

No. 688,502

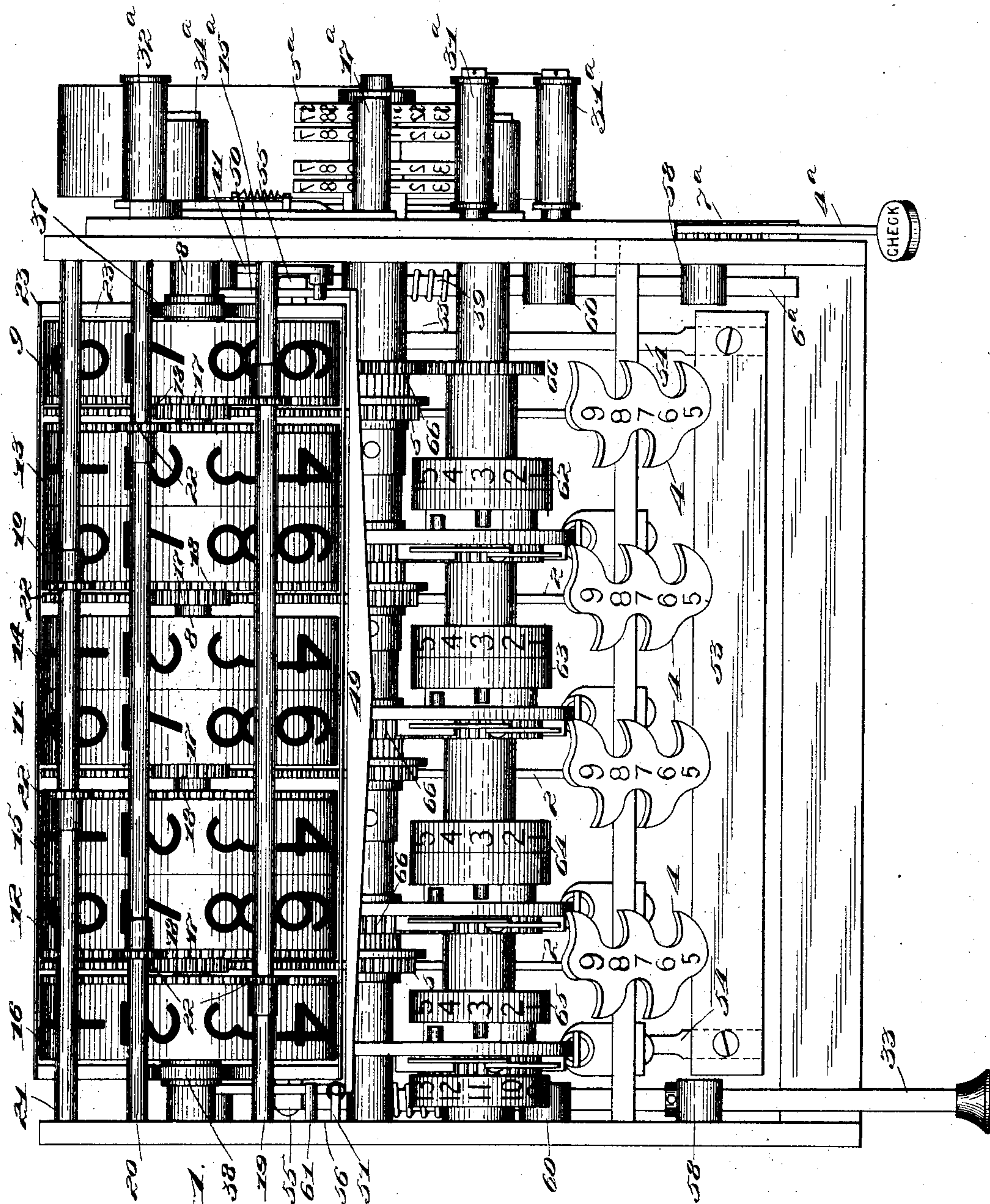
Patented Dec. 10, 1901.

T. CARROLL.
CASH REGISTER.

(Application filed Mar. 19, 1898.)

(No Model.)

4 Sheets—Sheet 1.



Witnesses

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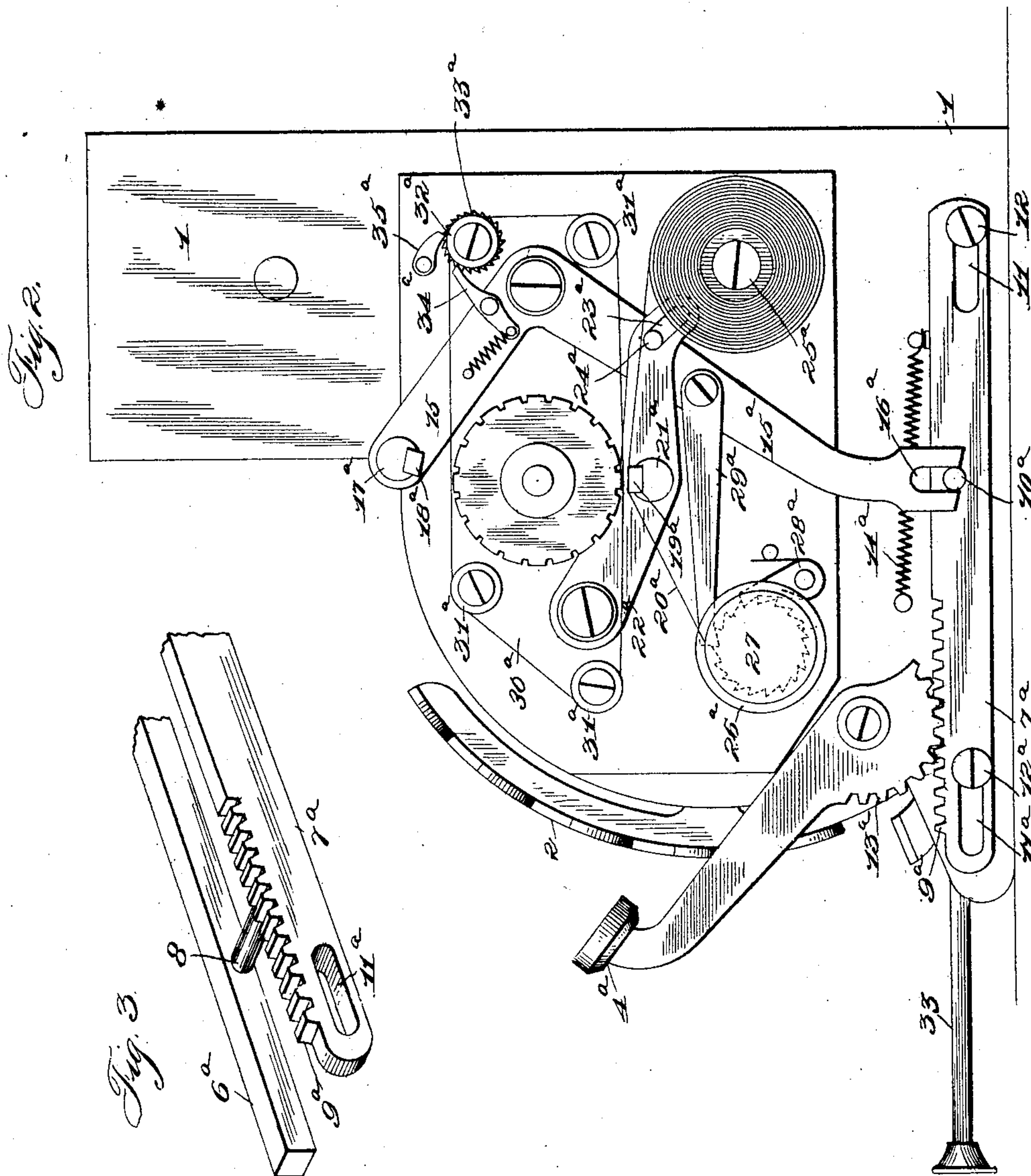
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4 Sheets—Sheet 2.



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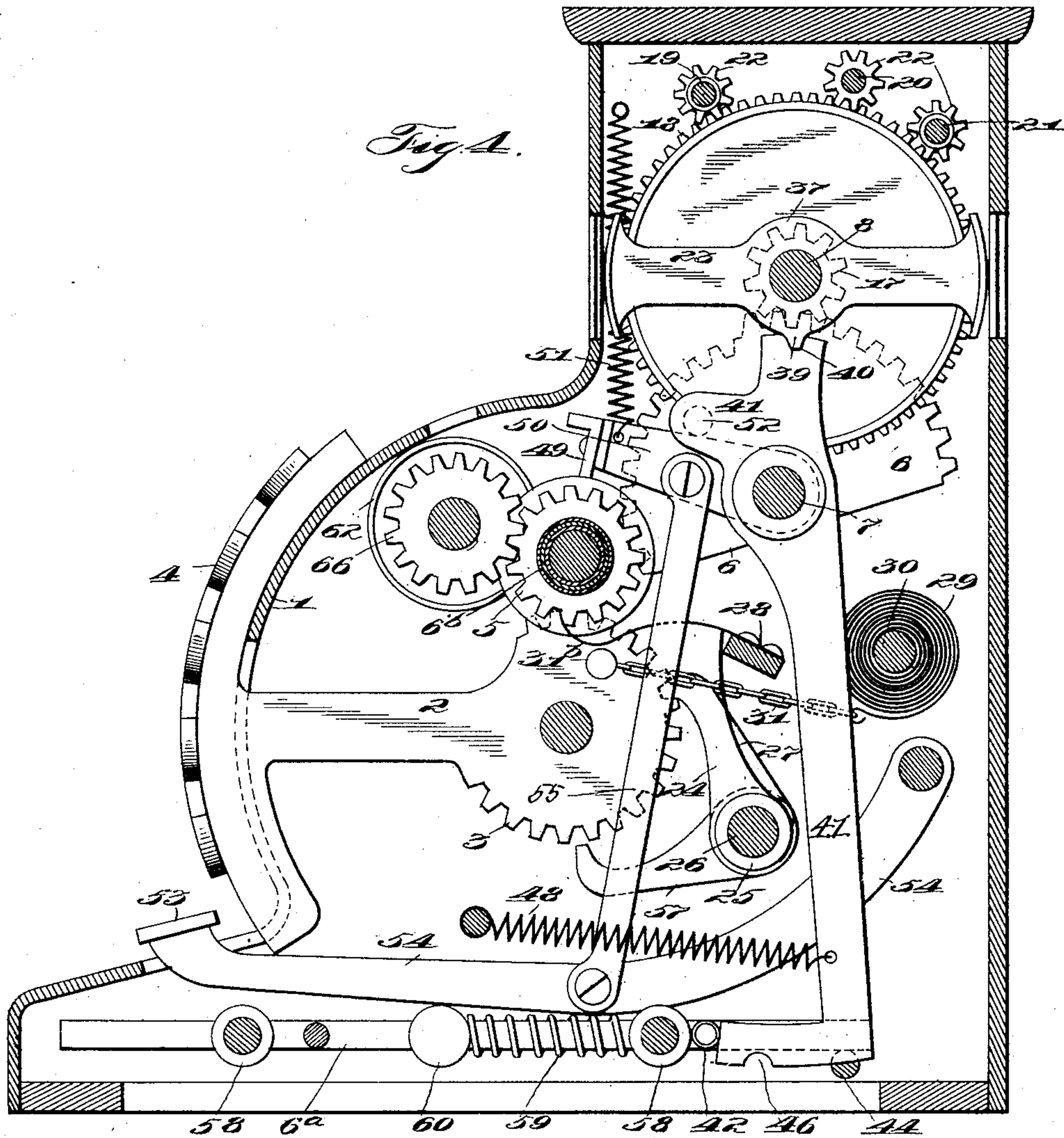
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4 Sheets—Sheet 3.



Witnesses

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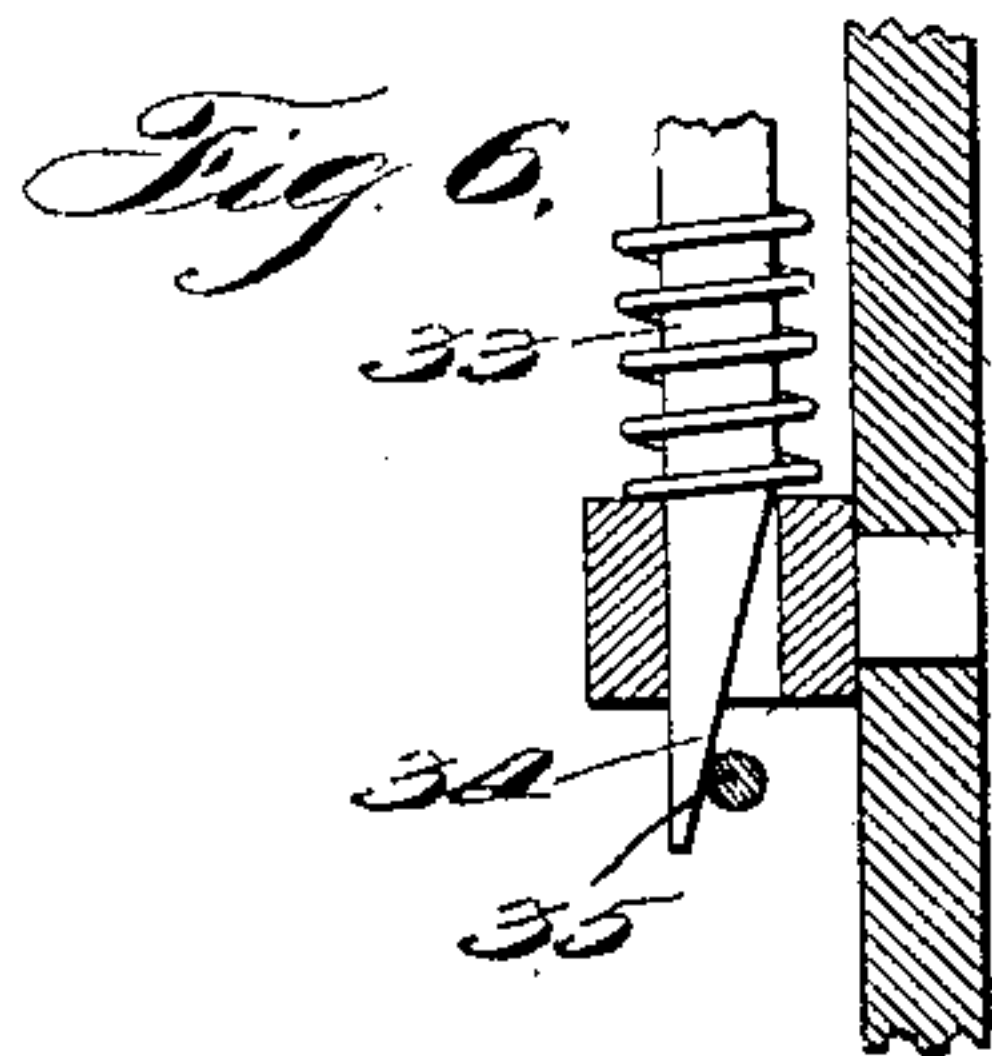
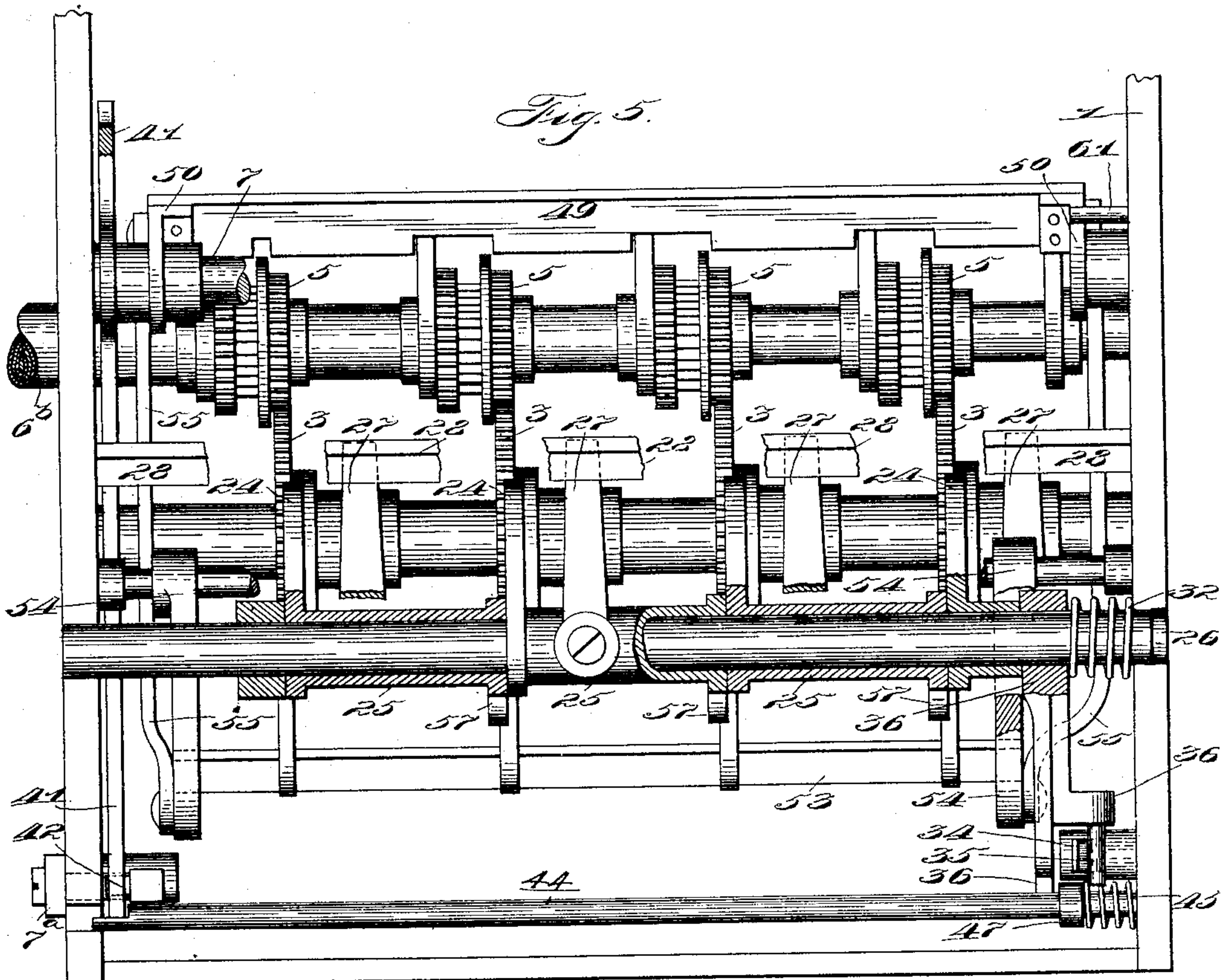
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(No Model.)

4 Sheets—Sheet 4.



Witnesses

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UNITED STATES PATENT OFFICE.

THOMAS CARROLL, OF DAYTON, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS,
TO NATIONAL CASH REGISTER COMPANY, OF JERSEY CITY, NEW JERSEY,
A CORPORATION OF NEW JERSEY.

CASH-REGISTER.

SPECIFICATION forming part of Letters Patent No. 688,502, dated December 10, 1901.

Application filed March 19, 1898. Serial No. 674,506. (No model.)

To all whom it may concern:

Be it known that I, THOMAS CARROLL, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Cash-Registers, of which I declare the following to be a full, clear, and exact description.

This invention relates to improvements in cash-registers, and has more particular relation to the class of machines described in Letters Patent No. 585,467, issued to F. L. Fuller June 29, 1897, and also patents to Fuller and Griswold, dated February 4, 1890, and numbered 420,554 and 420,555.

One of the several objects of the invention is to provide a printing device for the class of machine mentioned.

In the appended drawings, forming part of this specification, Figure 1 represents a top plan view of the devices embodying my invention applied to a machine of the class mentioned. Fig. 2 represents an end elevation of the same. Fig. 3 represents an enlarged detail perspective view of a portion of the operating rack-bar, showing its connection with one of the operating-bars of the machine. Fig. 4 represents a vertical section through said machine, taken near one end. Fig. 5 represents a partial rear elevation of said devices, and Fig. 6 represents a detail top plan view of the inner end of one of the push-rods.

In the said drawings, 1 represents the inclosing case, within which are fulcrumed a number of operating-levers 2, each provided with a toothed segment 3 and an operating-handle 4. These segments mesh with and are adapted to operate gears 5, which in turn mesh with a segment or partial gear 6, mounted upon a shaft 7. As will of course be readily understood, the number of the partial gears 6 is equal to the number of the operating-levers. In the present case that number is four. The said operating-gears 5 are respectively made fast to a series of nested sleeves 6^b 6^b, which extend longitudinally of the machine through the right-hand side frame, and on their outer ends are located the several printing-wheels 5^a 5^a.

A transverse shaft 8, journaled between the ends of the case or frame, affords a bearing for eight indicating-wheels, four of which have their figures so arranged as to show in proper order at the openings on one side of the case, and the alternate four are adapted to show in the openings on the other side of the case. In order that these may be clearly distinguished, I have denoted those which show at the front of the machine by the numerals 9, 10, 11, and 12 and those which appear at the rear side by 13, 14, 15, and 16. Each of the wheels 9, 10, 11, and 12 carries a gear 17, which meshes with and is operated by one of the partial gears 6. Each of the wheels except the two central wheels, which will presently be described, is provided with a gear 18, affixed to the side thereof and a little larger in diameter than the wheel. Shafts 19, 20, and 21 are journaled between the ends of the frame, and each carries two pinions 22. Those on the shaft 19 engage with the gears 18 upon the wheels 9 and 16. Those upon the shaft 20 in like manner engage the gears of the wheels 12 and 13, and the pinions upon the shaft 21 engage with the gears upon the wheels 10 and 15, so that movement applied to any of these wheels will be transmitted through the shaft and pinions to one other wheel of the series. It will be observed that there are four couples of wheels, but only three shafts. The two wheels 11 and 14 lying side by side are simply formed integral, so as to operate as one part. The operation of this part of my invention may be best described by supposing that an amount—say one dollar and forty-seven cents—is to be indicated and totalized. To do this, the units-operating lever is depressed by means of the "7" handle. Said lever through the gears 5 and 6 operates the wheel 9 so that the figure "7" thereon is shown in the opening in the front of the case. This movement of the wheel 9, however, through the gears 18, pinions 22, and shaft 19, operates the wheel 16 at the other end of the case so as to show the figure "7" in the opening in the rear side of the machine. The tens or dimes lever is then depressed by means of the "4" handle, whereupon the wheel 10 shows

"4" to the operator and the wheel 15 shows "4" in the tens-space at the rear of the machine. Then in like manner the dollars or hundreds lever is depressed by the "1" handle, thereby so moving the double wheel 11 14 that the figure "1" appears on both sides in the hundreds place.

Each segment 3 is provided with a detent 24, carried by a sleeve 25, mounted loosely upon a longitudinally-movable shaft 26 for preventing return of the levers 2 after they have been depressed. The detents 24 are held yieldingly in engagement with their respective segments by springs 27, secured to the sleeves and engaging the under face of a plate or strip 28, extending across the machine. Each segment is also provided with a flat helical spring 29, connected at one end to a fixed shaft or rod 30, extending across the rear of the machine and flexibly connected, by means of a chain 31, to a stud 31^b on said segment. The detents 24 are held normally in engagement with their segments by a spring 32, (see Fig. 5,) located between the frame of the machine and an arm 36, mounted on the shaft 26. They are thrown out of engagement with their segments by a rod 33, extending outside the machine and rearwardly therein and provided at their inner end with an inclined or cam-shaped portion 34, which upon the inward movement of the rod 33 engages a pin 35, projecting downwardly from the bracket or arm 36, secured to the end of the shaft 26. Upon the inward movement of the rod 33, therefore, its inner end engaging the pin 35 will move the arm 36, and with it the shaft 26, toward the frame of the machine (from left to right, Fig. 4) against the pressure of the spring 32, thus moving the detents 24, carried by said shaft, sidewise out of engagement with the segments. Upon the withdrawal of the rod 33 the parts, including the shaft, the detents, and the arm 36, are all returned to normal position by the spring 32.

In connection with the indicating devices and the sight-openings, through which the indications are read, is employed a flash or shutter 23, consisting of a plate for each sight-opening (two being shown in the present case) connected to sleeves or hubs 37 38, loosely mounted on shaft 8. The hub 37 is provided with a notch or tooth 39, which is engaged by a corresponding tooth or notch 40 upon the upper end of a lever 41, fulcrumed upon shaft 7 and extending downwardly into position to be engaged by a pin 42 upon the inner end of a longitudinally-movable rod 6^a, similar to the rod 33, but on the opposite side of the machine. Beneath the foot of lever 41 and extending across the machine at its rear is a longitudinally-movable shaft or locking-bolt 44, one end of which is cut away slightly to permit the passage of the foot of the lever and the other end of which is provided with a spring 45, which when the lever 41 has been moved rearwardly sufficiently to bring a re-

cess 46 in the foot of the lever into register with shaft 44 moves the shaft longitudinally through and into engagement with said recess, so as to lock the lever against further movement in either direction. The shaft 44 is disengaged from the lever 41, so as to release the shutter, by the bracket 36, which engages a collar 47 on said shaft and which when moved sidewise by the rod 33, as before described, also moves said shaft in the same direction against the pressure of spring 45 until the cut-away portion of shaft 44 again registers with the foot of the lever, when a spring 48, connected to the lever and to the frame of the machine, returns the lever to normal position.

In connection with the operating-gearing there is employed a locking mechanism, operated from the shutter-operating mechanism, for locking said gearing when the shutter is moved to expose the indication and while it retains that position. This locking mechanism consists of locking-plate 49, extending across the machine and supported from arms 50, loosely mounted on shaft 7. The locking-plate 49 is held normally elevated out of locking position by a spring 51, connected to the plate and the frame of the machine, and is depressed to locking position into engagement with gear 5 by a pin 52, carried by lever 41, which when the foot of said lever is moved rearwardly by rod 6^a engages one of the arms 50, moves the latter and the plate 49 downwardly into engagement with the gear, and holds the plate in that position until the shutter mechanism is released and returned to normal position. The locking-plate 49 is also adapted to be operated each time one of the handles 4 is depressed from a stop-plate 53, pivoted by arms 54 to the rear of the machine and connected by links 55 to the arms 50, supporting the locking-plate 49. The stop-plate 53 by engaging the hand of the operator arrests the downward movement of the handles 4, but is itself slightly depressed when the hand comes in contact with it. When thus depressed, it moves the locking-plate 49 into engagement with the gear 5, and when relieved of the pressure of the hand it, with the locking-plate, is returned to normal position by spring 51.

The operation is as follows: When the handles 4 have been depressed to make an indication, as before described, they will be prevented from returning by the detents 24, the shutter during this operation remaining in its normal position, closing the sight-openings. To expose the indication, the operator will actuate the rod 6^a, as hereinafter described, and through the pin 42 rock the lever 41 on its fulcrum into engagement with the shaft 44, as before described. During this movement the upper end of the lever engaging the hub or sleeve of the shutter 23 will rock the latter from its horizontal position, thus uncovering the openings in front

and rear of the indicating-wheels. Simultaneously with this movement of the shutter the pin 52, engaging the arms 50, will through the latter move the locking-plate downwardly into engagement with the gears 5, thus locking the indicating mechanism against operation. The parts are held in this condition so long as the shaft 44 remains in engagement with the recess 46 in the foot of the lever 41.

To disengage said shaft and lever, the operator will press the rod 33 inwardly into engagement with the arm or bracket 36, which is, as before described, thus thrust aside, and through it move the shaft 44 longitudinally against its spring 45 and out of engagement with the lever 41, which is then, with the shutter 23, returned to normal position by the spring 48. Simultaneously the shaft 26, with the detent-carrying sleeves 25 thereon, is also moved longitudinally against its spring 32, thus moving the detents 24 sidewise out of engagement with their segments to permit the springs 29 to return the segments and indicator-wheels to normal position, when the rod 33, retracted by its spring 56, is disengaged from the arm 36 and permits the shafts 26 and 44 to resume their normal positions and the detents 24 to reengage their segments 3.

Connected to each detent-carrying sleeve 25 except the last is a detent 57 for engaging the next adjoining segment to the left to prevent simultaneous movement of adjoining segments. The detents 57 are normally disengaged from their segments; but as soon as one segment is actuated and throws its detent 24 upward the detent 57, carried by the sleeve of that detent, is thrown upwardly into engagement with the next adjoining segment.

The rods 33 and 6^a are supported and guided in their backward and forward movements by bosses 58, secured to the frame, and the rod 6^a is also provided with a retracting-spring 59, confined, like the spring 56 of rod 33, between a collar 60 on the rod and one of its supporting and guiding bosses 58. A stop 61 is also provided in the side frame of the machine, which engages the upper sides of the arms 50 of the locking-plates 49 to limit the upward movement of the latter. Registering mechanism is also provided, consisting of disks 62 63 64 65, representing, respectively, units, tens, hundreds, and thousands, operated, respectively, from the units, tens, &c., indicating mechanisms. The registering-disk of each series is operated by the gear 5 of that series through suitable pawl-and-ratchet mechanism and pinions 66 during the movement of the indicating mechanism in indicating direction, suitable transfer mechanism being interposed between the respective registering-disks for carrying amounts from one to the other. The aforesaid bar 6^a is similar to the bar 33 with the exception that the operating-button is omitted, and said bar is connected to a slidable bar 7^a by means

of a rod 8^a, Fig. 3. This bar 7^a is formed with a rack 9^a, a laterally-projecting stud 10^a, and elongated slots 11^a and is connected to the frame 1 by screws 12^a, which pass through said slots. The key 4^a, which is pivoted on the side of the frame, is formed near its pivot end with a segmental rack 13^a, which meshes with the aforesaid rack 9^a, so that any movement of said key 4^a will slide the bar 7^a longitudinally. The bar is normally held forward with the key 4^a in an elevated position by a coil-spring 14^a, connected thereto and to a portion of the main frame. In operating the machine the rod 33 is first operated, the levers or key-frames 2 are then drawn down, and the key 4^a then depressed to operate the bar 7^a and the bar 6^a. The longitudinal movement of the bar 7^a effects a corresponding movement of a bell-crank lever 15^a, pivoted on the frame and slotted at its lower end, as at 16^a, to straddle the pin 10^a, carried by said bar. The upper end of said bell-crank lever is provided with a laterally-projecting bar 17^a, in which is set a platen 18^a, of rubber or other resilient material. This platen 18^a is adapted to print a ticket which may be inserted between it and the printing-wheels 5^a, while a similar platen 19^a, mounted below said wheels, is adapted to effect the printing upon the detail-strip 20^a. This latter platen 19^a is of the same material as the platen 18^a and is similarly set in a laterally-extending bar 21^a, mounted upon a lever 22^a, which in turn is pivoted upon the casing and formed at one end with an elongated slot 23^a, through which projects a pin 24^a, mounted on the lever 15^a. The aforesaid detail strip is fed from a supply reel or spool 25^a over the platen 19^a and is wound upon a spool 26^a, journaled on the casing and provided with a ratchet-wheel 27^a. This latter wheel is engaged by a spring-pressed restraining-pawl 28^a and also by an operating-pawl 29^a, pivoted upon the lever 15^a, whereby the spool 26^a is moved forward at each operation of said lever 15^a. An endless inking-ribbon 30^a passes above and below the printing-wheels, being supported by antifriction-rollers 31^a and 32^a. The roller 32^a is roughened on its periphery to prevent slipping of the ribbon and is provided at one end with a ratchet-wheel 33^a, which is operated by a spring-pressed pawl 34^a, mounted on the lever 15^a, and prevented from turning backward by a gravity-pawl 35^a.

Thus constructed the cash-register shown in the patent to Fuller, previously referred to, with my printing mechanism applied thereto, is operated in the following manner: A check or ticket is inserted under the platen 18^a. Then the release-rod 33 is pressed in, which drops the flash or shutter to hide the indicators and releases the indicators and pivoted key-frames or levers 2 2, whereupon the helical springs return the indicators and the said frames to zero or normal position. The

pivoted key-frames must then be respectively swung downward according to the amount it is desired to register and indicate. This movement of the key-frames actuates the registering-wheels, sets the indicators, and in turn sets the printing-wheels 5^a. Finally the printing or check key 4^a must be depressed, which raises the flash to expose the proper indication and forces the platens 18^a and 19^a against the opposite sides of the printing-wheels, thereby pressing the detail-strip 20^a, which passes above the platen 19^a, and the check which is under the platen 18^a against the type on the type-wheel, and thereby the amount last registered is printed upon both the check and the detail-strip. A detailed statement of each amount registered is therefore preserved on the detail-strip, and if it is desired to print the amount on the check it is only necessary to insert the check in proper position under the platen 18^a.

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

25 1. In a cash-register, the combination with a plurality of nested counter-operating sleeves, of printing-wheels mounted upon the outer ends of the same, a pivoted lever carrying a platen, a rack-bar for operating said lever and a key having a rack for engaging said rack-bar to operate it.

30 2. In a cash-register, the combination with printing-types, of a lever carrying a platen, a rack-bar for operating said lever and a key carrying a rack arranged to engage the rack-bar for operating the same.

35 3. In a cash-register, the combination with a registering mechanism, and a printing mechanism, of setting means for said registering mechanism and printing mechanism, locking devices for the setting means and a special key for operating the printing mechanism and said locking devices.

40 4. In a cash-register, the combination with a series of printing-wheels or type-carriers, of a pivoted lever carrying a platen, a slidable rack-bar engaging said lever and a pivoted key having a segmental rack to actuate the slidable rack.

45 5. In a cash-register, the combination with printing-types, of a bell-crank lever carrying a platen, a pivoted slotted lever also carrying a platen, a projection on the first-mentioned lever projecting into the slot on said slotted lever whereby said levers are caused to operate simultaneously and a special independent key for actuating the bell-crank lever.

50 6. In a cash-register, the combination with printing devices, of a pivoted lever slotted at one end, a platen mounted on said lever, a slidable operating rack-bar having a pin projecting into the slot in said lever for operating the latter, and a special key carrying a rack meshing with said bar.

55 7. In a cash-register, the combination with a registering mechanism, indicators, a flash for

the indicators, type-carriers and platen, of the operating-handles arranged to actuate the said registering mechanism and to adjust said type-carriers, and a special or printing key arranged to actuate the platen and indicator-flash.

70 8. In a cash-register of the class described, the combination with the indicators and registering-wheels, of the printing devices arranged to move in unison therewith, operating-handles arranged to actuate the printing devices, a check or printing key arranged to cause an impression from the printing mechanism, a release-rod for restoring the key-frames to normal position, a flash for the indicators, and a rod for operating said flash arranged to receive motion from the check-key.

85 9. In a cash-register of the class described, the combination with the indicators, of the shutter or flash for the indicators, the registering-wheels and printing devices, the operating-handles arranged to actuate the registering mechanism, the check or printing key arranged to actuate the printing mechanism and to move the flash or shutter to expose the indicators.

90 10. In a cash-register of the class described, the combination with the indicators, of the shutter or flash therefor, the registering-wheels and printing devices, the operating-handles arranged to actuate the registering-wheels and the printing mechanism, the special check or printing key arranged to cause an impression from the printing devices upon the paper strip and to move the flash or shutter into position to expose the indicators, and the release-rod for the purpose of permitting the key-frames to be returned to zero position and to move the flash or shutter into position to hide the indicators, substantially as described.

105 11. In a cash-register, the combination with the indicators, registering-wheels and printing devices, of the operating-handles arranged to actuate the indicators, the registering-wheels and the printing devices, a special check or printing key arranged to cause an impression by the printing device, and a release-rod arranged to restore the key-frames and the indicators to normal position.

110 12. In a cash-register, the combination with printing-types, of a lever carrying a platen, a strip-feeding device, a pawl mounted on said lever for actuating the same, a rack-bar for operating said lever, and a key carrying a rack which engages said bar for operating the same.

115 13. In a cash-register, the combination with printing-types, of a lever carrying a platen, a second lever also carrying a platen and arranged to be operated by the first-mentioned lever, a rack-bar for operating said first-mentioned lever, and a key carrying a rack which engages the rack-bar for operating the same.

120 14. In a cash-register, the combination with

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a registering mechanism, indicators, and a flash, of a series of operating-handles adapted to be grasped and operated by the fingers, nested sleeves arranged to be moved by said handles, printing-wheels moved by said sleeves, a platen cooperating with the printing-wheels and a special key for operating said platen and controlling the indicator-flash.

10 15. In a cash-register, the combination with printing-types, of a platen, a strip-feeding de-

vice, an inking device, a rack-bar for operating said platen and feeding and inking devices, and a special pivoted key having a segmental rack which engages the rack-bar for operating the same. 15

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

THOMAS CARROLL.

Witnesses:

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IRA BERKSTRESSER.