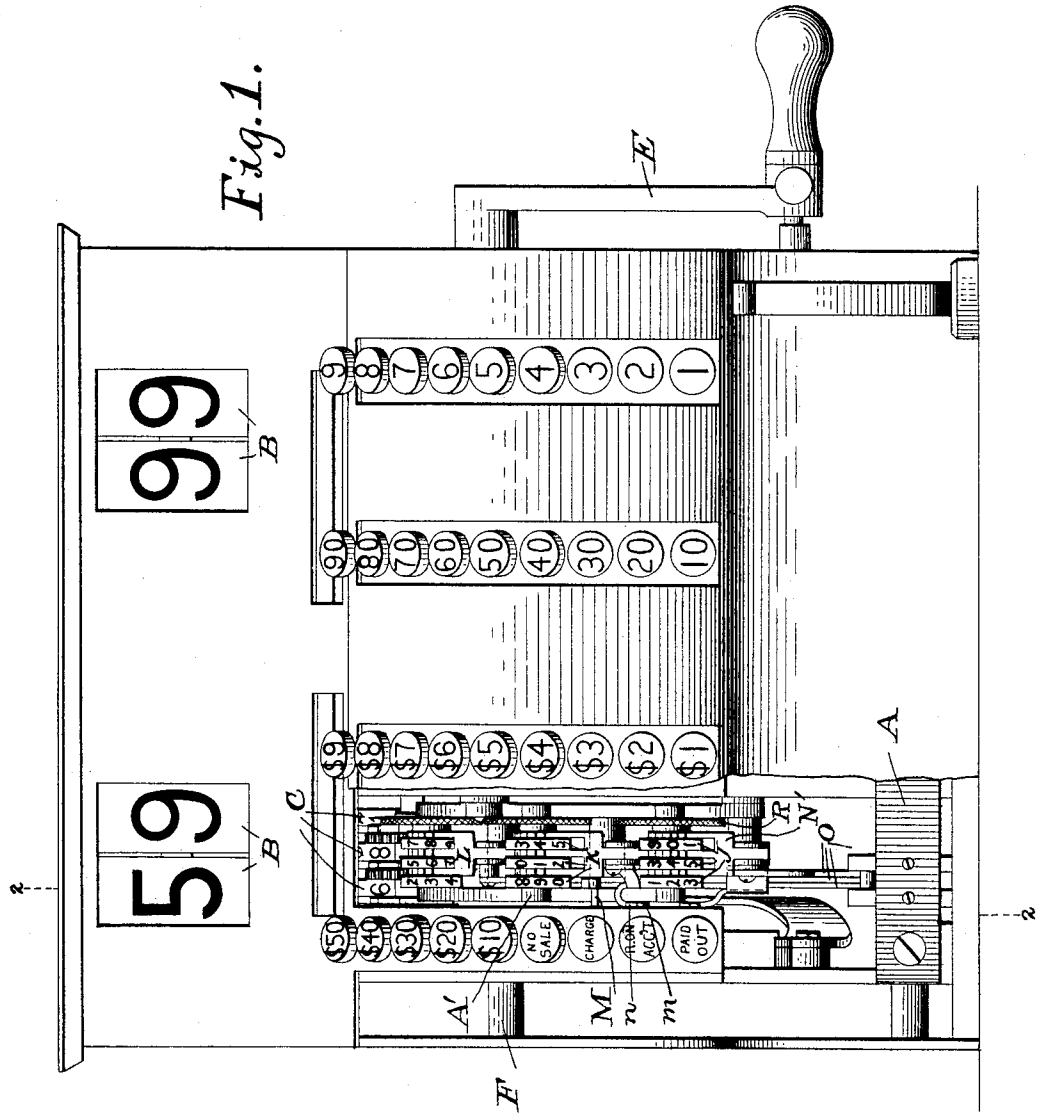
(No Model.) 3 Sheets—Sheet 1.

F. H. BICKFORD.

CASH REGISTER.

No. 589,114. Patented Aug. 31, 1897.

Fig. 1.



WITNESSES:
Wm. McCarthy.
Isa Berkstresser

INVENTOR.
Frank H. Bickford
BY
Alvan Macauley.
ATTORNEY.

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

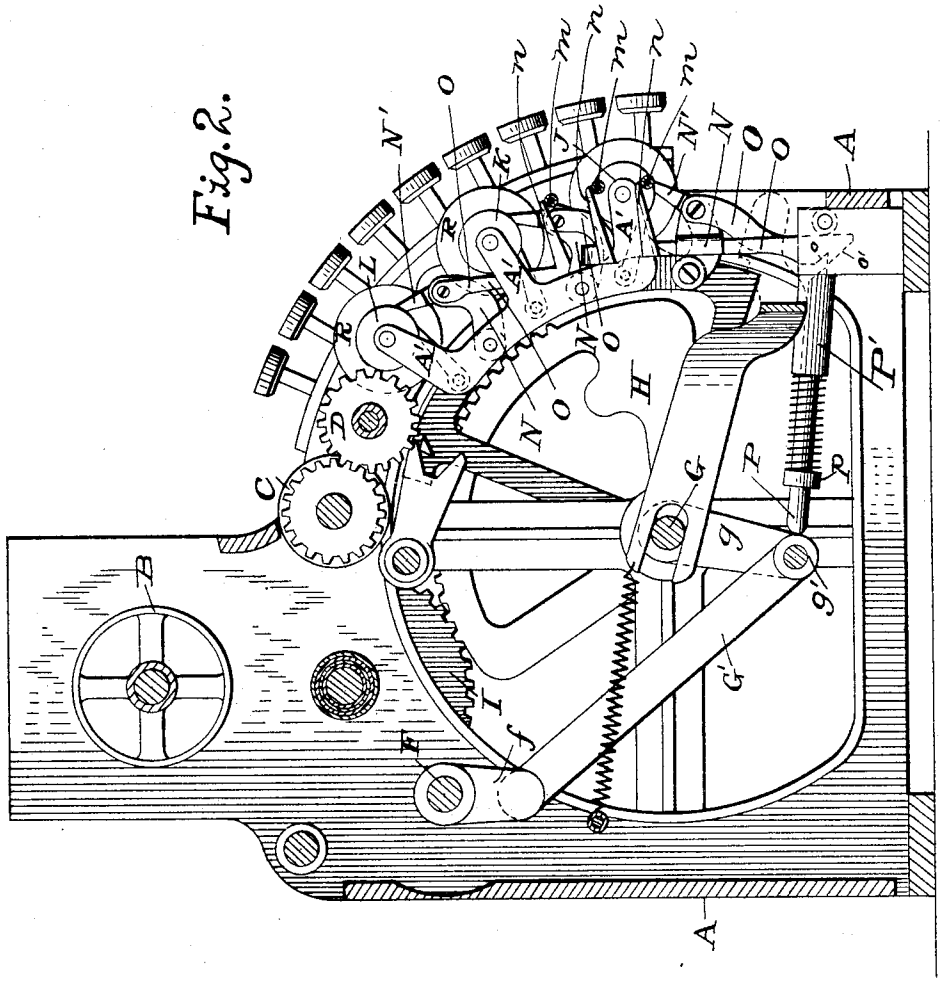
(No Model.) 3 Sheets—Sheet 2.

F. H. BICKFORD.

CASH REGISTER.

No. 589,114. Patented Aug. 31, 1897.

Fig. 2.



WITNESSES:
Wm. McCarthy
Ira Berkstresser

INVENTOR.
Frank H. Bickford
BY
Alvan Macauley
ATTORNEY.

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

(No Model.) 3 Sheets—Sheet 3.

F. H. BICKFORD.

CASH REGISTER.

No. 589,114. Patented Aug. 31, 1897.

Fig. 3.

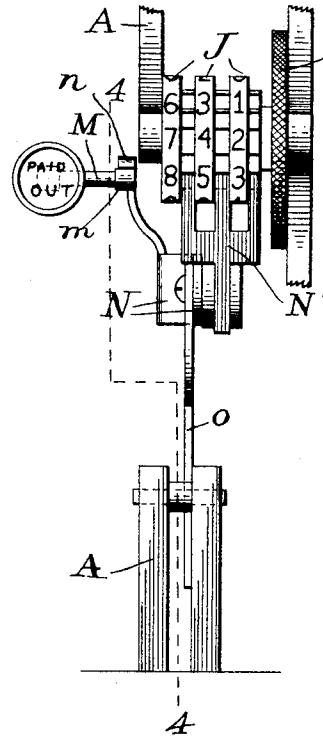


Fig. 5.

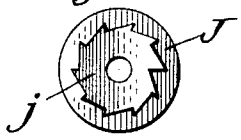


Fig. 6.

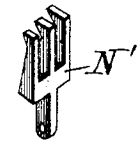
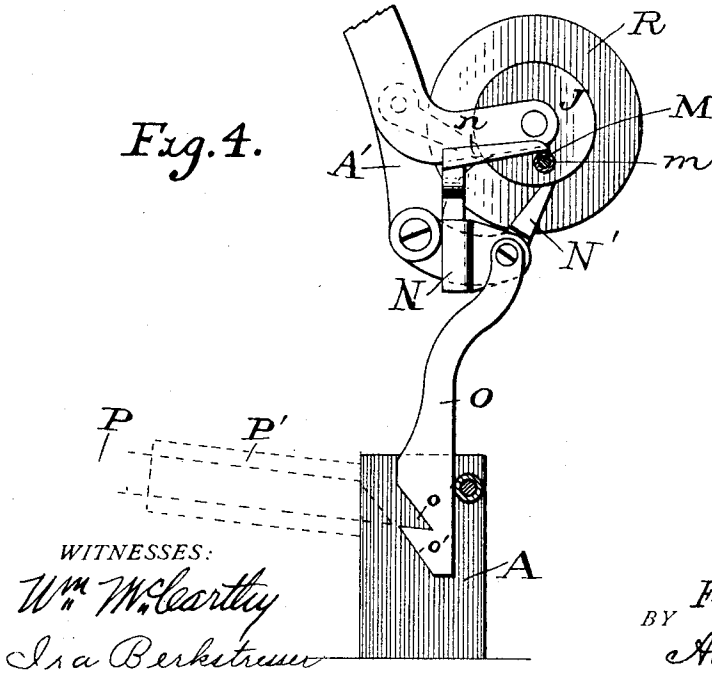


Fig. 4.



WITNESSES:

Wm. McCarthy

Isa Berkstresser

INVENTOR.

Frank H. Bickford

BY Alvan Macauley.

his ATTORNEY.

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

UNITED STATES PATENT OFFICE.

FRANK H. BICKFORD, OF DAYTON, OHIO, ASSIGNOR TO THE NATIONAL CASH REGISTER COMPANY, OF SAME PLACE.

CASH-REGISTER.

SPECIFICATION forming part of Letters Patent No. 589,114, dated August 31, 1897.

Application filed May 13, 1897. Serial No. 636,421. (No model.)

To all whom it may concern:

Be it known that I, FRANK H. BICKFORD, 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; and I do hereby declare the following to be a full, clear, and exact description of the invention.

My invention relates to an improvement in cash-registers. In the drawings I have shown it applied to a machine similar to that described in the patent to Hugo Cook, No. 483,511, of September 27, 1892. Although I have shown my invention as applied to this particular machine, its adaptability is not so restricted, as it comprises in a cash-register the application of special counters auxiliary to the main counter, which record, respectively, the number of times the so-called "special keys" are pressed. By "special keys," I refer particularly to the "Charge," "Rec'd on acc't," and "Paid out" keys. Of course my special counters might be applied to cooperate with any other keys, as desired.

Referring to the drawings, Figure 1 is a front elevation showing my invention applied to a cash-register. Fig. 2 is a vertical section on the line 2 2 of Fig. 1. Fig. 3 is a detached front elevational view of one of the special keys with the connecting mechanism by which it operates its special counter. Fig. 4 is a side elevation, partly in section, on the line 4 4 of Fig. 3. Fig. 5 is an end view of one of the adding-wheels of the special counter shown in Fig. 3, showing also the actuating-ratchet with a single deep notch, which cooperates with the transfer-pawl to transfer an amount from a lower to an adding-wheel of higher denomination in a manner well understood in the art. Fig. 6 shows the transfer-pawl.

The same letters of reference indicate identical parts throughout the various figures of the drawings.

As the machine in connection with which my invention is shown is fully described in the Cook patent referred to and as many cash-registers of the type shown are now in daily use, only so much of that machine will be described as is necessary to an understanding of my invention, reference being had to the aforesaid patent for a fuller description.

Referring to the drawings, the letter A indicates various fixed parts of the main frame and case of the cash-register, in which are suitably supported the indicators B, the registering-wheels C of the cash-counter, the transfer-gears D, the crank E, the drive-shaft F, and the rock-shaft G, which is driven from the drive-shaft by the link G', which has a jointed connection at one end with the revoluble arm *f*, which is fixed to the drive-shaft F, and at the other end with the oscillating arm *g*, which is fixed upon the rock-shaft G, as will be readily understood. When a key is pressed and the crank turned, the driving-shaft F is revolved, which rocks the rock-shaft and gives the extremity *g'* of the oscillating arm *g* a definite movement first backward, then forward past its normal position, as shown in Fig. 2 of the drawings, then backward to normal position again. A movemeмt is also imparted to the segment H proportionate to the value of the operated key, which in turn is transmitted through the gear I to the registering-wheels C and the indicators B. In the fourth bank of keys (see Fig. 1) it will be seen that, besides the cash-keys registering from ten dollars to fifty dollars, there are also the special keys "No sale," "Charge," "Rec'd on acc't," and "Paid out," which do not register on the cash-counter, and it is the specific object of my invention to provide counters appropriated, respectively, to the special keys, upon which shall be recorded the number of times each of the special keys is used, except the "No sale" key, which in the present instance is not provided with a counter.

Referring to Figs. 1 and 2 of the drawings, it will be seen that I have provided three sets of adding-wheels J, K, and L, which are supported in the auxiliary frame A', which is secured to the main frame A of the machine, and each series is composed of three wheels—a units-wheel, a tens-wheel, and a hundreds-wheel—as will be readily understood. When a special key—for example, the "Charge" key—is pressed and the handle turned, the fact that a transaction has been made will be recorded upon the series of registering-wheels

L, which coöperates with the "Charge" key. The series K coöperates with the "Rec'd on acc't" key and the series J with the "Paid out" key.

I shall now describe the connecting mechanism between the special keys and the special counters, respectively, and as these are substantially the same a description of one of the mechanisms will suffice for all, and for this purpose I shall describe the connecting mechanism between the "Paid out" key and its special counter. (Illustrated in detail in Figs. 3 and 4 of the drawings.)

Each special key carries a rigid laterally-extending arm M, upon the end of which is a suitable antifriction-roller *m*. Pivoted at one end to the auxiliary frame A' is the pawl-carrier N, in which is pivoted near the other end the pawl N', which is arranged to engage the ratchet-wheels *j*, carried by the registering-wheels in the usual manner. Fixed to the oscillating pawl-carrier is the arm *n*, which rests against the antifriction-roller on the arm M, which is carried by the special key, and thus the key supports the pawl-carrier, the pawl, and the depending actuating-bar O. That surface of the arm *n* which rests against the antifriction-roller is inclined downward with respect to the travel of the antifriction-roller when the special key is operated. When the key is pressed, the arm M has a fixed travel, and the roller in passing under arm N will lift it, thereby raising the pawl-carrier, to which it is rigidly secured, and actuating the pawl N' sufficiently to turn the units-wheel of the series J slightly. Simultaneously the operating-bar O is also raised slightly and the parts are held in this position until the key is released, when they will of course drop to normal position, but meanwhile the crank must be turned, and this operation rocks the oscillating arm *g*, so that the extremity *g'* thereof, when the crank is near the end of the stroke, strikes the rear end of the spring-pressed plunger P, which slides in a suitable bracket P', secured to the main frame A, and forces it forward. Surrounding the plunger between the bracket and the fixed collar *p* is a helical spring which operates to retain the plunger in normal position. (Shown in broken lines in Figs. 2 and 4.) The front end of the plunger is beveled, and when it is thrown forward while the operating-bar O is in normal position, as shown in Fig. 4, the beveled end of the plunger will slide into the notch *o* in the bar O. Near its lower end, below the notch *o*, the operating-bar also has a beveled end *o'*. As previously described, when a special key is operated the operating-bar is raised slightly, so that when the plunger is moved forward the beveled front end thereof will not enter the notch *o*. On the contrary, it will contact with the beveled end *o'* of the operated bar, and a continued forward movement of the plunger will force the operating-bar to slide upward and raise the pawl N' to complete the turning of the units-wheel of the registering-wheels J. Before the crank-handle is again at normal position the special key is released and permitted to spring out to its normal position, thereby permitting the pawl-carrier and its coöperating parts to drop down to their normal position. The helical spring of course restores the plunger to normal position after each operation of the crank-handle.

The operation of each of the other series of special registering-wheels and their respective coöperating devices is exactly the same as that described with respect to the "Paid out" key and its special counter. The two other operating-bars O (see Fig. 1) lie side by side with the operating-bar already described, and the edges of the notches *o* of the two other operating-bars lie flush with the edges of the notch in the operating-bar O, already described as coöperating with the "Paid out" key. Likewise the other operating-bars have corresponding beveled ends, from which it will be readily understood that when any one of the special keys is pressed its operating-bar will be raised, the others being locked in normal position, and when the crank is turned only the registering-wheels which coöperate with the operated special key will be actuated. The others will not. The thumb-wheels R are for the purpose of turning the special registering-wheels to zero in the usual manner.

When the register is operated, if no special key be pressed the beveled end of the plunger simply enters the notches *o* in the operating-bars without affecting the special registering-wheels. If, however, a special key be pressed either by itself or in connection with the cash-keys, a record thereof will be duly recorded upon the special registering-wheels.

I claim—

1. In a cash-register, the combination with the cash-registering wheels, the cash-keys and the driving means arranged to actuate the cash-registering wheels after the cash-keys have been pressed, of the special counter, normally-disengaged mechanism connecting the driving means and the special counter, and the special key for setting the connecting means to operative position and arranged when pressed, to partially actuate the special counter.

2. In a cash-register, the combination with the cash-registering wheels, the cash-keys and the driving means arranged to actuate the cash-registering wheels, of the special counters, normally-disengaged mechanisms connecting the driving means and the special counters and the special keys one appropriated to each of the special counters, so arranged that when one of the special keys is pressed, it will partially actuate its coöperating special counter and set the coöperating mechanism to operative position, whereby the driving mechanism, when operated, will complete the actuation of the special counter.

3. In a cash-register the combination with

the driving mechanism, of the special counter, normally-disengaged connecting means, between the driving mechanism and the special counter comprising a spring-pressed plunger, and an operating-bar, and a special key arranged to move the operating-bar.

4. In a cash-register the combination with the driving mechanism, of the special counter, the pawl arranged to move the special counter, the operating-bar pivoted to said pawl and having a beveled end, and a spring-pressed plunger arranged to transmit motion from the driving mechanism to the operating-bar.

5. In a cash-register the combination with the driving mechanism, of a special counter, the pawl-carrier bearing a pawl coöperating with the special counter, the operating-bar provided with a notch and having a beveled surface, and a spring-pressed plunger arranged to be moved by the driving mechanism and having a beveled end arranged normally to slide into the notch of the operating-bar.

6. In a cash-register the combination with the driving mechanism, of a special counter, a special key, a pawl coöperating with the special counter, an operating-bar arranged to actuate the pawl and having an arm inclined to the path of travel of the special key, and a projection on the key arranged to strike the arm and move the operating-bar when the key is pressed.

7. In a cash-register the combination with the driving means, of a special counter, a special key, a pawl coöperating with the special counter, an operating-bar arranged to actuate the pawl and provided with a notch, a spring-pressed plunger arranged to coöperate with the notched portion of the operating-bar and moved by the driving means, a projecting arm carried by the operating-bar, and a projection carried by the special key for moving the operating-bar when the key is pressed.

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

FRANK H. BICKFORD.

Witnesses:
ALVAN MACAULEY,
IRA BERKSTRESSER.