

No. 618,491.

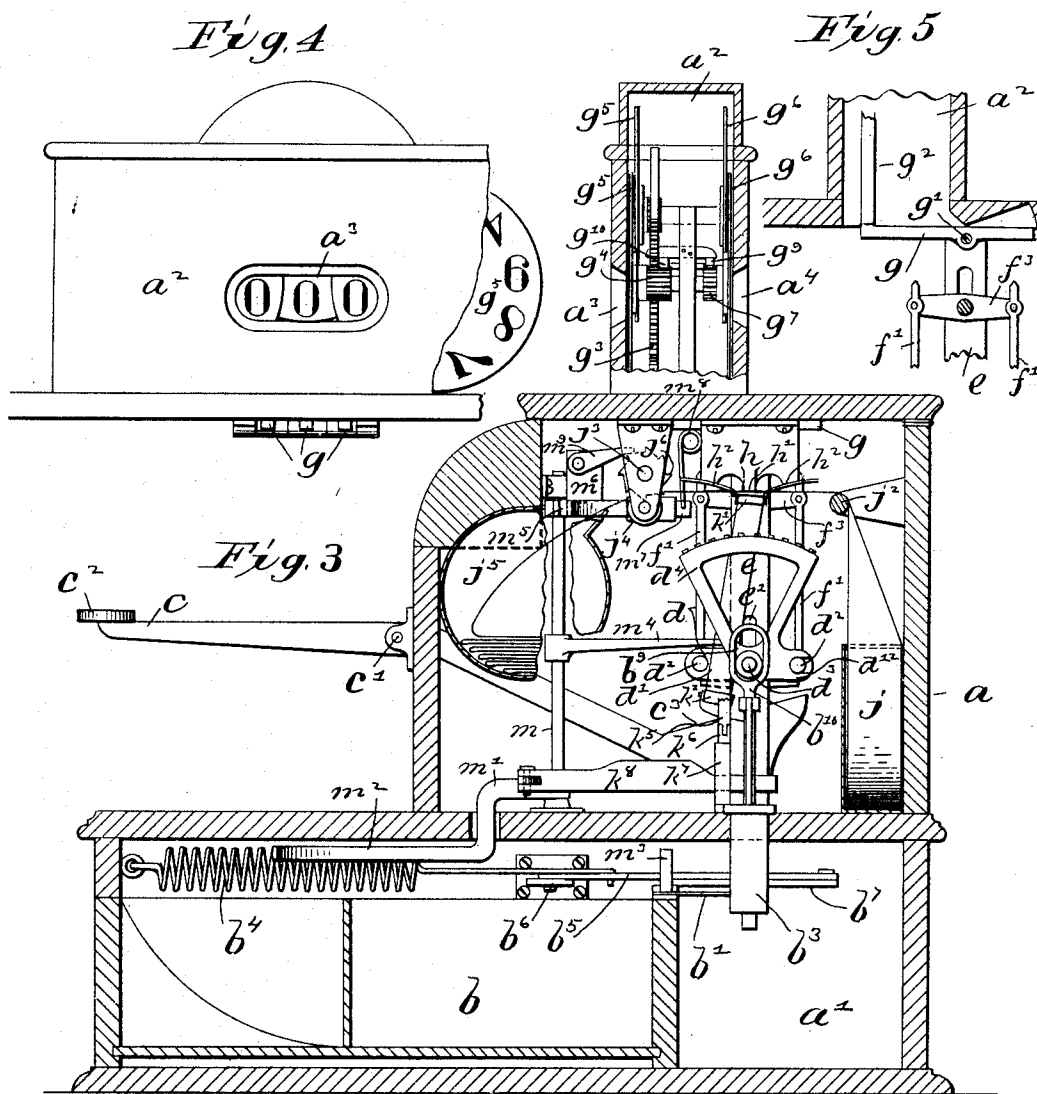
Patented Jan. 31, 1899.

F. WOODBRIDGE.
CASH REGISTER.

(Application filed July 30, 1897.)

(No Model.)

4 Sheets—Sheet 2.



Witnesses
G. M. Bradley
Chas. J. Melch

Inventor
Frank Woodbridge
By his Attorney
[Signature]

**F. WOODBRIDGE,
CASH REGISTER.**

(Application filed July 30, 1897.)

(No Model.)

4 Sheets—Sheet 3.

Fig. 6

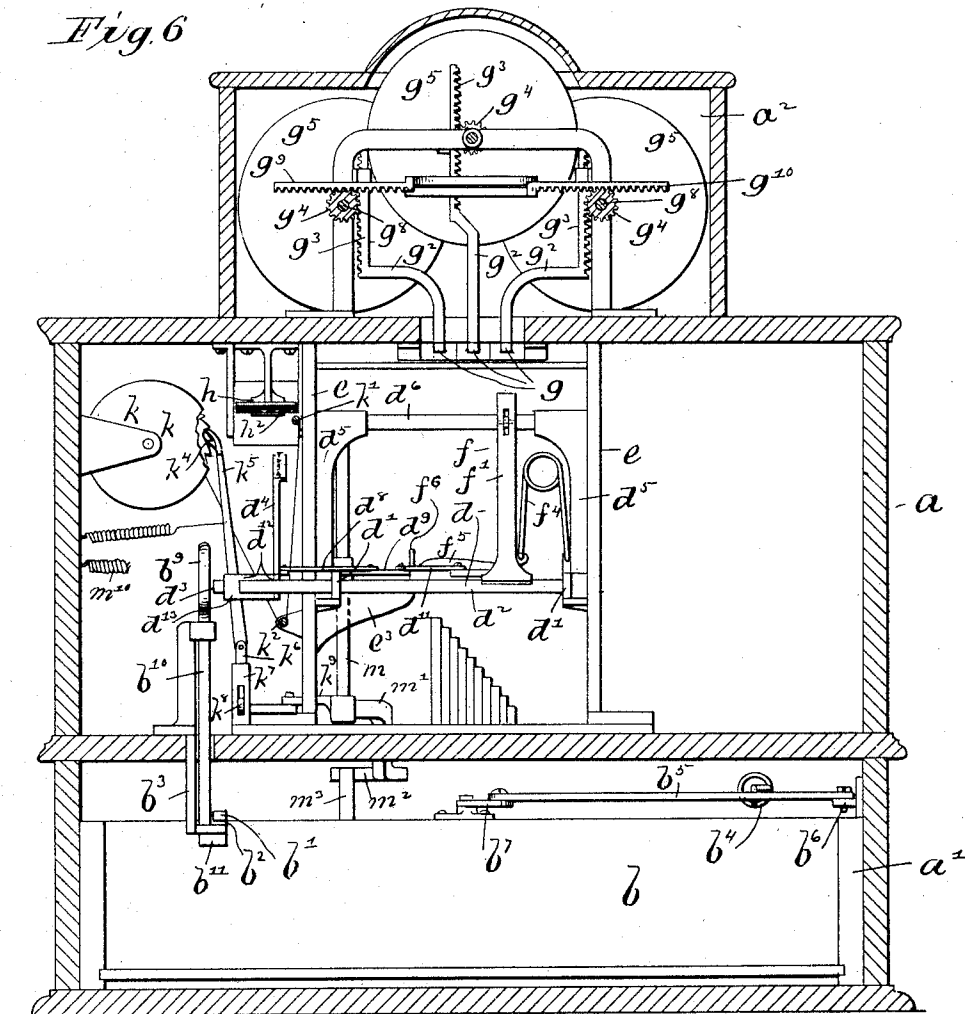
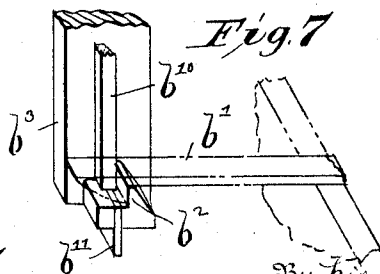


Fig. 7



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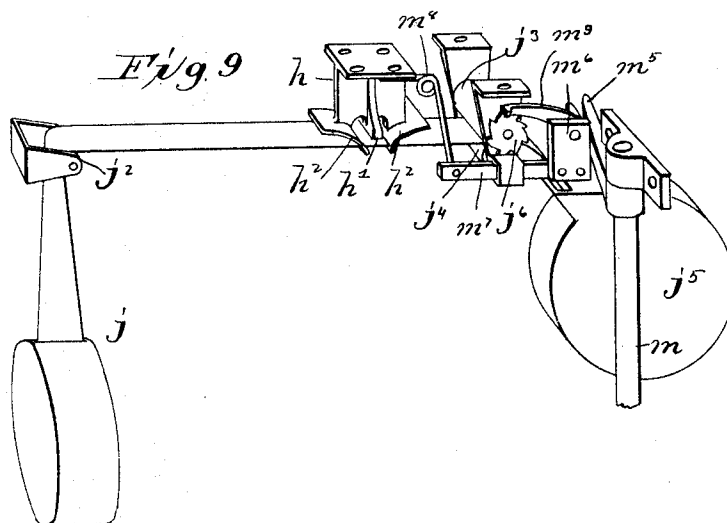
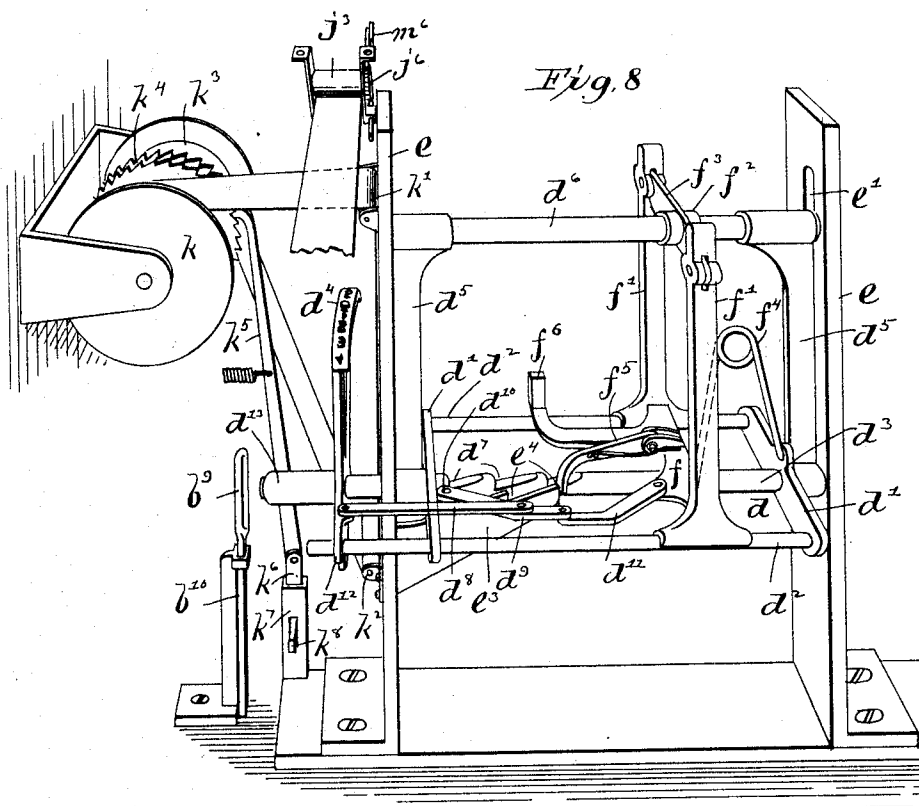
F. WOODBRIDGE.

CASH REGISTER.

(Application filed July 30, 1897.)

(No Model.)

4 Sheets—Sheet 4.



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UNITED STATES PATENT OFFICE.

FRANK WOODBRIDGE, OF INDIANAPOLIS, INDIANA.

CASH-REGISTER.

SPECIFICATION forming part of Letters Patent No. 618,491, dated January 31, 1899.

Application filed July 30, 1897. Serial No. 646,443. (No model.)

To all whom it may concern:

Be it known that I, FRANK WOODBRIDGE, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Cash-Registers, of which the following is a specification.

My invention relates to cash indicators and recorders; and it particularly relates to the devices set forth and described in my prior patent, No. 585,996, dated July 6, 1897.

My invention consists in the constructions and combinations of parts hereinafter described, and set forth in the claims.

In the accompanying drawings, Figure 1 is a sectional view in the nature of a plan of a device embodying my invention, some of the parts being broken away so as to show a section on a different elevation in order to more clearly illustrate the constructions. Fig. 2 is a transverse sectional view through the indicator chamber or compartment, showing the devices for operating the indicators. Fig. 3 is a vertical sectional view taken at one side of the outer casing, the indicating-chamber being broken away and shown in section on a different plane from the section of the main casing. Fig. 4 is a front view, partly broken away, of the indicator-chamber. Fig. 5 is a sectional view in detail of a portion of the same. Fig. 6 is a longitudinal sectional view of the casing, showing the operating mechanism from the rear. Fig. 7 is a detail view in perspective of the drawer-locking device. Fig. 8 is a perspective view of the printing and recording devices and connected parts in detail. Fig. 9 is a perspective view of the same parts, showing the arrangement of the printing-strip.

Like parts are represented by similar letters of reference in the several views.

In the said drawings, *a* represents an outer casing, which may be of any suitable size or shape, the casing being preferably provided with a lower compartment *a'*, in which there is located a cash-receptacle *b*, preferably in the nature of a drawer adapted to slide into and out of the compartment *a'*. The drawer is provided at the rear with a spring-catch *b'*, which normally hooks over a stationary hook or projection *b''* on a depending post *b'''*, which is connected to the casing or frame-

work which supports the operating parts. The drawer when released is adapted to be opened by a spring *b''''*, which is connected at one end to the casing *a* and at the other to a lever *b'''''*, which is pivoted at *b''''''* to one side of the casing and connected at its other or free end by a link *b'''''''* to the rear of the drawer, preferably near the center, the link *b'''''''* being pivoted at each end, so as to compensate for the movement of the outer end of the lever *b'''''*, which moves in the arc of a circle, while the drawer moves in a straight line. The lever *b'''''* is preferably provided with openings *b''''''''*, into which the end of the spring *b''''* may be connected, as shown in Fig. 1, so as to vary the tension of the spring, and thus the pressure which is applied to the drawer in opening.

Within the casing *a* and above the drawer-compartment *a'* are the cash-keys *c*, which are preferably pivoted on a common rod *c'*, supported at the front of the casing and provided at the outer extremities with numbered buttons *c''* in the usual manner. These key-levers extend inwardly, preferably at an angle toward the center, and are each formed at the ends on different angles, as shown at *c'''* and in the manner described in my prior patent. These levers are adapted to operate upon a pivoted vertically-movable frame *d*, preferably formed of cross-bars *d'* and longitudinal bars *d''* and having a central shaft *d'''*, adapted to slide vertically in slotted openings *e'* in the vertical frame-pieces *e*, in the manner described in my prior patent referred to. The shaft *d'''* is extended at one end, so as to pass through the frame-piece *e*, and there is mounted loosely on the shaft a sector *d''''*, which is numbered around on the outer periphery with numbers corresponding with the numbers on the cash-keys.

As in the device shown in my prior patent, there is mounted on the rod *d'''* a movable head or traveler *f*, having vertical arms *f'*, bearing at their lower ends on the longitudinal frame-rods *d''*, on which they are adapted to slide. The upper ends of the vertical arms *f'* are pivotally connected to arms *f''*, extending from a sleeve *f'''* on a rod *d''''*, connected to the shaft *d'''* by arms *d'''''*, and the shaft *d''''* being adapted to travel through the slotted openings *e'* in the vertical frame-pieces *e*. A spring *f''''* tends to press the traveler *f* longi-

tudinally on the shaft d^3 , which, however, is held by the pivoted pawl f^5 , which engages in the respective notches d^7 on the shaft d^3 , all the parts being constructed and adapted to operate substantially in the manner described in my prior patent. To provide, however, for moving the sector d^4 in unison with the traveler f , but to a slightly-less degree, I connect the sector d^4 by a pivoted link d^8 to a lever-arm d^9 , one end of which is pivoted at d^{10} to one of the cross-bars d^7 and the lower end connected by a pivoted link d^{11} to the traveler f . In order that the sector d^4 will always assume the same angular position as this vertically-movable frame, I also extend one of the rods d^2 and provide the sector d^4 with an extension d^{12} , which is bifurcated or perforated to receive the extension of the rod d^2 . The result of this construction is that as the frame is turned to any angular position about the shaft d^3 the sector assumes the same angular position as do the vertical bars f' . The sector d^4 is further provided with an extended hub d^{13} , which is adapted, as the sector is moved laterally along the rod d^3 , to engage in a loop b^9 in a vertically-sliding rod or bar b^{10} , which terminates at its lower end in a narrow projecting foot b^{11} , which slides in a bearing in the projection b^2 and below the spring-catch b' of the drawer, the foot b^{11} being adapted to raise the spring-catch out of engagement with the lug or projection b^2 when the sliding bar b^{10} is raised.

As in my prior patent, the traveler is adapted to move laterally in successive stages after each elevation of the frame d , which is caused by the operation of any of the keys, and this successive lateral movement is accomplished by the stationary bar e^2 , having notches e^4 in the top thereof arranged adjacent to and corresponding to the notches d^7 , with the exception that the notches e^4 are arranged slightly in advance of those d^7 . In the normal position the pawl f^3 engages with the end of the bar e^2 ; but as soon as the frame is raised the pawl is withdrawn from contact with the notches e^4 and the traveler moves until the pawl engages with the first notch d^7 . As the frame descends the pawl striking on the top of the bar is withdrawn from the notch d^7 and the traveler moves to the second notch e^4 in the bar, this operation being repeated after each successive elevation of the frame until the traveler is moved the prescribed distance along the rod d^3 , when the hub d^{13} enters the loop b^9 , and on the next elevation of the frame the drawer is unlocked and opened by the spring b^4 .

It will be understood that the pivoted vertically-movable frame will not only be moved vertically by the depression of any one of the cash-keys, but by reason of the different angles given to the ends of the key-levers the frame will also be turned to a different angle. This, as before mentioned, changes the position of the sector b^4 and also the position of the upper ends of the vertical arms f' .

At the top of the casing a and in a plane above the arms f' is a series of lever-arms g , which are pivoted in a line vertically above the shaft d^3 and the rod d^6 , preferably on a common rod g' . Each of these levers g has resting on or connected to one end thereof an extension g^2 of a rack g^5 . These rack extensions g^2 are offset from the racks to which they are connected, so that the racks stand farther apart than the levers g , as is clearly shown in Fig. 6. Each of these racks engages in a pinion g^4 , which pinions are connected directly to rotary indicators g^5 , which are mounted in the indicating-chamber a^2 at the top of the main casing a . These indicators each have numbers on their respective faces corresponding to the numbers on the keys, preferably from "0" to "9," and each indicator represents a different denomination, such as dollars, dimes, and cents. The vertical arms f' , when the pawl-lever is in engagement with the first notch d^7 , would stand below the first lever g , or the one farthest to the left in looking from the front of the machine, which corresponds to dollars. As the ends of the arms f' assume the same angular position as the frame these arms in contacting with the respective levers g will cause them to assume the same angular position on the pivotal center g' , and this will produce a greater or less movement of the rack g^2 , which will in turn produce a greater or less movement of the indicating-disk g^5 , attached to the pinion g^4 . These disks are so arranged with reference to each other that the numbers thereon are adapted to appear in successive order through an opening a^3 at the front of the indicating-chamber a^2 , so as to expose the number corresponding to the key depressed.

In order to provide for exposing the numbers at the rear of the machine as well as at the front, I provide in the indicating-chamber, at the rear, an opening a^4 and a duplicate set of indicating-disks g^6 . To each of these disks, except the middle or dimes, there is connected a pinion g^7 , which is mounted on the same stationary shaft g^8 that supports the respective pinions g^4 . The dollars-indicating wheel at the front is connected to the dollars-indicating wheel at the rear by a double rack g^9 , which engages with the respective pinions g^4 and g^7 and which extends horizontally through the indicating-chamber a^2 and is offset, as shown in Figs. 2 and 6, the units and cents indicator at the front being connected to the units and cents indicator at the rear by a similar double rack g^{10} . These racks are preferably offset at the center in a vertical plane, so that the center portions of the respective double racks stand one above the other, the construction being such that the front and rear indicating-disks representing the same denominations move in unison, the middle and dimes indicators being connected to the same shaft, and therefore turn in unison.

The printing or recording is accomplished as follows: Immediately above the sector d^4 and supported from the upper part of the casing is a support h , the lower end of which is a stationary platen h' and at each side of which there are guides h^2 for the tape or paper on which the printing is to be done. This paper is drawn from a roll j , mounted in a suitable casing, and extends over a guide j^2 , thence under the platen h' and between feeding-rolls j^3 j^4 and into a receiving-casing j^5 . The inking-ribbon is adapted to extend below the paper and preferably at right angles thereto and is fed from one spool k , thence oversuitable supporting-rollers k' k^2 , arranged at an angle to each other, and onto a second spool k^3 , which is preferably mounted on the same shaft with the spool k . The spools k and k^3 are preferably provided with ratchets k^4 at their adjacent ends, either of which ratchets is adapted to be engaged by a pawl k^5 , attached loosely at one end to a slide k^6 , mounted in a post k^7 . The post k^7 is slotted laterally to receive a sliding cam-plate k^8 , which is pivoted at one end to a lever k^9 on a vertical shaft m . This shaft m is provided near the bottom with an arm m' , which is offset so as to project into the compartment a' , immediately above the cash-receptacle b , the free end of said arm being formed in the nature of a cam m^2 , adapted to be engaged by a projection m^3 on the drawer as the same is opened and closed, and thus produce an oscillating movement of the arm m' and the shaft m . The shaft m is further provided with a projecting finger m^4 , which stands adjacent to the frame d and in line with a projection f^6 on the traveler f . The shaft m is provided with still another spur or projection m^5 , arranged near the top thereof and adjacent to a head m^6 on the end of a sliding bar m^7 , which is adapted to be moved in one direction by a spring m^8 . The head m^6 on the bar m^7 carries a pawl m^9 , which engages with a ratchet-wheel j^6 on the end of the pivoted feeding-roll j^3 .

The operation of the device is as follows: When any one of the keys is depressed, the inner inclined end of the key contacting with the rods d^2 of the frame d turns the frame until it assumes an angle corresponding to the inclination of the key-lever. As the key is still further depressed the frame is elevated. The turning of the frame has brought the number on the sector d^4 corresponding to the key opposite the stationary platen h' , and as the frame is elevated the number is printed onto the recording-strip. The arms f' contact with the lever g of the hundreds or dollars series and cause said lever to assume the same angular position as the frame, which moves the rack g^2 and the indicators connected therewith, so as to indicate the number of the key at the front and rear through the medium of the connecting mechanism for the indicators before described. As the key is released the frame descends

and the pawl f^5 , coming on top of the bar e^3 , is released from the notch d^7 and the traveler is moved by the spring f^4 to the second position, or until the pawl on the traveler engages with the second notch of the bar e^3 . If another key is now depressed, the operation will be repeated. At the first upward movement of the frame the pawl on the traveler will be released by the bar e^3 and moved until it engages with the notch d^7 of the rod d^3 , and the vertical arms f' will engage with the second lever g —that is to say, the lever for the tens or dimes indicators, and these indicators set according to the key. At the same time the sector d^4 , having been moved laterally by the movement of the traveler, will be brought in contact with the recording-strip, so as to print the amount of this key at the side of the amount previously recorded. If any one of the keys is again depressed, the operation will be again repeated, and this time the hub d^{13} of the sector d^4 having been brought into the loop b^9 the raising of the frame will release the drawer by withdrawing the spring-catch b' from the projection b^2 and the drawer will be opened by the spring b^4 , operating through the lever b^5 and the link b^7 . In opening the projection m^3 on the drawer will pass by the end m^2 of the arm m' . As the drawer is closed the projection m^3 engages with the lever m^2 and moves the same laterally. This oscillates the shaft m and through the medium of the various arms or projections thereon produces the following results: The arm m^4 engages with the projection f^6 on the traveler and moves the traveler back to its normal position, where it is held by the pawl engaging the end of the bar e^3 . The projection m^5 engages the projection m^6 of the bar m^7 and causes the pawl m^9 to engage with the ratchet-wheel j^6 and moves the feeding-rolls j^3 and j^4 so as to advance the recording-strip to a position to receive the next succeeding amount to be registered. The projection k^9 operates the cam-plate k^8 , so as to raise the slide k^6 , and thus operate the pawl k^5 to move the receiving-spool for the inking-ribbon, and thus advance the ribbon to a new position. As the drawer passes the offset of the lever m' a spring m^{10} returns said lever to its normal position, when the machine is again in position for another registration.

It will be seen from the above description that I provide a machine in which amounts of different denominations may be registered by the same keyboard. If an amount less than a dollar is to be registered, the first operation would be to strike the zero-key. If an amount less than a dime is to be registered, the zero-key would be operated twice to bring the devices into position to operate the units or cents indicators and recorders. The drawer opens only on the last operation, and the closing of the drawer returns the parts to their normal positions. The pawl k^5 is preferably formed with sufficient lateral

movement to enable it to move laterally to engage with the ratchets k^1 on either one of the spools k or k^3 , so that the ribbon may be wound from one spool to the other and back again by simply shifting the pawl k^5 and without rewinding.

Having thus described my invention, I claim—

1. The combination with the vertically-movable frame consisting of pivoted cross-bars and cash-keys to operate same, a traveling head adapted to move on said frame, the sector movable with said frame and the connection to said traveling head, substantially as specified.

2. In a cash register and recorder, a pivoted movable frame, cash-keys for operating the same, a traveling head on said frame, a laterally-movable sector also supported by said frame and adapted to turn therewith, and means for connecting said sector to said traveling head to cause said sector to move laterally by means of said traveler but to a less extent, substantially as specified.

3. The combination with the cash-receptacle and retaining-catch for the same, a movable pivoted frame, cash-keys for operating said frame, a traveling head on said frame, a numbered sector also on said frame and connected to said traveling head, and means for operating said holding-catch when the traveling head is moved to a predetermined position, substantially as specified.

4. The combination with the vertically-movable pivoted frame, cash-keys for moving said frame, a numbered segment supported on said frame, and means for producing a lateral movement of said sector by the successive operations of said frame, and a platen opposed to said sector, substantially as and for the purpose specified.

5. The combination with the cash-drawer, a holding device for the same, a vertically-movable pivoted frame, the laterally-movable sector thereon, means for producing a lateral movement of said sector at the successive vertical movements of said frame, and a projection on said sector to engage and operate the drawer-catch when said sector has been moved laterally to a predetermined position, substantially as specified.

6. The combination with the cash-keys, an intermediate pivoted movable frame, indicators above said frame, pivoted levers adapted to be engaged by said frame, and a rack-and-pinion connection from said pivoted levers to said indicators, substantially as specified.

7. The combination with a traveling head, of vertical arms on said traveling head, piv-

oted levers arranged above said arms, racks on said levers, and indicators located at one side of a containing-compartment, said indicators having pinions to engage with said racks, indicators located at the other side of said containing-compartment, and longitudinally-offset racks extending from an indicator at one side to an indicator at the other side of said compartment, substantially as specified.

8. The combination with the cash-keys, the vertically and laterally moving sector, means on said keys for turning said sector to different positions of rotation, and means connected with the sector-support for causing the same to move laterally at each successive elevation thereof, a stationary platen opposed to said sector, a record-strip between said platen and sector, and means, substantially as described, for returning said sector to its normal position and at the same time advancing the record-strip, substantially as specified.

9. The combination with the vertically-movable pivoted frame, cash-keys for operating the same, a traveling head on said frame, vertical arms on said traveling head, pivoted levers arranged above said arms, racks on said pivoted levers, and indicators having pinions to engage with said racks, substantially as and for the purpose specified.

10. The combination with the vertically-movable pivoted frame, the traveling head thereon, a sector also mounted in said frame, and pivoted link connections extending from said traveling head to said sector, substantially as and for the purpose specified.

11. The combination with the vertically and laterally movable sector, cash-keys for operating the same, means for producing a lateral movement of said sector after each successive vertical movement thereof, and a platen opposed to said sector, a movable record-strip between said sector and platen, feeding-rolls for moving said record-strip, and an inking-ribbon extending under said record-strip and between the same and said sector, a normally-closed cash-receptacle adapted to be opened when said sector reaches a predetermined position, and means, substantially as described, for returning said sector to its normal position and advancing said record-strip and ribbon when the cash-receptacle is closed, substantially as specified.

In testimony whereof I have hereunto set my hand this 22d of July, A. D. 1897.

FRANK WOODBRIDGE.

Witnesses:

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J. F. EDWARDS.