

(No Model.)

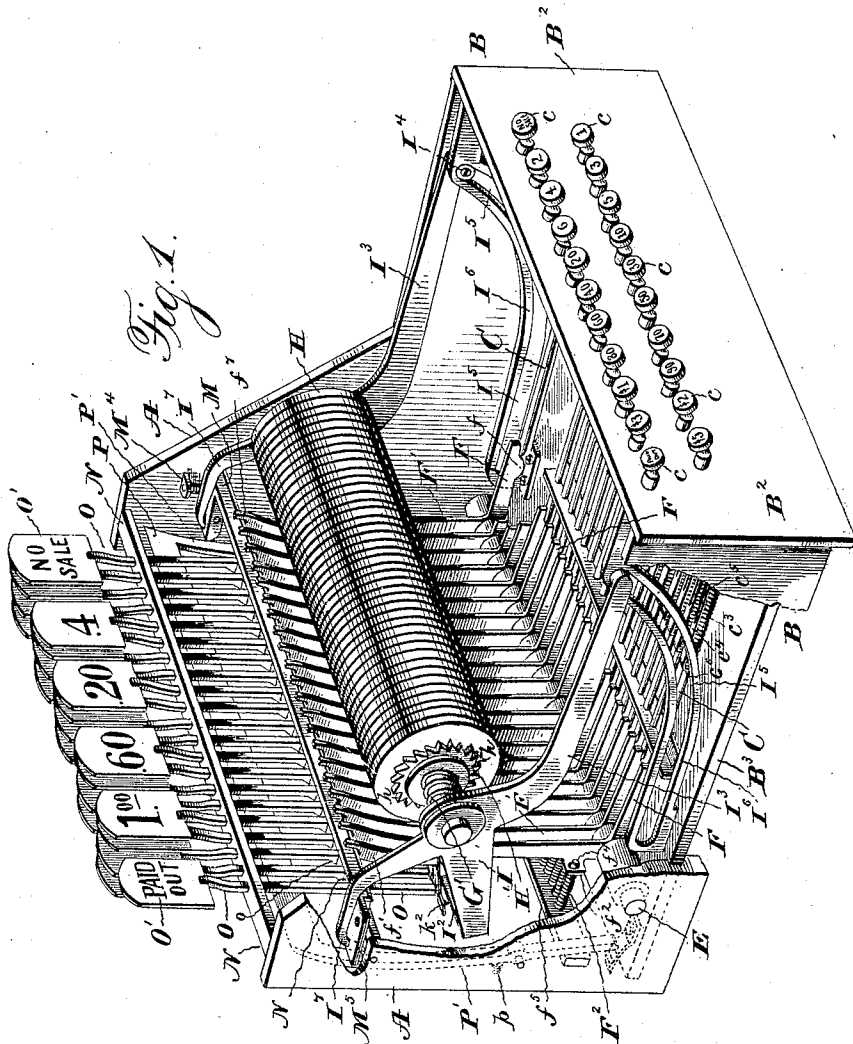
6 Sheets—Sheet I.

G. L. BARNES.

CASH INDICATING AND REGISTERING APPARATUS.

No. 568,728.

Patented Oct. 6, 1896.



Witnesses:  
Jas. C. Hutchinson  
Henry C. Hazard

Inventor.  
George L. Barnes  
by Pough and Russell  
his attorneys

(No Model.)

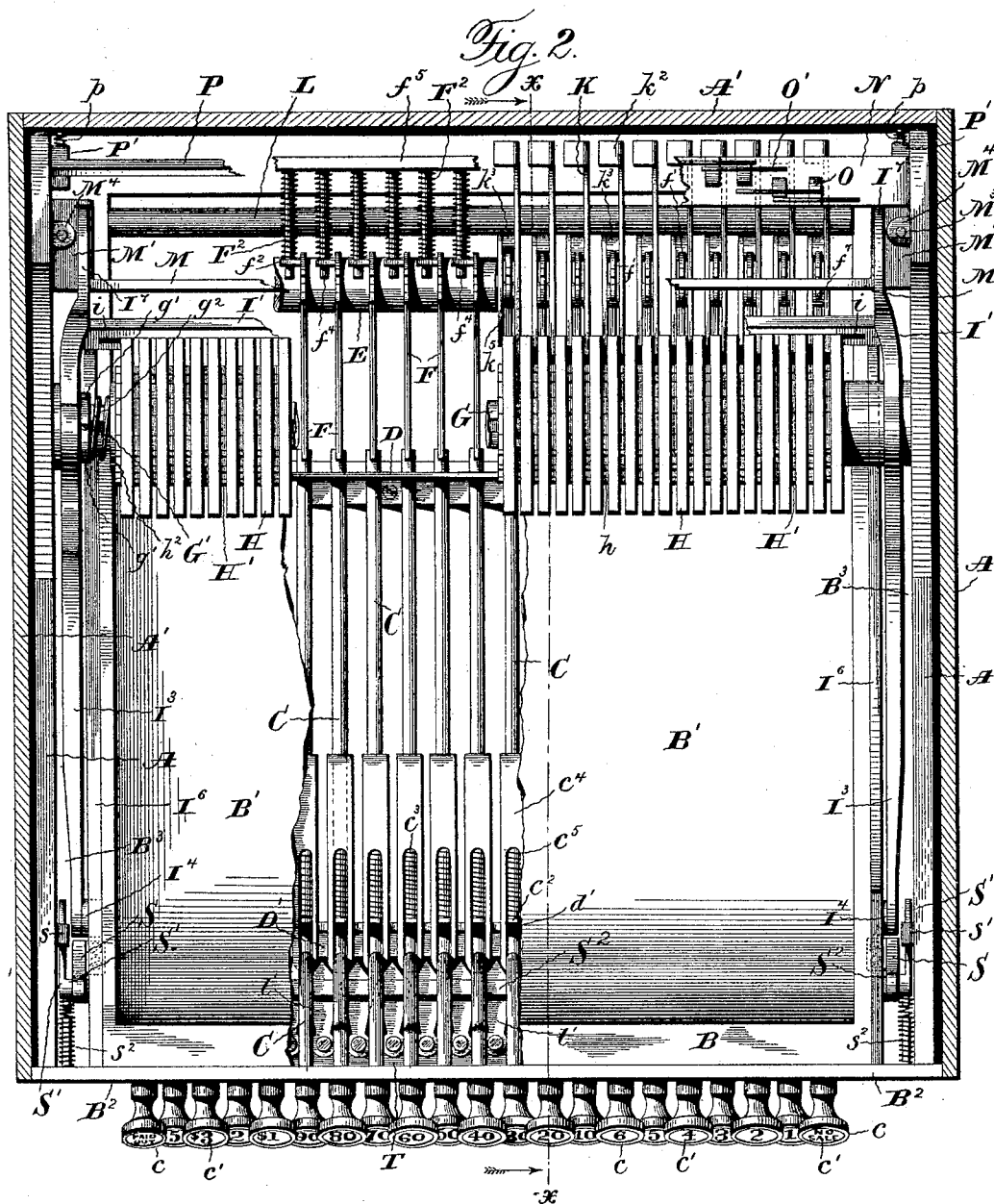
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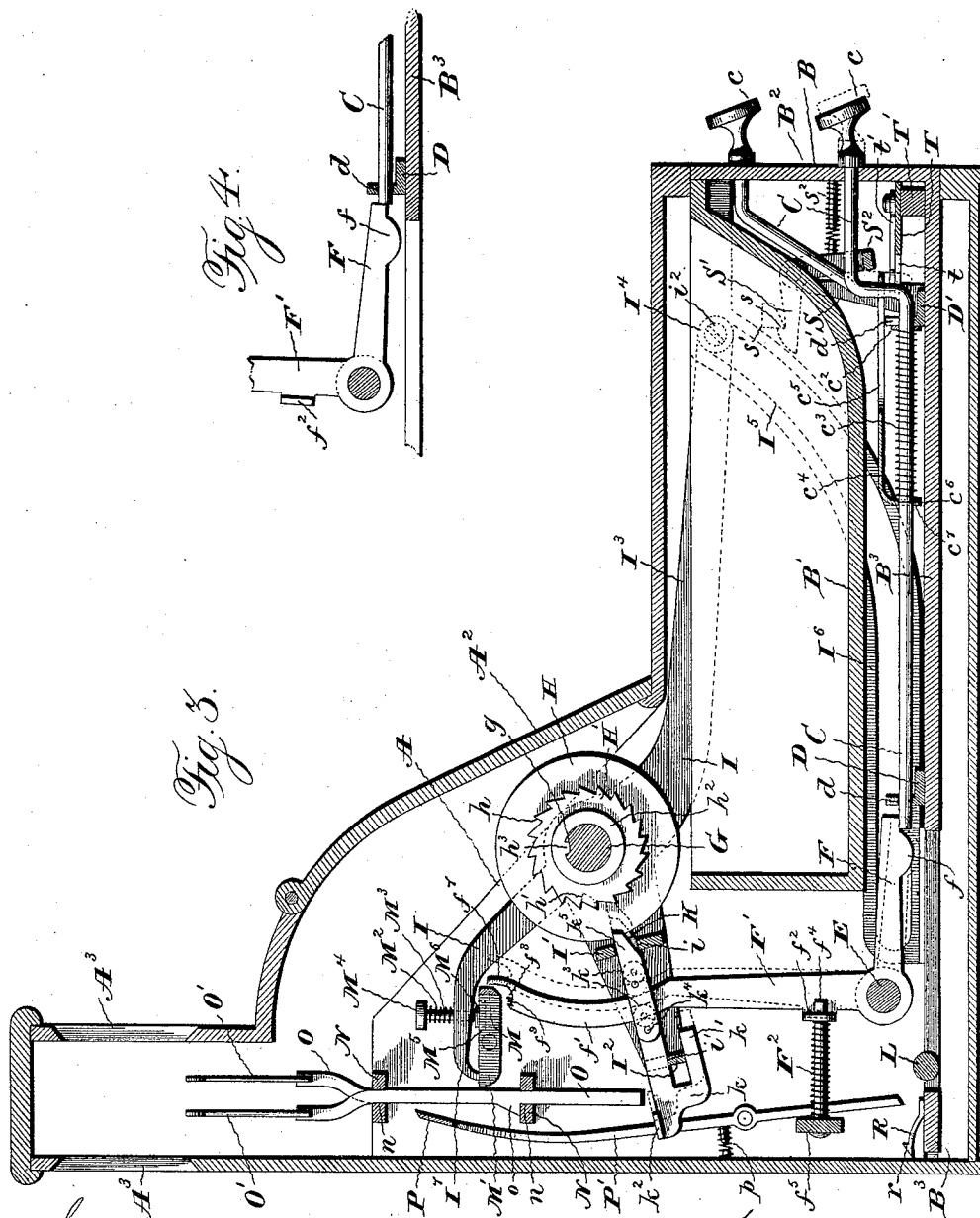
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(No Model.)

6 Sheets—Sheet 4.

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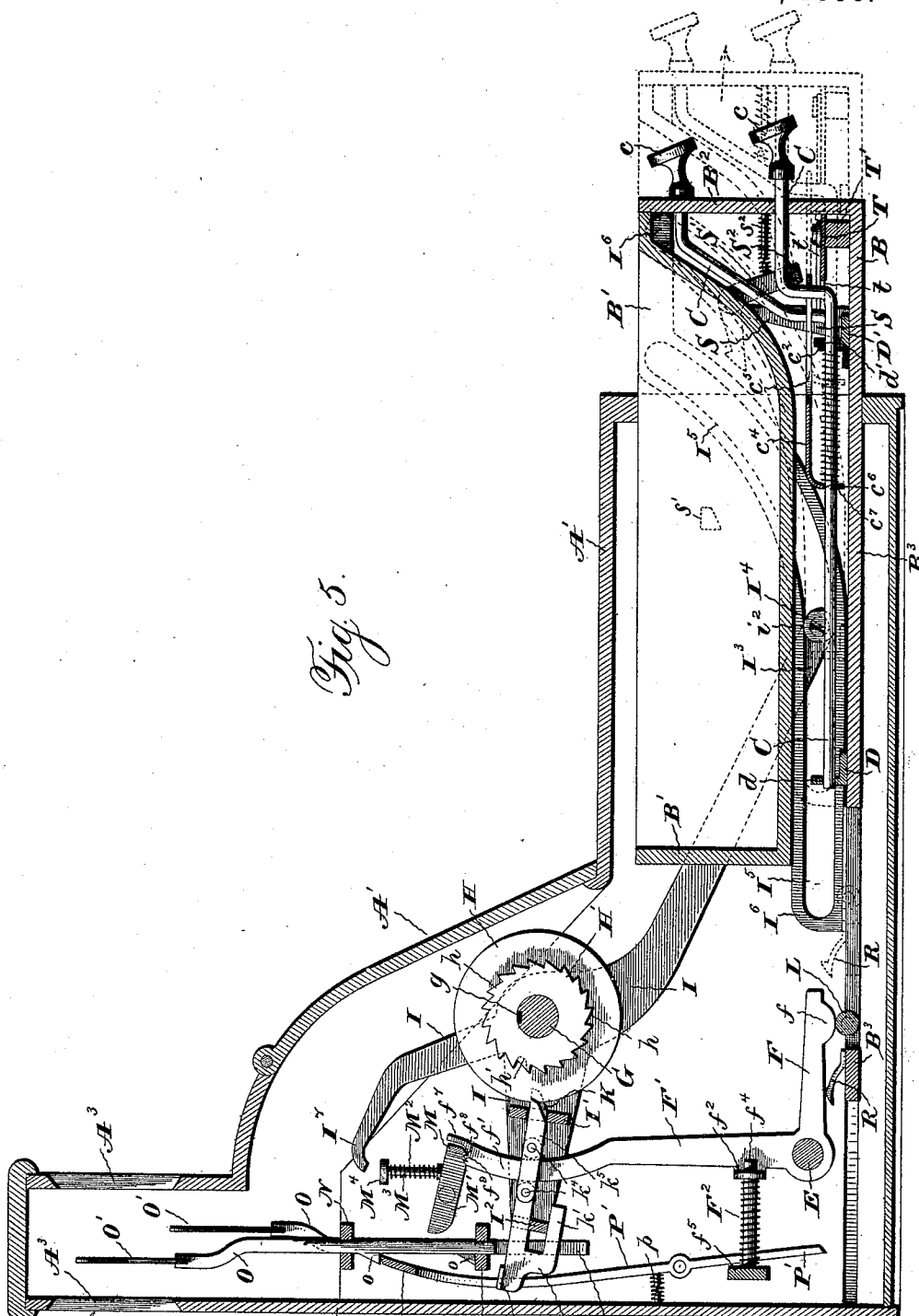


Fig. 5.

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(No Model.)

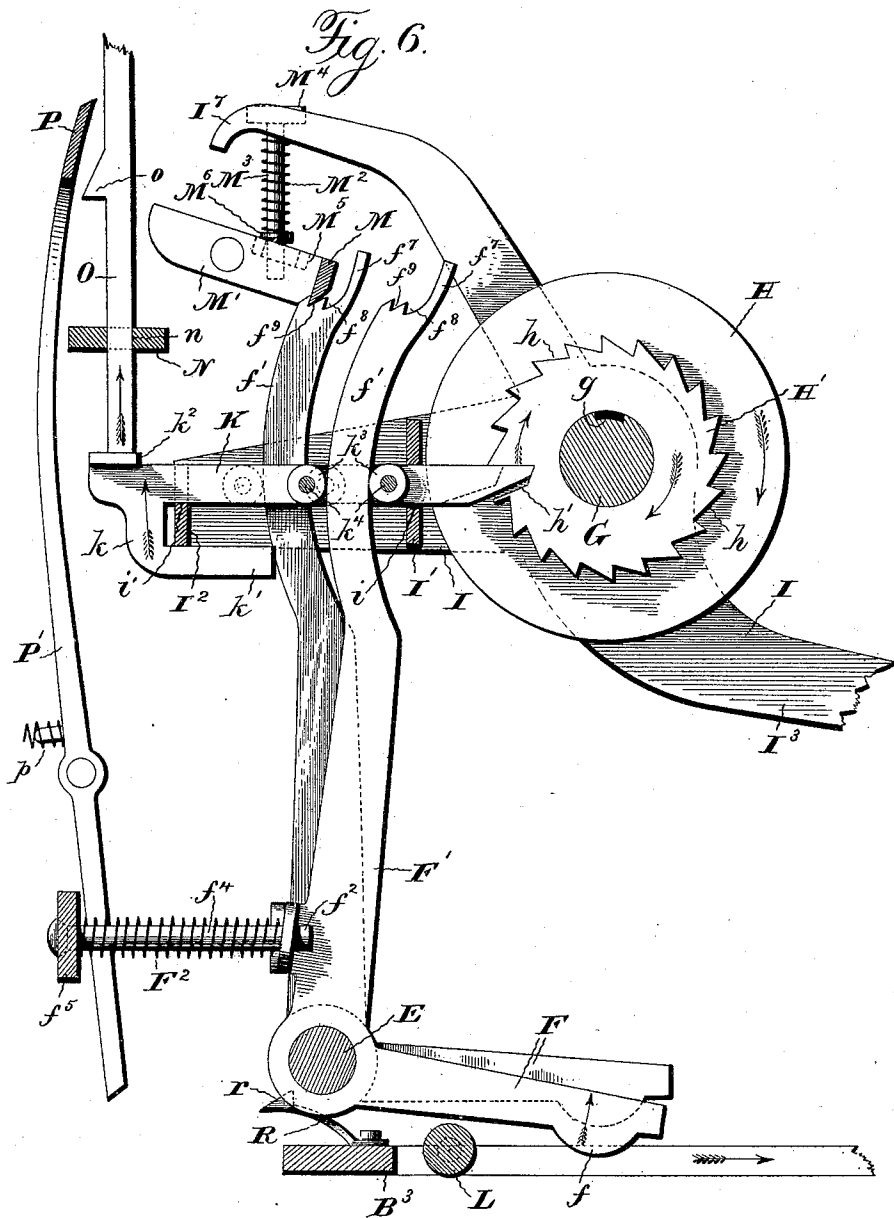
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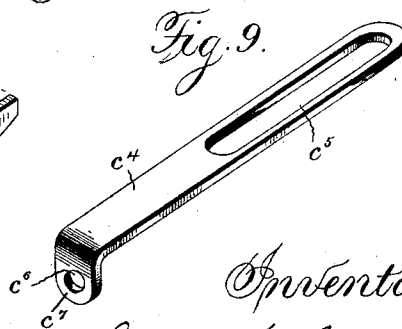
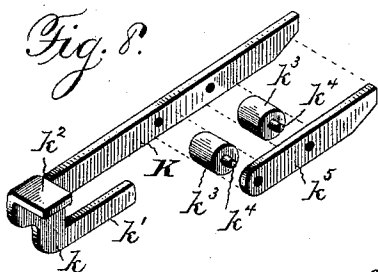
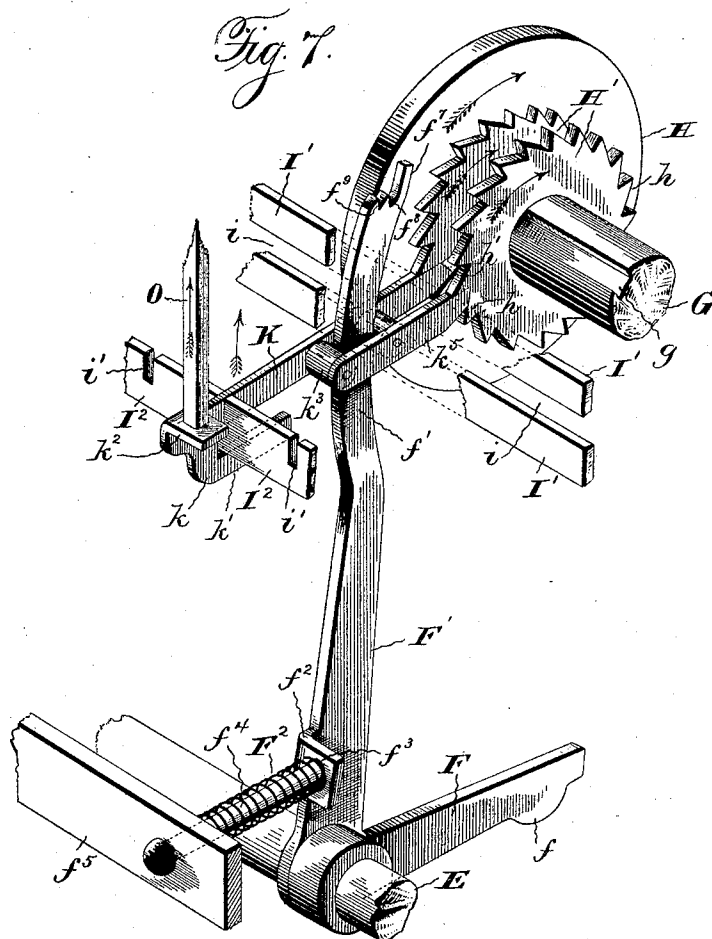
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*Witnesses:*  
*James Hutchinson.*  
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*his Attorneys.*

# UNITED STATES PATENT OFFICE.

GEORGE L. BARNES, OF NORTH HAVEN, CONNECTICUT.

## CASH INDICATING AND REGISTERING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 568,728, dated October 6, 1896.

Application filed July 17, 1895. Serial No. 556,241. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE L. BARNES, of North Haven, in the county of New Haven, and in the State of Connecticut, have invented certain new and useful Improvements in Cash Indicating and Registering Apparatus; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 shows a perspective view of my improved cash register and indicator with the casing and the money-receptacle of the drawer removed; Fig. 2, a plan view of the same with the casing shown in section; Fig. 3, a view of a vertical section on line  $x x$  of Fig. 2; Fig. 4, a detail view showing in side elevation a portion of one of the keys and of the arm of the respective setting-lever when the key has been pulled out and released; Fig. 5, a view of a vertical section on the same line as that shown in Fig. 3, but with the parts in the positions which they occupy when the drawer has been opened to the amount necessary to complete an indication and registration; Fig. 6, a detail view, on an enlarged scale, showing in side elevation the registering and indicating devices in the positions which they occupy just before the completion of a registration and indication, the secondary ratchet-wheel and the portion of the sliding pawl-piece for engaging such wheel being removed; Fig. 7, a detail perspective view, on an enlarged scale, showing the operation of one of the setting-levers in connection with the respective register-actuating pawl with its means for engaging and lifting the indicator-rod; Fig. 8, a detail perspective view of such pawl with its parts separated; Fig. 9, a detail perspective view showing, on an enlarged scale, one of the stirrups used to form a connection between each key and its retracting-spring.

Letters of like name and kind refer to like parts in each of the figures.

The object of my invention is to provide an improved cash registering and indicating apparatus in which the opening of the drawer or till causes registration and indication of the amount or amounts corresponding to any key or keys which may have been actuated; and to this end my invention consists

in the apparatus and in the construction, arrangement, and combination of the parts thereof, substantially as hereinafter specified.

In the drawings, A designates the frame for supporting the various parts of the machine, and A' designates the casing for inclosing such frame and the registering and indicating mechanism. This casing, which can be of any desired shape, construction, and material and is provided with the usual door or lid A<sup>2</sup> to cover the front of the register wheels or disks, has in its upper part the usual sight or display openings A<sup>3</sup> A<sup>3</sup>, through which any raised indicator-tablets can be seen.

Guided in suitable ways in the lower horizontal part of the frame is the drawer B, carrying the cash receiving and holding tray or receptacle B', which can be of any desired shape or construction for properly holding money in position convenient for access when the drawer is opened. In the front plate B<sup>2</sup> of this drawer are guided and supported the forward ends of the keys C C, each of which is provided with a knob or handle  $c$ , by which it can be readily pulled out or forward. While I have shown twenty-two of these keys, it will of course be understood that their number can be changed as desired without involving any departure from my invention.

The key-knobs have, on their front sides, the surfaces or tablets  $c' c'$ , all but two of which are provided with markings to correspond with the different amounts of cash to be registered and indicated, while the remaining two are marked, respectively, "No sale" and "Paid out." These markings can of course be varied as desired to suit the purposes for which any machine is to be used. In each case they are made to agree with the markings on the respective indicating-tablets to be displayed after the operation of the keys.

The forward knob-carrying ends of the keys are preferably arranged in two rows, as shown, though such arrangement can be departed from as desired.

The shanks of the keys are, at a point beyond the inner face of the front plate B<sup>2</sup> of the drawer, bent downward to a point near

the bottom plate  $B^3$  of the drawer, where they are again bent, but in the opposite direction, to cause them to extend rearward horizontally over and close to such plate.

5 The rearwardly-extending portions of the keys pass through and beyond the guide-openings  $d$  and  $d'$  in the cross-plate  $D$ , attached to plate  $B^3$ . Another guide-plate,  $D'$ , situated near the second bend in the keys,  
10 has the upright slots  $d' d'$ , through which the keys pass.

To hold the keys normally drawn inward or rearward, I provide each one of them with a loose collar  $c^2$ , which engages the rear face  
15 of plate  $D'$ , a spring  $c^3$  surrounding a portion of the key and bearing against collar  $c^2$ , and a stirrup-plate  $c^4$ , having in its forward portion a slot  $c^5$ , the forward end of which engages the upright portion of the key between the two bends. The rear end of the  
20 plate being bent down to engage the end of the spring  $c^3$  has an opening  $c^6$ , through which the shank of the key passes. With this construction, and the spring  $c^3$  compressed between the downwardly-bent part  
25  $c^7$  of the stirrup-plate and the loose collar  $c^2$  resting against the guide-plate  $D'$ , the stress of the spring will be transmitted by the stirrup-plate to the front side of the upright  
30 portion of the key, so as to draw such portion inward to retract the key when the latter has been drawn out and is left free to return.

The slot  $c^5$  in each stirrup-plate is made  
35 long, as shown, merely to facilitate the assembling of the parts. For this purpose it is made long enough to allow the stirrup-plate, after it has been passed onto the shank of a key, with the latter extending through the  
40 slot, to be swung down low enough to bring the opening  $c^6$  in the part  $c^7$  of the plate in line with the end of such shank. With the stirrup-plate thus made after each key has been passed through the respective guide-  
45 opening in the front plate  $B^3$  in assembling the parts of the machine the rear end of the shank of the key is passed through the slot  $c^5$  in the respective stirrup-plate, the spring  $c^3$  is slid upon such shank, and the stirrup-  
50 plate is swung down to bring its part  $c^7$  beyond the rear end of the spring and its opening  $c^6$  in line with the key-shank, and then the stirrup-plate and spring are slid forward until the upright portion of the key is reached,  
55 when the front end of the stirrup-plate is raised to bring the forward end of its slot into engagement with the front side of such upright portion. The loose collar  $c^2$  may be dispensed with, if desired, in which case the  
60 front end of the spring  $c^3$  can abut directly against the guide-plate  $D'$ . Where the collar is employed, it is of course passed upon the shank of the key before the spring is  
65 placed in the assembling of the machine.

With the stirrup-plates and springs in place the two guide-plates  $D$  and  $D'$  can be readily

placed in engagement with the keys and secured in position on the bottom plate  $B^3$  of the drawer. As with the guide-plate  $D'$  in  
70 position the stirrup-plates pass over the top of the same, there is no possibility of the forward ends of the stirrup-plates dropping down off of the upright portions of the keys even where the loose collars  $c^2 c^2$  are not used. 75

Upon a transverse shaft  $E$ , supported on frame  $A$ , near the rear side of the latter and to the rear of the positions occupied by the ends of the shanks of the keys when the drawer  
80  $B$  is closed, I pivot a series of levers, one for each key, having the forwardly-extending arms  $F F$ , of which each one is adapted to rest upon and be supported by the rear portion of the shank of its respective key when the latter is in its normal retracted position  
85 on the drawer and the drawer is closed. (See Fig. 3.) The under side of each of these arms  $F F$  is at a point to the rear of the portion which is to engage the respective key-shank provided with a rounded projection  $f$  for a  
90 purpose to be described hereinafter.

In addition to the arm  $F$  described each lever on shaft  $E$  has an upwardly-extending arm  $F'$ , having the curved portion  $f'$ , for a purpose to be described. Each lever has a  
95 spring  $F^2$  acting upon its arm  $F'$  to throw the latter forward when the lever is released by the drawing out of the respective key from under the arm  $F$ . Such spring can be of any desired construction and connected in any  
100 suitable way with the lever; but I prefer the arrangement shown in the drawings, in which each lever-arm  $F'$  has a lug  $f^2$ , provided with an opening  $f^3$ , into which projects the end of a pin  $f^4$ , attached to a cross-bar  $f^5$  on the  
105 frame  $A$ . Each of such pins serves as a support for the spiral spring  $F^2$ , which, abutting at one end against the bar  $f^5$  and at the other against the respective lug  $f^2$ , presses upon the latter, so as to force the lever-arm carrying it forward. To allow for the swinging  
110 movement of the lever-arm with relation to the spring-supporting pin, the opening  $f^3$  is made slightly elongated, as shown in Fig. 7.

Journaled upon a transverse shaft  $G$ , extending across within frame  $A$  in front of the curved portions of lever-arms  $F' F'$ , are the register wheels or disks  $II II$ , which, like those commonly employed in cash-registering machines, are to have their peripheries marked  
120 with figures to be brought successively, by the rotation of the wheels, to a given display-point. Each of these wheels, of which there are two for each lever-arm  $F' F'$ , has attached to or made in one piece with it a ratchet-wheel  $H'$ , which, as shown, has twenty teeth  
125  $h h$ . Both wheels  $II II$  of each pair are to have their markings arranged in the well-known way, the one to the right or the primary wheel having its series of figures beginning with zero and successively increasing by the amount marked on the respective key-knob, and the other or secondary wheel having its series of figures beginning with

zero and successively increasing by twenty times the amount marked on the knob of the key.

While I prefer the above-set-forth arrangement of twenty-toothed ratchet-wheels, with correspondingly-arranged figures, which is well known to and will be understood by those familiar with cash indicating and registering machines, I do not intend to limit myself thereto, but contemplate having instead, where desired, any other construction or arrangement of ratchet-wheels and figured disks required to secure the kind of registrations to be made. For instance, if desired, the number of teeth on the ratchet-wheels could be decreased to ten or increased to thirty, forty, or more, with a corresponding change in the markings or figures on the disks or wheels H H without departure from my invention.

The ratchet-wheel on each primary disk or wheel H has one of the notches between its teeth made deeper than the others, as shown at  $h'$  in Figs. 5, 6, and 7.

While the disks or wheels H H can be rotatively mounted on the shaft G in any desired way, I prefer to arrange them as shown in the drawings, having between them non-rotating washers  $h^2 h^2$ , provided with lugs  $h^2$ , engaging a longitudinal groove  $g$  in the shaft, so that they are held from rotating but can move longitudinally along the shaft. A spring G', engaging the washer  $h^2$ , bearing against the outer side of the ratchet-wheel on the register-disk at the left-hand end of the series, serves to force the ratchet-wheels H' H' and wheels H H and washers in contact with each other, so as to produce friction enough to hold the disks normally from rotating upon the shaft, while allowing them to be turned by the pawl devices, to be described. The spring G' is held compressed and forced against the outer washer  $h^2$  by a collar  $g'$ , adjustably fixed upon the shaft by the set-screw  $g^2$ , though any other form of abutment for the outer end of the spring can be used instead without departure from my invention.

Upon the shaft G, which during the operation of the machine is normally held stationary, I pivot the two side pieces I I of a swinging frame, such pieces being situated, respectively, beyond opposite ends of the series of register-wheels close to the sides of frame A. This swinging frame has connected with its side pieces I I, to the rear of the shaft G and wheels H H, the transverse parallel bars I' I', the former being situated close to the rear sides of the wheels and provided with a longitudinal slot  $i$ , which supports the forward ends of the sliding pieces K K, extending through the slot and into the spaces between the register-wheels. The rear portions of these pieces extend through and are supported and guided in the upright slots  $i' i'$  in the rear bar I', which stands at some distance behind bar I'. Their rear ends at a point beyond bar I' have the downwardly-extending

portions  $k k$ , from the lower ends of which forwardly-projecting arms  $k' k'$  extend under and in contact with the lower edge of the bar, so as to hold the pieces down in position in the slots  $i' i'$ , while leaving them free to be reciprocated toward and from the ratchet-wheels H' H' on the sides of the wheels H H. Also attached to the rear portion of each piece K is the flat lug or table  $k^2$  to engage and raise the lower end of an indicator-rod in the manner and for the purpose to be hereinafter described. There is one of these sliding pieces for each upright arm F' of the key-engaging levers hereinbefore described, and each piece has two bearings  $k^3 k^3$  to engage, respectively, the front and rear edges of the curved part  $f'$  of the respective lever-arm, so that as such arm is moved forward and back the sliding piece will be moved correspondingly toward and from the shaft G or the ratchet-wheels thereon. These bearings, as shown, are in the form of antifriction-rollers journaled upon the pins  $k^4 k^4$ , which connect with the main body of the piece a second parallel plate  $k^5$ . The forward ends of these two connected parts of each sliding piece are formed with noses to act as pawls in connection with the ratchet-wheels of one of the pairs of primary and secondary register-wheels H H, the nose on the main part or body of the piece being made longer than that on the part  $k^5$  in order that when in engagement with the ratchet-wheel on the primary wheel H it will keep the nose on part  $k^5$  out of engagement with the teeth of the secondary ratchet-wheel except when the nose on the main part or body passes into the deep notch  $h'$  in the primary register-wheel. If the frame I I I' I' is then swung upward to raise the sliding piece, both the primary and secondary wheels will be turned together; but if the piece be withdrawn from the ratchet-wheels and lowered for another registering movement and then moved toward the ratchet-wheels again its long nose engaging the primary ratchet-wheel away from the deep notch will keep the short nose out of engagement with the secondary ratchet-wheel until the primary wheel has completed a full rotation and the deep notch  $h'$  has been brought around in position to receive the long nose of the piece again, when a movement of the sliding piece to turn the ratchet-wheels will cause the secondary wheel to move another step at the same time that the primary wheel does.

While I have shown and described the sliding pieces K K as made in two parts and provided with antifriction-rollers on the connections between such pieces to engage the front and rear edges of the respective lever-arms F' F', I do not limit myself to such construction, but contemplate, where desired, making the long and short ratchet-wheel-engaging positions integral with each other and providing the sliding piece with arm-engaging lugs or shoulders in place of the rollers.

The pieces K K are of such length that when the arms F' F' are swung back to or nearly to

the positions which they occupy when the corresponding arms  $F' F'$  are above the plane of the upper sides of the respective keys  $C C$  the sliding pieces will be entirely out of engagement with the ratchet-wheels; but when the arms  $F' F'$  are swung forward by their springs  $F^2 F^2$ , after the arms  $F' F'$  are released by movement of the keys, the pieces will be carried forward as far as their described engagement with their respective ratchet-wheels will allow them to go. The curved portions  $f' f'$  of the lever-arms, the edges of which are curved so as to be substantially concentric with the ratchet-wheels when the arms  $F' F'$  are swung into their extreme forward positions, will then keep the respective sliding pieces in ratchet-wheel-engaging position while such pieces are being moved upward by the swing of frame  $I I I' I^2$  about the shaft  $G$  as an axis. To cause such swing of the frame each time that the drawer  $B$  is opened, I provide such frame with the two forwardly-extending arms  $I^3 I^3$ , close to the sides of the main frame  $A$ , each provided with a bearing  $I^4$ , preferably, though not necessarily, in the form of an antifriction-roller journaled on a stud  $i^2$  on the arm. Each of these bearings engages a cam-slot  $I^5$  in an upright plate  $I^6$ , attached to and moving with the drawer. Such slot has its forward portion curved from its front end downwardly and rearwardly, so as to cam the respective arm  $I^3$  down to complete the raising of the sliding-piece-carrying part of frame  $I I I' I^2$  during the first part of the opening movement of the drawer, preferably before the latter is more than half opened. The slot then runs horizontally rearward along the plate  $I^6$ , so as to hold the respective arm  $I^3$  in the position to which it has been swung, while the outward movement of the drawer is continued. As the drawer is being closed the frame  $I I I' I^2$  will remain stationary until the rollers on the arms  $I^3 I^3$  are reached by the inclined parts of slots  $I^5 I^5$ , when such rollers will be cammed up to bring the sliding-piece-carrying part of the swinging frame down to its normal position again.

With the construction described if any key  $C$  be pulled out to release the arm  $F'$  of its respective rocking-lever the other arm,  $F'$ , of the latter will be thrown forward by its spring  $F^2$ , so as to bring the sliding piece  $K$ , engaged by the curved part of arm  $F'$ , into ratchet-wheel-engaging position, and as the drawer is opened to swing up the frame carrying such sliding piece, in the manner and by the means just above set forth, the respective ratchet and register wheel or wheels will be moved one space.

To retract the sliding piece  $K$  at the end of the upward travel of the swinging frame and take it out of position to engage either one of its pair of ratchet-wheels, I provide a roller  $L$ , journaled in suitable bearings in the drawer-frame and so situated as to ride under and raise the rounded projection  $f$  on the under side of any depressed lever-arm  $F$

just after the inclined portions of slots  $I^5 I^5$  have passed beyond the antifriction-rollers  $I^4 I^4$  during the opening of the drawer. The resultant camming up of any depressed arm  $F$  against the stress of the spring  $F^2$  throws back the corresponding lever-arm  $F'$  to retract the respective sliding piece  $K$ . To retain the arm  $F'$  in its retracted position during the remainder of the opening of the drawer and while the latter is being closed and to keep the levers, whose arms  $F' F'$  have not been released by the actuation of the respective keys before the drawer is opened, from being swung forward by their respective springs  $F^2 F^2$ , I notch the upper ends of arms  $F' F'$  and provide a catch-bar  $M$ , having an edge to engage the notches in such arms. This bar forms part of a swinging frame having the arms  $M' M'$  pivoted to the frame  $A$ , and each of such arms is forced downward by a spring  $M^2$ , which can be of any form and supported in any desired way, though I prefer to make it a helical spring, as shown, surrounding a pin  $M^3$ , attached to a lug  $M^4$  on the side of frame  $A$  and extending down through a lug  $M^5$  on the arm. If desired, a loose collar  $M^6$  can be placed on the pin between the lower end of the spring and lug  $M^5$ . The upper end of each lever-arm  $F'$  is provided with the finger  $f'$ , adapted to limit the backward swing of the arm by coming in contact with the front face of bar  $M$  and the two notches  $f^8 f^9$ . The forward sides of notch  $f^8$  and the part of the arm end to the rear of such notch are beveled or made inclined upwardly and forwardly, so as to ride easily rearward under the lower edge of bar  $M$  when the latter is down, as shown in Fig. 6, and the arm  $F'$  is swung rearward to retract the respective sliding piece  $K$ . These notches  $f^8 f^9$  are so situated on each lever-arm  $F'$  that when the forward one or  $f^8$  is engaged by bar  $M$  the lever will be held so that its other arm,  $F$ , is above the plane of that part of the respective key which is intended to support such arm when the drawer is closed. The other notch,  $f^9$ , is so situated that when the bar  $M$  engages it the arm  $F'$  will be still enough retracted to keep its respective sliding piece  $K$  out of ratchet-wheel-engaging position.

With the parts in the positions which they take when the drawer is closed, and while the lever-arms  $F' F'$  are resting upon the supporting parts of their respective keys, the notches  $f^8 f^9$  are, as shown, (see Fig. 3,) in position to be engaged by the bar  $M$  when the latter is subsequently thrown down by the action of springs  $M^2 M^2$ . While the drawer is closed the bar is held raised by the arms  $I' I'$ , connected with the swinging frame  $I I I' I^2$ , and pressing down upon portions of the arms  $M' M'$  to the rear of the points where the latter are pivoted to frame  $A$ . The first movement of arms  $I' I'$ , as the drawer starts open, allows the bar  $M$  to descend into the notches  $f^8 f^9$  of the arms  $F' F'$  of all the levers which have

their other arms F F still supported by the respective unactuated keys. This dropping of the bar M, taking place, as it does, before the drawer has been opened far enough to  
 5 take any of the keys which have not previously been pulled out away from under the arms F F, effectually secures the retaining of the corresponding arms F' F' in a sufficiently-retracted condition to keep their sliding  
 10 pieces away from the ratchet-wheels during the subsequent upward swing of the frame I I I' I'. The arm F' of any lever, which by the pulling out of its key before the opening of the drawer has been allowed to be thrown  
 15 forward by its spring F<sup>2</sup>, passes forward out of the path of the bar M, as indicated in Figs. 3 and 6, but is forced back again by the engagement of the roller L with the projection *f* on the corresponding arm F, which causes  
 20 not only the arm F' referred to, but all the others to be moved to their extreme rearward positions to bring the bar M into engagement with the notches *f*<sup>8</sup> *f*<sup>8</sup> and raise the forward portions of arms F F above the planes of the  
 25 tops of the keys C C, so that the latter can pass freely under them as the drawer is being closed.

The bar M by its engagement with the shoulders forming the rear sides of notches  
 30 *f*<sup>8</sup> *f*<sup>8</sup> causes the lever-arms F F to be kept in their most elevated positions to clear the keys until the latter have passed well under them and the drawer is just completing its closing movement. At that time the downwardly-  
 35 moving arms I' I', coming in contact with the rear ends of arms M' M' and pressing them down, cause the bar M to rise above the plane of the upper edges of notches *f*<sup>9</sup> *f*<sup>9</sup>, so as to leave the levers free to swing under the in-  
 40 fluence of their springs F<sup>2</sup> F<sup>2</sup> until their arms F F rest upon the supporting parts of the respective keys again.

Attached to the frame A are the two transverse horizontal plates N N, situated to the  
 45 rear of lever-arms F' F', and above the rear portions of the sliding pawl-pieces. In openings *n n* in these plates are guided the vertically-sliding indicator-rods O O, carrying, on the upper ends, the usual display targets or  
 50 tablets O' O'. These rods, of which there is one for each piece K, have their tablets marked to correspond with the markings on the knobs of the respective keys C C. The lower ends of the rods, when they are down  
 55 in their normal positions, stand forward of and above the front edges of the tables *k*<sup>2</sup> *k*<sup>2</sup> on the respective sliding pieces K K, when the latter are retracted and the frame I I I' I' is down, as shown in Figs. 1 and 3.

The tables referred to are so arranged that they will pass under their indicator-rod ends when the pieces K K carrying them are  
 60 thrown forward by the lever-arms F' F' into ratchet-wheel-engaging positions upon the pulling out of the keys supporting the corresponding lever-arms F' F', as hereinbefore  
 65 described, and will remain under the rod

ends while the pieces K K carrying them are moved upward by the swinging of frame  
 I I I' I', caused by opening of the drawer. 70  
 With this construction the movement of any piece K, to cause registration, will at the same time raise the corresponding indicator-rod to display its marked tablet O' at the openings A<sup>3</sup> A<sup>3</sup>. 75

The hereinbefore-described retraction of any forwardly-thrown pawl-piece K, which takes place after the upward travel of the piece is completed and is caused by the riding of the rounded projection *f* over the  
 80 roller L, moves the table *k*<sup>2</sup> rearward beyond the rear side of the rod, as shown in Fig. 5. To keep any raised rod from falling when thus released by its lifting-table *k*<sup>2</sup>, I provide each rod with a retaining-shoulder *o*, having  
 85 its lower side abrupt and its upper side inclined upwardly and forwardly, and employ a swinging spring-pressed wing P, which flies forward under the shoulder on any rod, as the lifting of the latter carries the shoulder  
 90 above the wing's upper edge. This wing, pivoted to the frame A, consists of a plate whose edge is to engage the indicator-rod shoulders in the manner set forth, and the arms P' P' extending downward from the  
 95 opposite ends of the plate close to the sides of frame A A beyond the opposite ends of the series of pieces K K. Springs *p p* engaging these arms above the points where they are pivoted press them forward so as to  
 100 force the plate toward the rear faces of the indicator-rods, and make it snap in quickly under any indicator-rod shoulder which is passed up by the plate edge.

Upon the bottom plate B<sup>3</sup> of the drawer I  
 105 place a spring-pawl R, having a shoulder *r*, which, as the drawer is being opened, engages the lower end of one of the arms P' and draws it forward to cause the wing to move back to release the shoulder of any previously-raised  
 110 rod and let the latter drop to carry its tablet below the display-openings A<sup>3</sup> A<sup>3</sup>. The upper face of this pawl, to the rear of shoulder *r*, is inclined, as shown, to ride easily under the wing-arm during the return or closing  
 115 movement of the drawer. The pawl is preferably, though not necessarily, situated at such a point on the drawer-frame as to engage and move the arm P' to trip the wing when the drawer has been opened far enough to swing  
 120 the frame I I I' I' through about one-third of its register-actuating and indicator-rod-moving travel. To hold the drawer closed until after a key C has been moved far enough to release its respective lever-arm F in the man-  
 125 ner and for the purpose hereinbefore set forth, I pivot to the standards S S on the bottom plate B<sup>3</sup> the catches S' S', each provided with notch *s* to engage a locking-lugs' on the frame A or some stationary part within the same. 130  
 The other or lower arms of these catches are connected together by a transverse bar S<sup>2</sup> in front of the upright portions of the keys and adapted to be engaged and swung outward

by any key which is pulled out. Springs  $s^2$   $s^2$ , engaging the lower arms of the catches, force them toward the rear of the machine, so as to lift the notched or upper arms into position to engage lugs  $s' s'$  when the drawer is closed. The nose or forward end of each catch beyond the notch  $s$  is beveled off, as shown, so that it will ride easily under the respective lug as the drawer is being closed.

10 The under side of each lug can be correspondingly beveled, as shown, to assist and make certain of the easy forcing down of the catch ends on their inward travel.

Where it is desired to prevent the actuation of two adjoining keys in a series at the same time, a key-arrester of any of the well-known constructions of such device can be employed, situated in front of the upright portions of the keys C C.

20 As shown in the drawings, the key-arrester consists of a transverse horizontal plate T, attached to a support T' on the bottom plate B<sup>3</sup> of the drawer and having the slots  $t t$  in line with the upright portions of the respective keys, and their front or outer ends adapted to act as stops to limit the outward movements of the keys with reference to the drawer. Pivoted upon this plate, in line with the spaces between slots  $t t$ , are the swinging dogs  $t' t'$ , having their inner ends made wedge-shaped and of a width substantially equal to the distance between the middle lines of two adjoining slots. To the front of these broad wedge-shaped ends the dogs are made tapering forwardly toward their pivoted ends in order that, as two adjoining dogs are separated by the upright portion of a key engaging their inclined sides, such key portion may be left free to move outward along the respective slot  $t$ , between the shanks of the dogs. As this separating of the wedge-shaped ends of adjoining dogs causes them to move over across the slots  $t t$  on opposite sides of that one along which the actuated key is passing, the separated dogs will obviously stand in the path of the upright portions of adjoining keys, so that the latter cannot be moved until the first actuated key has been returned beyond the inner ends of the dogs engaged by it. With the dogs in contact with each other the swinging of any two adjoining dogs to clear the slot  $t$  and allow a key to be moved along such slot will cause all the contacting dogs on opposite sides of the moved pair to be swung to lock the other keys from movement.

As will be understood by those familiar with cash registers and indicators, where the keys are divided up into subseries, containing, respectively, the keys for registering and indicating amounts of different denominations, the key-arrester dogs can be correspondingly divided up into separate series, so as to prevent the simultaneous operation of two keys in the same series, while not preventing the movement of single keys in the several different series at the same time.

While I have shown and described my apparatus as provided with a movable drawer, by the opening of which registrations and indications corresponding to any keys previously operated are caused or produced, I desire it to be understood that I do not limit myself to such construction, but contemplate using instead, where desired, a stationary money-receptacle with a movable lid. Such a change would only involve a fixed support for the tray or receptacle and attachment to the lid of those devices for causing registration and indication, which have been hereinbefore described and shown as carried on a frame moving with the receptacle.

So far as the keys, with the devices for guiding and retracting them, the key-arrester, and the key-actuated lock are concerned, they could be likewise supported upon or form the movable lid or cover; or they could be carried by a stationary frame, with reference to which the lid-cover could be moved so as to open the till, after the operation of any key to unlock the lid, and to cause the respective register and indicator actuating mechanism to be set for movement by the devices carried by or moving with the lid. In the former of these two cases the front plate B<sup>3</sup>, slotted plate I<sup>6</sup>, and the bottom plate B<sup>3</sup>, with all the parts hereinbefore shown and described as supported thereby will be connected with the lid or cover in any desired way, so as to move in and out with the same, as the till is being closed and opened, respectively. The cash-holding chamber or receptacle can then be supported from any fixed part of frame A or casing A', so as to leave the cover or lid and plates I<sup>6</sup> and B<sup>3</sup> free to be moved past it. In the latter of the two cases the front plate B<sup>2</sup> and the part of plate B<sup>3</sup> which supports the keys and key-arrester and till-lock may be fixed, and the lid or cover, arranged to slide in and out over the upper edge of plate B<sup>2</sup>, can have the plate I<sup>6</sup>, the lugs  $s' s'$ , to be engaged by the notched arms of the till-lock, a frame-carrying roller L set low enough down to pass under plate B<sup>3</sup>, and the wing-tripping pawl R, all attached to or rigidly connected with it. With the roller L so set the rounded projections  $f f$  on lever-arms F F can be made correspondingly longer to reach the roller. In each of these constructions, constituting different forms of my invention, as in the one where the money-receptacle moves in and out, it is the motion of a movable part of the till which causes the registration and indication, for which the machine has been set, by the pulling out of any key.

The described employment of a movable lid instead of the arrangement with moving money-chamber or receptacle I do not consider to involve departure from the invention intended to be covered by the broader claims in the present application.

I have not shown or described any means for resetting the register disks or wheels to zero, but desire it to be understood that I con-

template using with my registering mechanism any suitable one of the various well-known resetting devices in use in registering-machines.

5 If desired, the devices for holding the registering-wheel supporting-shaft normally locked and for securing a turning of all the wheels to bring their zeros in line opposite a given display-opening, which are shown and described in United States Patent No. 521,333, can be made use of. I have not herein shown or described such devices or any others for the same purpose, as they form no part of my present invention covered by this case.

15 The operation of my machine, which will be understood from the foregoing description and the drawings, is briefly as follows: With the drawer closed and locked, if a key be drawn out its inner end will be withdrawn from under the arm F of the respective lever pivoted on shaft E, and the spring F<sup>2</sup>, engaging the other arm F' of the lever, will force it forward so as to carry the respective sliding piece K into ratchet-wheel-engaging position and bring the table k<sup>2</sup> on it, under the lower end of the indicator-rod. Continued movement of the key then trips the drawer-locking catches, and the drawer can be drawn open. As it opens, the inclined parts of slots 20 I<sup>5</sup> I<sup>5</sup> cam the bearings I<sup>4</sup> I<sup>4</sup> on arms I<sup>3</sup> I<sup>3</sup> down, so as to swing up the frame I I I' I<sup>2</sup> supporting the sliding pieces K K. This movement of the frame causes the arms I' I' to release the arms M' M', so that bar M drops into engagement with notches f<sup>9</sup> on all the lever-arms F' F' which have not been left free to swing forward by the pulling out of their respective keys. The bar M, by thus engaging the notches f<sup>9</sup> f<sup>9</sup> of all the unmoved lever-arms F' F' before the opening of the till moves 40 the unactuated keys out from under the corresponding arms F F, prevents all the lever-arms not corresponding to an actuated key from moving, when the motion of the movable part of the till carries the keys away from the levers. The lever-arms F' F', the notches f<sup>9</sup> f<sup>9</sup> of which are thus engaged by bar M, are held back by the latter, so that their sliding pieces do not engage the ratchet-wheels, and the tables on such pieces stand to the rearward of the lower ends of the indicator-rods. As the rising of the frame I I I' I<sup>2</sup> takes place the table k<sup>2</sup> of the piece K, which, upon the previous drawing out of its key has been moved inward, engages the lower end of the respective indicator-rod and raises the latter to bring its marked tablet up to the display-openings. As the rod, corresponding to a key which has been actuated, is being 60 carried up in the manner described, the pawl R, on the drawer or moving part of the till, engaging the arm of the supporting-wing, trips the latter to cause it to release the shoulder o of any rod raised by a previous operation of the machine. As the opening motion of the movable part of the till continues the pawl R passes out of engagement

with the wing-arm and allows the wing to be thrown forward again by springs pp into its normal rod-supporting position before the 70 raising of the new indicator-rod is completed. The shoulder o on this rod as it rises forces back the wing, which subsequently snaps under the abrupt lower side of the shoulder as the latter reaches a point above the edge of 75 plate P. This takes place just before the frame I I I' I<sup>2</sup> completes its upward swing. After the frame has come to rest, at the end of its upward movement, necessary to cause the set-piece K to move the respective part 80 of the registering mechanism one full step and to raise the respective indicator-rod into indicating position, the roller L on the drawer or movable part of the till engages the rounded projection f on the dropped lever-arm F and 85 raises the latter so as to swing the corresponding arm F' back to retract the piece K from the registering mechanism and carry its table k<sup>2</sup> to the rear of the indicator-rod. The roller L at the same time engages the rounded 90 projections f f on the other lever-arms F F, so that all of the levers will be swung together to bring their arms F' F' into their extreme rearward positions, with the bar M engaging the front notches f<sup>8</sup> f<sup>8</sup>. After the 95 roller has passed the projections f f the levers will then be kept by the bar M with the front ends of their arms F F raised above the plane of their keys C C, so that the latter can pass freely under them as the drawer or till is closed again. It will be noticed from the 100 hereinbefore-given description and the drawings that the pieces K K, which may have been moved into ratchet-wheel-engaging position because of the actuation of their keys, remain in such position during the upward stroke of frame I I I' I<sup>2</sup> and are not retracted until their registering-throw has ceased. With this arrangement I make sure of preventing any over-registration, due to over-throw, for the teeth on the register-wheels 110 in order to pass forward by any unretracted pieces K would have to cam them, and the arms F' F', engaging them back against the stress of the springs F<sup>2</sup> F<sup>2</sup>. As any piece K 115 is retracted by its lever-arm F' in the manner described, the corresponding indicator-rod, which has been raised by the table of such piece, will, as it is released by the table, drop slightly until its shoulder o rests upon 120 the wing. As the drawer or movable part of the till is being closed the frame I I I' I<sup>2</sup> is, as the inclined portions of slots I<sup>5</sup> I<sup>5</sup> engage the bearings I<sup>4</sup> I<sup>4</sup> on arms I<sup>3</sup> I<sup>3</sup>, swung down again to lower the pieces K K to their normal positions, such pieces being, during their downward travel and after they have reached their lowest positions, held back away from the respective ratchet-wheels by the curved parts of the lever-arms F' F', which are kept retracted by the bar M, engaging their notches 125 f<sup>8</sup> f<sup>8</sup>, until after the ends of the keys C C have passed under the forward ends of lever-arms F F. The bar M is then raised by the en- 130

gagement of arms  $F' I'$  with the rear portions of the arms  $M' M'$  connected with it, so that the lever-arms  $F' F'$  are released and the other lever-arms,  $F F$ , drop upon the respective keys, which then serve to support them in the positions shown in full lines in Fig. 3. With the parts in position, as when the drawer or till is closed, the levers  $F F' F' F'$ , being supported only by the keys  $C C$  from movement under stress of the springs  $F^2 F^2$ , will fly forward at once to carry their respective pieces  $K K$  into register, engaging positions with their tables  $k^2 k^2$ , under the respective indicator-rods, as soon as the corresponding keys are pulled out from under lever-arms  $F F$ . When a key has been thus retracted to allow the respective lever to swing forward, it will be kept so retracted by the forward end of the lever-arm  $F$ , which drops down in front of the key end, as shown in Fig. 4. The abutting end of the lever-arm is of such shape that no pushing in of the key can cause the arm to rise to retract the piece  $K$  again before full registration and indication have been produced by the opening of the till. This construction well adapts the machine for a setting of the parts, so that when the till is opened any desired combination of a number of indications with corresponding registrations will be secured.

Where no key-arrester is employed to prevent several of the keys from being moved at one time, any desired number of keys may be pulled out to release the corresponding lever-arms  $F F$  and then released to move inward until they abut against such arms. The opening movement of the drawer or moving part of the till will then, through the mechanism described, cause all the pieces  $K K$ , connected with the set-levers of the respective actuated keys, to operate the corresponding registering devices and raise the proper indicator-rods to display their marked tablets.

Where, as hereinbefore described, the keys are divided up into series and the key-arrester is arranged only to prevent the operation of two keys in any one series at a time, any desired combinations of single indications in the several series can be simultaneously produced upon separately or simultaneously pulling out the proper keys until the respective lever-arms are released and then opening the drawer or till.

While I have shown and described springs as used to force the lever-arms  $F' F'$  forward to carry the pieces  $K K$  into their desired register-wheel-engaging positions, I do not intend to limit myself to such means, but can use instead, without departure from my invention, any other means, as weights on arms  $F F$ , exerting a force acting to swing the levers in the required direction as the respective keys are pulled out.

From the foregoing description and the drawings it will be seen that the sliding pieces  $K K$ , with their parts to engage and actuate

the registering and indicating devices, are in effect double pawl-pieces adapted to operate as actuating-pawls, not only in connection with the ratchet-wheel teeth, but with the ends of the indicator-rods. As constructed and used in connection with the slotted bars  $I' I^2$  of the frame they are most simple and cheap in construction, can be most readily inserted in place on the swinging frame during the assembling of the parts of the machine, and after being put in place in engagement with the lever-arms  $F' F'$  they cannot get loose or out of their desired positions on the frame in engagement with the slotted bars of the latter.

Having thus described my invention, what I claim is—

1. In combination with a series of registering devices, a movable frame, a series of pawls for actuating the registering devices, mounted on the frame, a series of movable arms connected with the pawls, so as to move them into and out of register-device-engaging position, and a series of keys connected with such arms, so that the movement of a key causes the arm corresponding thereto to move toward the registering devices, substantially as and for the purpose specified.

2. In combination with a series of registering devices, a movable frame, a series of pawls for actuating the registering devices, mounted on the frame, a series of movable arms connected with the pawls, so as to move them in and out of register-device-engaging position, a second movable frame, connections between the two frames, whereby movement of the second one causes the other to move, and a series of keys movably mounted upon the second frame, and connections between such keys and the series of movable arms, whereby the keys normally hold the arms, to retract the respective pawls, and connections between the keys and the pawl-operating arms, whereby movement of a key upon the second frame causes the arm corresponding thereto to move its pawl toward the registering devices, substantially as and for the purpose specified.

3. In combination with a series of registering devices, a movable frame, a series of pawls, for actuating the registering devices, mounted on the frame, a series of movable arms connected with the pawls, so as to move them toward and from the registering devices, yielding means for pressing such arms toward the registering devices, a series of keys, and connections between the same, and the pawl-moving arms, whereby the arms are normally held back, and, as any key is moved, the respective arm is left free to move toward the registering devices, substantially as and for the purpose shown.

4. In combination with a series of registering devices, a movable frame, a series of pawls mounted thereon, a series of movable arms connected with the pawls, yielding means for forcing the arms toward the registering de-

vices, arms connected with the pawl-actuating arms, and a series of movable devices, to support these second arms, adapted to be moved from under the same, substantially as and for the purpose set forth.

5. In combination with a series of registering devices, a movable frame, a series of pawls movably mounted thereon, a series of levers each having an arm connected with one of the pawls, yielding means tending to swing the levers to carry the pawls toward the registering devices, a second movable frame connected with the first one, so as to actuate the same, and a series of keys movably mounted upon the second frame, to engage arms of the levers and hold them normally retracted, adapted to be withdrawn out of engagement with said arms by movement upon the frame supporting the keys, substantially as and for the purpose described.

6. In combination with a series of registering devices, a movable frame, a series of pawls mounted thereon, a series of levers each having an arm connected with one of the pawls so as to move the same toward and from the respective registering device, yielding means for swinging the levers to carry the pawls toward the registering devices, and a series of keys for supporting the other arms of the levers, adapted to be withdrawn therefrom, substantially as and for the purpose described.

7. In combination with a series of registering devices, a movable frame, a series of pawls mounted thereon, a series of levers each having an arm connected with one of the pawls so as to move the same toward and from the respective registering device, yielding means for swinging the levers to carry the pawls toward the registering devices, a series of movable keys, for supporting the other arms of the levers, adapted to be withdrawn therefrom, and means for moving back any lever which has been released by the withdrawal of its key, substantially as and for the purpose specified.

8. In combination with a series of registering devices, a movable frame, a series of pawls mounted thereon, a series of levers each having an arm connected with one of the pawls so as to move the same toward and from the respective registering device, yielding means for swinging the levers to carry the pawls toward the registering devices, a series of movable keys for supporting the other arms of the levers, adapted to be withdrawn therefrom, springs to hold the keys normally in position to support such arms, and means for moving back any lever which has been released by withdrawal of its key, substantially as and for the purpose shown.

9. In combination with a series of movable keys, a series of registering devices, a movable frame, a series of pawls mounted thereon, a series of movable arms having curved edges engaging bearings on the pawls so as to move in both directions with the pawls, means in-

dependent of the keys for moving the arms toward the registering devices, and connections between the keys and the movable arms, whereby, as a key is actuated, the respective arm will be caused by its actuating means to move toward the registering device, substantially as and for the purpose set forth.

10. In combination with a series of registering devices, a movable frame, a series of pawls mounted thereon, a series of movable arms having curved edges on their front and rear sides engaging bearings on the pawls, means for moving the arms toward the registering devices, a series of movable keys, connections between the same, and the movable arms, whereby as a key is actuated, the respective arm will be caused to move toward the registering device, and means for returning the arm, substantially as and for the purpose described.

11. In combination with a series of registering devices, a swinging frame, a series of sliding pawls mounted thereon to engage and actuate the registering devices, and a series of moving arms each engaging, with its forward and rear edges, bearings on one of the pawls, substantially as and for the purpose shown.

12. In combination with a series of registering devices, a swinging frame, a series of sliding pawls thereon to engage and actuate the registering devices, and a series of movable arms each having its forward edge engaging one of the bearings on one of the pawls curved and its rear edge adapted to engage the other bearing on the pawl, substantially as and for the purpose set forth.

13. In combination with a series of registering devices, a swinging frame having the two transverse bars, the series of sliding pawls mounted on the frame to engage and actuate the respective registering devices, each having its forward portion guided in a slot in one of the transverse bars, and its rear end guided in a slot in the other bar, and provided with an arm extending under such bar, to hold the pawl down in place as it moves, substantially as and for the purpose described.

14. In combination with a series of registering devices, a swinging frame having the two transverse bars, the series of sliding pawls thereon, to engage and actuate the respective registering devices, each having its forward portion guided in a slot in one of the bars, and its rear end guided in a slot in the other bar, and provided with an arm extending under the bar, movable arms, and bearings on the pawls engaged thereby, substantially as and for the purpose specified.

15. In combination with a registering device, having a ratchet-wheel, a swinging frame, a sliding pawl mounted thereon, and having the two roller-bearings, and a movable arm for moving the pawl toward and from the ratchet-wheel projecting between and adapted to engage such bearings with its front and rear sides, substantially as and for the purpose shown.

16. In combination with a registering device having a ratchet-wheel, a swinging frame, a sliding pawl mounted thereon having the two bearings, and a movable arm for moving the pawl toward and from the ratchet-wheel having a portion projecting up between and engaging such bearings, curved so as to be substantially concentric with the ratchet-wheel, when the arm is moved toward the latter, substantially as and for the purpose set forth.

17. In a registering mechanism, in combination with two ratchet-wheels, of which one has one notch deeper than the others, the swinging frame, a sliding pawl mounted thereon, having the two ratchet-wheel-engaging noses, of which the one to engage the ratchet-wheel with the deep notch is longer than the other, a movable arm and bearings on the pawl to engage the front and rear sides of the arm, whereby it will move the pawl toward and from the ratchet-wheels as it swings in one direction and the other, while leaving the pawl free to move with the swinging frame, substantially as and for the purpose described.

18. In a registering mechanism, in combination with two ratchet-wheels, of which one has one notch deeper than the others, the swinging frame, the sliding pawl mounted thereon, consisting of two plates connected together and having the noses to engage the ratchet-wheels, formed so that the one to engage the deep-notched wheel is longer than the other, and a movable arm for moving the pawl to and from the ratchet-wheels projecting up between two bearings between these plates, substantially as and for the purpose specified.

19. In an indicating mechanism, in combination with a series of movable indicators, a movable frame, a series of movable indicator engaging and actuating pieces mounted on the frame, a series of devices engaging the actuating devices and exerting upon them a yielding pressure to force them toward their indicator-engaging positions, a series of movable keys to engage and retain portions of such devices adapted to be moved to leave the latter free to move the indicator-engaging pieces into position to engage and actuate the indicators as the frame is moved, substantially as and for the purpose described.

20. In an indicating mechanism, in combination with a series of movable indicators, a movable frame, a series of movable indicator engaging and actuating devices mounted on the frame, a series of arms engaging and moving such pieces, yielding means, tending to move the arms to carry the respective pieces into position to engage the indicators, a second movable frame, a series of keys movably mounted thereon, and connections between such keys and the movable arms, whereby the keys normally hold the arms to keep their connected movable pieces out of indicator-engaging position, and the move-

ment of the keys on their frame leaves the arms free to move, under the stress of their yielding, actuating means, substantially as and for the purpose specified.

21. In an indicating mechanism, in combination with a series of movable indicators, a movable frame, a series of movable indicator engaging and actuating pieces, mounted on the frame, spring-actuated devices connected with these pieces, so as to move the same into their indicator-engaging positions, a series of keys and connections between them, and the spring-actuated devices, whereby, as any key is operated, the respective spring-actuated device is left free to move the piece connected therewith into position, to engage and raise the respective indicator, as the frame is moved, substantially as and for the purpose set forth.

22. In an indicating mechanism, in combination with a series of movable indicators, a movable frame, a series of movable indicator-engaging pieces mounted on the frame, a series of arms connected with such pieces, to move them into indicator-engaging position, means tending to move the arms to bring the pieces into such position, a series of keys and connections between the same and the movable arms, whereby, as any key is moved, the respective arm will be left free to be moved, substantially as and for the purpose described.

23. In an indicating mechanism, in combination with a series of movable indicators, a movable frame, a series of movable indicator-engaging pieces mounted on the frame, a series of arms connected with such pieces to move them into and out of indicator-engaging position, means tending to move the arms into such position, a series of keys, and connections between the latter and the arms, whereby the unmoved keys cause the arms to be held back, to keep the pieces out of indicator-engaging position, and the drawing out of a key leaves the respective arm free to be moved, substantially as and for the purpose specified.

24. In an indicating mechanism, in combination with a series of movable indicators, a movable frame, a series of movable indicator-engaging pieces mounted on the frame, a series of spring-pressed arms engaging such pieces, and a series of keys, and connections between the same and the arms, whereby the latter are held retracted, against the stress of their springs, until the respective keys are moved, and then are left free to be actuated by the springs, substantially as and for the purpose shown.

25. In an indicating mechanism, in combination with a series of movable indicators, a movable frame, a series of movable indicator-engaging pieces mounted on the frame, a series of movable arms connected with such pieces, yielding means tending to move the arms, to carry the respective pieces into position for engaging the corresponding indicators, a series of arms each connected with

one of the former arms, and a series of keys to engage and support the second arms, substantially as and for the purpose set forth.

26. In an indicating mechanism, in combination with a series of movable indicators, a swinging frame, a series of movable pieces mounted on the frame, having parts to engage and lift the indicators, as the frame is raised, a series of levers having arms connected with the pieces on the frame, so as to move them into and out of indicator-engaging position, the springs acting upon the levers, and the series of movable keys to engage the other arms of the levers, substantially as and for the purpose described.

27. In an indicating mechanism, in combination with a series of movable indicators, a swinging frame, a series of indicator-actuating pieces movably mounted on the frame, a series of levers having arms connected with the pieces on the frame, so as to move them into and out of indicator-engaging position, yielding means acting upon the levers, tending to move them to carry the respective pieces into indicator-engaging position, a second movable frame connected with the other frame, so as to move the same, and a series of keys movably mounted on the second frame, having portions to engage arms of the levers, so as to hold the levers normally retracted, and to release them, when the keys are moved upon their supporting-frame, substantially as and for the purpose described.

28. In a registering and indicating machine, in combination with a movable indicator and a registering device, a movable frame, a movable piece, thereon having a part to actuate the registering device, and a part to engage and actuate the indicator, and means for moving such piece, on the frame, into and out of its register and indicator actuating position, substantially as and for the purpose specified.

29. In a registering and indicating machine, in combination with a movable indicator, and a registering device, a movable frame, a movable piece thereon, adapted to actuate both the registering device and the indicator, as the frame is moved, yielding means tending to move such piece into position for actuating the registering device and indicator, a key, and connections between the same and the movable piece, for holding the latter out of its register-device and indicator engaging position, substantially as and for the purpose shown.

30. In a registering and indicating machine, in combination with a movable indicator and a registering device, a movable frame, a movable piece mounted thereon, adapted to actuate both the registering device and the indicator, as the frame is moved, a lever connected with such piece, yielding means to move the lever, to carry the piece into its described engaging position, a key, and connections between the same and the lever, for

holding the lever retracted, until the key has been moved a certain distance, substantially as and for the purpose set forth.

31. In a cash registering and indicating machine, in combination with a movable indicator, and a registering device, a movable frame, a movable piece mounted thereon, adapted to actuate both the registering device and the indicator, as the frame is moved, a two-armed lever, having one arm engaging such piece, to move the same on the frame, a spring to swing the lever, and a key having a portion adapted to engage and support the other arm of the lever, and to be moved out from under the same, substantially as and for the purpose described.

32. In combination with a series of registering devices, a swinging frame, a series of register-actuating pawls mounted thereon, a series of levers connected with such pawls, so as to move them into register-actuating position, a reciprocating frame, cam connections between the latter and the swinging frame, a series of keys, connections between the keys and levers, whereby the latter are held retracted, while the reciprocating frame is in, and the keys are unoperated, and means for holding retracted, while such frame slides out the levers corresponding to any unactuated keys, substantially as and for the purpose specified.

33. In combination with a series of registering devices, a swinging frame, a series of register-actuating pawls mounted thereon, a series of levers, connected with the pawls, to move them into and out of register-actuating position, yielding means to move the levers, to carry the pawls toward the registering devices, a reciprocating frame, the series of movable keys thereon, the retaining-bar to engage the levers, and cam connections between the reciprocating and the swinging frame, to swing the latter, substantially as and for the purpose shown.

34. In combination with a series of registering devices, a swinging frame, a series of register-actuating pawls mounted thereon, a series of spring-pressed levers, each having an arm connected with one of the pawls, and provided with notches, the catch-bar, to engage such notches, a reciprocating frame, a series of movable keys mounted on the latter to engage the other arms of the levers, cam connections between the reciprocating frame and the swinging one, whereby the latter is swung as the former is moved, means carried by the reciprocating frame, to retract the levers, and arms moving with the swinging frame, to raise the stop-bar from the notches in the lever-arms, as the reciprocating frame is moved back to its normal position, substantially as and for the purpose set forth.

35. In a cash-register, in combination with a series of registering devices, a swinging frame, a series of register-actuating pawls

mounted thereon, a series of levers connected with the pawls, a series of keys, connections between the latter and the levers, whereby the levers are held normally retracted by the  
 5 unoperated keys, and the moving of a key releases the respective lever, the till having a movable part, and connections between such part, and the swinging pawl-carrying frame, whereby the movement of the movable part  
 10 of the till causes such frame to swing, substantially as and for the purpose set forth.

36. In a cash-register, in combination with a series of registering devices, a swinging frame, a series of register-actuating pawls  
 15 mounted thereon, a series of levers each having an arm connected with one of the pawls, yielding means tending to swing the levers, to carry the pawls toward the registering devices, a series of keys to engage the levers,  
 20 the till, having a movable part, and cam connections between such part, and the swinging frame, substantially as and for the purpose described.

37. In a cash-register, in combination with  
 25 a series of registering devices, a swinging frame, a series of register-actuating pawls mounted thereon, the spring-pressed levers connected with such pawls, to move the same toward and from the registering devices, the  
 30 series of keys to engage the levers, the till, having a movable part, connections between such part and the swinging frame, for moving the latter, and means traveling with the movable part of the till, for retracting any  
 35 lever which has been released by movement of its key, substantially as and for the purpose specified.

38. In an indicator, in combination with a series of movable indicators, a movable frame,  
 40 a series of movable pieces, mounted thereon, each having a part adapted to engage and actuate an indicator, as the frame is moved, a series of levers connected with such pieces, yielding means tending to move the levers to  
 45 bring the movable pieces into position to engage the indicators, a series of keys to engage the levers, the till, having a movable part, and cam connections between such part and the movable frame, for moving the latter,  
 50 substantially as and for the purpose shown.

39. In an indicator, in combination with a series of movable indicators, a swinging frame, a series of indicator-engaging movable  
 55 pieces thereon, the spring-pressed levers connected with such pieces, a series of movable keys to engage the levers, the till, having a movable part, cam connections between such part and the swinging frame, and means, moving with the movable part, adapted to  
 60 retract any levers released by movement of the respective keys, substantially as and for the purpose set forth.

40. In an indicator, in combination with a series of movable indicators, a swinging

frame, a series of movable pieces on such  
 65 frame, having parts to engage and actuate the indicators, a series of spring-pressed levers connected with such pieces, a movable part of the till, communications between such part and the swinging frame, whereby the  
 70 latter is caused to swing, by movement of the former, a series of keys having portions to engage and support arms of the levers, against the stress of the lever-moving springs, and  
 75 springs to return such keys, when they have been pulled out to release the respective levers, substantially as and for the purpose described.

41. In combination with a till, having a movable part, a series of keys mounted on a  
 80 frame moving with such part, the series of levers having arms to engage and be supported by the keys, when the movable part of the till is in position to close the latter, the swinging frame, connections between the lat-  
 85 ter and the movable part of the till, whereby the frame is caused to swing by the movement of such part, the movable pieces mounted on the swinging frame, and connected with  
 90 arms of the levers, and means for holding such arms from movement, after the movable part of the till has been moved to take all the keys away from the levers, substantially as and for the purpose specified.

42. In combination with a till having a  
 95 movable part, a series of keys movably mounted on a frame, moving with such part, the swinging frame, the series of movable pieces mounted on such frame, the series of levers,  
 100 each having an arm to engage one of the keys, and an arm connected with one of the movable pieces, yielding means for swinging the levers, when released by the keys, a catch-bar, to engage and hold the levers, means  
 105 tending to move it into engagement with the lever-arms, connections between the movable part of the till and the swinging frame, whereby the latter is caused to swing by movement of the former, and means actuated by move-  
 110 ment of the movable part of the till to raise the catch-bar from the lever-arms, as the till is closed, substantially as and for the purpose set forth.

43. In combination with a till having a movable part, and a frame moving with such  
 115 part, the series of keys movably mounted on such frame, a swinging frame, cam connections between the latter and the movable part of the till, a series of movable pieces mounted on the swinging frame, the series of  
 120 levers each having an arm to be engaged by one of the keys, and an arm connected with one of the pieces on the movable frame, a catch-bar to engage the levers, means tend-  
 125 ing to force it down into lever-engaging position, an arm moving with the swinging frame, and connections between such arm and the catch-bar, whereby, as the frame is swung

down, the catch-bar is lifted from its lever-engaging position, substantially as and for the purpose described.

44. In combination with a till having a movable part, and a frame moving with such part, the series of keys movably mounted on such part, a swinging frame, connections between the latter and the movable part of the till, for swinging the frame, as the till is opened and closed, a series of movable pieces mounted on the swinging frame, the series of levers each having an arm to be engaged by one of the keys, and an arm connected with one of the pieces on the swinging frame and notched, yielding means tending to swing each lever, as it is released by its key, the catch-bar, to engage the notched ends of the levers, means carried by the frame moving with the movable part of the till, adapted to swing the levers, to raise their key-engaging arms above the planes of the keys, and an arm moved by connections with the movable part of the frame, to cause the catch-bar to be raised away from the levers, when the till is closed, substantially as and for the purpose specified.

45. In combination with a till having a movable part, and a frame moving with the latter, the series of keys on such frame, a swinging frame, connections between the latter and the movable part of the till, for swinging the frame, as the till is opened and closed, a series of movable pieces mounted on the swinging frame, the series of levers, each having an arm to be engaged by one of the keys, and an arm connected with one of the movable pieces on the swinging frame and provided with two notches, yielding means to swing the levers, when released by retraction of the respective keys, a catch-bar to engage the notched ends of the lever-arms, means, actuated from the movable part of the till, to cause the bar to be raised away from the lever-arms, while the till is closed, and means carried by the frame moving with such part, to engage the levers and swing them to raise their key-engaging arms above the level of the keys, substantially as and for the purpose shown.

46. In a registering-machine, in combination with a movable drawer, the keys mounted thereon, the registering devices, the swinging frame, the pawl-pieces mounted thereon, the levers each having an arm to be engaged and supported by one of the keys, and a notched arm connected with one of the pawl-pieces, springs for moving such levers, one or more arms connected with the swinging frame, cam connections between such arm or arms and the drawer, the catch-bar to engage the notched ends of the levers, arms connected with such bar, means moving with the swinging frame to engage these arms, and raise the bar away from the notched parts of the levers, while the drawer is closed, and means mov-

ing with the drawer, to engage and move the levers against the stress of their springs after the drawer has been opened a certain distance, substantially as and for the purpose set forth.

47. In a registering-machine, in combination with a movable drawer, the keys mounted thereon, the registering devices, the swinging frame, the movable pawl-pieces mounted thereon, one or more arms connected with the frame, cam connections between such arm or arms, and the drawer, the series of spring-pressed levers, each having an arm to be engaged and supported by one of the keys, and an arm connected with one of the pawl-pieces, and provided with two notches, a swinging frame having a bar to engage such notches, means for holding such bar up out of notch-engaging position, while the drawer is closed, and until it has been moved a certain distance, in opening direction, and means moving with the drawer to cam the levers back against the stress of their springs, substantially as and for the purpose described.

48. In a register and indicator, in combination with a movable drawer, a series of movable keys mounted thereon, a series of registering devices, and a series of movable indicators, a swinging frame, a series of pawl-pieces mounted thereon each having portions adapted to be moved simultaneously into position for actuating a registering device and the corresponding indicator, the series of levers, each having an arm adapted to be supported by one of the keys while such key is in its normal position on the drawer, and the drawer is closed, and an arm connected with one of the pawl-pieces, and provided with the two notches, a catch-bar, normally tending to engage the notched parts of the levers, one or more arms connected with the swinging frame, cam connections between such arm or arms and the drawer, whereby the frame is swung as the drawer is opened, and means, also, actuated by the drawer to move the catch-bar away from the notched parts of the levers, when the drawer has been closed far enough to bring the keys under the lever-arms to be supported by them, substantially as and for the purpose specified.

49. In combination with a supporting-frame provided with suitable key-guides, a movable key having a portion bent at an angle to its shank, a stirrup-plate having a bent part through which the key-shank passes, and its body provided with a longitudinal slot, having its end engaging the bent part of the key, and a spring on the key-shank between the part of the plate through which the shank passes, and a stationary abutment, substantially as and for the purpose shown.

50. In combination with a supporting-frame provided with suitable key-guides, a series of movable keys each having a portion bent at

an angle to its shank, stirrup-plates for the  
respective keys, each having a bent part  
through which the key-shank passes, and  
its body provided with a longitudinal slot  
5 through which the bent part of the key passes,  
the springs on the key-shanks engaging the  
parts of the plates through which such shanks  
pass, and a guide-plate for the shanks en-  
gaging the springs, so that the stress of each  
10 spring is transmitted to the respective key

by the stirrup-plate, substantially as and for  
the purpose set forth.

In testimony that I claim the foregoing I  
have hereunto set my hand this 6th day of  
July, A. D. 1895.

GEORGE L. BARNES.

Witnesses:

HENRY C. HAZARD,  
JAS. E. HUTCHINSON.