No. 666,648. Patented Jan. 29, 1901.

J. P. CLEAL.

CASH REGISTER.

(Application filed Aug. 25, 1898.)

(No Model.) 4 Sheets—Sheet 1.

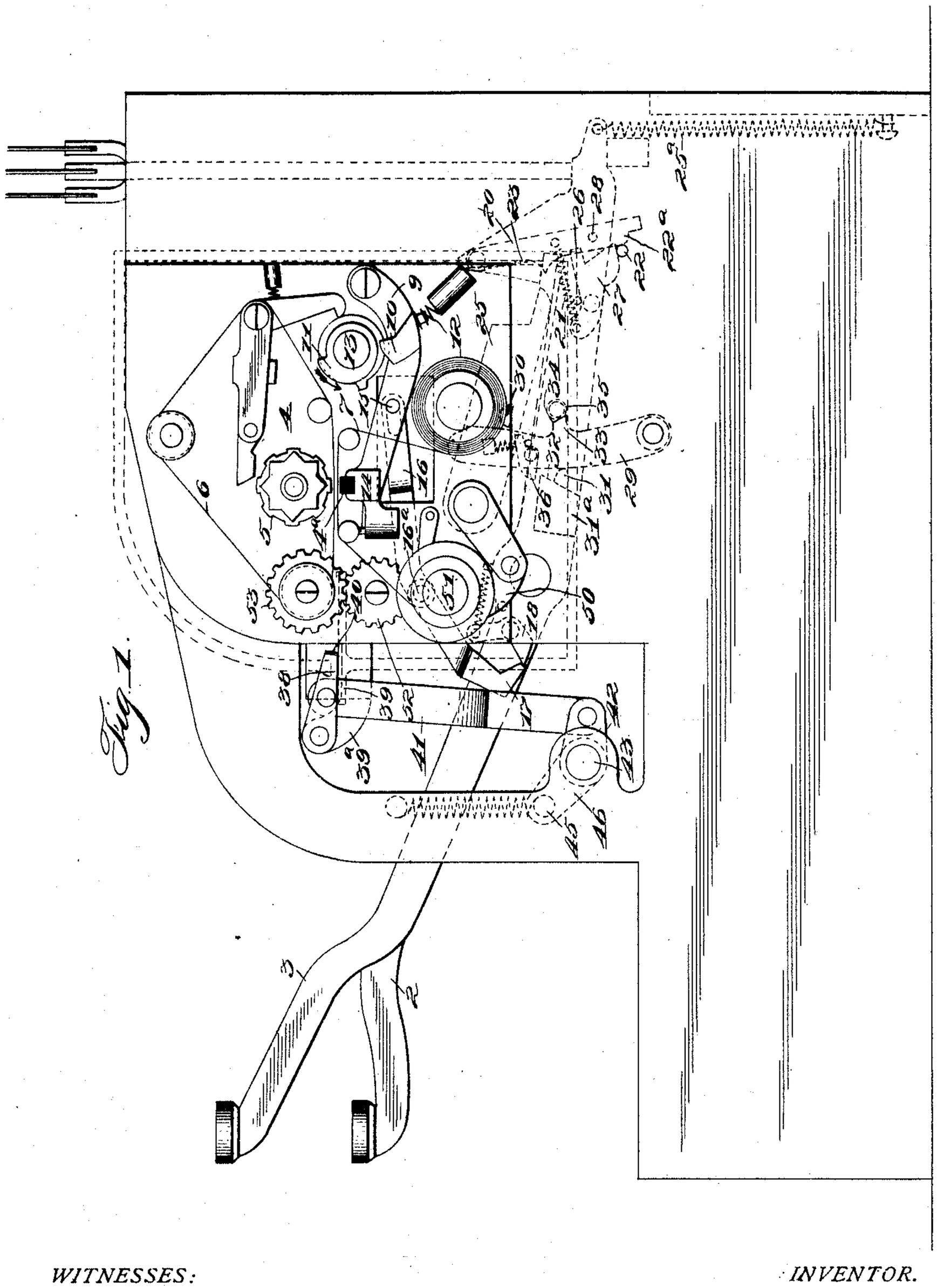

Fig. 1.

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4 Sheets—Sheet 2.

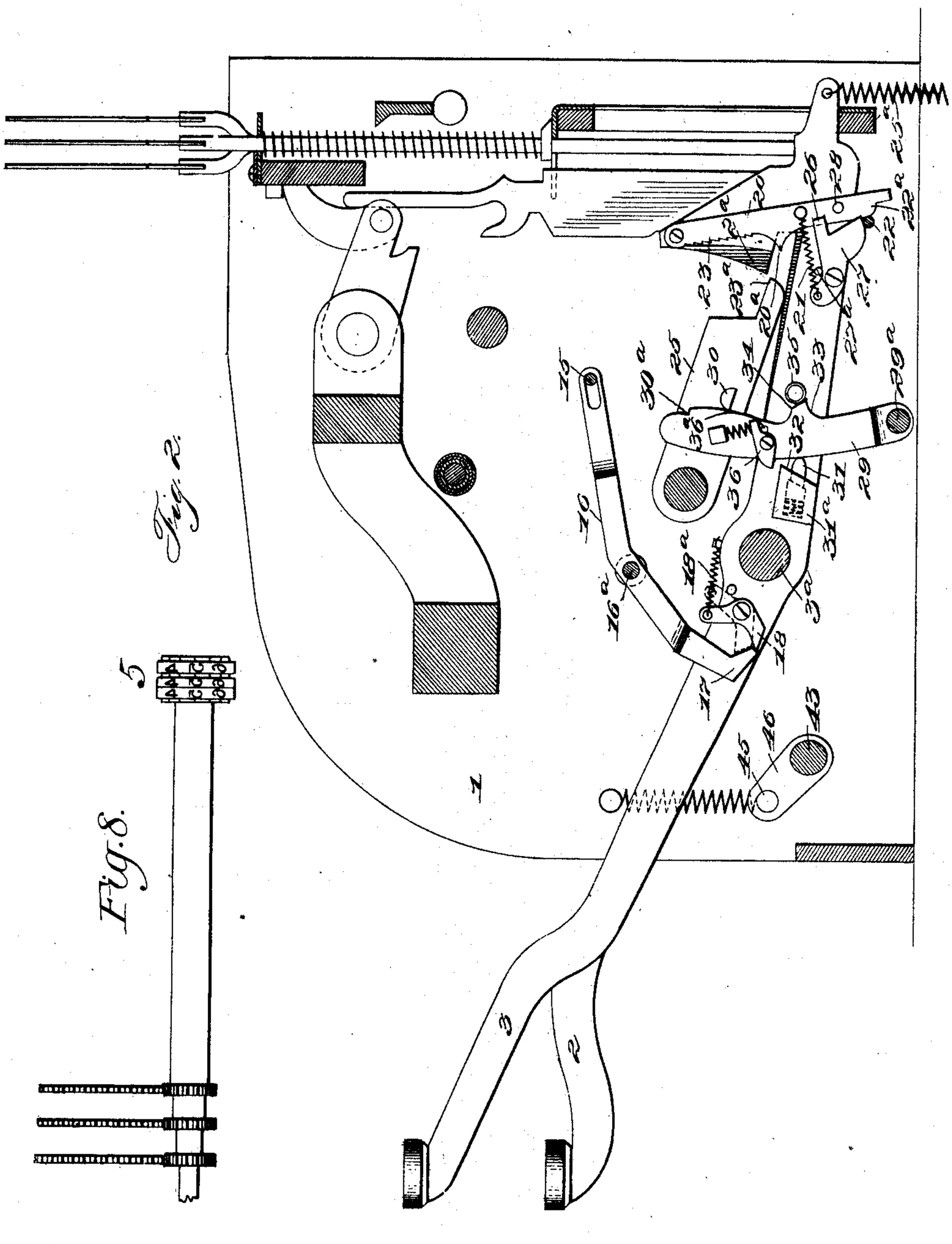

Fig. 2.

Fig. 8.

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CASH REGISTER.

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(No Model.) 4 Sheets—Sheet 3.

Fig. 3.

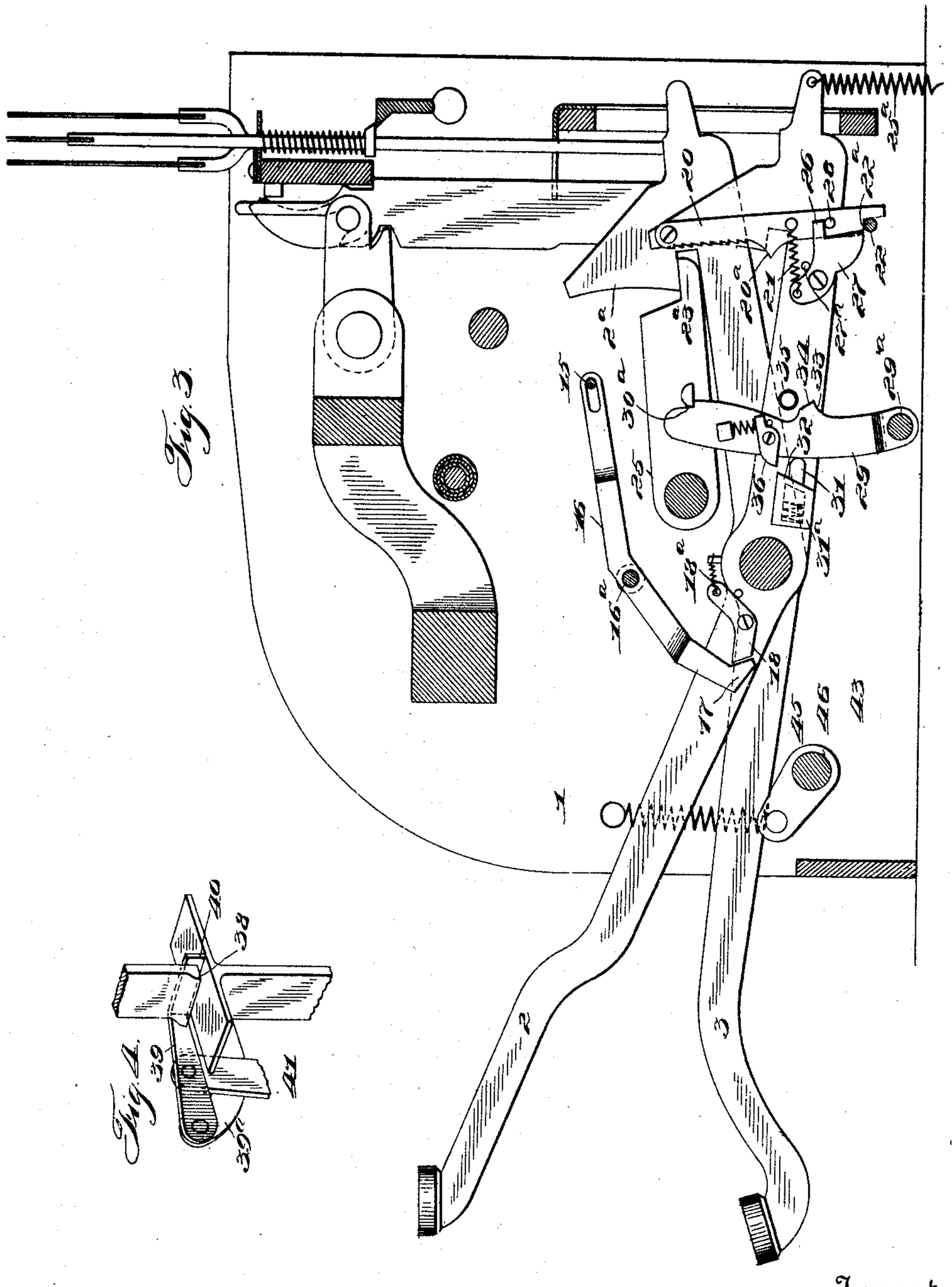

Fig. 4.

Witnesses

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CASH REGISTER.

(Application filed Aug. 25, 1898.)

(No Model.) 4 Sheets—Sheet 4.

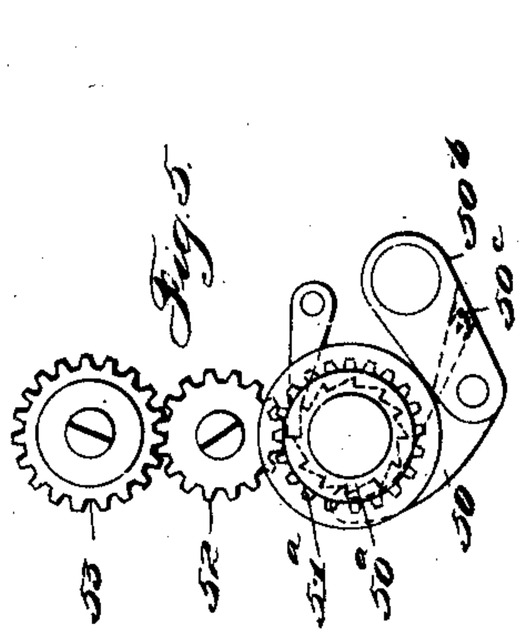

Fig. 5.

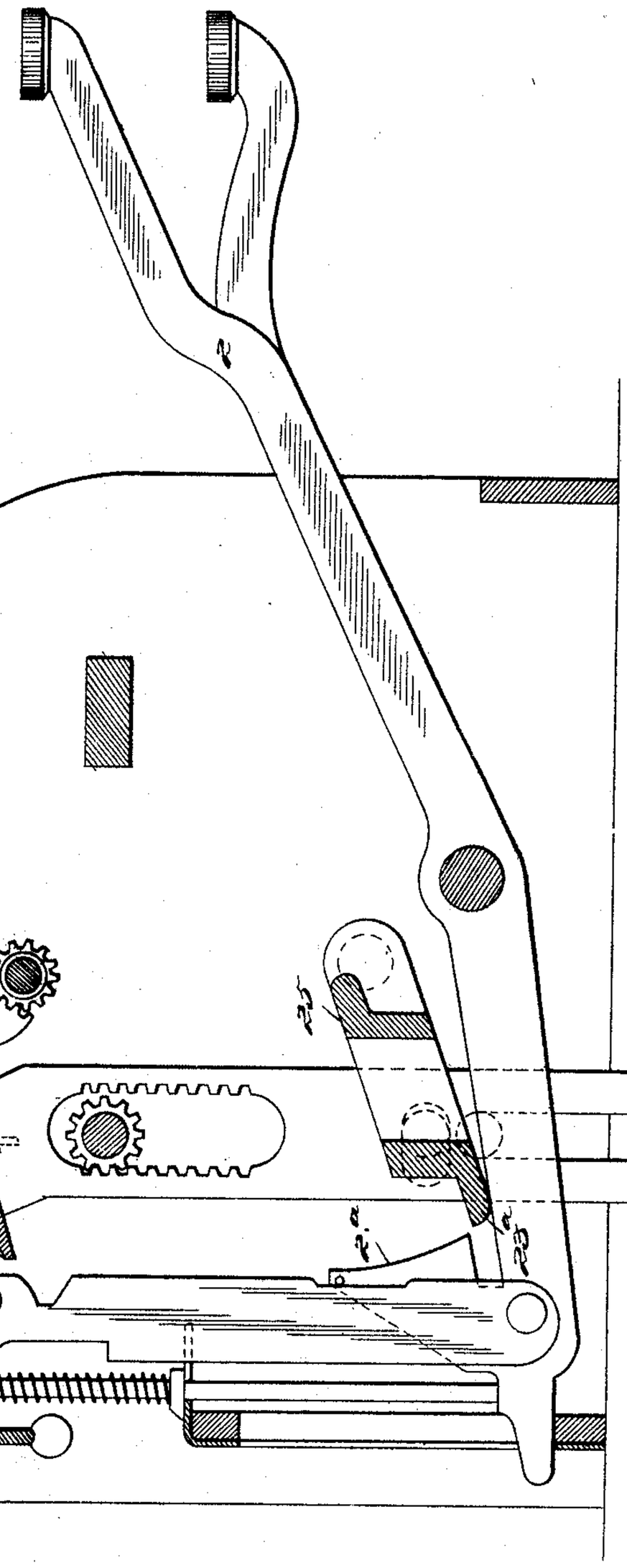

Fig. 7.

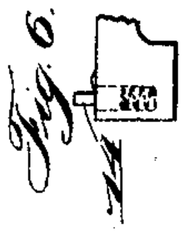

Fig. 6.

Witnesses

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Attorney

UNITED STATES PATENT OFFICE.

JOSEPH P. CLEAL, OF DAYTON, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE NATIONAL CASH REGISTER COMPANY, OF JERSEY CITY, NEW JERSEY.

CASH-REGISTER.

SPECIFICATION forming part of Letters Patent No. 666,648, dated January 29, 1901.

Application filed August 25, 1898. Serial No. 689,492. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH P. CLEAL, 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 more particularly to registers of the class patented to Thomas Carney March 19, 1895, and numbered 536,015.

One of the several objects of the invention is to provide improved means in the class of machine mentioned for printing both a check and a detail-strip during a single operation of the machine.

In the appended drawings, forming part of this specification, Figure 1 represents an end elevation of the devices embodying my invention applied to a machine of the class mentioned. Fig. 2 represents a vertical transverse section through the same, taken just inside the printing mechanism. Fig. 3 represents a view similar to Fig. 2 with the parts in the positions they assume when the check-key has made its initial movement and one of the amount-keys has made its downstroke. Fig. 4 represents a perspective view of a portion of the printer-hood and the shutter for closing the check-opening in the same. Fig. 5 represents an enlarged detail side elevation of the detail-strip spool, its actuating devices, and coöperating gears. Fig. 6 represents a detail side elevation of the spring-pressed stud upon the platen. Fig. 7 represents a vertical section through the machine, showing the connection between the keys, type-carriers, and rotation-shaft; and Fig. 8 represents a detail top plan view of the operating rack-segments and nested sleeves carrying the printing-wheels.

In the said drawings, 1 represents the frame of the machine; 2, the keys; 3, the special check-key, and 4 the printing mechanism.

As a large part of the printer and the mechanism connecting the same with the register proper is fully described in said patent, I will only enter into a brief description of the same here and will refer to said patent if a more detailed description of such parts is desired.

The printing-wheels 5 of the printing mechanism are actuated by the register-operating mechanism, substantially as described in said patent and as shown in Figs. 7 and 8. There is one printing-wheel or type-carrier coöperating, respectively, with each bank of keys in the usual manner, and the said type-carriers are connected to the register-operating mechanism in the usual manner, so as to be moved varying distances, according to the numerical value of the operated key, as will be readily understood. These printing-wheels act in conjunction with an endless inking-ribbon 6 and a platen 4^a to make a printed record of every transaction upon the detail-strip 7. The inking-ribbon and detail-strip are moved forward at each operation of the machine by the actuating-pawl 50, which engages a ratchet-wheel 50^a on the spool 51, upon which the detail-strip is wound, and through the gears 51^a, 52, and 53 moves the inking-ribbon a certain distance at every operation of the machine. The said pawl 50 is pivotally mounted upon a crank-arm 50^b, which is fast to one of the journal ends of the key-coupler 25, and is further connected to said arm by a spring 50^c, so as to be always forced into engagement with the ratchet-wheel. The platen 4^a of said printing mechanism is mounted upon a pivoted lever 9, which is provided with an operating-nose 10, so located thereon as to be forced normally against the periphery of an operating-cam 11 by means of a coil-spring 12. The said cam is rigidly mounted upon the rotation-shaft 13 of the machine, so as to be given one complete revolution during every operation of the machine, and thus engage the nose 10 and force the lever 9 down against the tension of its spring, so that when the enlarged portion of said cam passes said nose the latter will be released and the lever 9 will be thrown suddenly upward, because of the tension of its spring, and thus give the desired rapid stroke to said platen. A spring-pressed stud 14 is mounted on a portion of the lever 9 and is arranged to strike a stationary part of the frame, whereby the platen rebounds from the printing-wheels after making its stroke.

The devices thus far described form no part of my present invention. My invention, there-

fore, as illustrated, consists in applying to such a mechanism, which is arranged to print a detail-strip, other devices which will enable one to print the amount of the recorded transaction also upon a paper check which is arranged to be manually inserted at the proper time between the printing-wheels and the platen. To this end I provide means for operating the platen a second time during a single operation of the cash-register, so that the first operation of the platen will designate the amount represented by the operated keys upon the detail-strip and the second operation of the platen will designate that amount upon the check.

About midway of the ends of the platen-carrying arm 9 I fix a pin 15, which is carried by said arm and projects inwardly. Embracing said pin is the rear slotted end of a lever 16, which is centrally pivoted at 16ª to a part of the fixed frame. The forward end of said lever terminates in a downwardly-extending nose 17. Pivoted to the check-key 3 is a pawl 18, the lower swinging end of which is normally spring-pressed against the nose of the lever 16 for a purpose to be presently described. If the lever 16 is not first operated, the pawl 18 will remain in the position shown in Fig. 1, in which it is inoperative in relation to the nose 17.

Pivoted at its upper end to a portion of the check-key is a vertically-swinging arrester-bar 20, the lower end of which normally rests against a rigid stud 22, which is fixed also to a portion of the frame of the machine. Along the upper front edge of the arrester-bar is the ratchet 23, and below the ratchet and carried by the arrester-bar is a pin 28. Coöperating with said pin is a stop-plate 27, which is pivoted to the check-key, and a coiled spring 21, which is secured at its opposite ends to the arrester-bar and the stop-plate, respectively, normally tends to swing the latter downward and said bar forward. A pin 27ª limits the movement of the stop-plate in both directions. The lower end of the stop-plate also rests normally upon the pin 22, and a notch intervenes between said lower end and the nose 26. A projection 20ª on the front edge of the arrester-bar and just below the ratchet 23 is arranged to be struck by the front inclined edge 23ª of the universal bar or key-coupler 25 at a predetermined time to force said arrester-bar backward, as shall be presently described.

Pivoted at its lower end at 29ª to the fixed frame of the machine is a locking-plate 29, which extends vertically upward alongside the check-key and the right-hand end of the universal bar or key-coupler 25. Pivoted to the side of the plate 29 is a spring-pressed locking-pawl 36, whose movement in one direction is limited by a stop-pin 36ª. Secured to the side of the check-key in front of the locking-plate is a block 31ª, the upper right-hand corner of which coöperates with the locking-pawl 36 to limit the initial movement of the check-key—that is, when the check-key is moved a short distance from normal position, the block 31ª strikes the locking-pawl 36 and prevents further upward movement. Secured to the right-hand end of the key-coupler is a projection 30, which coöperates with a detent-notch 30ª near the upper end of the locking-plate 29. When the key-coupler is raised, the spring-pressed plunger 31, located within the block 31ª, forces the locking-plate to the rear, so that the wall of the notch 30ª engages under the projection 30 to retain the key-coupler in raised position until the latter is suitably released. The locking-plate 29 is further provided on its rearward edge with a nose 33, which has an inclined edge 34, and this nose coöperates with a stud 35, carried by the check-key, to prevent the locking-plate from being swung rearwardly by its spring-pressed plunger 31 unless the check-key has been previously partly raised, so that in the normal operation of the machine where no check is to be printed the amount-keys are simply pressed in the ordinary manner. If, however, it is desired to print a check, the check-key is pressed before an amount-key and is swung upward a short distance until the block 31ª strikes and is stopped by the stop-pawl 36. Thereby the stud 35 is raised, and when later the amount-keys are pressed and the key-coupler raised the locking-plate 29 will be swung rearwardly and the wall of said notch 30ª will engage the projection 30 to lock the key-coupler in its raised position. It will be observed from the above that the initial movement of the check-key is intended to release the locking-plate 29, so that it will arrest the key-coupler, as above described. As the locking-plate swings rearwardly to engage the key-coupler the locking-pawl 36 is moved out of the path of the block 31ª, so that the check-key can now be depressed its full and final stroke. The check-key 3 does not coöperate with the key-coupler 25, as the amount-keys do. It is so reduced in size at its rear end that its initial movement will not cause it to engage said key-coupler, nor will its subsequent movements bring it into connection therewith. As the check-key starts upon its initial movement the stop-plate 27 and the arrester-bar 20 are brought together by the spring 21 until the pin 28 engages the notch of the stop-plate 27 under the nose 26, and the shoulder 22ª moves over the pin 22 and supports the check-key at the end of its initial movement, while the locking-pawl 36 prevents its further movement until after the amount-keys have been pressed. As soon as the amount-key is started the rear end 23ª of the key-coupler engages under the hooked rear end 2ª of the key. When the said amount-key reaches the extreme of its initial stroke and the key-coupler is engaged and held in raised position by the locking-plate 29, as already described, of course the amount-key will be also held at the extreme of its initial stroke, and the said operated amount-key cannot be released except by giving the check-

key its final stroke. As the check-key moves on upward the arrester-bar moves farther forward, the pin 28 passing into the notch under the nose 26. During the upward movement of the check-key the rack 23 engages the edge 23^a, so that any reverse movement of said key before its upward stroke is completed and the key-coupler released, as hereinafter described, is prevented. Just before the projection 20^a of the locking-bar has reached in its forward movement the rear edge of the key-coupler, the stud 35, carried by the check-key, and which has been traveling along the rear cam edge of the locking-plate 29, forces said platen so far forward as to release the key-coupler, which immediately starts to fall by its own weight until it strikes the rear end of the upraised check-key. If now the check-key is released, the weight of the key-coupler will restore all the operated keys to normal position. In falling the key-coupler strikes the projection 20^a of the arrester-bar, thereby swinging the lower end of the latter toward the rear of the machine, so as to allow the nose 26 to drop in front of the pin 28 and hold the lower end of the arrester-bar and the shoulder 22^a thereof to the rear of the pin 22, so that the special key can return to its normal position. (Shown in Fig. 2.) The locking-plate 29 is meanwhile restored also to normal position, as will be readily understood.

It will be observed from the above that the rack-teeth on the arrester-bar 20 are not disengaged from the key-coupler until the latter has been released and moves downward, thus avoiding any danger of the special key being operated and returned to its normal position without releasing the coupler. When the pawl 27 strikes the bar 22 upon the return stroke of the special key, said pawl is moved up into the position shown in Fig. 2, so as to leave the arrester-bar free for the next setting operation.

It will be readily understood that during the initial movement of the operated amount-key the shaft 13 will be moved, as described in the aforesaid patent, the cam 11 will be given a half-turn in the direction of the arrow shown in Fig. 1 far enough to retract the platen or printing-hammer 4^a and to then release it, so that the said hammer forces the detail-strip 7 against the ink-ribbon 6, which passes just under the printing wheels, whereby said printing-wheels or type-carriers designate by printing upon the detail-strip the numerical value of the operated keys. In practical operation of the machine the check is now manually inserted between the detail-strip and the ink-ribbon and the check-key given its final and full stroke to cause the hammer to be again retracted and released and in the manner already described designate by printing upon the inserted check the amount of the recorded transaction. The platen is retracted as referred to by the lever 16. During the initial movement of the operated amount-key as the platen is retracted the pin 15 therein swings the rear end of the lever 16 downwardly, thereby rocking the said lever on its pivot 16^a and raising the nose 17, so that the locking-pawl 18 passes by it and the parts remain in the position shown in broken lines in Fig. 2. Now when the check-key is given its final movement the locking-pawl 28 is held rigid by its stop-pin 18^a, and therefore in passing down it swings the nose 17 upward, thereby throwing the rear end of the lever 16 downward, and through the pin 15 retracts the platen until as the nose 17 slips off the locking-pawl 18 the platen is released and its spring 12 throws it upward for its second stroke, thereby forcing the check against the printing-wheels, as heretofore referred to.

Of course my invention may be embodied in a variety of forms without departing from its spirit, and I do not limit myself to any particular form, my object being to provide a machine of the general class referred to which is arranged to print both a check and detail-strip and in which a primary movement of the machine adjusts the type-carriers to printing position, holds them there, and makes one impression by the platen, and during the final operation of the machine an independent means comes into play to again actuate the platen before the type-carriers are released.

Another feature of my invention relates to a means for alternately closing and opening the horizontal slot 38 in the front of the casing of the printing devices and through which the check is manually inserted, so that the said check can only be inserted at the proper time. Normally the slot is closed by the arm 39, pivoted at its front end to the upturned end of the bracket 39^a. The transverse extension 40 upon the rear end of the arm 39 forms the shutter to close and open the slot 38. Pivoted at its upper end to the arm 39 is a link 41, which is jointed at its lower end to a crank-arm 42, the latter being fast at its forward end upon a transverse rock-shaft 43, which is journaled at its ends in the fixed frame of the machine. Forwardly-extending arms 46 are also secured upon the transverse rock-shaft and are connected at their outer ends by a crank-bar 45, to which a coil-spring is secured at one end, its other end being fast to the fixed frame of the machine, and thereby when the shaft 43 is rocked the said spring operates to return it to normal position. When any key is depressed, it contacts with the bar 45 and by forcing the same downward raises the crank 42, and consequently the arm 39 and the shutter 40, to open the slot 38. The special object of providing the shutter and its operating mechanism is to prevent both impressions of the platen being made upon the check, as this would leave no record on the detail-strip; but by means of the mechanism described the slot 38 is absolutely closed until after its first impression has been made by the platen 4^a, as will be readily understood.

Having thus described my invention, what

I claim as new, and desire to secure by Letters Patent, is—

1. In a cash-register arranged to print both a check and a detail-strip, the combination with the type-carriers, of a platen keys arranged to move the type-carriers according to their numerical value and also operate the platen, means for locking the operated keys at the end of their initial movement, and means independent of the keys for actuating the platen and releasing the operated keys.

2. In a cash-register which is arranged to print a check, and a detail-strip, the combination with the type-carriers and the coöperating platen, of the keys arranged during their initial movement to adjust the type-carriers according to the numerical value of the operated keys and to actuate the platen, means to lock the operated keys at the end of their initial movement, and means independent of the keys arranged to release the operated keys and to again actuate the platen.

3. In a cash-register which is arranged to print a check and a detail-strip, the combination with a key having an initial and a final movement, of the type-carriers, means for adjusting the type-carriers during the initial movement of the amount-keys means for locking said carriers in adjusted position, a platen, means for actuating the platen during the initial movement of said keys, and independent means arranged to actuate the platen a second time and to also restore the type-carriers to normal position.

4. In a cash-register arranged to print both a check and a detail-strip, the combination of a check-key and a series of amount-keys all having an initial and a final movement, type-carriers, a platen means for adjusting the type-carriers and actuating the platen during the initial movement of the amount-keys, means for automatically locking the type-carriers in adjusted position, and independent means controlled by the check-key for actuating the platen a second time and restoring the type-carriers to normal position.

5. In a cash-register, the combination with a printing mechanism, of a lever carrying a platen, an auxiliary lever arranged to operate the platen-lever and mechanism by means of which the platen-lever must be operated before the auxiliary lever can operate said platen-lever.

6. In a cash-register, the combination with a printing mechanism, of a platen, two levers for operating said platen, a spring for normally forcing said levers toward the printing mechanism and means for depressing said levers against the tension of the spring and then releasing them upon the operation of the machine, and an independent key for operating said levers.

7. In a cash-register, the combination with the driving mechanism and the type-carriers arranged to be set by the driving mechanism, of a platen operated by the driving mechanism to make a printed impression from the type-carriers when they are set by the driving mechanism, and means independent of said driving mechanism for operating the platen to make a second printed impression from the type-carriers when so set by the driving mechanism.

8. In a cash-register, the combination with the driving mechanism and the type-carriers, of a platen arranged to be operated by said driving mechanism, and a check-key arranged to operate said platen independently of said driving mechanism.

9. In a cash-register, the combination with the driving mechanism and the type-carriers, of a platen arranged to be operated by the driving mechanism, a check-key and a lever coöperating with said key and arranged to operate said platen independently of the driving mechanism.

10. In a cash-register, the combination with the driving mechanism and the type-carriers, of a platen arranged to be operated by the driving mechanism, a check-key, means cooperating with said key and arranged to move said platen, and devices for disengaging said means from the key after a certain predetermined movement of the same.

11. In a cash-register, the combination with the type-carriers, of a series of keys for moving the same and having an initial and a final movement, a platen operated by said keys, devices for locking the keys at the end of their initial movement, and independent means for releasing the keys and actuating said platen.

12. In a cash-register, the combination with the type-carriers, of a series of keys a platen arranged to be operated thereby, a check-key for independently operating said platen and having an initial and a final movement, and a latching device for retaining said key in its position at the extremity of its initial movement.

13. In a cash-register, the combination with the type-carriers, of a platen, a series of amount-keys arranged to operate the platen, a locking-lever for securing the keys in position at the extremity of their initial movement, a check-key for operating said platen, and means mounted on said key and arranged to engage the locking-lever to release the operated amount-keys.

14. In a cash-register, the combination with the type-carriers, of a series of keys for moving the same, a platen arranged to be operated by said keys, a check-key for operating said platen independently of the first-mentioned keys, and means coöperating with said check-key for locking the first-mentioned keys.

15. In a cash-register, the combination with the type-carriers, of a series of operating-keys, means for preventing a complete im-

mediate stroke of said keys, a platen arranged to be operated by said keys, and a check-key also arranged to operate the platen and to release said means for preventing a complete stroke of the keys.

16. In a cash-register, the combination with the type-carriers and platen, of means for actuating said platen twice during one operation of the machine and devices for preventing the insertion of a check by hand until after the platen has been once actuated.

17. In a cash-register, the combination with a printing mechanism, of a series of amount-keys for operating the same, a check-key for operating the printing mechanism independently of the amount-keys, a shutter for preventing the insertion of a check, and means actuated by the amount-keys to release the shutter.

18. In a cash-register, the combination with a printing mechanism, of a series of amount-keys for operating the same, a check-key also arranged to operate said mechanism, a stop for preventing said check-key being fully depressed, and means for moving said stop upon the operation of the amount-keys.

19. In a cash-register, the combination with a printing mechanism, of a series of keys for actuating the same, a check-key also arranged to actuate the printing mechanism, a stop to prevent a complete stroke of said check-key, and means to prevent a complete stroke of the amount-keys.

20. In a cash-register, the combination with the type-carriers, of the platen, a series of keys for operating the same, the check-key, the locking-pawl 18 on said key and a pivoted lever engaged by said pawl and arranged to operate said platen.

21. In a cash-register, the combination with a printing mechanism, of a series of keys, a universal bar or key-coupler, a locking-plate 29 arranged to engage the said universal bar, and a check-key for operating the printing mechanism and actuating the locking-plate to release said bar.

22. In a cash-register, the combination with a series of amount or value keys, driving mechanism and type-carriers, of a platen operated by the driving mechanism to make a printed impression from the type-carriers when they have been set by the driving mechanism, and an auxiliary lever or check-key for making a second printed impression from the type-carriers when they have been so set.

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

JOSEPH P. CLEAL.

Witnesses:

ALVAN MACAULEY,

WILLIAM MUZZY.