

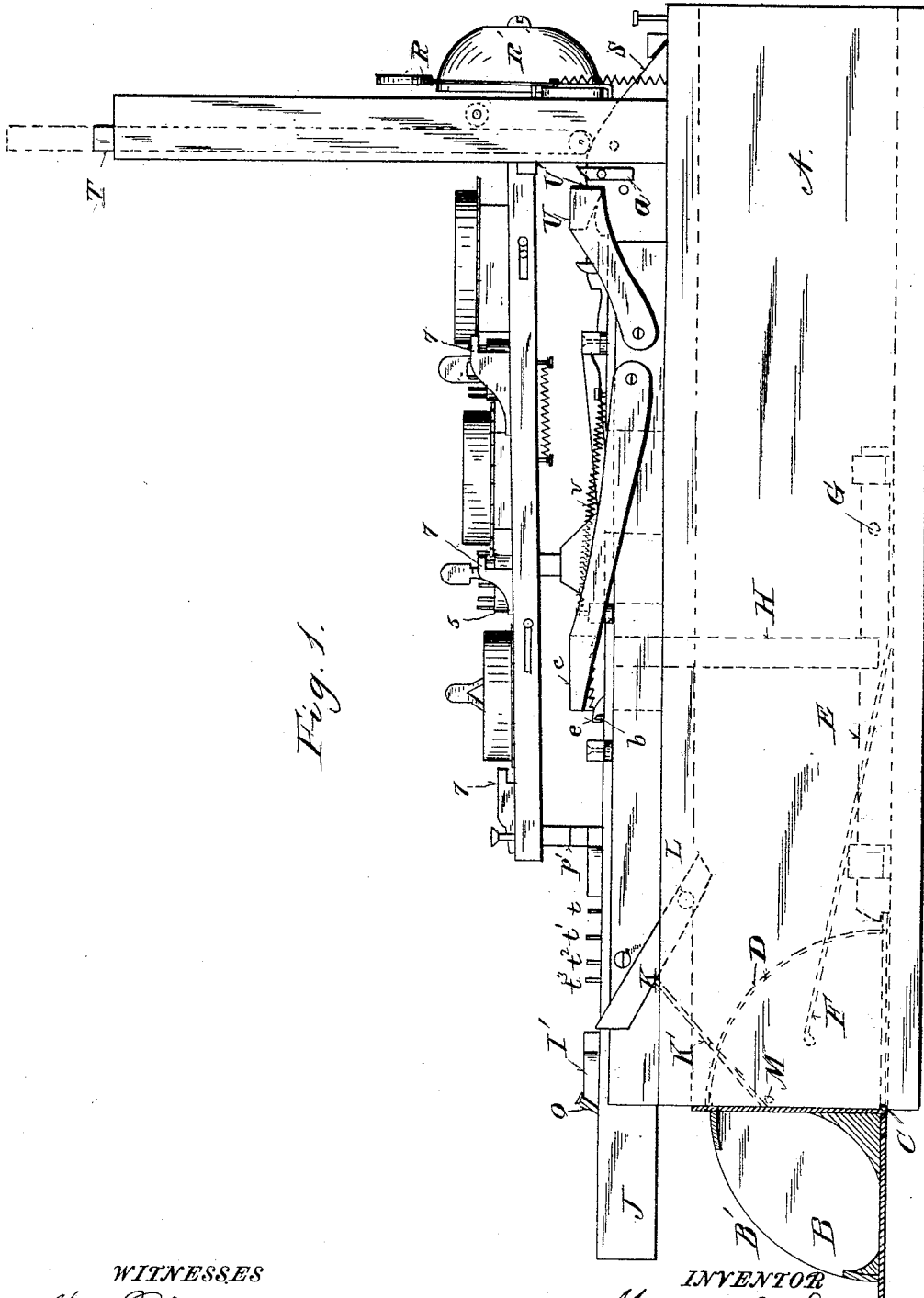
(No Model.)

5 Sheets—Sheet 1.

M. U. LOREE.  
CASH REGISTER.

No. 499,171.

Patented June 6, 1893.



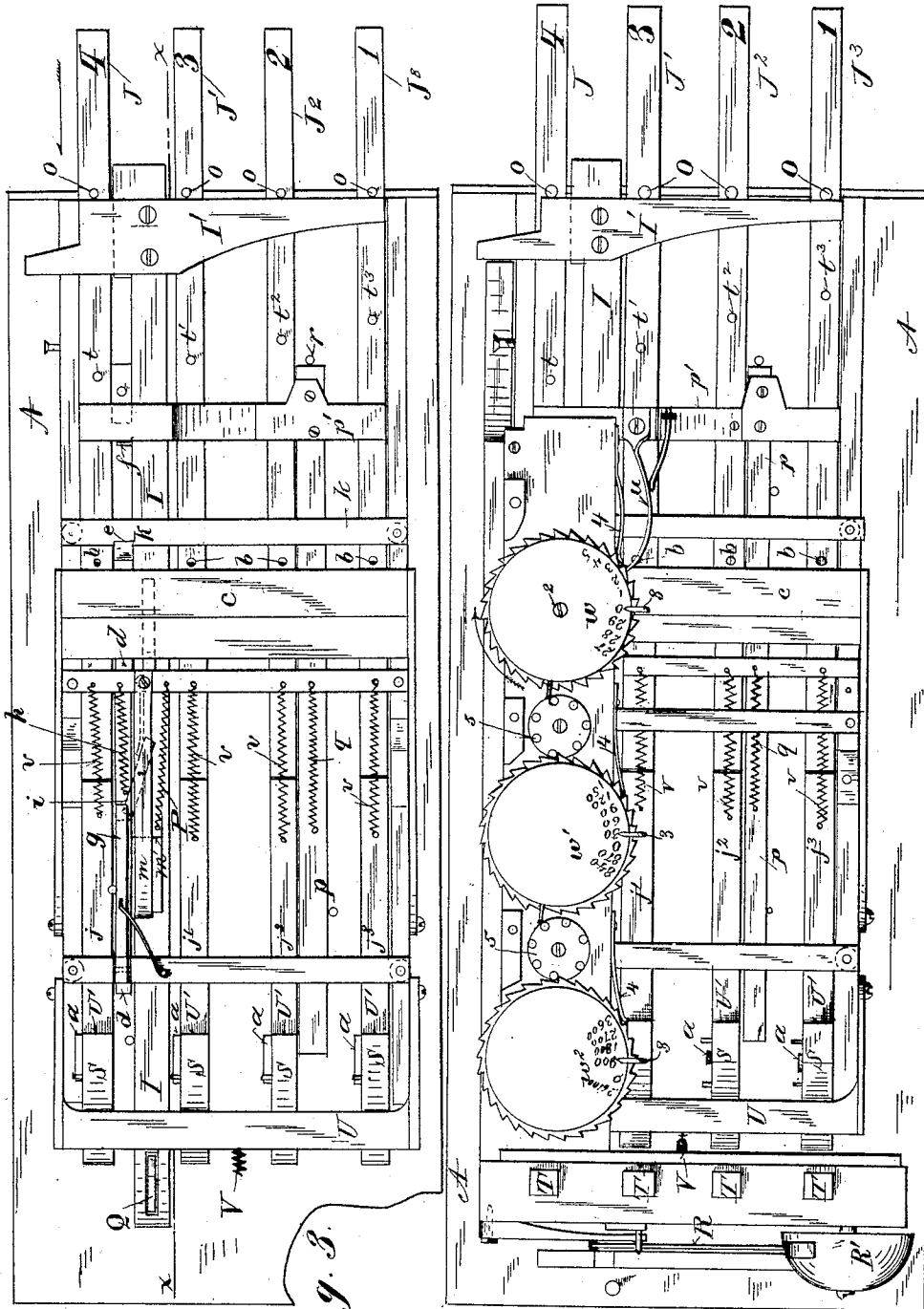
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Fig. 3.

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Fig. 2.

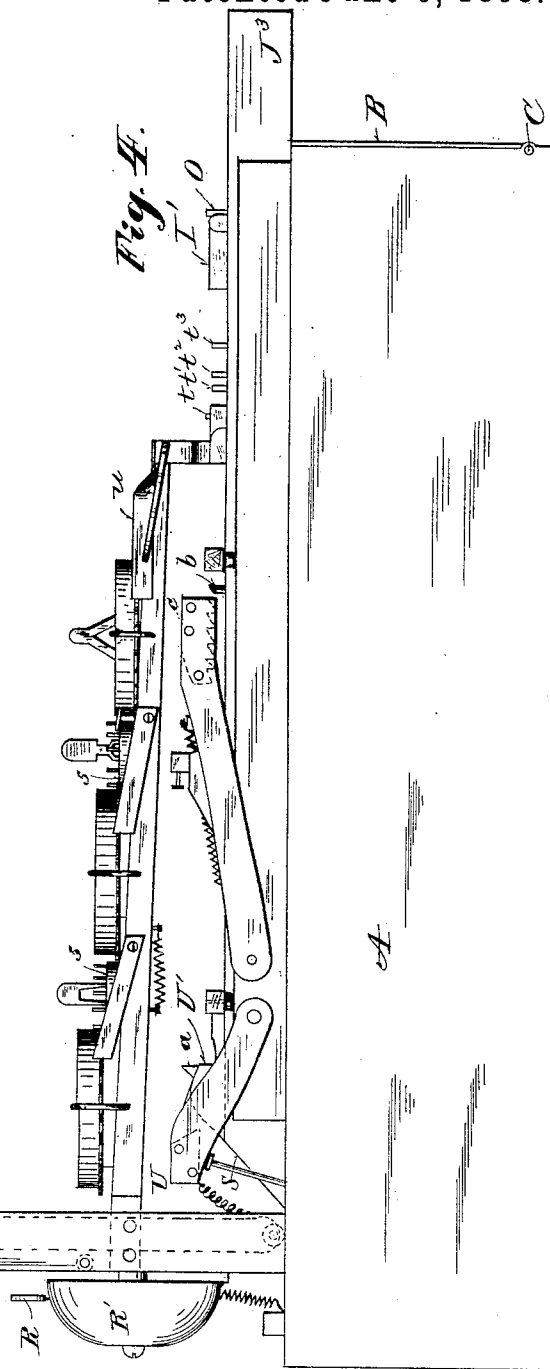
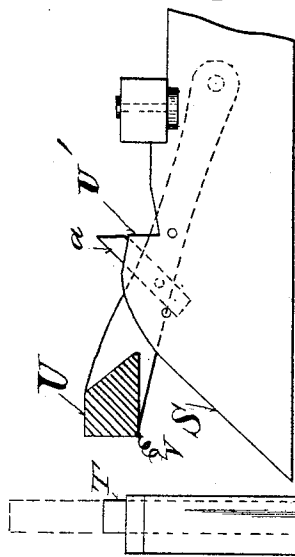
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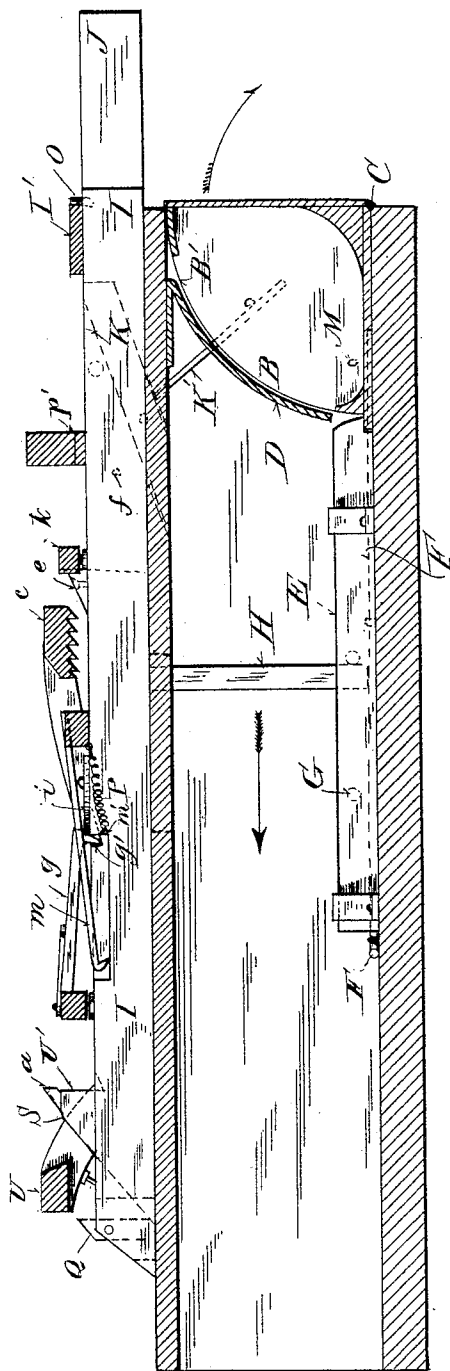
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Fig. 7.



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(No Model.)

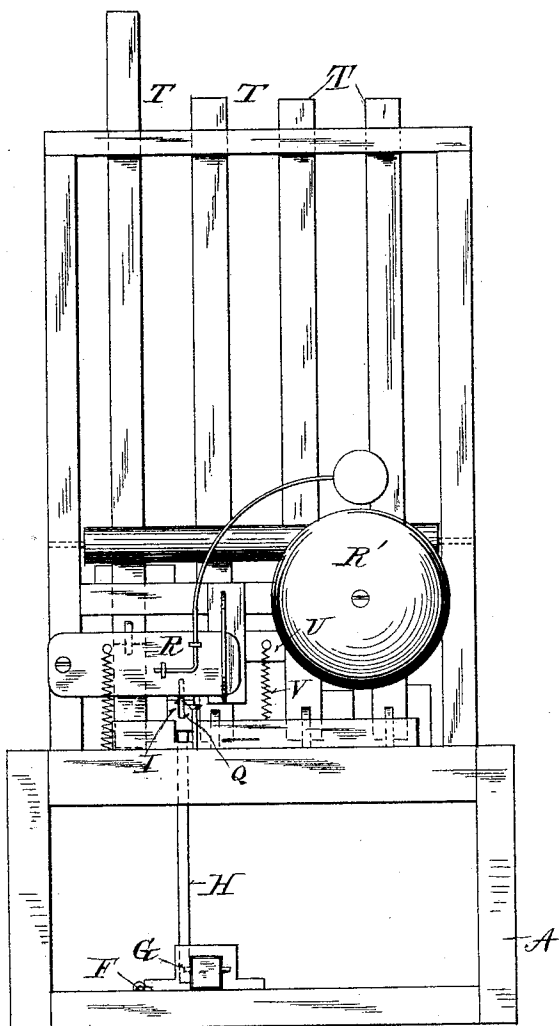
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M. U. LOREE.  
CASH REGISTER.

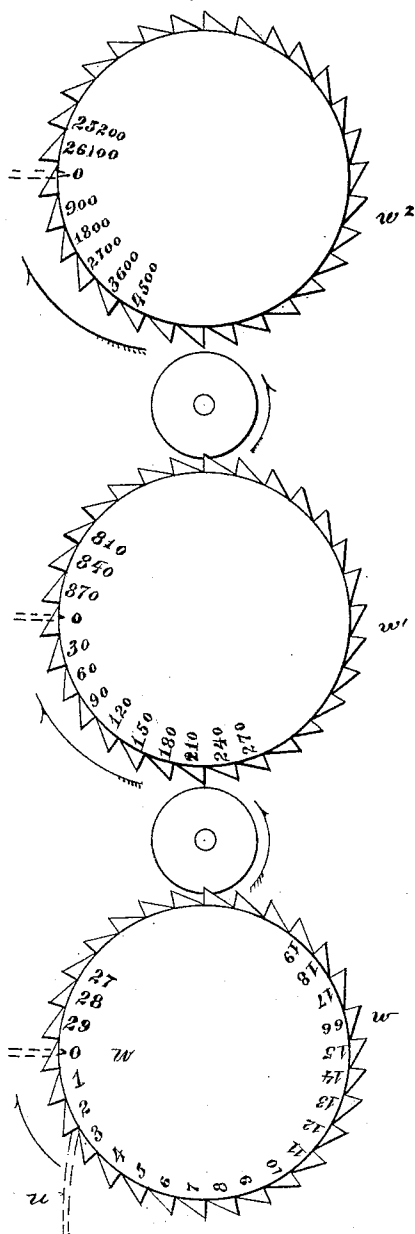
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*Fig. 8.*



*Fig. 9.*



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# UNITED STATES PATENT OFFICE.

MANFRED U. LOREE, OF MIAMISBURG, ASSIGNOR OF TWO-THIRDS TO GERTRUDE DRIGGS AND OLLIE KASIRSKY, OF DAYTON, OHIO.

## CASH-REGISTER.

SPECIFICATION forming part of Letters Patent No. 499,171, dated June 6, 1893.

Application filed May 31, 1892. Serial No. 434,839. (No model.)

*To all whom it may concern:*

Be it known that I, MANFRED U. LOREE, a citizen of the United States, residing at Miamisburg, 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 specification, reference being had therein to the accompanying drawings.

My invention relates to certain new and useful improvements in cash registers and indicators.

My improvements have reference to a series of sliding keys each designating a number or purchase and engaging with a common tumbler to operate the adjunctive mechanism; have reference to forming said keys in two parts, one adapted to operate the registering mechanism and adjunctive devices, and the other to operate the indicating mechanism; have reference to a serrated plate and its engagement with said keys to prevent the operation of the keys back and forth lesser distances than the full stroke; have reference to detent and cam devices acting to support said serrated plate out of engagement with said keys; have reference to a sliding bar carrying said cam and operated by said tumbler, and trip devices for freeing said bar and effecting its return; have reference to a common stop for the inner ends of said keys to maintain the indicator temporarily in its indicating position, and means to disengage said stop from the keys last operated, when the next keys are operated to indicate; have reference to a pivoted cross bar forming said stop and to special devices operating therewith; have reference to a cam and roller engagement of the keys with the indicating bars; have reference to a money receptacle rotatably operated through said keys, and to a safety check to prevent the operation of the keys while the money receptacle is open; have reference to a stop catch to limit the movement of the tumbler, and to the simultaneous operation of a sounder, the money receptacle and cam-bar engagement; have reference to a registering mechanism operated by the movement of said tumbler and special means to transfer the record from a lower to a higher order; have reference to a brake attachment for said

registering mechanism; and have reference to other points hereinafter described and claimed.

In the accompanying drawings on which like reference letters and numerals indicate corresponding parts: Figure 1, represents a side view of the machine with the casing removed; Fig. 2, a plan view; Fig. 3, a similar view to Fig. 2 with the registering and indicating mechanism removed, to show the construction of the keys and adjacent parts; Fig. 4, a side view of the machine, opposite to Fig. 1; Fig. 5, a detail sectional view of the pivoted serrated plate; Fig. 6, a detail of the forward end of a key, the pivoted cross bar detent being shown in section; Fig. 7, a vertical longitudinal sectional view taken on the line *xx* of Fig. 3; Fig. 8, an end view and Fig. 9, a diagram of the wheels.

The letter A designates a suitable casing for the machine, the letter B a money receptacle rotatably mounted in said casing at the outer end thereof and preferably consisting of a box in the shape of a quadrant, pivoted on a horizontal axis at C, and turning into the casing beneath an arched shield D to close the opening B' in the front of the receptacle by which access is had thereto when the same is exposed, as shown in Fig. 1. A spring-actuated catch E, engages with the said box to hold it closed, and a spring F is depressed by the box when in its closed position, and acts to open the same when the catch E is thrown backward. A projection G on the catch is engaged by an arm H carried by a tumbler I, slidingly mounted on the machine and adapted to be engaged by push keys J, J', J<sup>2</sup>, J<sup>3</sup> respectively, and effect the release of the catch E near the end of their forward stroke. The operation of the sliding keys in the direction of the arrow Fig. 3, opens the cash receptacle, and actuates the indicating mechanism, the registering mechanism and gong, as will be hereinafter described. A safety check K consisting of a piece pivoted at L, and having an arm K' engaged by a pin M, on the money box, is thrown up by the opening of the box to engage with a cross-bar I', on the said tumbler, and prevent the operation of the same while the box is open. When the box returns to its inner position, the tumbler is

freed from the catch. The cross piece *I'* of the tumbler is engaged by projections or pins *O*, Figs. 1, 2 and 3, so that the sliding in of any key will engage the same with the tumbler and operate it forward, a spring *P*, effecting the return of the same. The inner end of the tumbler is provided with a pivoted projection *Q* which passes under the hammer *R*, of a gong *R'*, to sound the latter when the box is open. The pivotal mounting of the projection *Q*, allows the return of the latter without acting on the gong. Each key is preferably formed in two parts, an outer and an inner member, the inner members being designated by *j*, *j'*, *j''*, &c., and having inclined surfaces *S*, Figs. 1 and 6, adapted to engage with the lower end of a corresponding indicator slide *T*, provided with a roller to effect the easy elevation of the slide when the key is pushed forward. The slide has a number corresponding to the key, so that the operation of any key will show a corresponding number on the respective slide operated.

In order to maintain the indicator temporarily in its indicating position, a detent consisting of a pivoted cross-bar *U*, engages with a notch or shoulder *U'*, of the inner end of the slide, under the action of a spring *V*, Fig. 3, or otherwise, till the detent is thrown out of engagement by operating another key, and the former key is returned to its normal position against its outer member, by a spring *v*. A lifting pawl *a*, is carried by each inner key and vibrates between limiting pins so as to raise the cross bar *U* when passing forward under it in the position shown in Fig. 6, thus freeing the previous key operated, and supporting the cross bar till it drops into the shoulder in line with the end of the pawl. The lifting pawl throws forward without acting on the cross bar when the key returns. Any other means may be employed for disengaging the cross bar and inner keys. The outer keys and tumbler return to their normal outer position after operating the inner keys and corresponding indicator slides respectively, each indicator slide being left in its indicated position till the following key is operated. The outer key is separated from the inner key to allow the return of the tumbler. The outer key is provided with a projection or tooth *b*, which is carried under a serrated plate *c*, pivoted or otherwise adapted to be thrown up and down, and allow the forward passage of the tooth on the key forward, but obstruct its return. No key can thus be operated forward and back again, less than its full stroke, whereby the falsifying of the registering mechanism also operated by the tumbler as hereinafter described, is prevented.

In order to allow the return of the outer key at the end of its stroke, the serrated plate or pawl must be raised and held up while the tooth on the outer key returns. This is effected by means of a cam-bar *d*, carrying a cam *e*, Fig. 1, which engages with the plate *c*, or otherwise, and acts to lift the same, when

the cam bar is pushed forward by a pin or projection *f*, Figs. 3 and 7, on the tumbler, which engages with said bar on its forward stroke. To hold the bar *d*, in its forward position and maintain the serrated plate raised, a catch *g*, is caused to engage with a shoulder *g'* on the cam-bar and hold the cam spring *h*, under tension. The engagement of the cam and plate is effected near the end of the forward stroke of the key, so as not to lift the plate from the tooth *b*, till just before the return of the key carrying the tooth. Before the next key, or any key be operated, the serrated plate is lowered again. This is done by a projecting finger piece *i*, carried by the tumbler, which is pushed under the catch *g*, at the beginning of the forward stroke of the tumbler, thereby disengaging the catch from the shoulder of the cam bar, and allowing the return of the latter under the action of the spring *h*, and lowering the serrated plate so as to be engaged by the tooth *b*, on the key now operated. The finger piece is pivoted and caused to engage with the catch *g*, on its forward stroke, and swing away from the catch when the tumbler carries it backward. Since the tumbler is operated by any key, the catch *g*, disengages from the cam bar no matter which key is operated. The cam-bar is stopped by a cross piece *k*, or otherwise on its return. Any form of stop for the tumbler itself to limit the forward stroke thereof, may be provided, such as a catch *m*, adapted to engage with a shoulder *m'* of the tumbler. The operation of any keys will thus push forward its inner member to show the number on the corresponding indicator slide and simultaneously sound the gong and open the cash box, the indicator slide exhibiting its number till the cross-bar *U* is lifted by the following slide; the return of the outer key taking place at the end of the stroke when the serrated plate is lifted by the cam *e*, and held till the succeeding key lifts the detaining catch and allows the serrated plate to drop again.

As before mentioned the keys also operate a registering mechanism as will now be described. A register slide *p*, having a spring *q*, to return it to its normal position against a stop *i*, is provided with a cross-piece *p'*, which is adapted to be engaged by pins or projections *t*, *t'*, *t''*, *t'''*, on the respective keys, which are mounted at distances from the cross-bar of the register slide, corresponding inversely to the number of the respective key, whereby each key will travel a certain distance corresponding to the number of the key, before it engages with said register slide to operate it the remainder of the stroke. The slide thus travels a greater or less distance, according to which key is operated, and therefore the registering mechanism with which said slide is connected, will be operated a corresponding amount. This connection is effected by means of a spring pawl *u*, carried by the said register slide and en-

gaging with teeth on a wheel *w*, provided with a series of numbers and adapted to be rotated on an axle 2, in the direction of the arrow Fig. 2, when the register slide is operated through the respective keys. A second dial *w'* of a higher order is connected by a transfer mechanism with the first register wheel, and a third wheel is similarly connected to the second, and so on to any desired number of wheels. The series of numbers on said wheels may increase in any regular order, such as one by one, when used to register cents or dollars one at a time; or any other convenient intervals consecutively, such as for nickel purchases. Each rotation of the first wheel will register 30, being provided with thirty teeth and correspondingly numbered from 0 to 29 inclusive, the thirtieth purchase being recorded by the transfer mechanism (to be presently described), on the second register wheel. A pointer 3, indicates on the dial of each wheel the number to be read. A detent 4 on each wheel prevents the accidental reverse movement thereof.

The transfer mechanism between each adjacent pair of register wheels, consists of a trundle 5, having pins adapted to be engaged with the teeth of the next higher order, and by a pin on the wheel of the next lower order, whereby one rotation of the latter wheel will operate the former wheel one notch or two and transfer the record from the lower to the higher wheel. The dial of the higher wheel will increase in a series, each division of which represents one rotation of the wheel of lower order operating it. For example, if the wheel *w'* increase by units to thirty divisions, the dial of the second wheel will have a series increasing by thirty, viz: 0, 30, 60, 90, &c. If there be thirty divisions on the second dial, it will act on the third register wheel by a similar transfer mechanism to carry the record yet higher.

The machine may be made wide enough to embrace any desired number of keys divided into sets with appropriate registering mechanism. In the example shown there are four keys in a set and a registering mechanism of three wheels for said set. The series of figures on the dials may increase by 10, 25, 50, and so on for cents, or any multiple or uniform increase may be used as before mentioned. Similarly the dollars may be indicated and registered.

The diagram Fig. 9, illustrates a set of register wheels and the numbering thereof. A sliding piece 6, provided with projections 7, is adapted to be engaged simultaneously with all the register wheels as shown in Figs. 1 and 2, to lock them against rotation.

Having thus fully described my improvements, what I claim as new, and desire to secure by Letters Patent, is—

1. In a cash register and indicator, the combination with a series of sliding keys, of a set of indicator slides with anti-friction rollers at their lower extremities for said keys, the keys and indicators being numbered corre-

spondingly and having a cam engagement with each other, whereby the operation of said slides will actuate said indicators respectively.

2. In a cash register and indicator, the combination with a numbered key having an inclined end, of an indicator slide numbered the same and provided with an anti-friction roller at its lower extremity adapted to be engaged with said inclined surface of the key, to exhibit the indicating figure.

3. In a cash register and indicator, the combination with a numbered key, of a correspondingly numbered indicator slide adapted to engage therewith by an inclined bearing surface and roller on said members, and means to return said key to its normal position after operating said slide.

4. In a cash register and indicator, the combination with a numbered sliding key formed in two parts, the outer adapted to return automatically, and the inner part having an inclined surface, an indicator slide adapted to be raised by said surface, a detent to maintain said inner member temporarily in its forward position, and means connected with the outer member of the key to actuate said detent, and effect the return of the inner member.

5. In a cash register and indicator, the combination with a set of spring-actuated keys having teeth, of a serrated pivoted plate adapted to ratchet over said teeth, a tumbler engaged by said keys, a spring-actuated cam bar operated by said tumbler near the forward end of the stroke, to lift the plate; a catch to hold said bar during the return of the key operated, and a trip finger on said tumbler to operate said catch at the beginning of the next forward stroke of the tumbler to lower said plate.

6. In a cash register and indicator, the combination with a series of sliding keys having projections, of a serrated plate pivoted to operate in engagement with said projections, a tumbler engaged by said keys, and lifting mechanism operated by said tumbler near the limit of its stroke to raise said plate, a catch to hold said cam in engagement with said plate, and a trip connection between said catch and tumbler to allow the return of said plate at the beginning of the next forward stroke.

7. In a cash register and indicator, the combination with a set of sliding keys and indicating mechanism operated thereby, of a tumbler engaged by said keys respectively, a ratchet mechanism to allow the forward movement of said keys and obstruct their return, springs acting on said keys and tumbler to return them to their normal outward position, a trip mechanism carried by said tumbler adapted to actuate said ratchet mechanism and allow said return of the tumbler and keys.

8. In a cash register and indicator, the combination with sliding keys, and springs to effect their return, of indicating mechanism

operated by said keys, a pivoted cross-bar detent, adapted to engage with said keys near the limit of their stroke a lifting pawl carried by each key and adapted to lift said bar on their forward stroke, and pass inoperatively under the same on their return, whereby each key is successively freed from the said detent.

9. In a cash register and indicator, the combination with sliding keys having numbers, of a register slide adapted to be engaged by said keys and moved a distance corresponding to said numbers respectively, a register mechanism operatively connected to said slide and consisting of wheels bearing numbers, and ratchet teeth corresponding thereto, a transfer mechanism from one order to the next higher order, consisting of a trundle engaging with the wheel of the higher order and operated by a pin from the wheel of the lower order, and detents and pointers for said register wheels.

10. In a cash register and indicator, the combination with numbered keys, a registering mechanism, and an operative slide connected to said registering mechanism and actuated by projections on said keys according to the numbers thereon, of means to check the return of said keys till the full stroke is made, whereby a false record is prevented.

11. In a cash register, the combination with a set of spring-actuated sliding keys, consisting of two members, an indicating mechanism operated by one member, and means to maintain said member in temporary engagement with said indicator, a register slide operated distances corresponding to the numbers on said keys and registering mechanism operated by said slide, a tumbler engaged by the outer members of said keys, a ratchet connection to obstruct the backward motion of the outer members of said keys, a cam piece operated by said tumbler at the limit of its stroke to break said ratchet engagement, a catch for said cam piece to allow the return of the key operated, and means carried by said tumbler, to release said catch at the next forward stroke, a lifting piece carried by each key and engaging with the detent on the forward member to effect the return of the indicator at said forward stroke.

ward member to effect the return of the indicator at said forward stroke.

12. In a cash register, the combination with a series of numbered sliding keys, and a corresponding series of indicator rods, of a rotatable money receptacle, pivoted on a horizontal axis, a sliding tumbler operated by each key respectively, the downwardly extending arm, H, attached to said tumbler, the spring-actuated catch, E, to hold said receptacle closed, and the spring, F, to throw said receptacle open, when the catch E, is removed from contact with the money receptacle, substantially as herein described.

13. In a cash register and indicator, the combination with sliding keys, and indicators therefor, having corresponding numbers, of a rotatable cash receptacle, held in a closed position by a reciprocating bolt in the rear thereof, and a spring under the bottom, by means of which the cash receptacle is automatically opened when said bolt is moved in a backward direction by the arm, H, and sliding tumbler, I, an arched cover secured within the casing, and extending downwardly from the top thereof, whereby the opening B' of said money receptacle is covered when the same is thrown backward in the casing, substantially as herein described.

14. In a cash register and indicator, the combination with a series of sliding keys, with projections on the upper surface thereof, a spring to draw said keys normally outward, the horizontal bar, *p*, having the cross-bar, *p'*, rigidly attached thereto at right angles, both adapted to slide backwardly upon the operation of any key, the spring, *q*, to return the bar, *p*, and cross-bar *p'* to their normal position, when the cross-bar *p'* is released by the key last operated, a registering mechanism, and a ratchet connection between said cross-bar and said registering mechanism, substantially as herein described.

In testimony whereof I affix my signature in presence of two witnesses.

MANFRED U. LOREE.

Witnesses.

AMOS K. CLAY,

FRANK HAMBURGER.