(No Model.)

C. ANGUS, M. S. SIMMONS & J. R. NANGLE.

CASH REGISTER.

No. 455,916. Patented July 14, 1891.

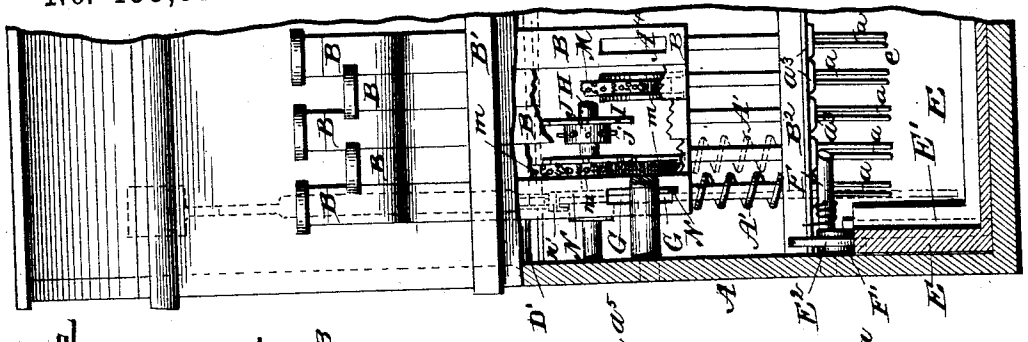

Fig. 2.

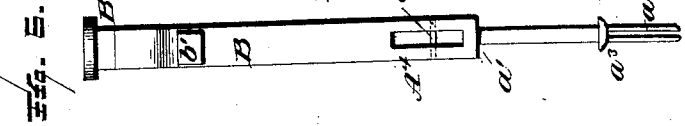

Fig. 6.

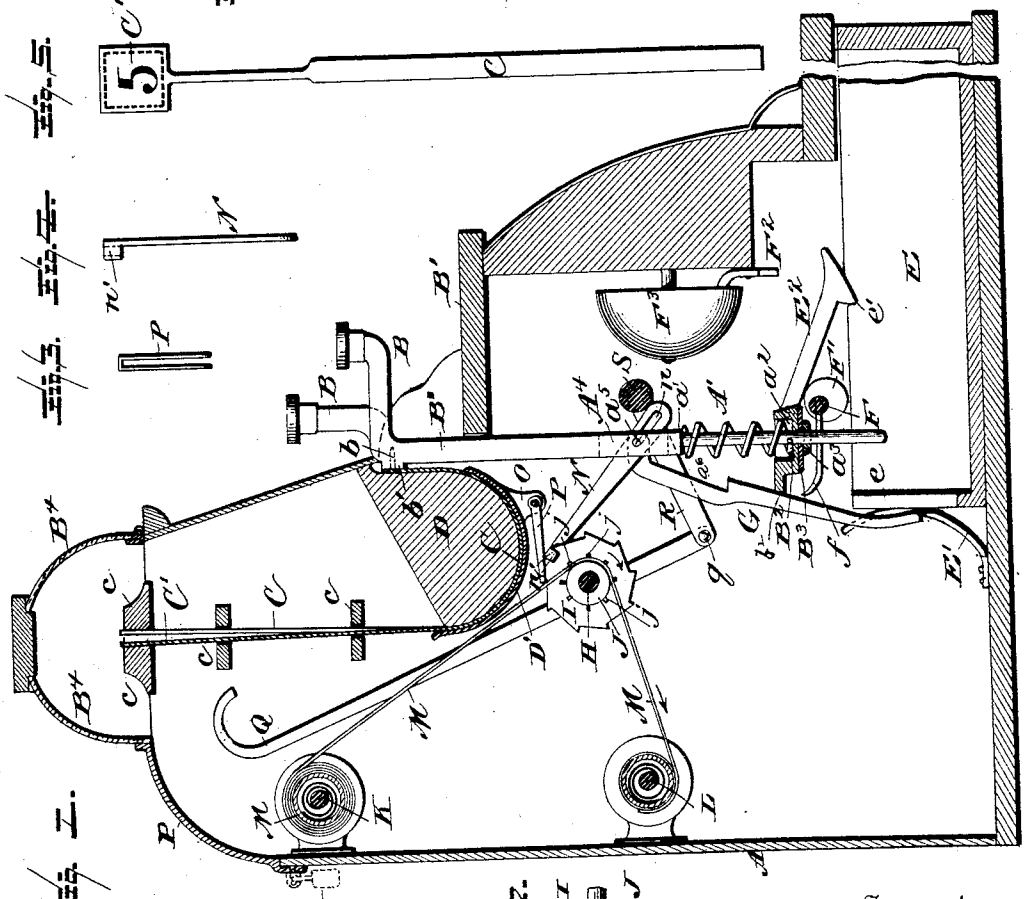

Fig. 5.

Fig. 4.

Fig. 3.

Fig. 1.

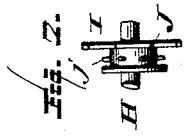

Fig. 7.

Witnesses
L. C. Mills
E. A. Bond.

Inventors:
Charles Angus,
Marcus S Simmons,
Joseph R. Nangle.
E. B. Stocking
Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CHARLES ANGUS, MARCUS S. SIMMONS, AND JOSEPH R. NANGLE, OF ALBANY, NEW YORK.

CASH-REGISTER.

SPECIFICATION forming part of Letters Patent No. 455,916, dated July 14, 1891.

Application filed May 14, 1890. Serial No. 351,831. (No model.)

To all whom it may concern:

Be it known that we, CHARLES ANGUS, MARCUS S. SIMMONS, and JOSEPH R. NANGLE, citizens of the United States, residing at Albany, in the county of Albany, State of New York, 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.

This invention relates to certain new and useful improvements in cash indicators and registers; and it has for its object, among others, to provide an improved device of this character which can be manufactured at a minimum of cost, in which the parts are few in number, readily assembled, and very positive and efficient in their operation. We dispense with levers between the keys and the indicating-tablets, preserving a substantially direct vertical movement of the keys. We provide a compact and light machine, most of the parts being capable of being stamped out by dies or otherwise formed of sheet metal. We have devised novel means for locking the keys when depressed for retaining them in a depressed position until released by the inward movement of the cash-drawer, and we arrange for the automatic adding up of the amounts, disclose the same through an opening, provide for the return of the tapes upon which the amounts are shown to 0 at the end of each day's sales or at any time desired, and improve generally upon the prior constructions as a whole.

Other objects and advantages of the invention will hereinafter appear, and the novel features thereof will be specifically defined by the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a vertical section through a cash-indicator embodying our invention, the section being taken from the front to the rear. Fig. 2 is a front view of a portion of the machine with parts broken away and others in section to better disclose the interior construction. Fig. 3 is a top plan view of the retaining-pawl for the ratchet-wheel. Fig. 4 is a like view of the actuating-pawl for said ratchet. Fig. 5 is a face view of a tablet and its strip. Fig. 6 is a rear view of one of the keys detached. Fig. 7 is a detail in front elevation of the ratchet-wheel and tape-engaging wheel or disk.

Like letters of reference indicate like parts throughout the several views.

Referring now to the details of the drawings by letter, A designates the case within which the operating parts are inclosed. It may be of any suitable material and as fanciful in design as the tastes of the maker or purchaser may desire.

B are the keys, there being thirty, preferably, in the complete machine; but this number may be varied at will without departing from the essential of or sacrificing the advantages of the other parts of the invention. These keys are arranged, preferably, in two rows or banks, and are constructed to move vertically in suitable guide-slots, or similar provisions in the ledge B′ at the front of the case, and at their lower ends pass through the guide-bar B^2, extending transversely of the machine, said guide-bar being provided along its under side with a strip B^3 of rubber, felt, or other suitable noise-deadening medium. Each key is slotted near its lower end, as shown at *a*, for a purpose hereinafter made apparent and at a distance above the guide-bar formed with a shoulder *a*′, between which and the guide-bar is confined a coiled or other spring A′, the lower end of which is confined, preferably, within a depression or cavity a^2, formed in the said guide-bar. The key above its slotted portion is provided with an elastic bumper a^3, which is designed to come in contact with the under side of the strip B^3 when the key is in its elevated position, as shown in Figs. 1 and 2. The tendency of these springs is to normally keep the keys elevated. They are compressed as the keys are depressed.

As above stated, the keys are arranged in banks or rows, and the tablets are arranged to overlap, as is usual in this class of devices. Each key carries a tablet, which is provided with a tablet-strip C, either integral with or affixed to the tablet C′ in any suitable manner, the said strip being of some flexible material—as, for instance, sheet-brass—the end

of which opposite that adjacent to or connected with the tablet being secured to the rear side of the key—as, for instance, by a suitable pin or rivet *b*, as shown in Fig. 1, a lug or projection *b'* being preferably provided upon the rear side of the key for this purpose, as shown in Fig. 5. This tablet-strip extends from its connection with the tablet in a vertical direction through suitable guides *c*, extending transversely of the machine and through which the strip has free play. The strip is then passed around the bottom of a substantially semicircular strip D, which also extends transversely of the machine and at the front face has a substantially vertical portion, as shown in Fig. 1, the said strip preferably passing between the bottom of the curved guide and a metallic guide-plate D', curved to correspond with the curvature of the strip D, as shown in said Fig. 1. A depression of the key-lever compels the tablet-strip to travel through its guides and projects the tablet vertically through its guides into an elevated position, as shown by dotted lines in Fig. 2, where it is disclosed through a transparent cover B^4. It will thus be seen that there are no levers employed between the keys and the tablets and each key works independently of the others, so that, if desired, when one lever is depressed any one or all of the others may be depressed without affecting the one depressed, providing the drawer is not actuated. This part of the construction is simple, cheap, and in practice has proved most efficient. The parts employed are few in number and not liable to get out of order.

E is the cash-drawer, adapted to be moved horizontally at the lower front end of the machine, and at its rear end is cut away, as shown at *e*, for a purpose which will hereinafter appear.

A spring E' is arranged upon the inside of the case, attached to the bottom thereof, as shown in Fig. 1, and arranged to exert its force upon the rear end of the drawer to give it an initial impulse when the locking devices are removed.

E^2 is a pawl pivoted to the cross-bar B^2, and having at its free end a lip to engage a notch *e'* on the drawer, as shown in Fig. 1, to hold the drawer normally locked.

F is a shaft extending across the machine and journaled in suitable bearings in the side walls thereof. Projecting from this shaft and extending through the slots of the lower ends of the keys are the rearwardly-extending pins *f*, the inner ends of which are bent upward, as shown at e^2, to prevent their being accidentally disengaged from the slots. This shaft carries a cam or eccentric F', which is arranged beneath the pawl E^2, as shown in Fig. 1, and when the key or any one of them is depressed the shaft F is rotated by the depression of the pin *f*, and the cam throws up the pawl, so as to release the end thereof from engagement with the notch of the cash-drawer and leaves the same free to be thrown out, and as the pawl is thus thrown up its free end engages the hammer-arm F^2 of the alarm F^3 and rings the gong. This bell may be of any preferred form and is secured upon the interior of the case, as shown. The cut-away portion *e* of the rear end of the drawer allows of the passage of the same by the lower ends of the keys, as will be readily understood from Figs. 1 and 2.

Each key has above the shoulder *a'* a slot A^4, in which is pivoted on a transverse pin a^5 a downwardly-extending arm G, the lower end of which is arranged in the path of the cash-drawer, and which a short distance below its pivot end is formed with a notch or shoulder a^6, which, as the key is depressed, is designed to engage beneath the rearwardly-projecting ledge b^2 of the bar B^2 and hold the key depressed. As the cash-drawer is pushed in its rear end comes in contact with the lower end of this arm G, and pushes it rearward until its notch is disengaged from the ledge of the bar B^2, when the spring A' forces the key upward to its normal position.

H is a shaft arranged transversely of the machine, preferably at a point substantially below the strip D, as shown in Fig. 1, and on this shaft are a plurality of ratchet-wheels I and wheels J, provided with radial-pins *j*. The number of ratchet-wheels and of pin-wheels is the same as the number of keys employed.

Across the rear end of the machine there are journaled in suitable brackets or other provisions the shafts K and L. On these shafts, in line with each other, are drums or rollers, both of which are spring actuated, after the manner of spring-rollers of known construction, the spring of the upper one, however, being somewhat stronger than that of the other, for a purpose which will soon be made known, one on each shaft for each key, and around these drums are wound the tapes or bands M, which are provided with holes *m*, which engage the pins *j* on the wheels J, as shown more clearly in Fig. 2. On these tapes or bands are printed or otherwise affixed the amounts corresponding with the amount on the key. Thus, for instance, the tape or band corresponding with and actuated by the five-cent key is provided with 5's, the ten-cent key-band with 10's, and so on.

Pivoted upon the pin a^5, within the slot A^4 of the key is a pawl N, which at its pivot end has an elongated slot *n* and at its other end a lug *n'*, which embraces the ratchet-wheel and is adapted to engage a tooth thereof to feed the wheel forward in the direction of the arrow in Fig. 1 at each depression of the key. The elongated slot in the pawl N is provided to compensate for the difference in distance of movement of the key and pawl, providing a predetermined amount of free play of the said pawl.

Depending from the plate D' are brackets or lugs O, to which are pivoted gravity-pawls P, (shown in detail in Fig. 3,) and which are de-

signed to engage the ratchet-wheels to prevent retrograde movement thereof.

The operation is as follows: At the beginning of a day's sales all the bands or tapes are set at 0. As a sale is made the key corresponding to the amount is depressed, which movement displays the tablet at the opening above through the medium of the mechanism above specified and the operation of which it is not deemed necessary to repeat here. When the key is depressed, the same is held locked in its depressed position, the drawer is released and propelled outward by the action of its spring, and the ratchet-wheel carrying the tape or band corresponding to the key is moved forward in the direction of the arrow one hole and the amount of the sale is shown on the said tape, and so on to the end of the day's sales. The machine is provided with a removable or hinged portion or cover P, provided with a suitable lock, as P′, the key of which is designed to be kept by the proprietor. When it is desired to set the device with all the tapes at 0, all that is necessary to do is to pull upon the lever Q, the lower end of which is pivotally connected, as at *q*, with one end of the arm R, the other end of which is connected with the rock or cam shaft S, extending transversely of the machine just above the lower ends of the pawls N, so that the rocking of said shaft will depress said lower ends of the pawls and throw up the upper ends, and the upper ends, coming in contact with the retaining-pawls P, disengage them from the ratchet-wheels, when the spring of the upper roller, being the stronger, will wind up the tapes thereupon, when the device will be set for the next day's operations. We prefer to arrange the numbers on the tapes or bands in arithmetical progression, so that the amounts will be automatically added up, and thus effect a great saving of time, it being only necessary to add the sums of the various totals exhibited by the tapes or bands to ascertain the amount of the day's sales.

The above constitutes what we at present consider the preferable means of carrying out our invention; but we do not wish to be understood as confining ourselves to the exact details hereinbefore specified, as it is evident that various modifications in detail may be resorted to without departing from the spirit of the invention or sacrificing the advantages of the other parts.

The tablet-strip, instead of being of a single flexible piece, may sometimes be composed of a plurality of pieces connected together by flexible joints; but in all cases the two ends of the connection between the key and indicator move in parallel vertical planes.

Where in the following claims we employ the term "bendable strip connection," as referring to the connection between the key and indicator, we wish to be understood as covering a connection which will permit of a required movement of the indicator by a direct push upon the key without becoming limp like a rope, cord, or chain. A rope, cord, or chain would not serve our purpose.

What we claim as new is—

1. The combination, in a cash-register, with a vertically-movable direct-acting key and an indicator constructed to move simultaneously in opposite directions in substantially parallel vertical planes, of a bendable strip connection between the two, as set forth.

2. The combination, in a cash-register, with a vertically-movable direct-acting key and an indicator constructed to move simultaneously in opposite directions in substantially the same vertical plane, of an unpivoted bendable strip connection between the two, as set forth.

3. The combination, with a vertically-movable key and an indicator constructed to move simultaneously in opposite directions in substantially parallel vertical planes, of a bendable strip connection between the two, having a portion curved, as set forth.

4. The combination, in a cash-register, with a vertically-movable direct-acting key and an indicator constructed to move simultaneously in opposite directions in substantially the same vertical or parallel planes, of a bendable strip unpivoted connection between the two, with one portion curved, substantially as specified.

5. The combination, in a cash-register, with a vertically-movable direct-acting key and an indicator constructed to move simultaneously in opposite directions in substantially parallel vertical planes, of a bendable strip connection between the two and a curved guide for a portion of said connection, as set forth.

6. The combination, in a cash-register, with a vertically-movable direct-acting key and an indicator constructed to move simultaneously in opposite directions in substantially parallel vertical planes, of a bendable strip connection between the two, with a curved portion and a fixed curved guide for the curved portion, as set forth.

7. The combination, in a cash-register, with a vertically-movable direct-acting key and an indicator constructed to move simultaneously in opposite directions in substantially parallel vertical planes, of a single bendable strip connecting the two, as set forth.

8. The combination, in a cash-register, with a vertically-movable direct-acting key and an indicator constructed to move simultaneously in opposite directions in substantially parallel vertical planes, of a single flexible resilient piece connecting the two, as set forth.

9. The combination, in a cash-register, with a vertically-movable direct-acting key and an indicator constructed to move simultaneously in opposite directions in substantially parallel vertical planes, of a single flexible resilient piece connecting the two and having a portion curved, as set forth.

10. The combination, in a cash-register, with a vertically-movable direct-acting key and an

indicator constructed to move simultaneously in opposite directions in substantially parallel vertical planes, of a single flexible resilient piece connecting the two and having a curved portion and a curved guide for the curved portion, as set forth.

11. The combination, in a cash-register, with a vertically-movable direct-acting key and an indicator constructed to move simultaneously in opposite directions in substantially parallel vertical planes, of a single bendable strip connecting the two and having its opposite ends fixed to the key and indicator, respectively, as set forth.

12. The combination, in a cash-register, with a vertically-movable direct-acting key and an indicator constructed to move simultaneously in opposite directions in substantially parallel vertical planes, of a single bendable strip connection between the key and indicator, said connection being integral with the indicator, as set forth.

13. The combination, in a cash-register, with a vertically-movable direct-acting key and an indicator constructed to move simultaneously in opposite directions in substantially parallel vertical planes, of a single bendable strip connected directly with the key at one end and at the other end to the indicator, as set forth.

14. The combination, in a cash-register, with a vertically-movable direct-acting key and an indicator constructed to move simultaneously in opposite directions in substantially parallel vertical planes, of a single flexible piece connecting the two, being integral with the indicator and connected directly to the key, as set forth.

15. The combination, in a cash-register, of a vertically-reciprocative key, a vertically-reciprocative indicator, said key and indicator being constructed and arranged to move together in opposite directions in substantially-parallel planes, and a direct flexible bendable strip connection between the two and of which the indicator forms a part, as set forth.

16. The combination, in a cash-register, of a vertically-reciprocative key, a vertically-reciprocative indicator, said key and indicator being constructed and arranged to move together in opposite directions in substantially parallel vertical planes, and a flexible bendable strip connection between the two, one end attached directly to the key and moving for a portion of its length in a curved path, substantially as specified.

17. The combination, in a cash-register, with a vertically-reciprocative key and a vertically-reciprocative indicator, said key and indicator constructed and arranged to move together in opposite directions in substantially parallel planes, of a flexible bendable strip connection between the two with a portion moving in a vertical line and a portion in a curved path, guides for the vertical portion, and a guide for the curved portion, as set forth.

18. The combination, with a vertically-reciprocative key and the cash-drawer, of a pawl for holding the drawer locked, and a device embracing a cam engaging said pawl actuated by the depression of a key to release the pawl and cause it to sound an alarm, as set forth.

19. The combination, with a vertically-reciprocative key and a cash-drawer, of a pivoted pawl engaging the drawer, and a cam-shaft actuated by the depression of a key to directly engage the pawl and disengage it from the drawer, substantially as specified.

20. The combination, with a vertically-reciprocative direct-acting key and the cash-drawer, of the bell, the pivoted pawl, and the transverse shaft carrying a cam arranged beneath the pawl and arranged to elevate the same and sound the bell by the depression of the key, as set forth.

21. The combination, with the vertically-reciprocative direct-acting key and the cash-drawer, of the pivoted pawl, the shaft, the cam thereon beneath the pawl, and the finger on the shaft passed through a slot in the key, substantially as and for the purpose specified.

22. The combination, with the vertically-reciprocative direct-acting key, the cash-drawer, and the pawl pivoted at one end, of the transverse shaft, the pawl thereon, and the finger on the shaft passed through a slot in the key and having upturned end, substantially as and for the purpose specified.

23. The combination, with the keys slotted at their lower ends, the cash-drawer having a notch in its side wall, and the pivoted pawl having its free end arranged to engage said notch, of the transverse shaft, the cam thereon beneath the pawl, and a plurality of pins carried by the shaft and passed through the slots of the keys, whereby the depression of any key actuates the cam, as set forth.

24. The combination, with the vertically-reciprocative key and the guide-bar through which the key passes, provided with a rearward ledge, of the pivoted arm carried by the key and having a notch to engage said ledge, substantially as described.

25. The combination, with a key and the guide-bar provided with a rear ledge, of the arm pivoted on the key, having a notch to engage said ledge and its lower end extended into the path of the cash-drawer, substantially as specified.

26. The combination, with the key having slotted lower end extended below the top edge of the cash-drawer, the transverse cam-shaft, and the fingers on the cam-shaft passed through said slot, of the cash-drawer having its rear end cut away, as set forth.

27. The combination, with the ratchet-wheels and the key, of the pawls carried by the keys, the transverse rocking shaft arranged above the tails of the pawls and adapt-

ed to be depressed to disengage the pawls from the ratchet, the lever Q, and the arm R, pivoted to the lever and connected to the rock-shaft, substantially as set forth.

28. The combination, with the vertically-reciprocative key and the ratchet-wheel, of the retaining-pawl, the pawl carried by a key and having a limited play thereon in the direction of the length of the said pawl, with its free end beneath the retaining-pawl, and the rock-shaft bearing upon the tail of the pawl beyond its connection with the key, substantially as specified.

29. The combination, with the key and the ratchet-wheel, of the pawl pivoted in a slot in the key and having an elongated slot and its free end arranged beneath the retaining-pawl, and the rock-shaft bearing upon the tail of the pawl, and the lever Q, pivotally connected with the arm, which is connected with said rock-shaft, substantially as and for the purpose specified.

30. The combination, with the key and the ratchet-wheel, of the pawl pivoted to the key and having lug at its free end and the gravity-pawl pivoted above the first-mentioned pawl and extended across and above the same, as set forth.

31. The combination, with the spring-rollers and the tape wound thereon and provided with holes, of the vertically-reciprocative key, the ratchet-wheel, and the pin-wheel on the shaft of the ratchet-wheel, and a connection between the key and ratchet-wheel, whereby the tape is fed along step by step by the depression of the key, substantially as specified.

32. The combination, with the spring-rollers, one of which is of greater power than the other, of the tape wound thereon, the ratchet-wheel, the key, connections between the key and ratchet-wheel, and means for releasing the ratchet-wheel to allow the stronger roller to wind up the tape thereon when desired.

33. In a cash-register, a system of vertically-reciprocative keys and tablets, with a direct positive-acting connection between the keys and tablets, of independent key-locking mechanism and a simultaneous unlocking mechanism, substantially as specified.

34. In a cash-register, the combination, with the tape-feed and the vertically-reciprocative direct-acting key arranged to actuate the same, and intermediate mechanism having a limited play as the key descends, of a tape-feed-locking device independent of the feeding mechanism and of the key and constructed to simultaneously return all of the tapes to 0, substantially as specified.

35. The combination, with the case, the tape-feed, and the vertically-reciprocative direct-acting key arranged to actuate the same, and intermediate mechanism having a limited play as the key descends, of a tape-feed-locking pawl arranged within the case and independent of the feed and key, as set forth.

36. The combination, with a key and an indicator, of a bendable strip connection between the two, substantially as described.

37. The combination, with a key and an indicator, of an unpivoted bendable strip connection between the two, substantially as specified.

In testimony whereof we affix our signatures in presence of two witnesses.

CHARLES ANGUS.
MARCUS S. SIMMONS.
JOSEPH R. NANGLE.

Witnesses:
THOS. H. HAM,
THOMAS MCNABB.