

(No Model.)

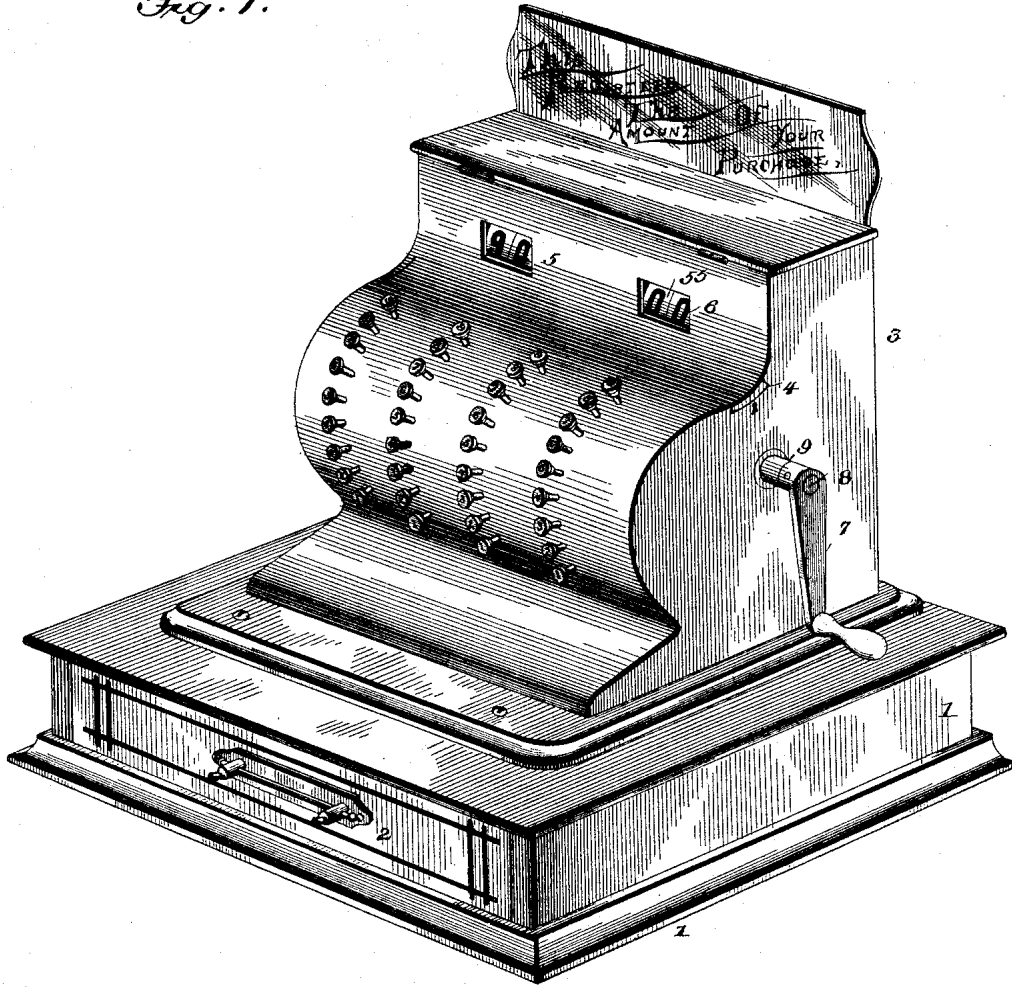
11 Sheets—Sheet 1.

F. L. FULLER.
CASH REGISTER.

No. 585,565.

Patented June 29, 1897.

Fig. 1.



Witnesses
John Danville
Renton Baouler

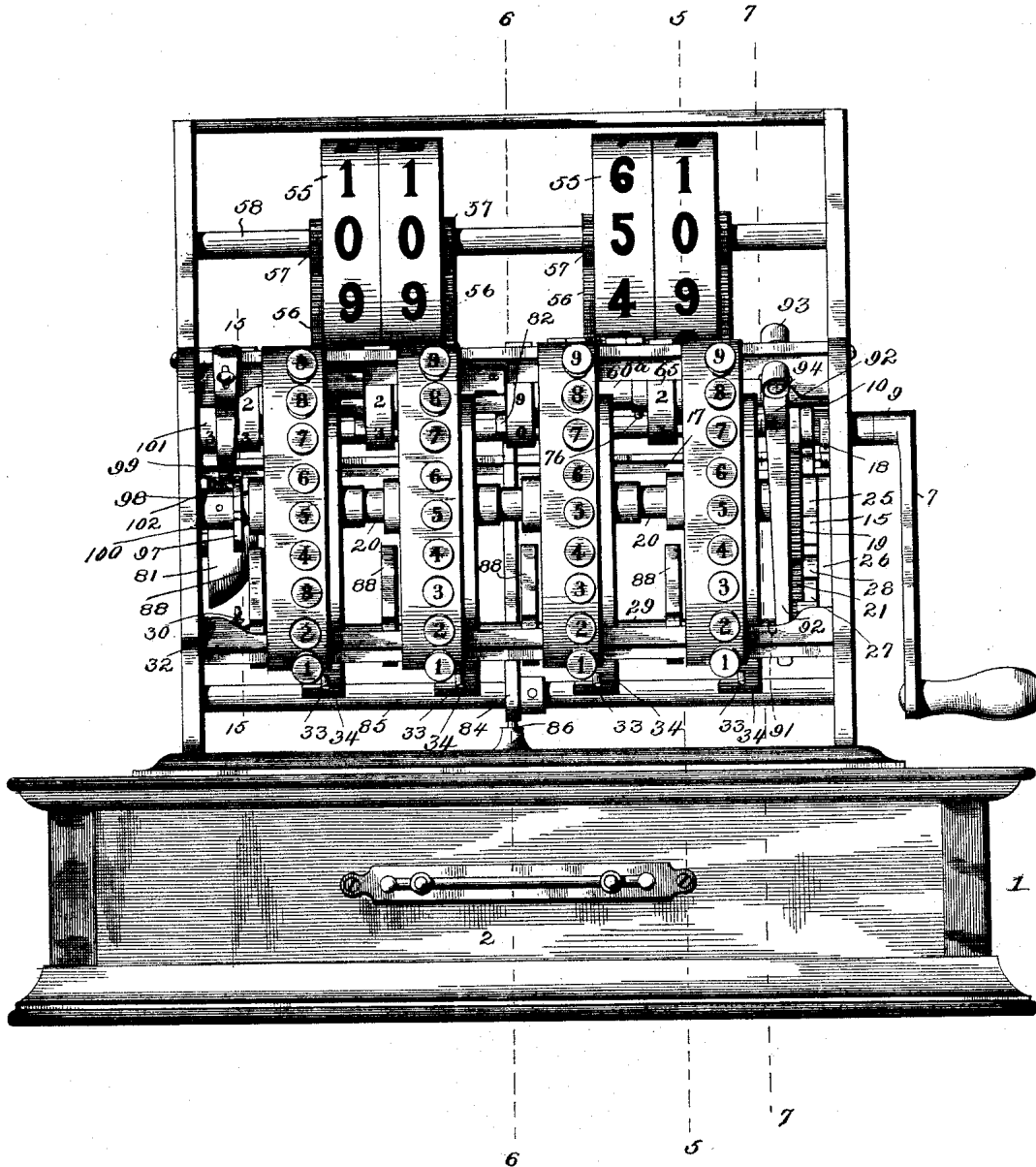
Inventor,
Fred L. Fuller,
by *Levie Goldsborough*
Attorneys

F. L. FULLER.
CASH REGISTER.

No. 585,565.

Patented June 29, 1897.

Fig. 2.



Witnesses

John Danville
Fulton Baombs

Inventor,
Fred L. Fuller,

by *Lewis Goldsborough,*
Attorneys.

(No Model.)

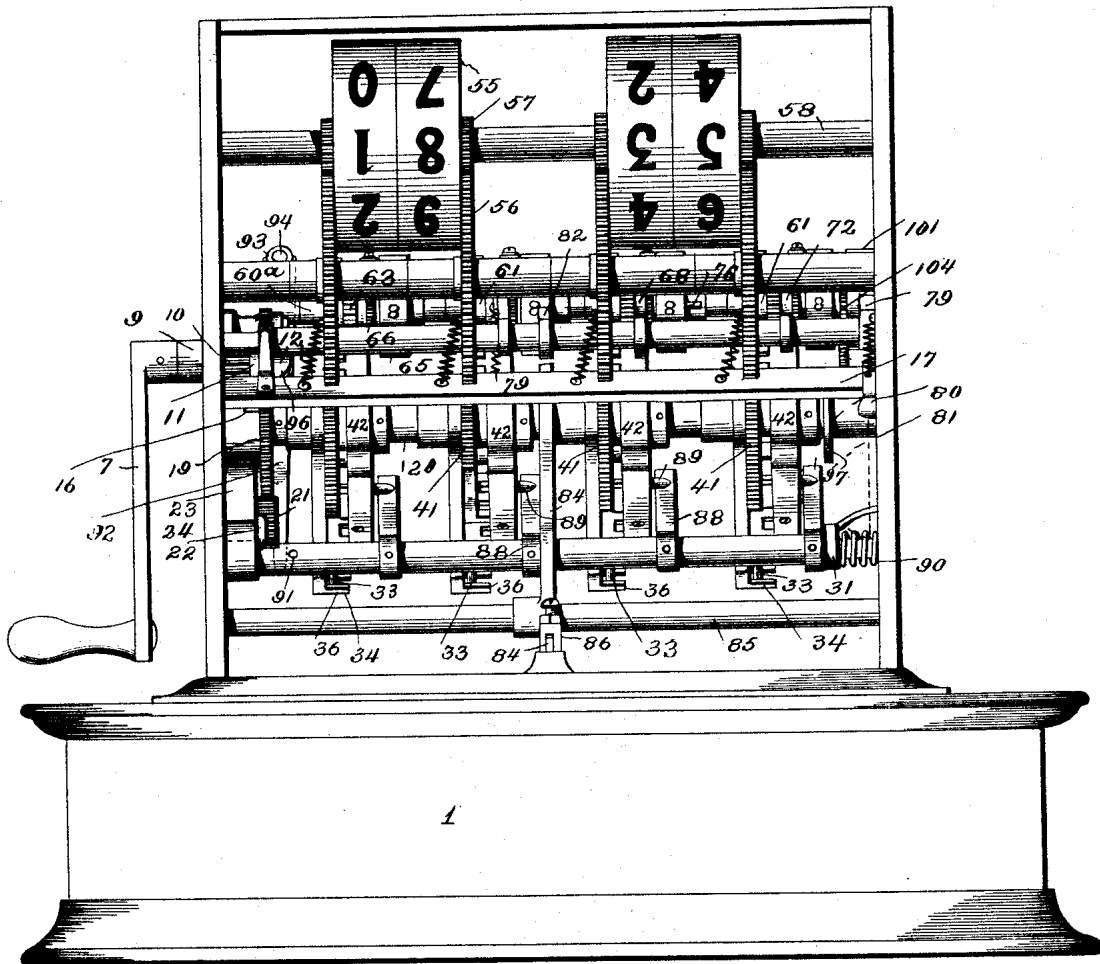
11 Sheets—Sheet 3.

F. L. FULLER.
CASH REGISTER.

No. 585,565.

Patented June 29, 1897.

Fig. 3.



Witnesses
John D. ...
Anton Coombs

Inventor,
Fred L. Fuller,
 by *Levie Goldborough*
 Attorneys

(No Model.)

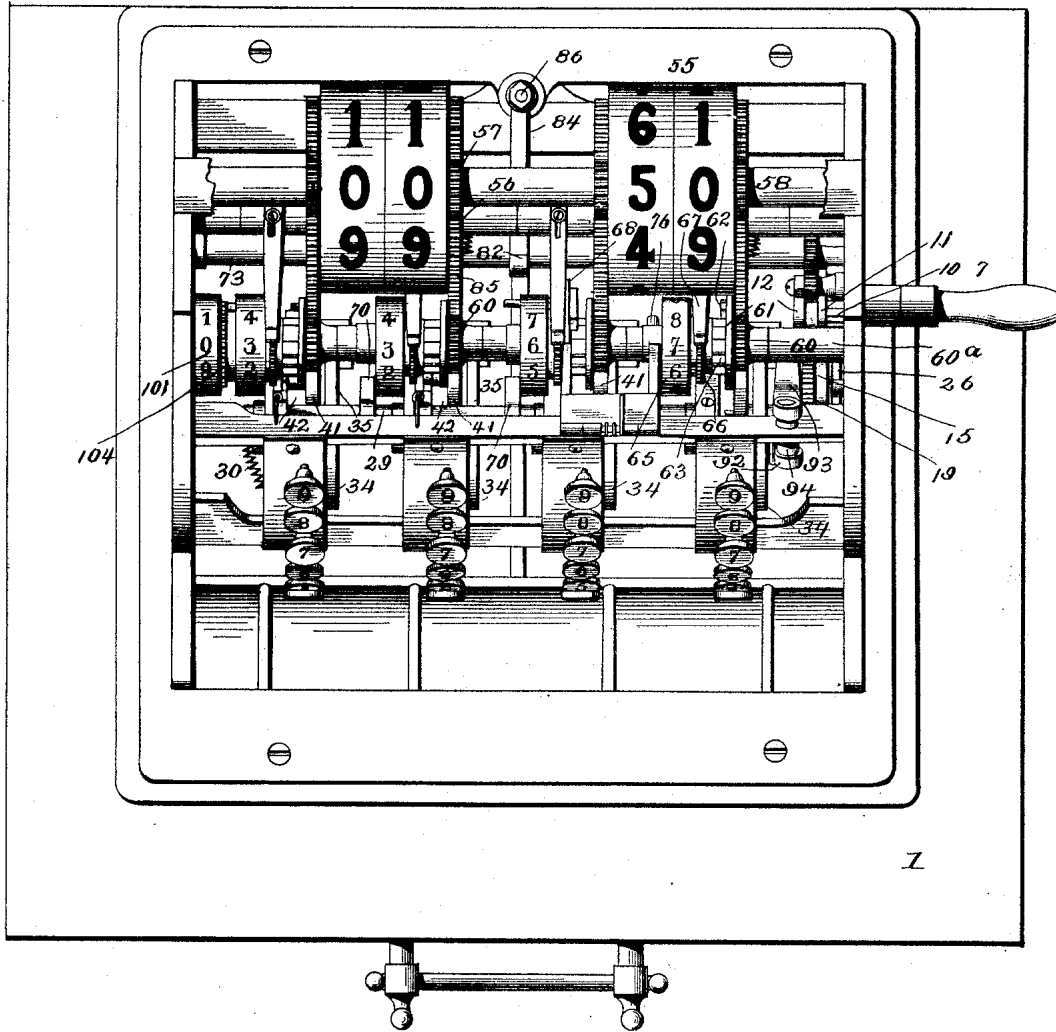
11 Sheets—Sheet 4.

F. L. FULLER.
CASH REGISTER.

No. 585,565.

Patented June 29, 1897.

Fig. 4.



Witnesses
John D. ...
Anton ...

Inventor,
Fred L. Fuller,
 by *Lucius & Goldborough*
 Attorneys

(No Model.)

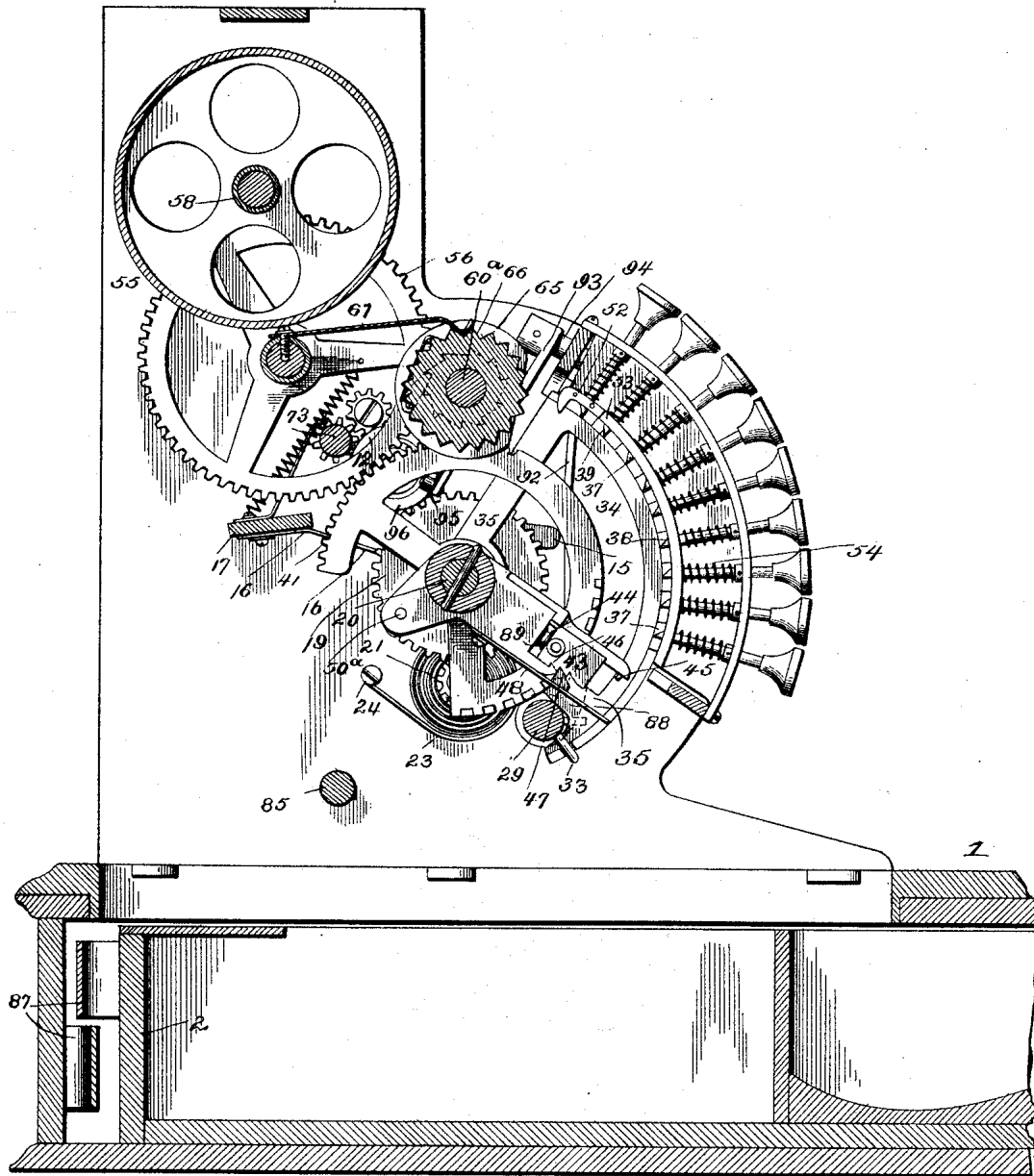
11 Sheets—Sheet 5.

F. L. FULLER.
CASH REGISTER.

No. 585,565.

Patented June 29, 1897.

Fig. 5.



Witnesses
John D. ...
Anton ...

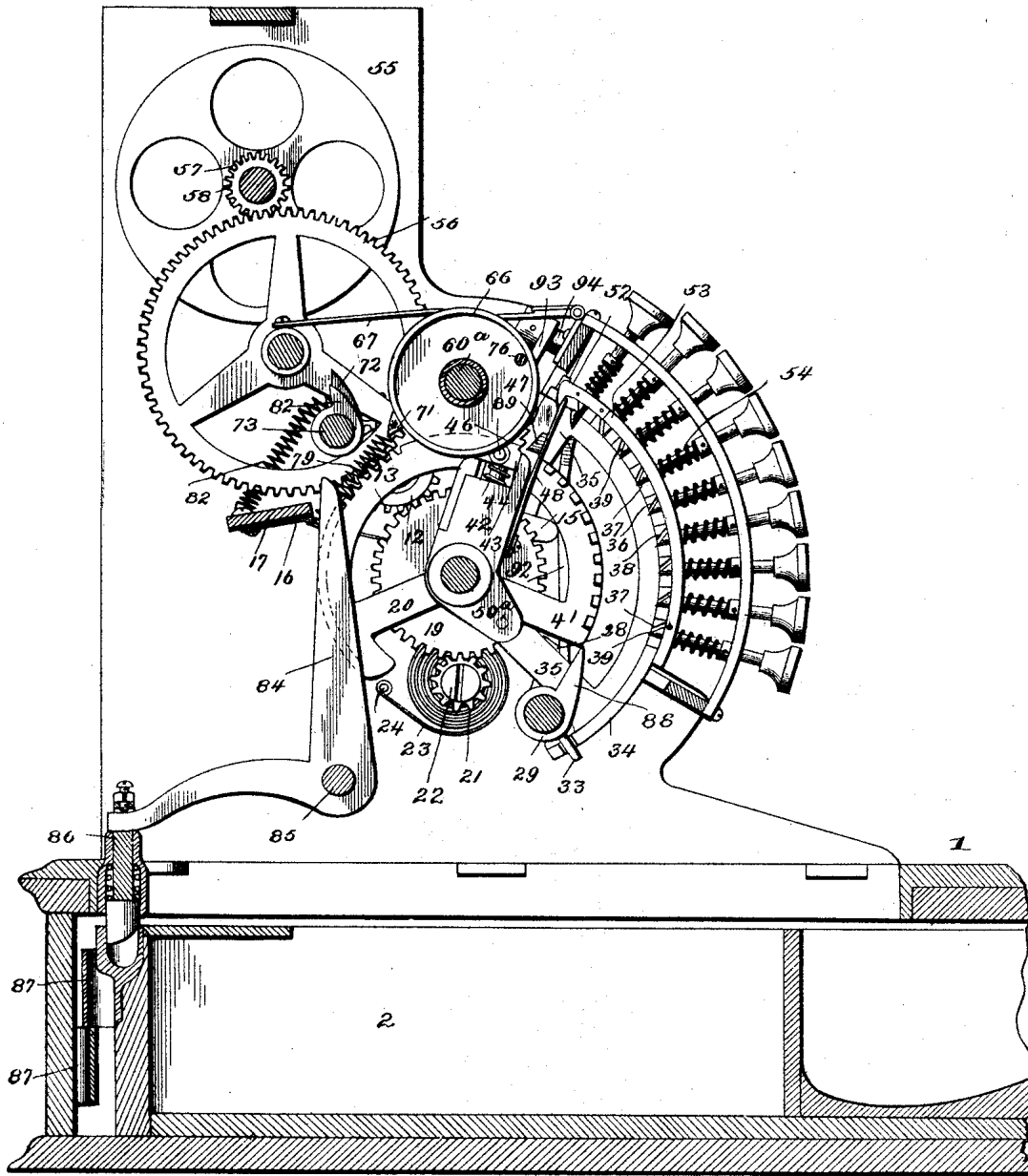
Inventor,
Fred L. Fuller,
by *Lennie Goldsborough,*
Attorneys

F. L. FULLER,
CASH REGISTER.

No. 585,565.

Patented June 29, 1897.

Fig. 6.



Witnesses
John Denny
Dinton Casullo

Inventor,
Fred L. Fuller,
 by *Levie Goldborough*
 Attorneys

F. L. FULLER.
CASH REGISTER.

No. 585,565.

Patented June 29, 1897.

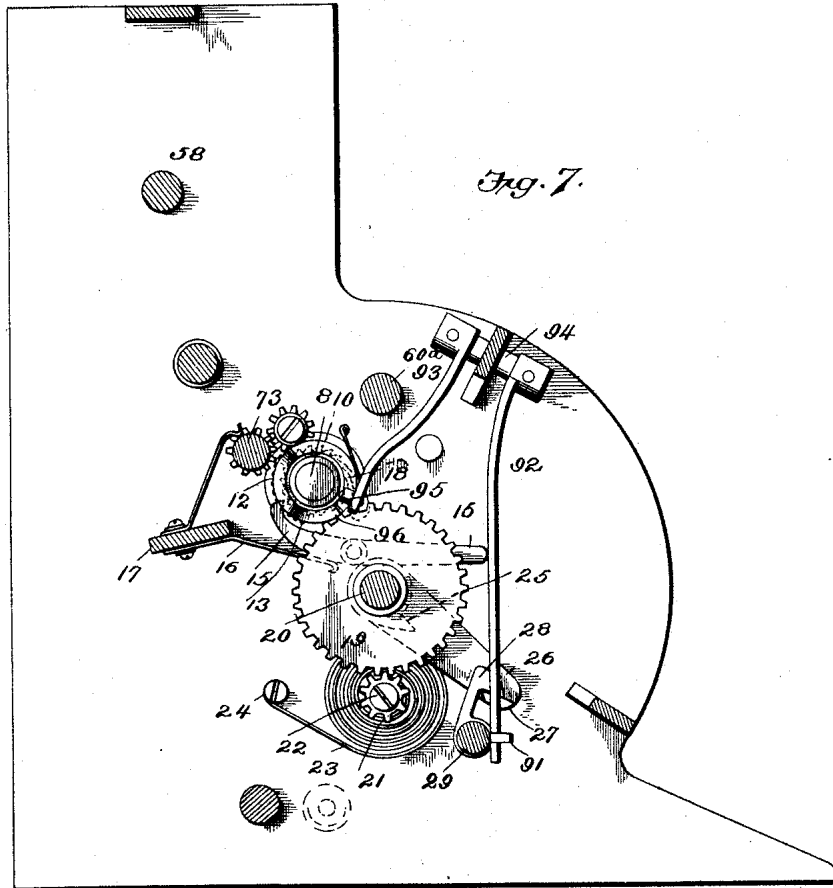


Fig. 7.

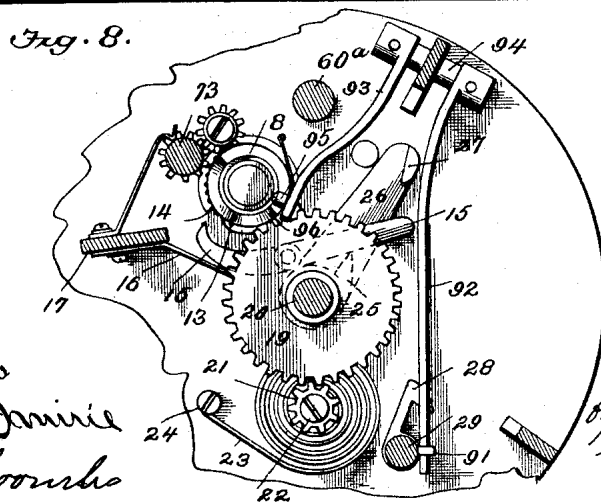


Fig. 8.

Witnesses
John Jamies
Clinton Coombs

Inventor,
Fred L. Fuller
 by *Lucius Goldborough*
 Attorneys

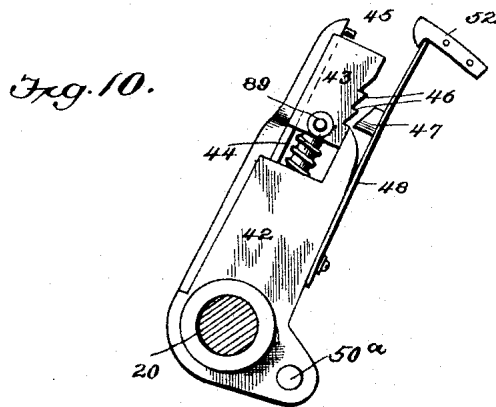
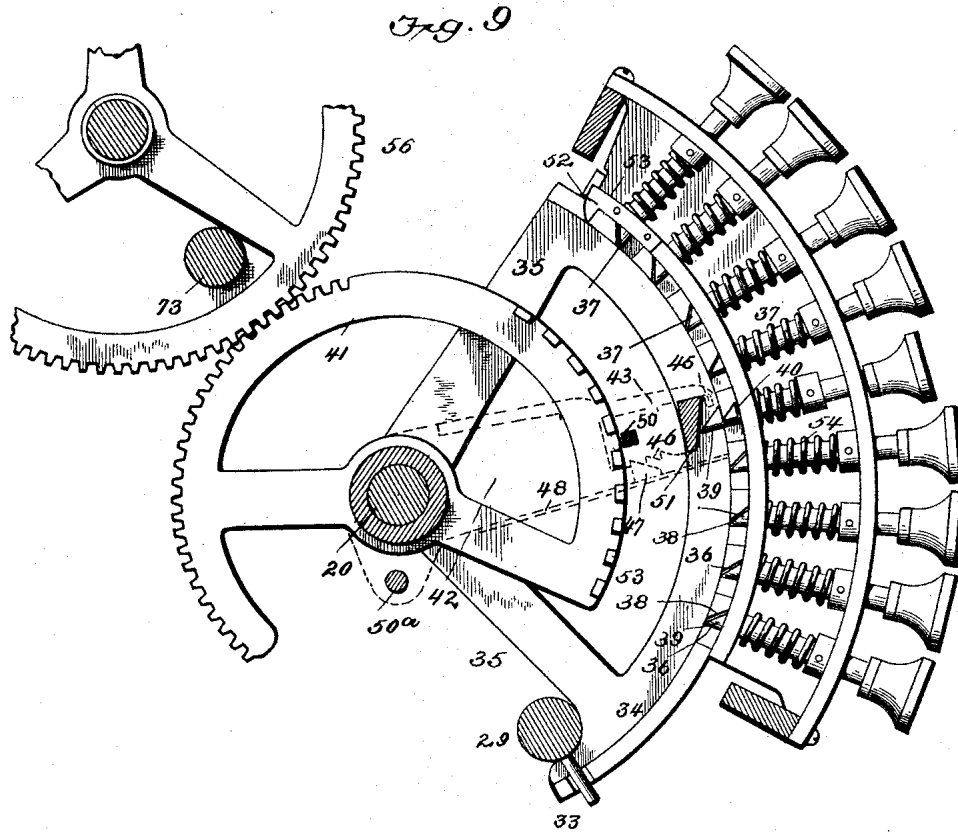
(No Model.)

11 Sheets—Sheet 8.

F. L. FULLER.
CASH REGISTER.

No. 585,565.

Patented June 29, 1897.



Witnesses
John Danville
Clinton Cassin

Inventor
Fred L. Fuller,
by *Lennie Goldborough*
Attorneys

(No Model.)

11 Sheets—Sheet 9.

F. L. FULLER.
CASH REGISTER.

No. 585,565.

Patented June 29, 1897.

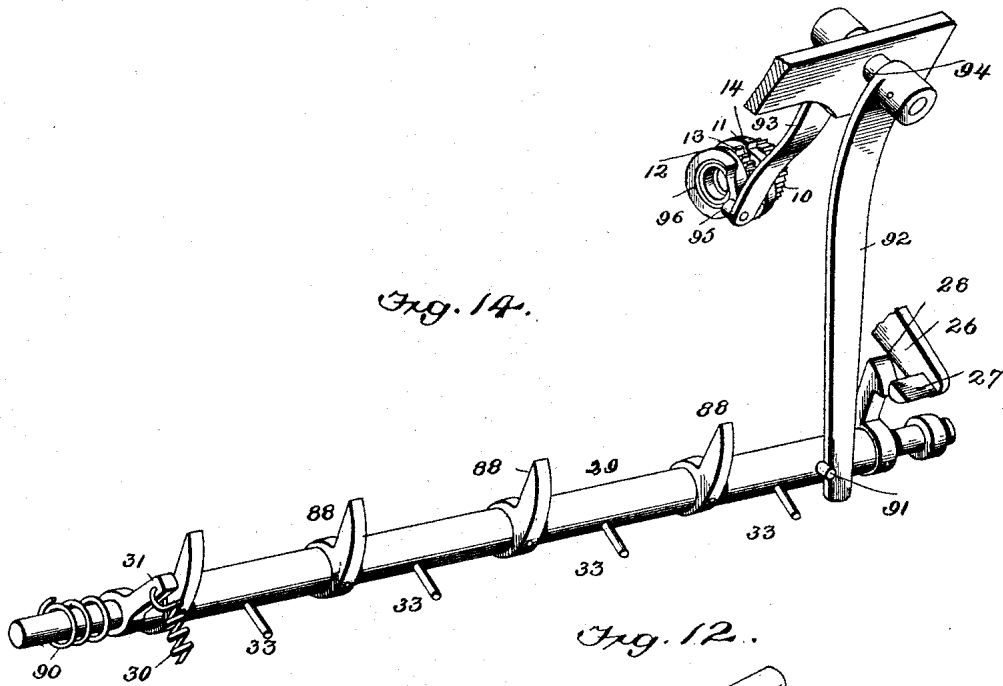


Fig. 14.

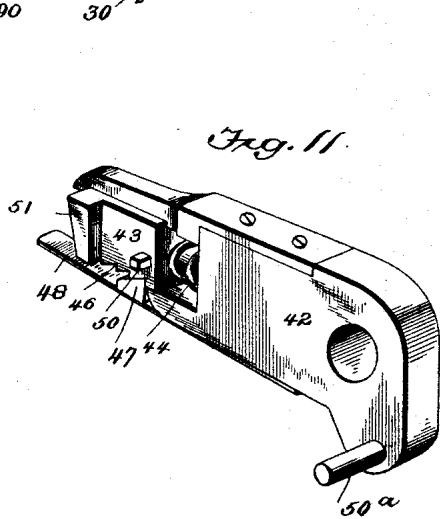


Fig. 11.

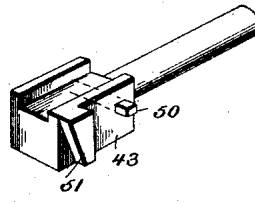


Fig. 12.

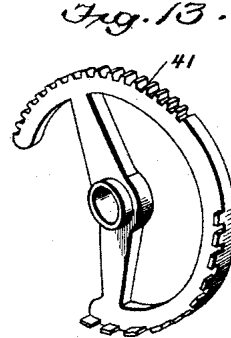


Fig. 13.

Witnesses
John Irvine
Vinton Coombs

Inventor,
Fred L. Fuller,
by *Lennie Goldborough*
Attorneys

(No Model.)

11 Sheets—Sheet 10.

F. L. FULLER.
CASH REGISTER.

No. 585,565.

Patented June 29, 1897.

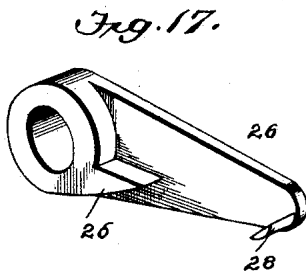
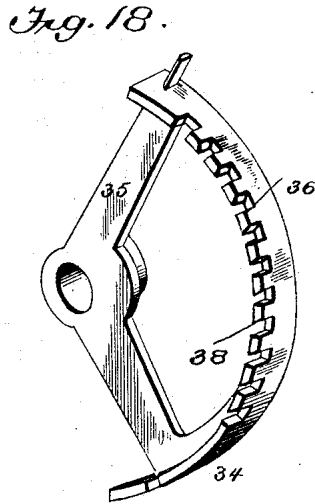
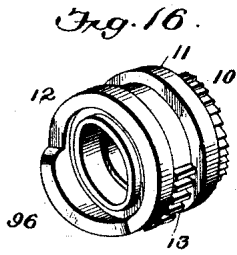
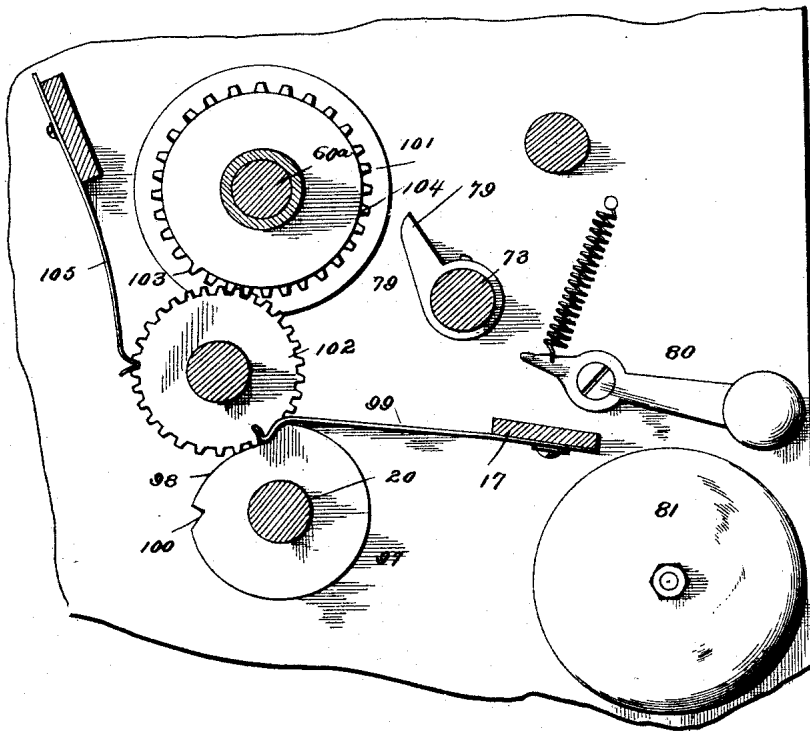


Fig. 15.



Witnesses
John Danie
Newton Coombs

Inventor,
Fred L. Fuller,
by *Leemie Goldborough,*
Attorneys.

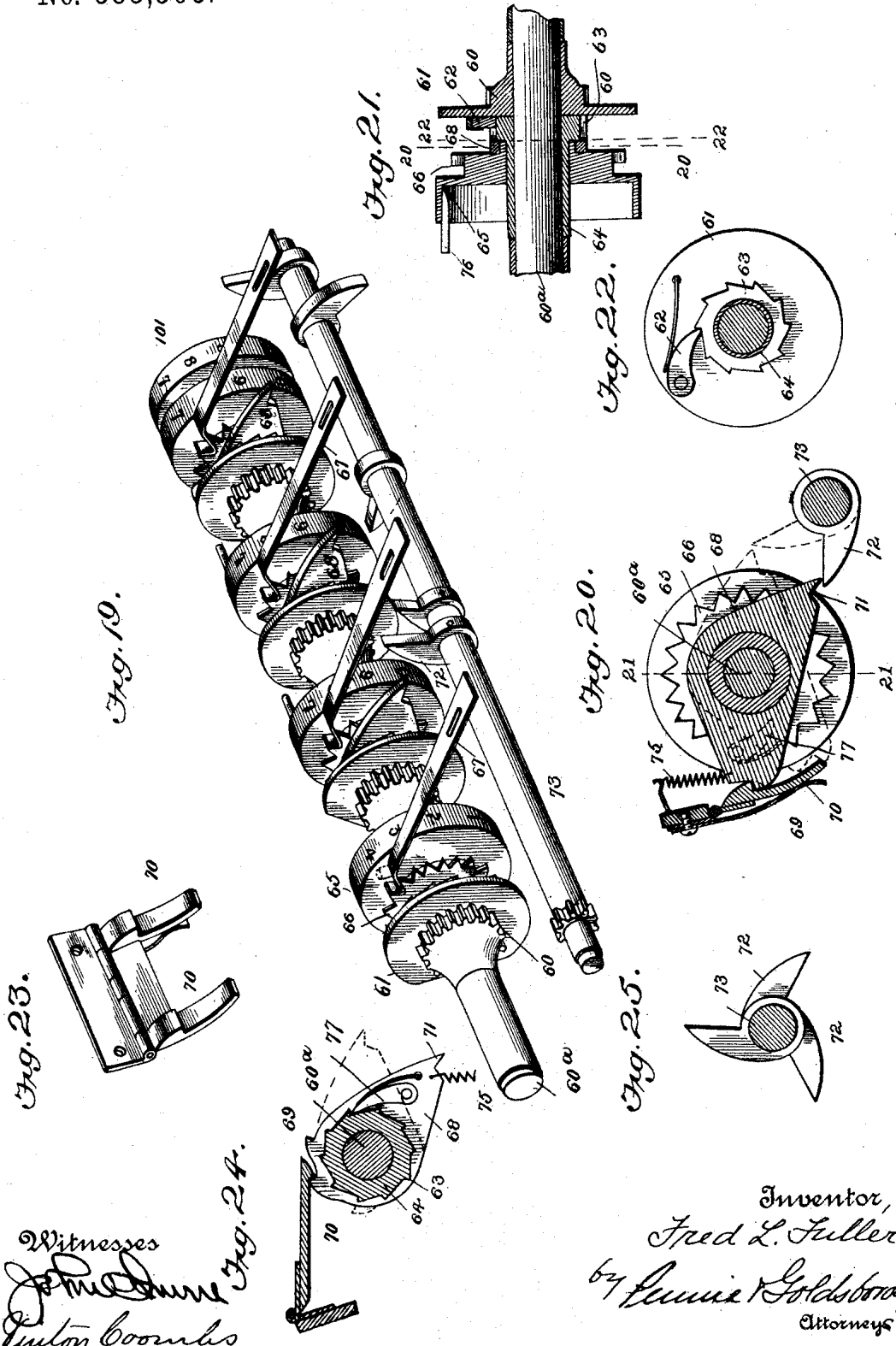
(No Model.)

11 Sheets—Sheet 11.

F. L. FULLER.
CASH REGISTER.

No. 585,565.

Patented June 29, 1897.



Witnesses
John D. ...
Anton Coombs

Inventor,
Fred L. Fuller,
by *Annie Goldberger,*
Attorneys

UNITED STATES PATENT OFFICE.

FREDERICK L. FULLER, OF TRENTON, NEW JERSEY.

CASH-REGISTER.

SPECIFICATION forming part of Letters Patent No. 585,565, dated June 29, 1897.

Application filed February 23, 1893. Serial No. 463,366. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK L. FULLER, a citizen of the United States, residing at Trenton, in the county of Mercer and State of New Jersey, have invented certain new and useful Improvements in Cash-Registers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

In an application for Letters Patent of the United States filed by me October 4, 1892, Serial No. 447,781, I have described a cash-register wherein, prior to the indication of a sale, the actuating mechanism for such indication is normally locked in such manner as to be releasable by the act of depressing a key or keys corresponding to a subsequent sale, the depression of said key or keys governing a clutch mechanism whose function is to engage the actuating mechanism with the indicating and adding mechanism, so that the movement of the actuating mechanism will be transmitted to the indicating and adding mechanism, thereby indicating and recording a sale corresponding to the keys depressed.

My present invention relates to a modified or improved construction and arrangement of parts embodying the same general or generic mode of operation. More particularly, it involves a general reorganization and rearrangement of the actuating mechanism and the auxiliary devices for locking and releasing the same and introduces important modifications in the clutch mechanism and in the adding mechanism and has especially in view the adaptation of the invention to a register whose indications are read from drums instead of from dials, although it will be readily apparent that many of the features of construction are equally adapted for use in connection with a dial-indicator.

Further features of improvement relate to the mechanism employed for locking and releasing the cash-drawer of the register and for ringing the alarm-bell at the time the drawer is released.

In the accompanying drawings, illustrative of the invention, Figure 1 represents in perspective an external view of a cash-register embodying my improvements. Fig. 2 represents a front elevation thereof with the up-

per part of the casing removed. Fig. 3 represents a rear elevation of the parts shown in Fig. 2. Fig. 4 represents a plan view thereof. Fig. 5 represents a transverse section taken on a plane indicated by the line 5 5 of Fig. 2, illustrating the position of the clutch mechanisms at the end of the indicating and adding operation of a prior sale. Fig. 6 represents a transverse section taken on a plane indicated by the line 6 6 of Fig. 2, illustrating the position of the clutch mechanism after the depression of a key or keys corresponding to a subsequent sale and prior to the indication and registration of such sale. Fig. 7 represents a section taken on a plane indicated by the line 7 7 of Fig. 2, showing the relation of parts when the actuating mechanism is locked. Fig. 8 represents a like section showing the relation of parts when the actuating mechanism is unlocked or released. Fig. 9 represents, on a larger scale, a transverse sectional view of the clutch mechanism and cooperating bank of keys and illustrates more fully the manner in which the depression of a key is adapted to throw the clutch mechanism into operative engagement. Fig. 10 represents a detail view of the clutch mechanism at the upper limit of its swing. Fig. 11 represents a perspective view of the clutch mechanism. Fig. 12 represents a perspective view of the plunger forming a part of the clutch mechanism. Fig. 13 represents a perspective view of the initial gear with which the clutch mechanism is adapted to engage and from which motion is transmitted to the indicating and registering mechanism. Fig. 14 represents a perspective view of the tappet-shaft for releasing the actuating mechanism and the clutch mechanism, together with the means employed for imparting longitudinal movement to said shaft. Fig. 15 represents a partial section taken on a plane indicated by the line 15 15 of Fig. 2. Fig. 16 represents a perspective view of a portion of the actuating mechanism. Fig. 17 represents a perspective view of a portion of the locking devices for said actuating mechanism. Fig. 18 represents in perspective the arched locking-slide for a bank of keys. Fig. 19 represents in perspective the main portion of the registering mechanism. Fig. 20 represents a cross-section thereof, taken on a plane indicated by the

line 20 20 of Fig. 21. Fig. 21 represents a longitudinal section taken on a plane indicated by the line 21 21 of Fig. 20. Fig. 22 represents a section taken on the line 22 22 of Fig. 21. Fig. 23 represents in perspective one of the elements of the carrying device of the registering mechanism. Fig. 24 represents in cross-section a different form or modification of carrying mechanism than that shown in Fig. 20, and Fig. 25 represents a transverse sectional view of the tappet-shaft for actuating the carrying devices and operating the drawer-releasing bolt and bell-stroke lever.

Similar figures of reference indicate similar parts throughout the several views.

As shown in Fig. 1, the register is provided with a casing having a suitable base 1 for the reception of the cash-drawer 2, and an upper portion 3, within which is housed the supporting framework for the mechanism and through which extend the operating-keys, which in this instance consist of four banks of nine keys each, corresponding, respectively, to units, tens, hundreds, and thousands of the decimal scale, the extreme right-hand bank representing cents, the extreme left-hand bank representing tens of dollars, and the intermediate banks representing tens of cents and dollars, respectively. The casing is provided with sight-apertures 5 6, through which the numerals of the indicating-drums appear, and with a locking-slide 4, adapted to be unlocked and removed to disclose the indications on the totalizing-drums.

The operating-handle 7 of the actuating mechanism is pinned or keyed upon a shaft 8, journaled in the framework of the machine and passing through a sleeve 9, rigidly attached to said framework. Upon the shaft 8 is rigidly secured a composite gear and cam, (shown in detail in Fig. 16,) and provided with a ratchet 10 on the end adjacent to the framework, and with two annular projections 11 and 12, including between them a space occupied in part by gear-teeth 13, which during the first half of the revolution of the shaft 8 is in gear with and rotates the indicating and registering devices and which during the second half of the rotation of the shaft 8 is in gear with and rotates a tappet-shaft for actuating the carrying mechanism of the registering devices, as will hereinafter appear. The annular projection 11 is notched at one portion of its periphery, as indicated at 14 in Fig. 8, said notch being adapted to engage with a pivoted locking-lever 15, which lever is provided with a spring 16, attached to cross-bar 17, forming a part of the framework, said spring tending to force the lever into engagement with the notch. The ratchet 10 cooperates with a spring-pawl 18, thereby permitting the operating-handle and its shaft to be moved in the forward direction only. When the operating-handle is in the adjustment indicated in Fig. 2, the gear-teeth 13 intermesh with a gear 19, fixed upon a shaft 20, jour-

naled in the framework of the machine. Said gear 19 in turn meshes with a gear 21, sleeved upon a stud 22, secured to the framework, a coil-spring 23 being secured at one end to a fixed stud 24 and at the other end to the sleeve of the gear 21. The rotation of the handle 7 and the revolution of the cogs 19 and 21 serve to wind up the spring 23, thereby causing it to exert a tension tending to return the parts to their original position.

Prior to the indicating and registering of any particular sale the operating-handle is locked in the position indicated in Figs. 1, 2, and 3, so as to be incapable until released of being rotated, the locking means being the pawl 15, as hereinbefore described. In order to release the pawl 15 from its engagement with the notch 14, I provide mechanism intermediate of the keys and said pawl for the purpose, so that on the actuation of any one of the keys the operating-handle will be released. In the present instance this mechanism consists primarily of a tappet 25, fixed upon the shaft 20 in such position as to strike the free end of the pawl 15 and rock said pawl out of engagement with the notch 14, as indicated more fully in Figs. 7 and 8. An arm 26, also fixed upon the shaft 20, is provided at its free end with a lug 27, adapted to engage beneath a hook 28, which is fixed upon a rock-shaft 29, said hook normally holding the arm 26 in the lower position, as indicated in Fig. 7, and the indicating mechanism in indicating position, as will hereinafter appear, against the tendency of the spring 23 to return said arm to the upper position (shown in Fig. 8) and the indicating mechanism to zero position.

The rocking shaft 29 is held in the forward or locking position by means of a spring 30, extending over a fixed part of the framework to a lug 31 of the rock-shaft and drawing said lug against a corresponding stop 32. (See Figs. 2 and 14.) At points along its length corresponding in position to each of the several banks of keys the rock-shaft 29 is provided with pins 33, interposed in the path of movement of movable slides 34, mounted loosely upon the shaft 20 by means of the arms 35. As shown more fully in Figs. 9 and 18, the slide 34 is provided on its edges with serrations 36, between which serrations are adapted to pass the inner ends of the key-shanks 37. The serrations 36 are provided with an incline 38, corresponding to a similar incline 39 on the extreme inner end of the key-shank, and a notch 40 is provided in said key-shank, so that when one of the keys is depressed, as indicated in Fig. 9, the slide 34 will be temporarily raised until the inclines pass each other, whereupon the key will be locked in the depressed position by the engagement of the incline 38 with the notch 40. This small upward movement of the slide is communicated through the pin 33 to the rock-shaft 29, thereby rocking said shaft upwardly against the tension of the spring 30. The

hook 28 is thereby released from engagement with the lug 27, and the arm 26 and tappet 25 thus released are rocked upwardly by reason of the tension of the spring 23, thereby releasing the pawl 15 from engagement with the notch 14, and consequently unlocking the operating-handle so as to permit its movement in a forward direction. It will be apparent that the depression of any one of the keys acting upon its corresponding slide 34 will thus release the actuating mechanism so as to permit it to be operated by the handle 7.

The actuating mechanism, whether locked or released, is normally out of engagement with the indicating and registering mechanism, the controlling-gears 41 of the said indicating and registering mechanisms being mounted loosely upon the shaft 20, so as not to rotate therewith except when thrown into engagement with said shaft by a clutch controlled by the key-shanks.

The clutch mechanism for engaging the actuating mechanism with the indicating and registering mechanisms is identical for each of the banks of keys, and consists, primarily, of an arm 42, fixed upon the shaft 20 and containing a longitudinally-movable plunger 43, seated within the arm against the tension of the spring 44, the outward movement of one being limited by a stop 45. On the under side of the plunger are the ratchet-teeth 46 corresponding to three possible positions of the plunger, said teeth cooperating with the pawl 47, fixed upon the spring-arm 48. The plunger 43 is furthermore provided on one side with a pin 89 and on the other side with a square pin 50 and with an incline 51 in the same plane with the inner ends of the key-shanks and adapted to contact with any depressed key when the plunger is in its outermost position.

By reference to Figs. 6 and 10 it will be noted that when the arm 42 is at the uppermost limit of its swing the spring 48 is brought in contact with a stop 52 upon an arch 53, and that by reason of said contact the pawl 47 is drawn out of engagement with the ratchet-teeth 46, thereby permitting the plunger to be moved outwardly to the farthest limit of its stroke by the spring 44. In this adjustment the square pin 50 just clears the outer periphery of the gear 41. Let us suppose now that one of the keys is depressed, as indicated in Fig. 9, and locked in the depressed position by the slide 34. On revolving the operating-handle 7 the shaft 20 and arm 42 will move or rotate forwardly until the incline 50 of the plunger comes opposite the incline 39 of the depressed key, whereupon the meeting of the inclines forces the plunger inwardly, causing the pin 50 to enter a corresponding recess or groove 53 of a series of such grooves or recesses formed in the edge of an annular flange upon the gear 41. The pawl 47 thereupon engages with the intermediate ratchet-tooth 46, so as to hold the plunger in place, and a continued revolution

of the operating-handle causes the arm 42 thus interlocked with or clutched to the gear-wheel 41 to move or rotate said gear 41 a distance corresponding to the particular key depressed, thereby actuating the indicator wheel or drum and the registering mechanism to the same extent. As the arm 42 reaches or approaches the lowermost limit of its swing, at which time the operating-handle completes the first half of its revolution, the projection 27 comes in contact with the upper inclined face of the hook 28, thereby causing the rock-shaft 29 to rock backwardly until the projection 27 has passed the hook 28, whereupon it will rock forwardly and lock the arm 26, as heretofore indicated. As the operating-handle completes the first half of its revolution the gear 13 runs out of mesh with the gear 19, and the rotation of the handle being continued the gear 13 will run into mesh, as hereinafter described, with a tappet-shaft for operating the carrying devices of the adding mechanism, so that while the indicating and registering are carried on during the first half of the revolution of the operating handle-bar the carrying is not done until the second half-revolution of the handle. The backward rocking of the rock-shaft 29 also causes the pin 33 to raise the slide 34, thereby releasing the depressed key, and the spring 54 of said key immediately restores the key to its normal position, as indicated in Fig. 5. Assuming the depressed key to have been the fifth from the bottom, the indicating-drum 55 will have moved through the intermediacy of the gear 56 and pinion 57 upon the shaft 58 a distance equal to five of the numerals upon said drum, and as a consequence the numeral "5" will be exhibited through the sight-opening in the casing opposite said drum, thereby indicating a number corresponding to the key depressed. At the same time the gear 56 transmits a like movement of rotation to the initial gear 60 of the adding mechanism, which gear is mounted on the shaft 60^a and with which gear the gear 56 is in mesh. Attached to the gear 60 of the adding mechanism is a plate 61, bearing a spring-pawl 62, adapted to engage with a ratchet 63, said ratchet being mounted upon a sleeve 64, separate from the sleeve upon which the gear 60 is mounted. The sleeve 64 has also mounted upon it the drum 65 of the adding mechanism, the outer periphery of said drum being marked with numerals from "0" to "9," inclusive. Upon the side of the drum 65 is attached the star-wheel 66, with which a spring-detent 67 cooperates, and between the wheels 66 and 63 is mounted loosely upon the sleeve 64 a plate 68, having a tooth or projection 69 at its forward end, said tooth cooperating with a spring-pawl 70, attached to the frame of the machine. The function of the spring-pawl 70 is to hold the arm 68 normally in such position that its rear end 71 will be out of the path of movement of a tappet 72 upon a tappet-shaft 73, which is geared to gear 13 of the operating-handle through an

intermediate 73^a and rotates with the gear 13 during the second half of the revolution of the operating-handle. The plate 68 is also provided with a spring 75, which upon the release of the spring-pawl 70 draws the plate 68 into such position that its rear end will be in the path of movement of the tappet referred to. The means for releasing the spring-pawl 70 is a pin 76, connected with the adding-drum of the preceding bank of keys. This pin releases the spring-pawl 70 once at every complete revolution of the adding-drum with which the said pin is connected, and on this release the tappet strikes the depressed rear end of the plate 68 and raises it, and at the same time a spring-pawl 77 upon the side of the arm 68 and engaging with the ratchet 63 propels said ratchet the distance of one tooth forward, thereby operating the corresponding adding-wheel in like manner. In this manner the carrying is effected from one drum to the next of the series of adding-drums of the registering mechanism, the complete revolution of a drum of a lower system of decimals being thus automatically registered upon the drum of the next highest decimal series. In this way the registering mechanism when the slide 4 is retracted will indicate at any moment the total amount of the sales indicated on the machine up to that time.

By reason of its engagement with the gearing of the operating-handle the tappet-shaft 73 makes a complete revolution during the second half-revolution of said handle, and during this revolution a tappet 79 strikes a bell-hammer 80, pivoted to the side of the machine-casing, as shown, and rings the bell 81. At the same time a tappet 82 upon the tappet-shaft 73 rocks a bell-crank lever 84, fixed to a rock-shaft 85, and raises a lock-bolt 86 out of engagement with the drawer 2, whereupon springs 87 throw the drawer forward, as will be readily understood. This sounding of the bell-alarm and throwing forward of the cash-drawer take place at the termination of the complete rotation of the operating-handle and coincidentally with the indicating and registering of the sale corresponding to the depressed key or keys, and the operator may then place the money corresponding to the sale within the drawer and, by pushing the drawer in, again lock it in place until released on the occasion of a subsequent sale.

During the second half-revolution of the operating-handle the swinging arm 42 remains in its lower position, being held therein by the engagement of the locking-hook 28 with the lug 27. The depression of one of the keys for the next sale, however, releases the locking-hook 28 from engagement with the lug 27 and permits the arm 42 to return to the upper limit of its swing, this upward movement being accompanied by the disengagement of the pin 50 from the rack 36. Thus the depression of any key, as has been ex-

plained, causes the slide 34 to rock or move upwardly a slight distance, and this movement is transmitted through the pin 33 to the rock-shaft 29, and a tappet 88 upon said rock-shaft strikes the pin 89 of the plunger 43, thereby moving said plunger inwardly and moving the pin 50 inwardly in like manner until said pin 50 is forced out of engagement with the rack 36 and is immediately held in such disengagement by means of the spring-pawl 47 engaging the outermost of the ratchet-teeth 46 of the plunger. The indicating-drum, which has up to the time of this disengagement been locked by the pin 50, is then restored to the zero indication. This restoration is effected by a lug or projection 50^a upon the shaft 20, which lug, during the upward swing of the arm 42, catches under the lowest spoke of the segment 41 and raises the segment to the normal position. The operating-handle is now in the unlocked condition and the arm 42 is in the position necessary for indicating the sale represented by the key or keys just depressed, which sale will be indicated and registered, as before.

It will be noted that the rock-shaft 29 has a limited longitudinal movement and is normally held in the position indicated in Fig. 3 by means of a spring 90 bearing against the arm 31. A pin 91 upon the longitudinally-movable shaft 29 bears against an arm 92, journaled within a cross-bar of the machine-casing, said arm 92 moving with a corresponding arm 93, secured to the same connecting rock-pin 94. The arm 93 bears a projection 95, adapted to ride upon a cam 96 of the sleeve which is attached to the operating-handle. The function of the parts just described is to move the tappet 88 out of the paths of downward movement of the pins 89 when the arms 42 descend, so that during such downward movement the pins 89 will not be engaged and the plungers 43 be depressed by their respective tappets 88. To this end the cam 96, acting upon the pin 95, swings the arms 93 and 92 upon the rock-pin 94 and moves the shaft 29 longitudinally toward the left against the resilient action of the spring 90. When the pin 95 has passed the cam 96, the spring 90 returns the shaft 29 to its original position, thereby bringing the tappets 88 in line with the pins 89 as required.

The shaft 20 is provided with a disk 97, fixed thereto and having a cam-shaped edge 98 cooperating with a spring-arm 99, fixed to the machine-casing, said spring-arm being bent at its forward end for engagement with a notch 100 of the disk. The function of these parts is to serve as a brake upon the movement of the parts at the time the released arm 42 and the locking-arm 26 move upwardly, and the notch 100 and cooperating bent ends of the spring 99 act as an additional limit to the backward rocking of the shaft 20.

At the extreme left of the series of adding-drums corresponding to the banks of keys

there may be located an additional drum 101, rotated a distance corresponding to one of its peripheral numerals at every complete revolution of the adjacent drum. This transmission may be effected through the intermediacy of a gear 102, actuated by a pin 103 upon the drum 65, said gear 102 meshing with a gear 104 upon the drum 101. A spring-pawl 105 acts as a back-stop to the gear 102.

10 In the drawings I have shown two different forms of carrying-arms 68 for transmitting or carrying from one drum to the other of the series of drums corresponding to the banks of keys. Thus, as shown specifically in Fig. 20, 15 the retracting-spring is located at the front end of the arm, so as to tend to raise said front end, thereby depressing the rear end of the rod, whereas in the construction shown specifically in Fig. 24 the said spring is connected to the rear end of the rod, so as to exert a direct pull downward; but it is evident that the two constructions and the corresponding modifications in the shape and location of the spring-pawls cooperating with said 25 arm are equivalents the one for the other and operate in substantially the same way.

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

30 1. The combination with indicating mechanism and an actuator therefor, of a clutch carried by the actuator, a series of keys each adapted when depressed to throw said clutch into engagement with the indicating mechanism, and means controlled by each of the keys 35 for disengaging the clutch from the indicating mechanism, substantially as described.

2. The combination with indicating mechanism and an actuator therefor, of a clutch 40 carried by the actuator, a series of keys each adapted when depressed to throw the clutch into engagement with the indicating mechanism, a catch for locking the actuator and indicating mechanism at the termination of 45 their indicating movement, and means controlled by each of the keys for simultaneously disengaging the clutch and releasing the catch, substantially as described.

3. The combination with indicating mechanism and an actuator therefor, of a clutch 50 carried by the actuator, a series of keys each adapted when depressed to throw the clutch into engagement with the indicating mechanism, a catch for locking the actuator and indicating mechanism at the termination of 55 their indicating movement, means controlled by each of the keys for simultaneously disengaging the clutch and releasing the catch and spring mechanism for returning the actuator and indicating mechanism to zero position, substantially as described.

4. The combination with indicating mechanism and an actuator therefor, of a clutch 65 carried by the actuator, a series of keys each adapted when depressed to throw the clutch into engagement with the indicating mechanism,

a sliding plate for locking the key in depressed position and adapted to be operated by each of the keys, a catch for locking the actuator and indicating mechanism at the termination of their indicating movement, and connections operated by the sliding plate for simultaneously disengaging the clutch and releasing the catch, substantially as described. 70

5. The combination with indicating mechanism and an actuator therefor, of a clutch 75 carried by the actuator, a series of keys each adapted when depressed to throw the clutch into engagement with the indicating mechanism, means controlled by the keys for disengaging the clutch and throwing it out of 80 position for engagement with the next key depressed, on its return movement to zero position, and means for throwing the clutch as it reaches zero position into position for 85 engaging the depressed key, substantially as described.

6. The combination with indicating mechanism and an actuator therefor, of a clutch 90 carried by the actuator, a series of keys each adapted when depressed to throw the clutch into engagement with the indicating mechanism, a catch for locking the actuator and indicating mechanism at the termination of 95 their indicating movement, means controlled by each of the keys for simultaneously releasing the latch and disengaging the clutch and throwing the latter out of position for 100 engagement with the next key depressed, on its return movement to zero position, and means for throwing the clutch as it reaches zero position into position for engaging the depressed key, substantially as described.

7. In a cash-register, the combination with the registering and indicating devices, of a 105 clutch for connecting the actuating mechanism with said registering and indicating devices, but normally out of gear with the latter, said clutch consisting of parts adapted to interlock, one of said parts being mounted upon 110 a plunger, a depressible key for actuating the plunger and effecting the engagement of its interlocking parts, a catch for holding the parts in the interlocked position, and means controlled by each of the keys, for disengaging 115 the clutch; substantially as described.

8. In a cash-register, the combination with the registering and indicating devices, of a 120 clutch for connecting the actuating mechanism with said registering and indicating devices, but normally out of gear with the latter, said clutch consisting of parts adapted to interlock, one of said parts being mounted upon a plunger, a depressible key for actuating the plunger and effecting the engagement of its 125 interlocking parts, a catch for holding the parts in the interlocked position, means controlled by each of the keys for disengaging the clutch, and means for catching the clutch in the disengaged position; substantially as described. 130

9. In a cash-register, the combination with

the registering and indicating devices, of a clutch for connecting the actuating mechanism with said registering and indicating devices, but normally out of gear with the latter, said clutch consisting of parts adapted to interlock, one of said parts being mounted upon a plunger, a depressible key for actuating the plunger and effecting the engagement of its interlocking parts, a catch for holding the parts in the interlocked position, means controlled by each of the keys for disengaging the clutch, means for catching the clutch in the disengaged position, and means for subsequently releasing the catch so as to return the clutch to its normal position; substantially as described.

10. The combination with indicating mechanism and an oscillating actuator therefor, of a clutch carried by the actuator having two movements thereon in the same direction for engagement with and disengagement from the indicating mechanism, a series of keys each adapted when depressed to move the clutch into engagement with the indicating mechanism upon the indicating movement of the actuator, and means for moving the clutch in the same direction out of engagement with the indicating mechanism, substantially as described.

11. The combination with indicating mechanism and an actuator therefor, of a clutch carried by the actuator having two movements thereon in the same direction for engagement with and disengagement from the indicating mechanism, a series of keys each adapted when depressed to move the clutch into engagement with the indicating mechanism upon the indicating movement of the actuator, and means controlled by each of the keys for moving the clutch in the same direction out of engagement with the indicating mechanism, substantially as described.

12. The combination with indicating mechanism and an actuator therefor, of a clutch carried by the actuator having two movements thereon in the same direction for engagement with and disengagement from the indicating mechanism, a series of keys each adapted when depressed to move the clutch into engagement with the indicating mechanism upon the indicating movement of the actuator, means controlled by each of the keys for moving the clutch in the same direction out of engagement with the indicating mechanism, and means for moving the clutch in the opposite direction into position to engage the next key depressed after the return to zero position of the actuator, substantially as described.

13. The combination with indicating mechanism and an oscillating actuator therefor, of a clutch carried by the actuator having two movements thereon in the same direction for engagement with and disengagement from the indicating mechanism, a spring

tending to move said clutch in the opposite direction, a catch for retaining said clutch in engaging and disengaging positions, a series of keys each adapted when depressed to move the clutch into engagement with the indicating mechanism upon the indicating movement of the actuator, means controlled by each of the keys for moving the clutch in the same direction out of engagement, and means engaging the catch to release the clutch upon the return to zero position of the actuator, substantially as described.

14. In a cash-register, a clutch for connecting the operating-handle with the indicating and registering devices, consisting of a swinging arm carrying a plunger, said plunger being provided with a locking projection, a circular rack geared to the indicating and registering devices, said locking projection being normally held to move in a path outside of the rack but adjacent thereto, a depressible key for forcing the plunger projection into engagement with the rack at a predetermined point, a catch upon the arm, engaging with the plunger and holding it in the locked position, means for forcing the plunger inwardly a farther distance so as to disengage the locking projection from the rack, and means for locking the plunger in said disengaged position; substantially as described.

15. In a cash-register, a clutching device consisting of a plunger having a locking projection, a spring normally holding said projection out of engagement with the indicating and registering mechanism, a swinging arm within which the plunger is mounted, a series of ratchet-teeth upon the plunger, a spring-pawl upon the arm adapted to engage with said ratchet-teeth, and a stop projection upon the machine-casing, normally holding the spring-pawl from engagement with the ratchet-teeth, so as to permit the plunger to normally stand at the outer limit of its throw, but with the capacity of occupying intermediate positions; substantially as described.

16. In a cash-register clutch mechanism, a spring-seated plunger mounted in a swinging arm, said plunger being provided with ratchet-teeth adapted to engage with a spring-catch secured to the arm, and being provided with a locking-pin and an actuating projection and a depressible key adapted to be projected into the path of movement of the actuating projection; substantially as described.

17. In a cash-register clutch mechanism, a spring-seated plunger mounted in a swinging arm, said plunger being provided with ratchet-teeth adapted to engage with a spring-catch secured to the arm, and being provided with a locking-pin and an actuating projection and a depressible key adapted to be projected into the path of movement of the actuating projection, the key and actu-

ating projection having coacting inclines; substantially as described.

18. In a cash-register clutch mechanism, a spring-seated plunger mounted in a swinging arm, said plunger being provided with ratchet-teeth adapted to engage with a spring-catch secured to the arm, and being provided with a locking-pin and an actuating projection, and a depressible key adapted to be projected into the path of movement of the actuating projection; a pin for pushing in the plunger farther than is effected by the key, and a tappet-shaft for actuating the last-mentioned pin; substantially as described.

19. In a cash-register, the combination with the registering and indicating devices, of a clutch, one of whose parts consists of a swinging arm carrying a plunger having a locking projection adapted to be thrown into engagement by a depressible key, a tappet-shaft having a tappet adapted to throw the said locking projection out of its engagement, a projection on the plunger adapted to be acted upon by the tappet, means for shifting the tappet-shaft longitudinally during the movement of the arm thereby temporarily moving the tappet out of the path of movement of the projection upon which it is to act, and means for subsequently returning the tappet-shaft to its original position; substantially as described.

20. In a cash-register, a clutch for connecting the operating-handle with the indicating and registering devices consisting of a rotary arm carrying a plunger, said plunger being provided with a locking projection, of a longitudinally-movable rotary shaft provided with tappets for engaging the clutch and disengaging it from the indicating and registering devices, and means for automatically moving said tappet-shaft longitudinally, substantially as described.

21. In a cash-register, a clutch for connecting the operating-handle with the indicating and registering devices consisting of a rotary arm carrying a plunger, said plunger being provided with a locking projection, of a longitudinally-movable rotary shaft provided with tappets for engaging the clutch and disengaging it from the indicating and registering devices, an arm for imparting longitudinal movement to said tappet-shaft, and a cam actuated by the operating-handle for operating said arm, substantially as described.

22. In a cash-register, the combination with a clutch for connecting the operating-handle with the indicating and registering devices, of a tappet-shaft for releasing the clutch, and spring for returning the released clutch and the indicating devices to their initial positions; substantially as described.

23. In a cash-register, the combination with a clutch for connecting the operating-handle with the indicating and registering devices, of a tappet-shaft for releasing the clutch, a

lock-catch for the operating-handle, governed by the tappet-shaft, and key-actuated mechanism for operating the tappet-shaft to release the clutch and lock-catch; substantially as described.

24. The combination with indicating mechanism, an oscillating actuator therefor and a rotary operating-handle for said actuator, of a lock for locking said handle in zero position, a catch for locking said actuator in indicating position, means controlled by the keys for releasing it, means for returning the actuator to zero position, and means moving with the actuator for unlocking the operating-handle upon the return of the actuator to zero position, substantially as described.

25. The combination with indicating and registering mechanism, an actuator therefor and means for automatically connecting said actuator and indicating mechanism, a rotary operating-handle for said actuator, a tappet-shaft for operating the carrying devices of the registering mechanism and a mutilated gear upon the operating-handle engaging said actuator during one part of its revolution and said tappet-shaft during the other part of its revolution, substantially as described.

26. In a cash-register, the combination with an adding or registering drum, of a sleeve upon which said drum is mounted, said sleeve being provided with a ratchet, a gear mounted upon a separate sleeve and adapted to be driven from the operating-handle when in engagement therewith, a pawl connected to said latter gear and engaging the said ratchet, a star-wheel mounted upon the same sleeve with the adding-drum, and a spring-detent engaging with the notches of the star-wheel; substantially as described.

27. The combination with a primary registering-wheel and a secondary registering-wheel, of a carrying-pawl for actuating the secondary wheel, a tappet-shaft for operating said pawl, a spring for moving said pawl into position for engagement by the tappet-shaft, a catch for retaining said pawl in the positions to which it is moved by said spring and tappet-shaft, and a projection upon the primary wheel for engaging and releasing said catch, substantially as described.

28. The combination with a primary registering-wheel and a secondary registering-wheel, of a carrying-pawl for actuating the secondary wheel, a tappet-shaft for engaging one end of the pawl to operate the same, a spring for moving said pawl into position for engagement by the tappet-shaft, a catch engaging the opposite end of the pawl for retaining it in the positions to which it is moved by said spring and tappet-shaft, and a projection upon the primary wheel for engaging and releasing said catch, substantially as described.

29. The combination with indicating and registering mechanism and carrying devices

70

75

80

85

90

95

100

105

110

115

120

125

130

for the latter, of an operating-handle therefor
connected with said indicating and register-
ing mechanisms and disconnected from said
carrying devices during one part of its revo-
lution connected with said carrying devices
5 and disconnected from said indicating and
registering devices during the other part of
its revolution, substantially as described.

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

FREDERICK L. FULLER.

Witnesses:

JOHN S. GASCRIGUE,
F. C. LOWTHORP.