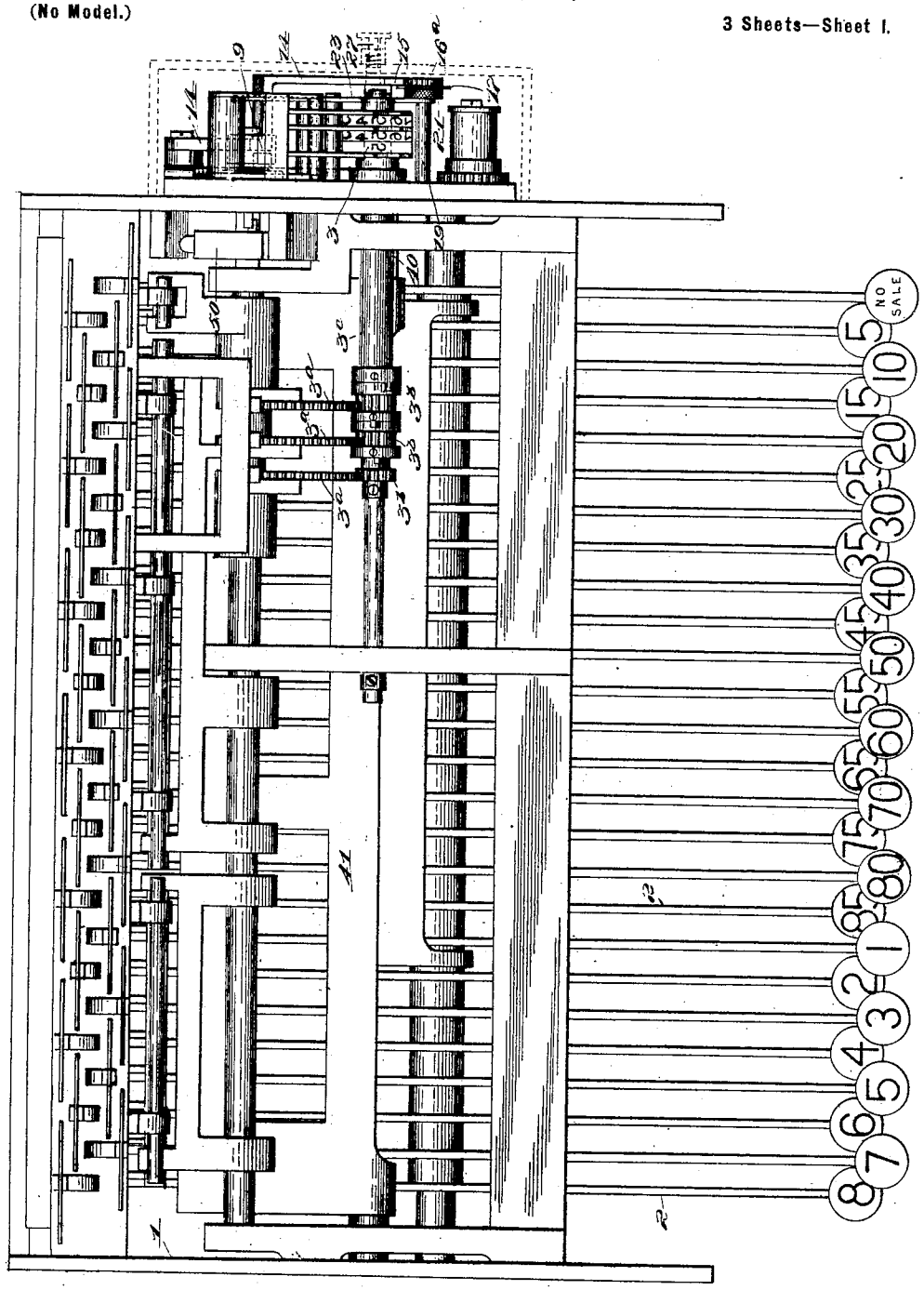
No. 707,408. Patented Aug. 19, 1902.

# G. S. GREEN.

## CASH REGISTER.

(Application filed Aug. 19, 1898.)

(No Model.) 3 Sheets—Sheet 1.




WITNESSES:

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Fig. 1.

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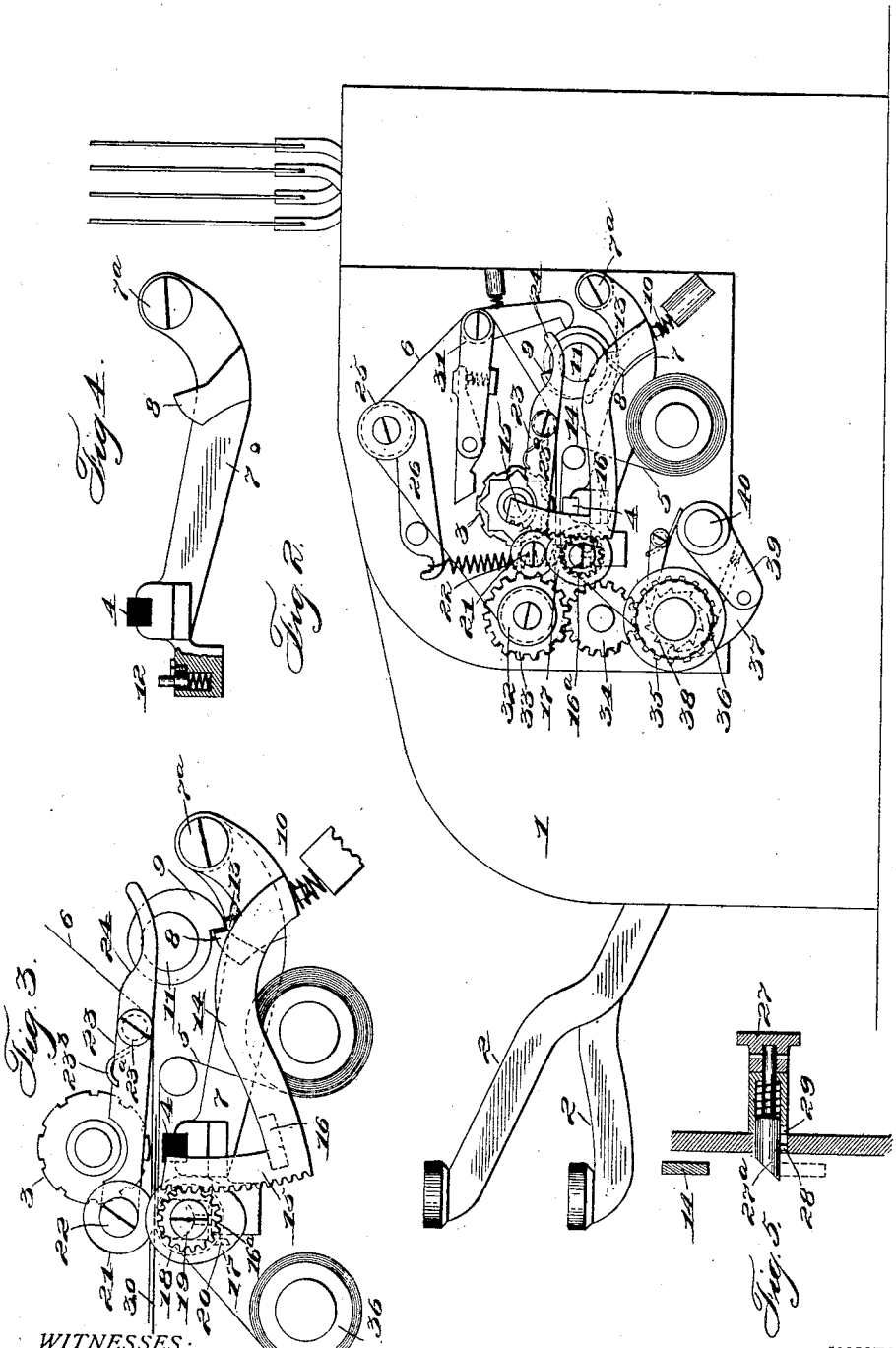
No. 707,408. Patented Aug. 19, 1902.

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CASH REGISTER.

(Application filed Aug. 19, 1898.)

(No Model.) 3 Sheets—Sheet 2.



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No. 707,408.

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G. S. GREEN.

CASH REGISTER.

(Application filed Aug. 19, 1898.)

(No Model.)

3 Sheets—Sheet 3.

Fig. 7.

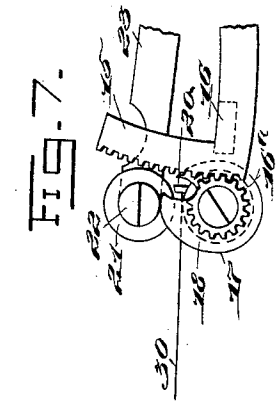



Fig. 6.




Witnesses

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# UNITED STATES PATENT OFFICE.

GEORGE S. GREEN, 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. 707,408, dated August 19, 1902.

Application filed August 19, 1898. Serial No. 688,989. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE S. GREEN, 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 improvements in registers of the type 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.

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 aforesaid type. Fig. 2 represents a side elevation of the same. Fig. 3 represents an enlarged detail side elevation of the platen-levers, the check-feeding rollers, and surrounding mechanism. Fig. 4 represents an enlarged detail perspective view, partly in section, of the platen and the spring-pressed plunger. Fig. 5 is a detail view showing the spring-pressed plunger which normally holds the check feed and printing devices out of operative position. Fig. 6 represents a vertical transverse section through a machine provided with my improvements; and Fig. 7 represents an enlarged detail side elevation of the check-feeding disks, a part of one of the same being broken away to expose the stop-pin.

In the aforesaid drawings, 1 represents the frame of the machine; 2, the operating-keys; 3, the printing-wheels; 4, the platen, and 5 the paper strip on which successively-registered amounts are printed consecutively. 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 said parts here and will refer to said patent if a more detail description is desired.

The printing-wheels 3 coöperate, respectively, with the segmental operating-racks $3^a$, which when the keys are pressed are operated different distances according to the numerical value of the operated keys and which transmit their movement through the pinions $3^b$, which are respectively secured upon ends of a nest of sleeves $3^c$ to the printing-wheels or type-carriers 3 in the usual manner. These wheels act in conjunction with an endless inking-ribbon 6 and the platen 4 to print the amounts of the successively-recorded transactions upon the paper detail-strip 5. The platen 4 is secured upon the swinging end of the lever 7, which is pivoted to the fixed frame at $7^a$, with an operating cam-nose 8 normally pressed against the periphery of a cam 9 by one of two coil-springs 10. The said cam is rigidly mounted upon the revolution-shaft 11 of the machine, so as to be given one complete revolution during every operation of the machine. As the cam rotates it engages the nose 8 and forces the lever 7 down against the tension of its spring, so that when the reduced release portion of said cam passes said nose the latter will be released and the lever will be thrown suddenly upward, because of the tension of its spring, and thus give the desired rapid stroke to the platen. A spring-pressed stud 12 is mounted on said platen and is arranged to strike a stationary portion of the machine, whereby the platen rebounds from the printing-wheels after making its stroke. The cam 9 is of sufficient width to also engage a nose 13, formed on segment-lever 14, which is pivoted at $7^a$ and is spring-pressed in a similar manner to the lever 7. The lever 14 is provided at its swinging end with a segmental operating-rack 15, the office of which will be hereinafter described. The relative locations of the cam 9 and the levers 7 and 14 are such that while both levers are depressed together they are released successively, the platen-carrying lever being released during the downward movement of the keys and the segment-lever 14 during the return movement of the keys. This arrangement will cause the platen to be operated first by its own lever and then during the return stroke of the keys. As the segment-lever returns to normal position under the impulse of its spring 10 a lat-

eral projection 16 on the segment-lever will strike the platen and again force it against the printing-wheels. The aforesaid segmental rack 15, which is carried by the lever 14, meshes with a pinion $16^a$, fast to a cam 17, which in turn is fast to a check-feeding disk 18, having a roughened periphery and journaled on a short transverse shaft 19, secured at one end to the fixed frame of the machine, and it is against the under side of the said shaft that the spring-plunger 12 of the platen strikes to retract the platen after the latter has struck the printing-wheels or intervening paper strip. The feed-disk 18 is provided with a stop-pin 20, which normally extends vertically upward from the lower feed-disk 18 and against which the end of the check abuts when it is forced into the machine through a suitable slot in the front of that part of the casing which covers the printing devices, said part being shown in broken lines in Fig. 1. Just above the feed-disk 18 is located a similar feed-disk 21, journaled upon a pivot 22, which in turn is mounted upon a swinging end of the feed-disk-carrying lever 23, the latter being pivoted to the frame at $23^a$ and having a spring $23^b$, which tends to throw the feed-disks 18 and 21 into contact; but said feed-disks are disengaged when in their normal positions by the cam 17, which contacts with the extended end of the pivot 22, and thereby forces the feed-disk 21 upward. The rear portion of the lever 23 is formed with a finger-piece 24, whereby it may be manually operated against the tension of its spring to separate the feed-disks for convenience in threading on the paper strip or removing or replacing the inking-ribbon should this become desirable.

It will be observed from the foregoing description that when a key is operated and the cam 9 thereby rotated, as it is by means of the usual revolution-rack 50, both of the levers 7 and 14 will be simultaneously depressed. The depression of the latter lever causes the rotation of the cam 17 and feed-disk 18, with the result that the feed-disk 21 is permitted to descend and engage the feed-disk 18 and the check 30, which was previously manually inserted from the front end of the machine between the feed-disks and until stopped by the stop-pin 20. As the segment-carrying arm 14 is moved backward the feed-disks, through the medium of the pinion $16^a$, are revolved and the check 30 is fed rapidly backward until its rear end is between the platen and the printing-wheels, as shown in Fig. 3. It then stops momentarily, and at this time the platen-carrying arm is released by its cam, and the platen springing upward strikes against the under side of the paper strip 5, and thereby the check 30 and the ink-ribbon which lies above it are both forced against the type or printing-wheels and the amount represented by the keys operated is printed upon the check. Immediately thereafter the segment-carrying arm is released by its cam 13 and is thereupon forced upward by its respective spring 10 and rapidly revolves the pinion $16^a$, and consequently the feed-disks, to forcibly eject the check 30 through the slot in the casing, whereby when the projection 16 on the segment-carrying arm has been thrown up far enough to strike the under side of the platen the check will have passed from between the platen and the printing-wheels. The force of the blow struck by the projection 16 upon the platen forces the latter again upward against the under side of the paper strip 5, and as the check 30 has previously passed out of the way the impression this time is made upon the strip 5. The paper strip 5, it should have been observed, is narrow and extends over the short shaft 19. The check, however, is wider, and therefore extends between the feed-disks, which grip it on one edge. In this way although when the check is inserted in the machine it lies just on top of the paper strip yet the movement of each is entirely independent of the other. The upward movement of the segment-carrying lever 14 also causes the cam 17 to again raise the feed-disk 21 and leave a clear space between the feed-disks for the insertion of the next check.

To prevent the slipping of the endless inking-ribbon and to hold the same taut at all times, I provide a tightening ribbon-guide and roller 25, mounted on the swinging end of a pivoted spring-pressed lever 26, so as to engage said ribbon under spring tension. The inking-ribbon is an endless band which passes over the roller 25, the roller 31, under the shaft $23^a$, upon which the feed-disk-carrying arm is pivoted, and finally around the roller 32, which is secured to and moves with the ink-ribbon-feeding gear 33. The latter meshes with the intermediate gear 34, which conveys movement from the driving-gear 35, secured to and carried by which is the receiving-spool 36, upon which the paper strip 5 is wound as it passes from the printing-wheels. A step-by-step movement is given the driving-gear 35, so as to move both the paper strip and the endless ink-ribbon by the driving-pawl 37, which is pivoted and held in spring engagement with the ratchet 38, also secured to the driving-gear. The pawl 37 is pivoted to the swinging end of the crank rock-arm 39, which is fast upon the outer end of the short shaft 40, which forms the right-hand pivot for the universal bar 41, which extends across all of the keys and is vibrated upward whenever any key is operated. When the said bar is thus vibrated, it of course rocks its pivot-shaft, and consequently the rock-arm 39, as will be readily understood.

As it is sometimes desirable to operate the machine without issuing a check, I provide the side of the printer-hood with a spring-pressed plunger 27, having a beveled head $27^a$, which normally snaps over the lever 14 when the same is depressed by the operation of the machine, and thus holds it in its de-

pressed position and prevents a second impression being made by the platen, and as no check is used the one impression is made on the paper strip 5. When a check is desired, the plunger 27 is drawn outward and held in this position by being given a partial turn to cause the pin 28, with which it is provided, to enter a portion of an angular slot 29, formed in the plunger-casing $27^a$.

By means of my improved devices a single printing device with but one set of types will print both a check and a detail-strip by a double action of the platen during a single operation of the machine. The check is first automatically drawn into the machine, then printed, and finally automatically ejected.

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

1. In a cash-register, the combination with the driving mechanism and type-carriers, of a platen coöperating with the latter, operating means for the platen and an auxiliary operating mechanism arranged to actuate said platen independently of and subsequently to the aforesaid operating means.

2. In a cash-register, the combination with a printing mechanism, of a platen, two independent levers for operating said platen and means arranged to depress said levers and release them successively so as to give the platen two distinct operations.

3. In a cash-register the combination with the driving mechanism and type-carriers, of a movable member carrying a platen, a primary mover for operating said member, and an independent secondary mover operated by the primary mover and arranged to actuate said member after it has been operated by the primary mover.

4. In a cash-register, the combination with a series of keys and the type-carriers arranged to print upon a paper check, of the platen and a segment or rack arranged to be moved in one direction to feed the check between the platen and type-carriers and in the opposite direction to eject said check.

5. In a cash-register which is arranged to print both a check and detail-strip, the combination with the series of keys and the type-carriers, of a platen, means actuated by the keys for performing the following operations in their assigned order, viz: feeding a loose check forward between the type-carriers and platen, forcing the check against the type-carriers, feeding the check backward, and forcing the detail-strip against the type-carriers.

6. In a cash-register, the combination with the series of keys and the type-carriers arranged to print upon a paper check, of the platen and a lever for operating the platen carrying a segment or rack arranged to feed the check.

7. In a cash-register, the combination with a printing mechanism, of a platen, two independent levers for operating said platen, means for successively operating said levers, and check-ejecting devices arranged to be operated by one of said levers.

8. In a cash-register the combination with a printing mechanism, of a platen, a check-ejector means, a lever for operating the platen, and means carried by the lever for operating the check-ejector means.

9. In a cash-register the combination with a printing mechanism, of a platen, a lever for operating said platen, a check-ejector means, and a segment or rack carried by said lever and arranged to operate said check-ejector means.

10. In a cash-register, the combination with a printing mechanism, of a platen, a lever for operating said platen, check-feeding disks operated by said lever and arranged to clamp the check between them and means coöperating with the said disks to separate them and release the check when it is to be ejected.

11. In a cash-register the combination with a printing mechanism, of a check-feeding disk, movable spring-pressed means carrying another feeding-disk arranged to contact with the first-named disk, devices for moving said disks to first feed a check forward and then to retract it, and means for automatically separating the disks to release the check when it is to be ejected.

12. In a cash-register, the combination with a printing mechanism, of a platen, two independent levers for operating said platen, springs for normally forcing said levers toward the printing mechanism and a cam connected to the movable parts of the machine and arranged to depress said levers against the tensions of their springs and then successively release them so that each in turn will cause a printing action of the platen.

13. In a cash-register, the combination with a printing mechanism, of a platen, two independent levers for operating said platen and a cam arranged to retract both levers and to afterward successively release them.

14. In a cash-register, the combination with a printing mechanism, of a platen, two independent levers for imparting a double stroke to said platen, a rack mounted on one of said levers and check-feeding devices meshing with said rack.

15. In a cash-register, the combination with a printing mechanism, of an operating-lever carrying a platen, an independent lever for operating said platen, and a cam engaging said levers and arranged to disengage therefrom at different times so that said levers are successively operated.

16. In a cash-register, the combination with a printing mechanism, of a platen, platen-operating means and an auxiliary independent operating device for said platen arranged to actuate the platen subsequent to its operation by the first-mentioned platen-operating means.

17. In a cash-register, the combination with a printing mechanism, of a check-feeding

mechanism comprising a feeding-roller, a projection mounted on said roller and arranged to act as a check-stop and a check-ejecting means.

18. In a cash-register the combination with the series of keys and type-carriers arranged to print upon a paper check, of the platen and devices arranged to move in one direction to feed the check between the platen and the type-carriers and in the opposite direction to eject said check.

19. In a cash-register the combination with a printing mechanism, of a platen, two independent levers for operating said platen, means for successively operating said levers, and check-ejecting devices arranged to be operated between the operations of the levers.

20. In a cash-register the combination with a printing mechanism, check-feeding disks, means arranged to operate said disks first in one direction and then in the other and devices coöperating with the said disks to separate them and release the check when it is to be ejected.

21. In a cash-register, the combination with a printing mechanism, of a lever carrying a platen, a second lever for operating said platen carrying a rack, a check-feeding disk carrying a pinion meshing with said rack, and a spring-pressed companion disk movable toward and from the first-mentioned disk.

22. In a cash-register, the combination with a printing mechanism, of a lever carrying a platen, a second lever for operating said platen carrying a rack and a check-feeding disk carrying a pinion which meshes with said rack.

23. In a cash-register, the combination with a printing mechanism, of a lever carrying a platen, a check-ejector means, a second lever for operating the platen and a rack carried by said second lever and arranged to operate the check-ejector.

24. In a cash-register, the combination with a printing mechanism, of a lever carrying a platen, a check-ejector means, a second lever for operating the platen and means carried by said second lever for operating the check-ejector means.

25. In a cash-register, the combination with a printing mechanism, of check-feeding devices arranged to be moved first in one direction to feed a check into coöperative relation with said mechanism and then in an opposite direction to eject said check.

26. In a cash-register, the combination with a series of keys, of type-carriers moved thereby, a platen, and devices arranged to be moved in one direction to feed a check and in the opposite direction to eject said check.

27. In a cash-register the combination with the series of keys, arranged to be operated by hand-pressure upon the same, of type-carriers arranged to be moved by said keys, a platen coöperating with said type-carriers and independent devices actuated by the keys for bringing said type-carriers and platen together twice during each operation of the keys.

28. In a cash-register, the combination with a printing mechanism, of a lever carrying a platen, a second lever for giving the platen a second operation and means for locking said second lever out of operative position at will.

29. In a cash-register, the combination with a printing mechanism, of a platen, independent devices for giving the platen two operations at each single operation of the machine and means for preventing one of said platen operations at will.

30. In a cash-register, the combination with a printing mechanism, of a platen, a lever for operating said platen independently of its regular operation, and means for rendering said lever inoperative at will.

31. In a cash-register, the combination with a printing mechanism, of a platen, two independent spring-pressed levers for operating said platen and means arranged to depress said levers against the tensions of their springs and release them successively so as to give the platen two distinct operations.

32. In a cash-register, the combination with a printing mechanism, of two independent spring-pressed levers, a platen mounted on one of said levers, a projection mounted on the remaining lever and arranged to engage the first-mentioned lever, and means arranged to depress said levers against the tensions of their springs and release them successively so as to give the platen two distinct operations.

33. In a cash-register, the combination with a printing mechanism, of a platen, two independent spring-pressed levers for operating said platen, and two cams arranged respectively to engage said levers, depress them against the tensions of their springs and release them successively so as to give the platen two distinct operations.

34. In a cash-register, the combination with a driving mechanism and type-carriers, of a platen coöperating with the latter, operating means for the platen connected to the driving mechanism, and an independent operating device for the platen also connected to the driving mechanism and arranged to automatically operate said platen subsequent to its operation by the first-mentioned means.

35. In a cash-register, the combination with a driving mechanism and type-carriers, of a platen coöperating with the latter, operating means for the platen connected to the driving mechanism, an independent operating device for the platen also connected to the driving mechanism, and check-feeding devices arranged to be operated by said independent platen-operating devices.

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

GEORGE S. GREEN.

Witnesses:

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ALVAN MACAULEY.