said upper open end, of a

cylinder inclosing the drawer and closing the said open upper end; the said cylinder being provided with a normally concealed opening to register with the open upper side of the drawer, a locking mechanism for retaining the cylinder in said position, and actuated from the key levers, and means for automatically rotating the cylinder when released to bring its opening into register with the said drawer, substantially as herein described.

In witness whereof I have hereunto set my hand.

EDWARD T. TAYLOR.

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