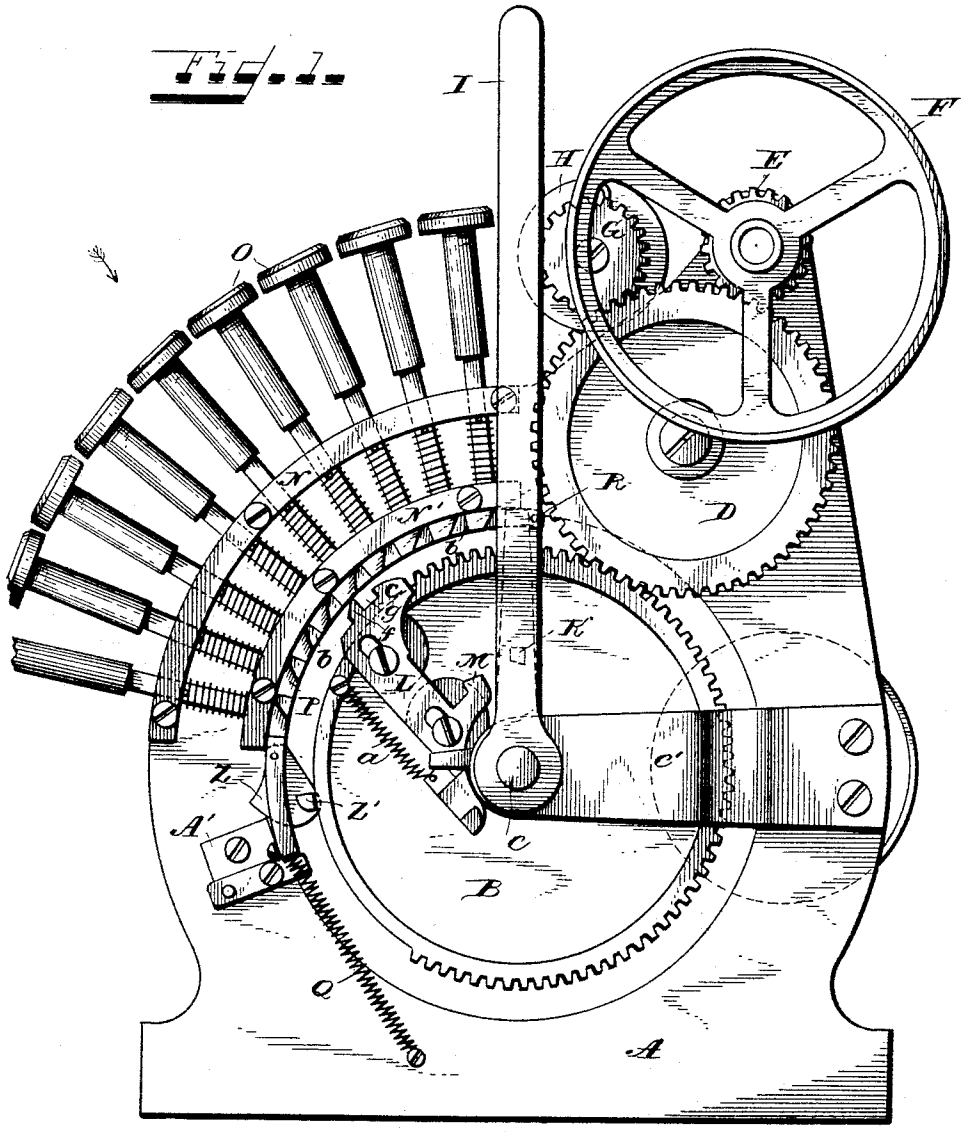
(No Model.) 3 Sheets—Sheet 1.

H. COOK.

CASH REGISTER AND INDICATOR.

No. 448,937. Patented Mar. 24, 1891.

Fig. 1.



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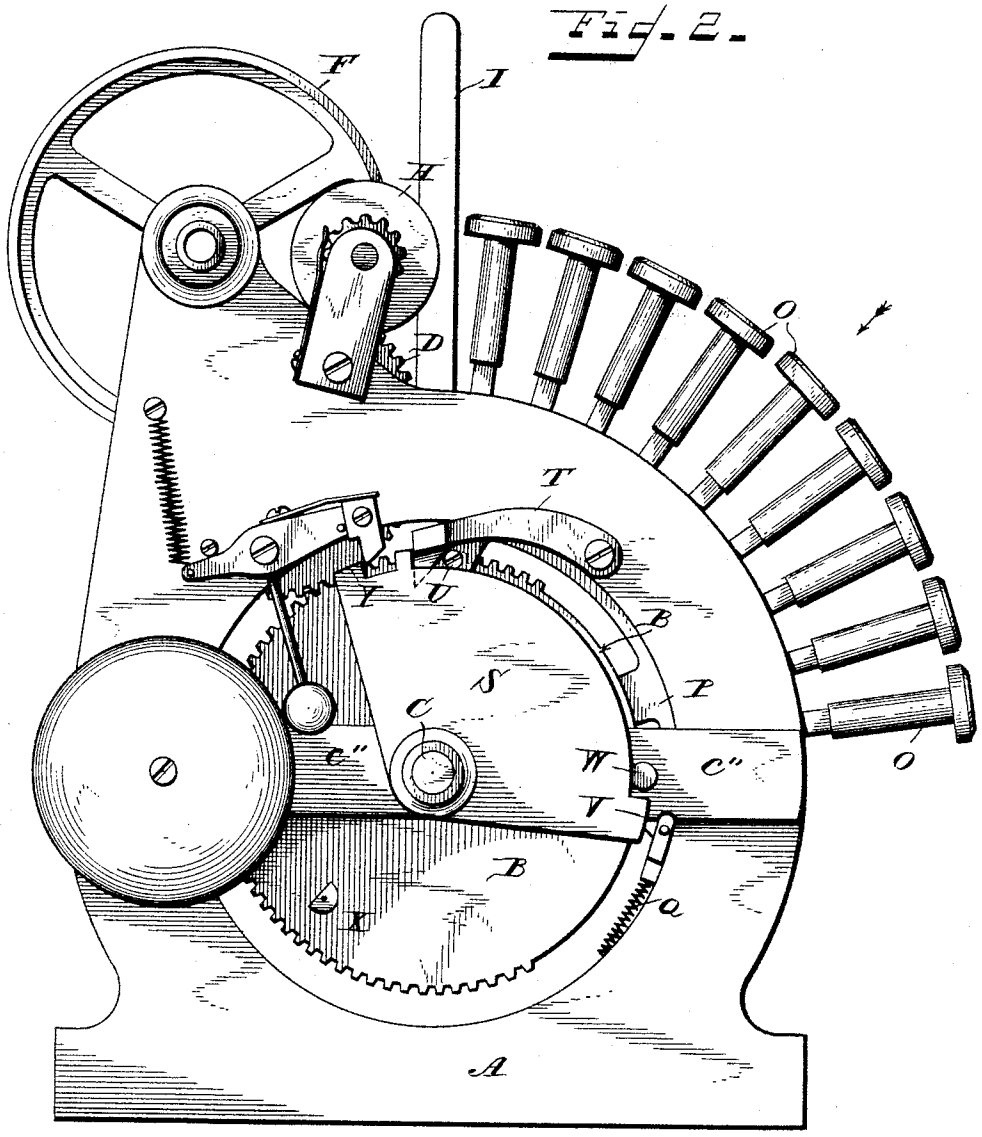
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Fig. 2.



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Fig. 3.

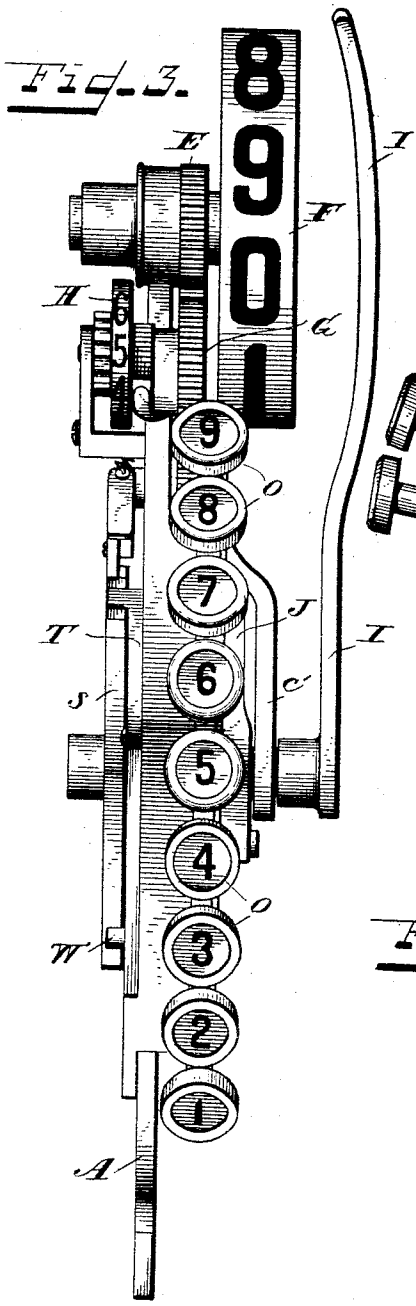


Fig. 4.

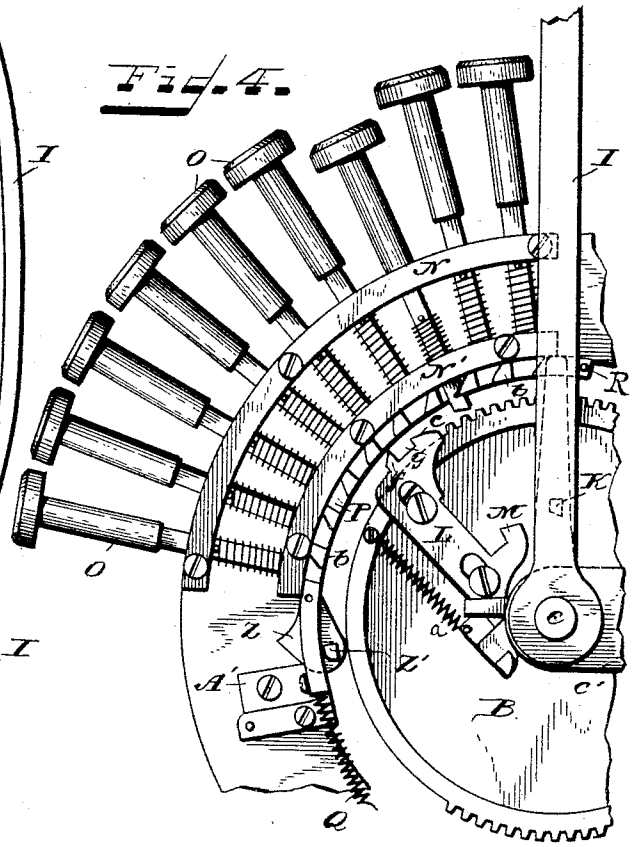
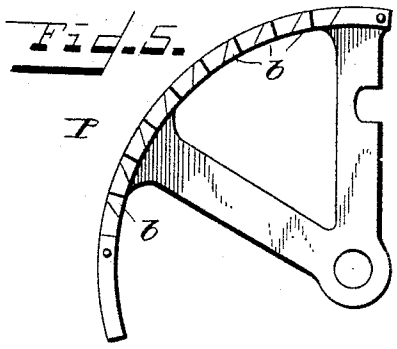


Fig. 5.



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UNITED STATES PATENT OFFICE.

HUGO COOK, OF DAYTON, OHIO.

CASH REGISTER AND INDICATOR.

SPECIFICATION forming part of Letters Patent No. 448,937, dated March 24, 1891.

Application filed January 9, 1891. Serial No. 377,225. (No model.)

To all whom it may concern:

Be it known that I, HUGO COOK, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Cash-Registers, of which the following is a description, reference being had to the accompanying drawings, in which—

Figure 1 represents a side elevation of the working parts of one section of my improved machine. Fig. 2 represents a reverse side elevation of the same. Fig. 3 represents a front view of the same, looking in the direction of the arrow in Figs. 1 and 2. Fig. 4 represents a portion of the side elevation as shown in Fig. 1, with one of the operating-keys depressed. Fig. 5 represents a detail side elevation of the detent-plate which co-operates with the keys.

The same letters of reference are used to indicate identical parts in all the figures.

I prefer to provide my improved machine with four sets of keys representing respectively units of cents, tens of cents, units of dollars, and tens of dollars, each from one to nine, inclusive, so that by operating different combinations of keys any amount from one cent to ninety-nine dollars and ninety-nine cents may be indicated and registered. Each set of keys is combined with its own separate indicator and register, the registers of all the sets of keys being, however, connected by suitable transfer devices, by which the amounts registered by all the keys are added into one common total. Inasmuch as the respective sets of keys and their co-operating indicating and registering devices are all substantially alike and each forms a complete machine, I have illustrated but one set in the accompanying drawings. From a description of this one set of keys and its associated devices the entire machine may be readily understood.

In a general way each section of my improved machine may be said to embody, primarily, a main actuator for the indicator and register, such as a gear-wheel or segment thereof, an oscillating shaft, to which a handle or other hand-operated device is applied, means for connecting the shaft with and disconnecting it from the actuator, and a series of keys or stops whose various positions determine the points at which the oscillating shaft shall become disconnected from the indicator and register actuator.

As shown in the accompanying drawings, the indicator is in the form of a wheel bearing the series of numbers on its periphery, (though it may be in other form,) and is geared directly to the main actuator, so as to turn in both directions with it. The registering-wheel is also driven by the main actuator, but with an interposed ratchet-and-pawl connection by which it is turned only in one direction by the movements of the actuator. Interposed between the main actuator and the oscillating shaft is a latch by which, after any key has been operated, the shaft becomes automatically connected with the actuator when moved a full stroke in one direction by the full stroke of the operating-handle, and carries the actuator with it in the reverse direction until automatically disconnected from it by the operated key, the latter determining the extent of movement of the actuator to effect the proper indication and registration.

As shown in the accompanying drawings, the operating parts of each section of the machine may be supported upon a single vertical plate A. The main actuator, in this instance a gear-toothed wheel B or segment thereof, is loosely mounted upon a central oscillating shaft C, supported by this plate A or cross-pieces C′ C″, secured thereto, Figs. 1 and 2. Meshing with the teeth of the gear B is a gear-wheel D, which in turn meshes with a pinion E, tight on the hub of the indicator-wheel F, so that the latter turns with the gears B and D. Also meshing with the gear D is a pinion G, whose movements in one direction are communicated by a ratchet-and-pawl connection to a registering-wheel H beside it on the same shaft. The operating handle or lever I is tight upon the shaft C, upon which the gear B is loosely mounted, so that without any further connection between the shaft C and gear B the handle could be pulled forward (to the left in Fig. 1) and downward to a horizontal position, and be then moved back to a vertical position (this being its limit of stroke) without moving the main actuator or gear B.

Tight upon the shaft C by the side of the gear B is an arm J, (shown in dotted lines behind the handle I in Figs. 1 and 4,) having

a beveled lug K upon its face next to the gear. This arm and lug co-operate with a radially-sliding latch-plate L, carried upon the adjacent face of the gear B. This latch-plate is shown as provided with oblong holes, through which are passed screws which secure it to the gear. A spiral spring *a*, secured at one end to the edge of the gear and at the other to a lug on the latch-plate L, pulls the latter outward from the center of the gear and yieldingly holds it in the position shown in Figs. 1 and 4. Near its inner end the latch-plate is provided with a beveled hook M. When the handle I is pulled forward and downward, oscillating the shaft C and arm J with it, the beveled lug K on the arm J rides over the beveled end of the hook M and presses the latch-plate L inward against the tension of the spring *a* until the lug passes the point of the hook, whereupon the latch-plate is pulled outward again by the spring *a* and the engagement of the lug with the hook connects the handle and shaft with the gear B, so that the latter turns with them in their further movement until it is disconnected from them in the manner hereinafter described. The turning of the gear turns the indicator-wheel F, and their relative arrangement is such that when the gear is turned forward to the limit of stroke of the operating-handle the zero on the indicator is brought to the reading opening or window in the casing of the machine.

Arranged radially in segmental guides N N′ are the operating keys or stops O. Spiral springs surrounding the keys between the inner guide N′ and pins passed through the keys serve to yieldingly hold the latter in and return them to normal position. Each key upon one side near its inner end is provided with a notch, as shown in the depressed key in Fig. 4.

Supported upon the shaft C by radial arms, Fig. 5, is a segmental detent-plate P. This plate is capable of slight rocking motion upon its pivotal axis and fits against the inner sides of the guide N′. It carries a series of beveled detents *b*, one for each key. A spiral spring Q, secured to the inner end of the plate and to the main frame-plate A, yieldingly holds the plate in the position shown in Fig. 1, in which position the beveled sides of the detents are immediately beneath the inner ends of the keys O. When any key is pushed inward, it pushes the detent-plate aside until the notch in the key becomes engaged with the detent, as shown in Fig. 4, and when pressure on the key is removed the key is held in this inner position by the detent.

The operation of the machine as thus far described is as follows: Assuming the main actuating-gear B to have been left in the position shown in Figs. 1 and 4 by the last operation of the machine, the indicator-wheel, as hereinafter explained, will be standing at 5. If the next amount to be indicated and registered is seven, the operator will depress the 7 key, as shown in Fig. 4. Upon then pulling forward the handle I the lug K on the arm J will ride over the beveled end of the hook M and become engaged therewith, thereby connecting the shaft C with the gear B. As the handle is pulled on down, the gear B is turned with it, and the zero on the indicating-wheel is brought to the reading-opening, as before explained. During this movement of the parts the registering-wheel H has remained stationary, its actuating-pawl, carried by the pinion G, slipping idly over its ratchet. The indicator is thus brought to zero before the registering operation begins. Upon the return-stroke of the operating-handle the gear B is carried with the shaft C and turns the indicator and registering wheels until the outer end of the latch-plate L engages the key, which has been pushed inward and detained by the detent, in Fig. 4 the 7 key. The further movement of the handle carries the latch-plate beneath the key, and as its beveled face *c* rides under the key the latch-plate is forced inward against the tension of the spring *a* until the hook M is disengaged from the lug K on the arm J, which disconnects the shaft from the gear B. The latter is arrested by the projection *f* on the outer end of the latch-plate striking the inner end of the key, while the handle and shaft are turned on backward to normal position. Just as they reach their limit of backward stroke the upper end of the arm J strikes the pin R, projecting from the side of the segmental detent-plate P, and moves that plate backward far enough to free the engaged detent from the operated key and the latter is thrown outward to normal position by its spring. The spring Q pulls the plate P back to position, as shown in Fig. 1, as soon as pressure on the operating-handle is removed. It will thus be seen that upon pushing in the proper key and giving the operating-handle a full forward and backward stroke the main actuator or gear B will first turn the indicator to zero and will then turn it in the reverse direction until it indicates the proper number, at which point the shaft C is automatically disengaged from the actuating-gear and the latter is arrested and held by the key which has been depressed. As the registering operation does not begin until the indicator-wheel has been turned to zero by the full forward stroke of the operating-handle, and as the registering-wheel turns with the indicator-wheel during the backward movement of the handle and stops at the same point as the indicator-wheel, the exact amount indicated on the indicator-wheel will always be added upon the registering-wheel. One side of the projection *f* on the outer end of the latch-plate L is beveled, as shown, so that it may freely ride under any depressed key during the forward stroke of the handle, as it must do where a key of less value than the previously-operated one is operated. Its opposite side is made abrupt to cause it to

squarely strike a depressed key when moving in the opposite direction to arrest the gear B, as before explained. Between the projection *f* and the face *c* of the plate L there is a recess *g*. When the face *c* passes under the end of the depressed key and the projection *f* strikes the key, the recess permits the spring *a* to throw the plate L outward slightly, the end of the key entering the recess, so that the gear B is positively locked to the key until the handle completes its return-stroke and the arm J strikes the pin R and moves the detent-plate P to release the key, as before explained. This locking of the gear to the depressed key by the recess in the latch-plate is advantageous, but not essential.

For the purpose of locking the operating-handle from movement except when a key has been operated I secure a locking-plate S, Fig. 2, upon the shaft C upon the opposite side of the gear B and plate A from said handle. A locking-dog T normally engages a lug on the edge of this plate, but has a beveled projection on its under side, which is engaged by a pin U, projecting from the side of the segmental detent-plate P or one of its supporting-arms. When a key is pushed inward and this plate is thereby rocked slightly rearward, as before explained, the pin U moves under the beveled projection on the dog T and lifts the latter out of engagement with the lug on the plate S, so that the latter may turn forward with the operating-handle. A lug V at the lower corner of the plate S strikes a pin W upon the cross-piece C″ of the plate A, when the operating-handle is thrown backward and limits the stroke of the handle. A lug X upon the side of the gear B engages a projection (not shown) upon the inner side of the cross-piece C″ and limits the forward movement of the gear. A lug Y at the upper corner of the plate S operates a bell-striker to sound an alarm at each operation of the handle.

It will be understood that where four of the single machines illustrated in the drawings are combined together to produce a machine capable of indicating and registering amounts in tens and units of dollars and tens and units of cents the same shaft C will extend through the entire machine and operate all the gears B, the shaft being provided with four arms J, having lugs K, one co-operating with the latch-plate L of each gear B. In such case only one handle I is employed for the entire machine. Whenever any one or more keys in any one or more sets are pushed in and caught by their detents and the handle is pulled forward, the arms J on the shaft C will turn all the indicators to zero; but as the handle is moved backward only the arms J and the latches L corresponding to the sets containing the operated keys must become engaged and only the gears B and indicators F belonging to those sets be turned, for the indicators of the other sets must remain at zero in order to make a proper indication. This result is accomplished by means of a trip which automatically disconnects the latch-plate L from the lug K on the arm J in each set when no key of that set has been operated, and which may be now described. Pivoted in the upper end of a slot or recess in the lower end of the segmental detent-plate P, Figs. 1 and 4, is a cam-plate Z, provided with a laterally-projecting pin Z′, extending into the path of the outer end of the latch-plate L. When the keys are all in their normal position and the detent-plate P is held in its lowest position by the spring Q, the engagement of the lower edge of the cam-plate Z with a plate A′, secured to the plate A, presses the plate Z inward and holds the pin Z′ in the position shown in Fig. 1. In such position the pin Z′ presses the latch-plate L inward, when the beveled corner of the latter engages it upon the full forward stroke of the handle and disengages the hook M from the lug K on the arm J, so that the shaft is freed from connection with the gear B and moves back to normal position alone, leaving the latch engaged with the pin Z′ and the indicator standing at zero. When, however, any key of the set is pressed inward, and the detent-plate P thereby moved to the position shown in Fig. 4, the cam-plate Z is lifted and swings outward to the position shown in said figure, removing its pin Z′ from the path of the latch-plate L, so that the lug K on the arm J remains engaged with the hook of the latch-plate until in the return-stroke of the handle it is disengaged by the latch-plate striking the operated key, as heretofore explained. It will thus be seen that no matter how many sets of keys are employed in the machine the operation of the handle will move all the indicators to zero and allow all to remain there excepting those belonging to the sets in which a key has been operated.

Where a number of sets of keys, as four, are employed in the machine, the locking-dogs T, heretofore described, will be rigidly secured upon a single rock-shaft, so that when any one dog is lifted by the operation of a key of any set, in the manner before explained, all the dogs will be lifted to free all the plates S, the latter being tight on the shaft C, extending through the machine.

From the foregoing description it will be apparent that the lever or handle I is employed merely as a convenient means for oscillating the shaft C, and that any other suitable means may be substituted for it.

My invention is not restricted to details of construction, for in its broader features the form and arrangement of the parts may be widely varied.

So far as I am aware, I am the first in the art to combine a main actuator, an indicator geared thereto, an oscillating shaft, means for connecting and disconnecting the shaft and actuator, and a series of operating keys or stops whose various positions determine the points at which the shaft and actuator shall

be disconnected, for the purpose described, and I desire to claim such combination, as well as others, broadly.

Having thus fully described my invention, I claim—

1. In a cash register and indicator, the combination of a main actuator, an oscillating shaft, means for automatically connecting the shaft and actuator, a series of keys of different values for automatically disconnecting the shaft and actuator at different points, and a lock for preventing movement of the shaft until a key has been operated.

2. In a cash register and indicator, the combination of a main actuator, an indicator-wheel geared thereto, an oscillating shaft, a latch for automatically connecting the shaft and actuator, and a series of keys for tripping the latch at different points to disconnect the shaft and actuator.

3. In a cash register and indicator, the combination of a main actuator, an indicator geared thereto, an oscillating shaft, a latch for automatically connecting the shaft and actuator, a series of keys for tripping the latch at different points, and a lock for preventing movement of the shaft until a key has been operated.

4. In a cash register and indicator, the combination of a main actuator, an indicator geared thereto, an oscillating shaft, a latch for automatically connecting the shaft and actuator, a series of keys for tripping the latch at different points, and a movable trip controlled by said keys to disconnect the shaft and actuator when no key has been operated.

5. In a cash register and indicator, the combination of a main actuator, an indicator-wheel geared thereto and a register operated thereby, an oscillating shaft, a latch for automatically connecting the shaft and actuator, and a series of keys for tripping the latch at different points to disconnect the shaft and actuator.

6. In a cash register and indicator, the combination of the gear B, the oscillating shaft C, the arm J, tight on the shaft C and provided with the lug K, the latch-plate L, carried by the gear B, and the keys O, co-operating with said plate, substantially as and for the purpose described.

7. In a cash register and indicator, the combination of the gear B, the oscillating shaft C, the arm J, tight on the shaft C and provided with the lug K, the latch-plate L, carried by the gear B, the keys O, co-operating with the plate L, and the detent plate P, co-operating with the keys, substantially as and for the purpose described.

8. In a cash register and indicator, the combination of the gear B, the indicator-wheel F, geared thereto, the oscillating shaft C, the arm J, tight on the shaft C and provided with the lug K, the latch-plate L, carried by the gear B, and the keys O, co-operating with said plate, substantially as and for the purpose described.

9. In a cash register and indicator, the combination of the gears B D, pinion E, and indicator-wheel F, pinion G and register-wheel H, with ratchet-and-pawl connection between them, oscillating shaft C, arm J, tight on the shaft C and provided with lug K, latch plate L, carried by gear B, keys O, co-operating with the plate L, and detent-plate P, co-operating with the keys O, substantially as and for the purpose described.

10. In a cash register and indicator, the combination of the gear B, the indicator-wheel F, geared thereto, oscillating shaft C, arm J, tight on the shaft C and provided with lug K, latch-plate L, carried by gear B, keys O, detent-plate P, and plate Z, carried by plate P, substantially as and for the purpose described.

11. In a cash register and indicator, the combination of the gear B, indicator-wheel F, geared thereto, oscillating shaft C, arm J, tight on shaft C and provided with lug K, latch-plate L, keys O, detent-plate P, locking-plate S, tight on shaft C, and dog T, co-operating with plate S and pin U on detent-plate P, substantially as and for the purpose described.

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