No. 824,881. PATENTED JULY 3, 1906.

F. C. OSBORN.

CASH REGISTER.

APPLICATION FILED SEPT. 11, 1899.

3 SHEETS—SHEET 1.

Fig. 1.

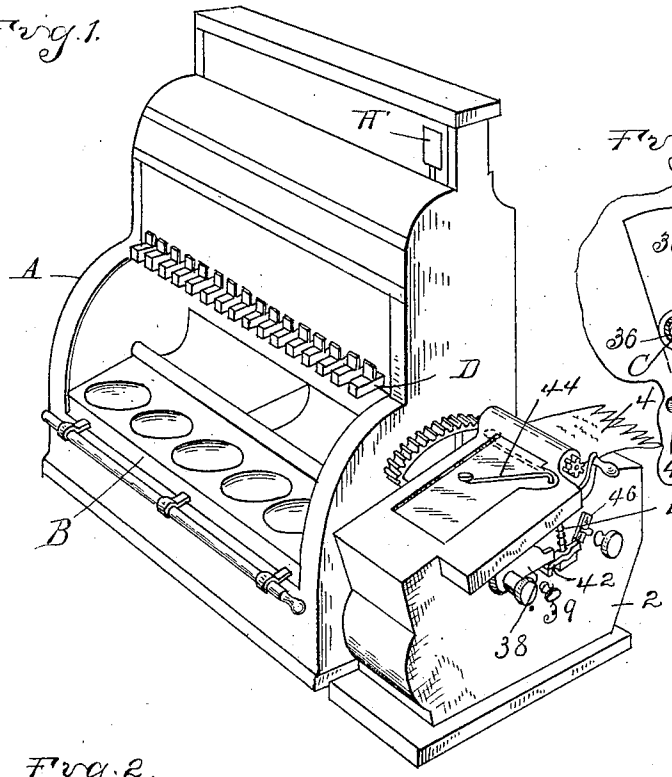


Fig. 6.

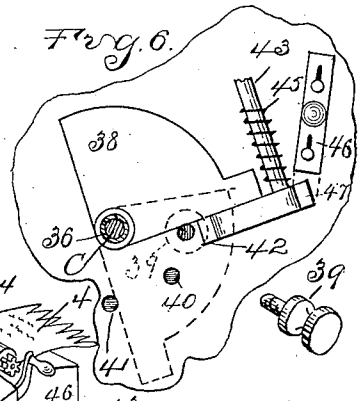


Fig. 2.

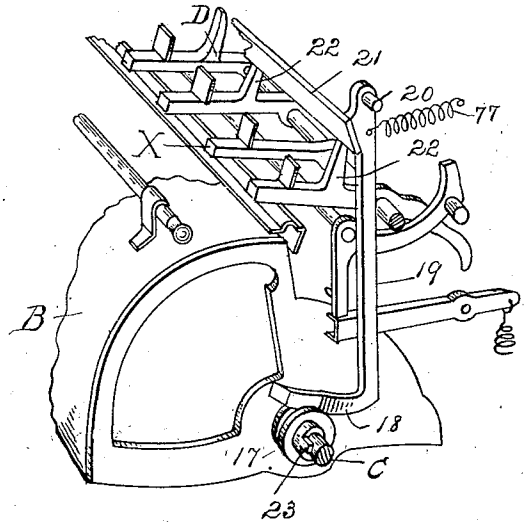
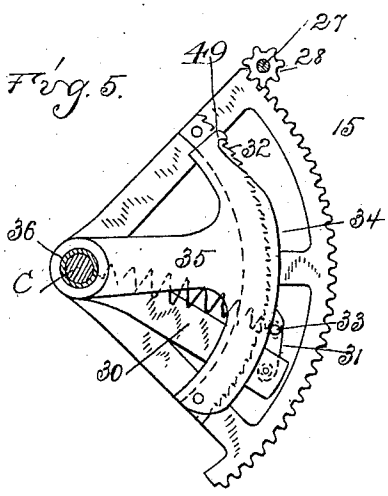


Fig. 5.



Witnesses
A. L. Hobby
W. B. Dougherty

Inventor
Francis C. Osborn
By Munn & Dyer
Attys.

No. 824,881. PATENTED JULY 3, 1906.

F. C. OSBORN.

CASH REGISTER.

APPLICATION FILED SEPT. 11, 1899.

3 SHEETS—SHEET 2.

Fig. 4.

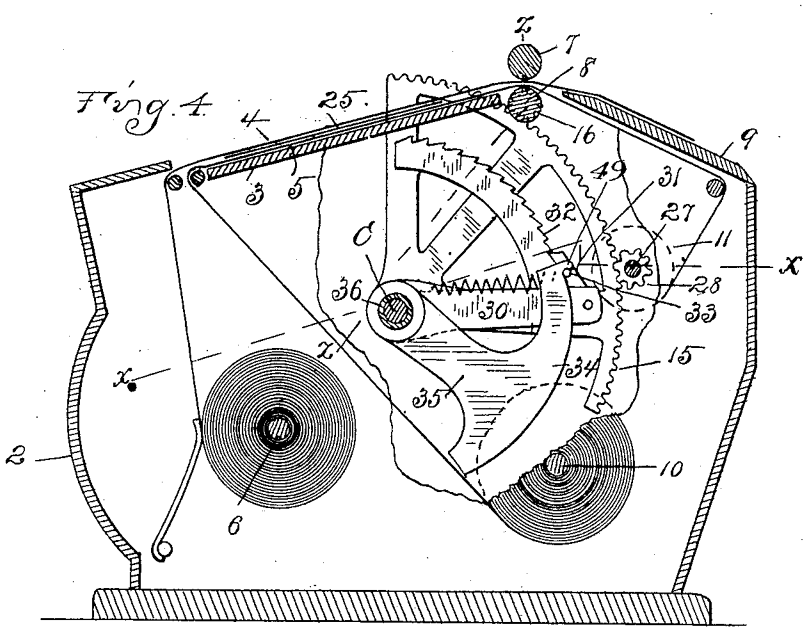
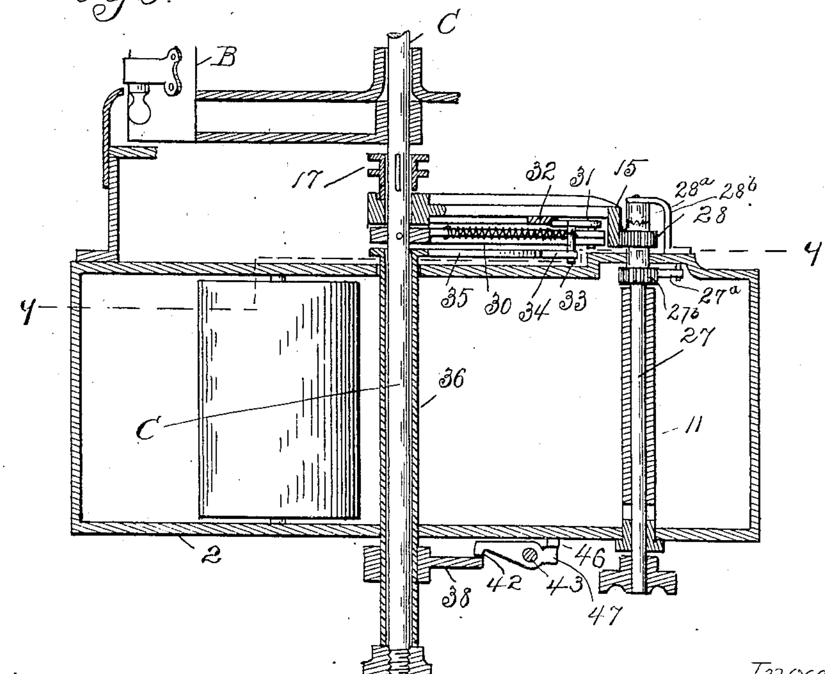


Fig. 3.



Witnesses
A. L. Abbey
W. B. Dougherty.

Inventor
Francis C. Osborn
By Thos. S. Sprague & Son
Attys.

No. 824,881. PATENTED JULY 3, 1906.

F. C. OSBORN.

CASH REGISTER.

APPLICATION FILED SEPT. 11, 1899.

3 SHEETS—SHEET 3.

Fig. 7.

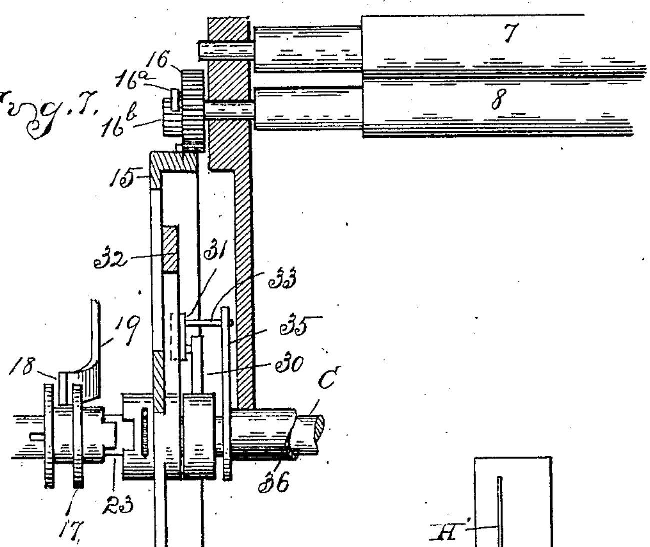
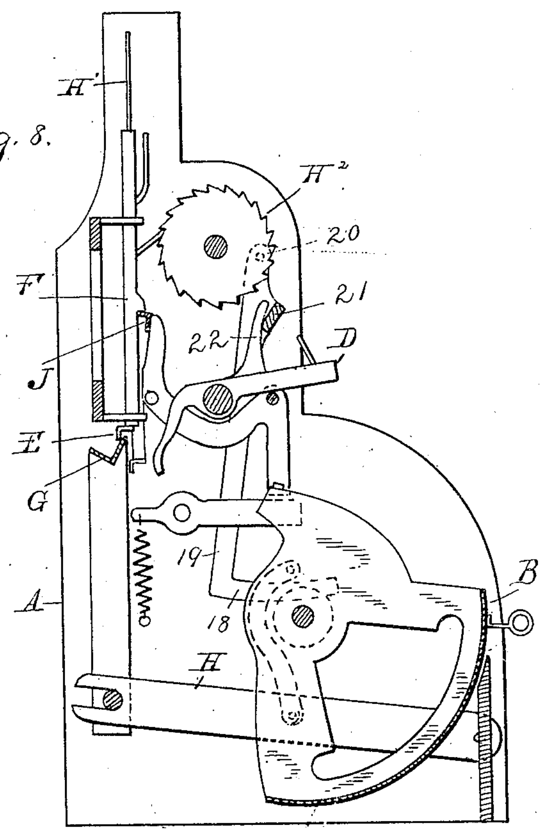


Fig. 8.



Witnesses
A. L. Hobby
Wm. McDogherty

Inventor
Francis C. Osborn
By Thos. S. Sprague & Son
Attys.

UNITED STATES PATENT OFFICE.

FRANCIS C. OSBORN, OF DETROIT, MICHIGAN, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE NATIONAL CASH REGISTER COMPANY, OF DAYTON, OHIO, A CORPORATION OF OHIO. (INCORPORATED IN 1906.)

CASH-REGISTER.

No. 824,881. Specification of Letters Patent. Patented July 3, 1906.

Application filed September 11, 1899. Serial No. 730,133.

To all whom it may concern:

Be it known that I, FRANCIS C. OSBORN, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Cash-Registers, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention consists in the construction of a cash-register, and particularly in the construction of a recording device embracing a paper strip upon which the record is to be kept or made.

The invention consists particularly in the construction of the actuating and controlling devices for the paper strip and for its feed movement and in its combination with keys or actuating devices in the cash-register which actuate the strip.

The invention further consists in the construction, arrangement, and combination of parts, as more fully hereinafter described, and pointed out in the claims.

In the drawings I have shown my improvement applied to a cash-register substantially like that shown in United States Letters Patent, granted to myself on December 6, 1898, No. 615,409. While I have shown the invention applied to such a cash-register, I do not intend to limit myself to its use with such a machine or even with such a type of machine. It will also be understood that the construction of the cash-register itself is no part of my present invention, except so far as it is combined with and intended to operate or control the paper strip of the recording device.

In the drawings, Figure 1 is a perspective view of a cash-register, showing my improvement applied thereto. Fig. 2 is a detail perspective view of the end of the cash-register, showing a view of the keys and the means for coupling the paper-feed devices by the operation of those keys. Fig. 3 is a horizontal section through the case containing the recording-strip, the section being upon line *x x* in Fig. 4. Fig. 4 is a vertical section on line *y y*, Fig. 3. Fig. 5 is an elevation of the clutch mechanism shown in Fig. 4, the parts being in different position. Fig. 6 is an elevation of the setting mechanism for determining the length of feed of the paper strip, showing in full and dotted lines the different positions thereof. Fig. 7 is a sectional elevation substantially on line *z z*, Fig. 4, to show the drive connection between the gear-segment and the feed-rollers for the paper strip. Fig. 8 is a sectional elevation of the cash-register, showing substantially its operating parts.

The cash-register to which I have shown my invention applied consists of a suitable casing A, the front of which has an opening which is covered by the cover B, this being, in effect, the cover of the cash-till. This cover is secured to and turns a transverse shaft C, and in turning the cover the tablets are moved into indicating position and the registering is effected.

D represents a series of keys which are adapted to set out a foot E upon the sliding rods F, moving in guides in the rear of the machine, the foot E being moved out into the path of the universal bar G, which is raised each time the cover B is turned down through the lever system H. The rods F carry at their upper ends suitable tablets H′, and they also carry suitable means for actuating the register-wheels H², of which there is one for each rod F. The rods are held in their elevated position by means of a universal bar J and are tripped upon the operation of any key of the series. This register thus comprises a series of keys, which set the indicating and registering mechanism, and a common register-actuating device operates the set parts. I do not deem a further description of the registering mechanism necessary, for, as previously described, this is fully set forth in my previous patent referred to and is no part of my present invention. It is also evident without description that other forms of registers may be employed to perform the same function that the particular form of registering mechanism here performs, and I do not desire to be limited to such precise registering mechanism.

At the end of the cash-register casing and preferably upon the same base is a recorder-casing 2. The top of this recorder-casing is cut away, and beneath the cut-away portion is a table or plate 3, over which runs a paper strip 4 and preferably a paper strip 5. The strip 4 runs from a roll 6 and runs between the feed-rolls 7 and 8 and above the divider-plate 9, while the paper strip 5 runs from a roll 10

over the plate 3, between the feed-rolls 7 and 8, and beneath the divider-plate 9, being wound up upon a roll 11.

The shaft C is extended through the actuating devices of the recorder, and sleeved upon it is a suitable hub carrying a gear-segment 15. This gear-segment meshes with a pinion 16, loosely mounted on the shaft of one of the feed-rolls, and I have shown it as meshing with such a pinion loosely mounted upon the shaft of the lower roller 8. The pinion 16 carries a pawl 16^a, which engages a ratchet-wheel 16^b, fast on the shaft C. (See Fig. 7.) By means of this ratchet connection the feed-roller 8 is actuated to feed the paper when the segment 15 is lifted, and when the segment drops the ratchet-pawl rides idly over its ratchet-wheel.

In the operation of the cover B, which forms the register-actuating device in this case, the shaft C will be turned or rocked; but the gear-segment will be rocked only when it is coupled to the shaft. This may be accomplished by various mechanism. I have shown it coupled by means of a clutch comprising the sliding collar 17, having a feather engagement with the shaft C. This collar is shown in Figs. 2 and 3. The collar is grooved and is adapted to be moved longitudinally, by means of a cam 18, upon the arm 19, which is journaled on the side of the cash-register casing on the trunnions 20. In this case there is connected to this arm a universal bar 21, which extends across such keys as it is desired shall operate the clutch. Such keys as it is designed shall operate the clutch are provided with an arm 22, which upon the operation of the key will impinge against the universal bar 21 and rock it, causing the cam 18 to shift the collar 17 longitudinally and cause the lateral projections 23 on the collar to engage corresponding recesses in the hub of the gear-segment, as shown in Fig. 3. When thus coupled, it is evident that the gear-segment will rock with the shaft C, and its movement will cause the feed-wheels 7 and 8 to be rotated. This will feed the paper strips along, the upper strip being fed out, so that it may be torn off and the lower strip be wound up upon the roll 11. For instance, supposing in a machine whenever a sale is to be charged it is desired to have a paper slip made showing what is charged and the price and also to keep a record thereof in the machine. In that event if the "charge-key" is adapted to operate the coupling mechanism the operator depresses the charge-key and then opens the lid or cover, having previously written with a suitable pencil upon the slip of paper the item and cost. The upper paper bearing the pencil memorandum would be fed out and would be torn off, while the under paper bearing a duplicate thereof by means of a carbon strip 25 between will retain a permanent record in the machine upon the roll 11. If any other key of the machine is operated not adapted to effect the coupling mechanism, the paper would not be fed forward. The arm 19 is automatically returned to its initial position after each operation by gravity or by other means, such as a spring 77, Fig. 2. The roll 11 is not intended to be a feed-roll for the paper, but simply to take up the slack between it and the feed-rolls 7 and 8. I preferably drive it as follows: The roll 11 is in the nature of a sleeve upon the shaft 27 and adapted to be frictionally connected thereto, so that if the shaft is rotated the spool will likewise be turned. Loosely mounted upon the shaft 27 is a pinion 28, which meshes constantly with the gear-segment 15, so as to be actuated thereby. The hub of this pinion is formed with clutch-teeth, which mesh with similar teeth formed on a collar 28^a, which is feathered upon the shaft 27. The clutch-teeth are normally held in mesh by an angular spring 28^b, mounted on the casing and engaging the collar 28^a. As the segment 15 moves up the shaft 27 is rotated to turn the roller 11; but when the segment is released and drops by gravity or a suitable spring the pinion 28 simply rotates freely, its clutch-teeth passing over the clutch-teeth of the collar 28^a by forcing the latter back against the tension of its spring 28^b. All backward movement of the shaft 27 is prevented by a suitable pawl 27^a, which engages a pinion 27^b, fast to said shaft, as best shown in Fig. 3. If the shaft 27 continues to rotate after the slack in the paper strip is taken up, the shaft will simply turn within the roll or sleeve in such further movement. Thus I provide for any difference in the winding up of the feed-strip due to the increased size of the roll when the paper is wound thereon. Any suitable means may be employed to prevent the reverse movement of the feed-roll and the roll 11 during the return movement of the segment 15. It will be understood from this description that any one or a number of the keys, or all, if desired, may upon operation act as controlling devices for the clutch and connect up the feed device for the paper, and thus with the same power required to register or indicate in a cash-register and by the same means simply adding on the paper strip and its feed mechanism I am enabled to have a salesman's record or a permanent record, or both, in the machine.

In this machine I have shown only a part of the keys connected to operate the clutch-collar 17, while other keys, which I shall call the "regular" keys, are not so connected and when operated will not ordinarily cause the feeding of the paper strip. These regular keys, one of which is shown at X, Fig. 2, are unprovided with the arm 22, and thus will not when operated move the universal bar 21 and cause the cam 19 to operate the clutch.

As before stated, the keys are mounted and operated substantially as shown and described in the before-mentioned patent, so that when they are depressed they remain in their depressed positions because of the friction between them and the shaft upon which they are mounted. As the till-cover reaches the end of its opening movement the keys are forced back to their normal positions, as described in said patent, and the arm 19 is thus released and allowed to resume its normal position, thus disengaging the clutch 17. This movement releases the segment 15, and the same drops by gravity or a suitable spring. Under certain conditions, however, it is desirable to have the regular keys also effect the feeding of the paper strip in order that a special record may be made thereon relating to the operation of said key. It is also desirable to be able to vary the amount of feed according to the space required for making the desired record on the paper strip. I have therefore provided my machine with a second clutch under the control of the operator and which may be actuated to effect a coupling between the shaft C and the gear-segment 15. This second clutch also I have shown provided with means for giving various lengths of feed to the paper strip under the control of the operator, so that he may for a few items feed forward but a short length of strip and for a longer list feed forward a longer strip of paper. Secured to the shaft C beside the gear-segment is an arm 30, having a pawl 31 at the end. Secured to the gear-segment in the path of the pawl is a curved ratchet-bar 32. On the pawl 31 is a laterally-extending pin 33, which extends over a controlling-cam 34, which is secured to an arm 35 on the sleeve 36 around the shaft C, Figs. 3, 4, and 5. This sleeve extends to the outside of the machine. Near the outer end of this sleeve is secured the plate 38. (Shown in Figs. 1, 3, and 6.) This plate 38 is normally held in its upper position by means of a pin 39, Fig. 6, so that the second clutch referred to is inoperative. If it is desired to use the second clutch, the pin 39 is removed from its upper position and may be inserted into either one of the apertures 40 or 41 in the case of the machine, which will determine the amount the plate 38 will drop. When the pin 39 is in either one of the lower apertures, then in the normal operation of the device the plate 38 will rest upon a finger 42 on the lower end of the shaft 43, which shaft at its upper end has connected to it the key or guard-arm 44, extending across the paper strip, the parts being held in this position by the tension of the spring 45, surrounding the shaft 43. Now as the operator desires to feed forward the paper strip by one of the regular keys he first moves the guard-arm 44 into the position shown in dotted lines in Fig. 1. This rocks the finger 42 from beneath the plate 38 and allows that plate to drop until it strikes the pin 39. The plate dropping behind the finger 42 holds that finger in, and thus holds the guard-arm 44 in its upper position. The operator then writes the items upon the paper strip and then depresses the proper key or keys and operates the registering device. When the plate 38 drops from its upper to its lower position, it will carry with it the sleeve 36, the arm 35, and the controlling-cam 34, moving those parts into the position shown in Fig. 4. The controlling-cam is so shaped in relation to the ratchet 32 that when it is in its upper position (shown in Fig. 5) the pin 33, riding over the surface thereof, will keep the pawl 31 from engagement with the ratchet-bar 32; but when the controlling-cam is in its lower position, as shown in Fig. 4, the spring-pawl will engage into the ratchet-bar and carry that bar with it in its motion. The pawl will also carry the controlling-cam by means of the hook 49 at the end thereof. Therefore when the operator moves the register-actuating device (in this case the cover of the till) he will turn the shaft C and likewise move the arm 30, which is secured thereto and through the pawl 31, and the ratchet-bar 32, which is secured to the gear-segment 15, just described, will operate the paper-feed. When the arm 30 moves back to its normal lower position, the segment 15 falls back to normal position by gravity or is drawn back by a suitable spring, as before described. It is evident without further description if the pin 39 is in the aperture 40 that the pawl 31 will not engage with the ratchet-bar until after it has traveled a part of its distance, and therefore that the paper will be fed but a short distance. If the pin 39 is in the aperture 41, then the pawl will engage with the ratchet-bar at the beginning of its movement and the paper will be fed its full amount each operation. As the shaft C is turned and the plate 38 is lifted thereby to its upper position the finger 42, actuated by the spring 45, will again pass under the plate 38 and hold it in its upper position, with the second clutch out of its operative position, so that the device will be operated only by its special keys.

By the means described it will be evident that the operator may at will have the paper fed forward only upon the operation of a special key or upon the operation of any of the regular keys and that this paper-feed may be a long feed or a short feed, as desired.

It is sometimes desirable to have the feeding of the paper strip effected upon each operation of the regular keys independent of the operation of the guard-arm 44. I have therefore provided means for locking said guard-arm and its finger 42 so that the latter will be out of the path of the plate 38. In the drawings I have shown for this purpose a sliding bar 46, adapted when

moved in one position (shown in dotted lines, Fig. 6) to engage behind a lug 47 on the finger 42 and hold the latter out of the path of the plate 38. It will be observed that the feeding of the paper strip is thus dependent upon the following conditions: First, if any one of the special registering-keys is operated the strip is always fed, and it is beyond the control of the operator to change or prevent said feeding of the strip; second, if any of the regular keys are operated the operator may at his option prevent the feeding of the strip by placing the pin 39 in the upper aperture therefor, or, third, he may place the said pin in the aperture 30 and obtain a short feed of the strip, dependent on the movement of the guard-arm 44, or, fourth, he may place the pin in the aperture 41 and obtain a longer feed of said strip, dependent on the same condition, or, fifth, he may move the bar 46 into engagement with the lug 47 and cause the long or short feed of the strip independent of the movement of the guard.

I have thus provided for the various conditions which arise in the special use of the machine without losing the advantage of having the feeding of the strip in the ordinary operation of the machine beyond the control of the salesman and serving as a check upon any fraudulent transaction.

What I claim as my invention is—

1. In a cash-register, the combination with a series of keys arranged to set parts for indicating and accounting, and an operating mechanism coöperating with said keys for effecting the indicating and accounting, of paper-feeding devices, and means controlled by a number of said keys for connecting the feeding devices for movement by the operating mechanism.

2. In a cash-register, the combination with a series of keys arranged to set parts for indicating and accounting, and an operating mechanism therefor, of paper-feeding devices, means controlled by a number of said keys for connecting the feeding devices for movement by the operating mechanism and for automatically disconnecting the same after each operation.

3. In a cash-register, the combination with a series of keys arranged to set parts for indicating and accounting, and an operating mechanism for effecting the indicating and accounting, of autographic strip-feeding devices, and means operated by a number of said keys and adapted to couple said feeding devices to the said operating mechanism.

4. In a cash-register, the combination with a series of keys and a registering mechanism, of a movable member having a uniform movement at each operation of the machine and operable as an operative accompaniment to the registering function of the machine, a paper-feeding device, and means controlled by a number of said keys for controlling the connections between said movable member and said feeding device.

5. In a cash-register, the combination with a series of keys and a registering mechanism, of a movable member having a uniform movement at each operation of the machine, a paper-feeding device, means for connecting said movable member with said feeding device, means including a number of said keys for controlling said connecting means between the movable member and the feeding device, and means for automatically restoring the connecting means to its normal position after displacement therefrom.

6. The combination with a series of keys, of strip-feeding devices, and mechanism intermediate the keys and feeding devices and adjustable at will to control the feed from only certain of said keys or from any one of the same.

7. A cash-register including a series of keys, a register-actuating mechanism, an autographic device, a feeding device therefor, means operated by a number of said keys and adapted to couple the feeding devices to the register-actuating mechanism and to automatically uncouple the devices at the completion of the operation.

8. A cash-register including a series of controlling-keys, a register-actuating device common to all of said keys, a paper-feeding device, and means actuated by certain of said keys for coupling the paper-feeding device to the register-actuating device.

9. In a cash-register the combination with a series of keys, of an actuating mechanism, an autographic device, a feeding device intermediate the autographic device and the actuating mechanism and means for controlling the feeding device actuated by the keys.

10. In a cash-register, the combination with a series of controlling-keys coöperating with a common operating mechanism, indicator mechanism controlled by said keys, and a paper-feeding device; of a coupling member between the operating mechanism and the paper-feeding device; and means operated by only a certain number of said keys for controlling the operation of the paper-feeding device when such keys are utilized in coöperation with the operating mechanism.

11. In a cash-register, the combination with a series of amount-keys and a series of special keys both coöperating with a common operating mechanism, a paper-feeding device, and means controlled by the special keys alone for coupling the operating mechanism to the paper-feeding device.

12. In a cash-register the combination with a series of amount-keys, of a series of special keys, an operating mechanism, a paper-feeding device, means for normally causing the paper-feeding device to move with the operating mechanism only when a special key

is operated, and means for moving the paper-feeding mechanism at will by the operating mechanism when only an amount-key is operated.

13. In a cash-register the combination with a series of amount-keys, of a series of special keys, an operating mechanism, a paper-feeding device, means for causing said device to be actuated by the operating mechanism only when a special key is operated, and a special autographic key which when operated controls the feed of the paper irrespective of the operation of either special or amount keys.

14. A cash-register including a series of keys, a register-operating member common to all of said keys, a paper-feeding device, means actuated by certain of said keys for coupling the paper-feeding device to the operating member, and independent means for coupling the feeding device to the operating member at will.

15. In a cash-register the combination with a series of amount-keys, of a series of special keys, an operating mechanism, a paper-feeding device, means actuated by the special keys for establishing the connection between the operating mechanism and the paper-feeding devices, and means for automatically disestablishing this connection at the end of each operation of the machine.

16. A cash-register including a series of keys, a register-operating member common to all of said keys, a paper-feeding device, means for connecting the paper-feeding device to the operating member arranged to automatically disconnect it after each operation, and means for preventing the automatic disconnection when desired.

17. In a cash-register the combination with a series of controlling-keys, of an operating mechanism, an autographic device, means for coupling said device to the operating mechanism when certain of said keys are operated, and means for coupling the autographic device to the operating mechanism independently of the aforesaid means.

18. In a cash-register the combination with a series of special keys and a series of amount-keys, of an autographic device arranged to be operated only when the special keys are actuated and adjusting means for controlling the autograph so that it will be actuated irrespective of the operation of the special or amount keys.

19. In a cash-register the combination with a series of amount-keys and a series of special keys, of an autographic device arranged to be actuated when the special keys are operated, means for adjusting said autograph so that it will be operated when any keys are operated said means being automatically returned to its normal position at each operation of the machine, and means for locking said adjusting means in its set position.

20. In a cash-register, the combination of a series of keys having a common actuating device, of feed devices for a paper strip, a connection between said common actuating device and said feed devices, a clutch in said connection, and an independent key for operating said clutch.

21. In a cash-register the combination with a series of controlling-keys, an operating mechanism including a rock-shaft, an autographic device, and a coupling means between the rock-shaft and autographic device controlled by the keys.

22. In a cash-register the combination with a series of keys, of an operating mechanism including a rock-shaft and arranged to actuate the parts controlled by the keys, an autographic device, and a coupling between the rock-shaft and autographic device controlled by the keys.

23. In a cash-register the combination with a series of controlling-keys, of an operating mechanism, including an oscillating handle and a rock-shaft connected thereto, an autographic device, a coupling between the rock-shaft and autographic device and means actuated by the keys for controlling the coupling.

24. In a cash-register the combination with a series of controlling-keys, of an operating mechanism including a lever and a rock-shaft, an autographic device having a rotary feed-roller and means intermediate the rock-shaft and rotary feed-roller controlled by the keys and arranged to convert the oscillating movement of the shaft into a rotary movement of the roller.

25. In a cash-register the combination with a series of keys, of an operating mechanism, an autographic device arranged to be actuated by the operating mechanism and means for predetermining the length of paper to be fed by the autographic device.

26. In a cash-register, the combination with a feeding mechanism including a feed-pawl for feeding a paper strip, and an operating mechanism for actuating said pawl; of manipulative means for controlling the extent of feeding effectiveness of said pawl.

27. In a cash-register, the combination with a feeding mechanism including a feed-pawl for feeding a paper strip, and an operating mechanism for actuating said pawl; of manipulative means for controlling the extent of feeding effectiveness of said pawl; and means for blocking the pawl at a certain point in its travel to vary the normal feeding extent of the paper.

28. A cash-register including a series of keys, a register-operating member common to all of said keys, a paper-feeding device, means actuated by said keys for coupling the paper-feeding device to the operating member, independent means for coupling the feed-

ing devices to the operating member and devices for regulating the feed through said independent means.

29. A cash-register including a series of keys, a register-operating member common to said keys, a paper-feeding device, means for connecting the paper-feeding device to the operating member at will and means for adjusting the length of feed through said connecting means.

30. In a cash-register, paper-feed devices with an actuating device therefor, a clutch or catch for connecting the actuating device to the feed devices, and a setting device for varying the point in the movement of the actuating device at which it is connected to the feed devices.

31. In a cash-register, a paper-feed device, a register-actuating device, a clutch for connecting the register-actuating device to the paper-feed, and a setting device for controlling the point of connection of the clutch.

32. In a cash-register, the combination of the register-actuating device, feed devices for a paper strip actuated by the register-actuating device, a clutch between said register-actuating device and the paper-feed devices, and means for setting the coupling-point of the clutch at different points to effect different lengths of feed of the paper.

33. The combination with a cash-register having an autographic paper strip, feed devices for the paper strip, means for actuating said feed devices upon the operation of the cash-register, a clutch to control the connection to the feed devices, and a guard extending over the autographic strip controlling said clutch.

34. In a cash-register having an autographic paper strip, feed devices for the strip, an actuating-shaft from the cash-register, a clutch thereon to connect said actuating devices to the paper-feed devices, the guard 44 extending over the paper strip and means for actuating said clutch upon the actuation of said arm.

35. In a cash-register, the combination of the register-actuating devices comprising a shaft C, paper-feed devices for the strip, an actuating device therefor, a clutch to connect the shaft to said actuating device comprising the plate 38, the arm 44 having a finger 42 on which the plate 38 is supported, and means for connecting plate 38 to the paper-feeding devices substantially as described.

36. In a cash-register, the combination with the register-actuating device, the shaft C operated thereby, the gear-segment 15 on said shaft, paper-feed devices actuated thereby, the controlling-cam 34 beside the gear-segment, the arm 30 carried by the shaft C, the pawl carried by the arm and engaging upon the cam, a ratchet-bar on the gear-segment in the path of the pawl, and means for controlling the position of the cam.

37. In a cash-register, the combination of a series of register-controlling keys, of a till or cover forming an actuating device for the series, feed devices for a paper strip, and a clutch connection from said till or cover to said feeding devices for operating the same.

38. In a cash-register, the combination with a cash-safe having a movable member, of a paper-feeding device; connecting means between said movable cash-safe member and said feeding device; a clutch in said connecting means; and manipulative means controlling said clutch.

39. In a cash-register, the combination of feed devices for an autographic strip and a record-strip, means for actuating said feed devices, a winding-roll for the record-strip actuated upon the operation of the feed devices, and a friction connection in said winding-roll for the purpose described.

40. In a cash-register, the combination of feed devices for both an autographic and a record strip, a winding-roll for the record-strip, a gear-segment for operating the feed devices, and the winding-roll, and a friction connection between said winding-roll and the paper strip for the purpose described.

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

FRANCIS C. OSBORN.

Witnesses:
JAMES WHITTEMORE,
H. C. SMITH.