

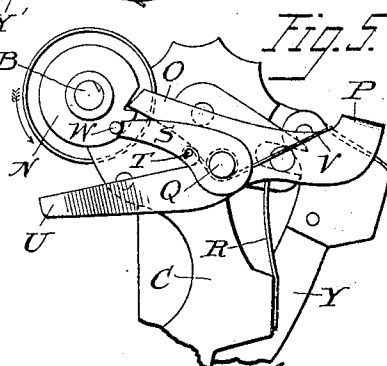
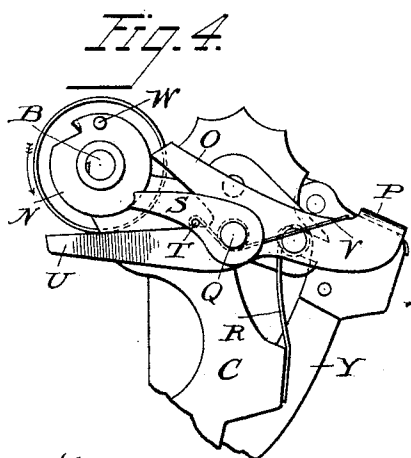
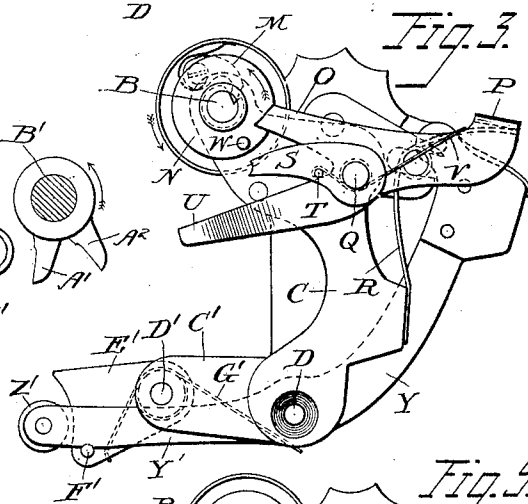
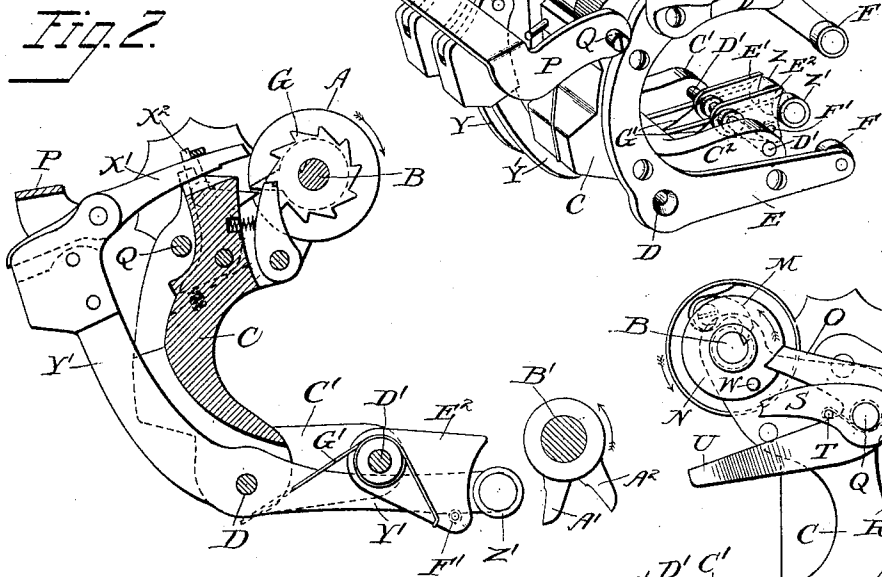
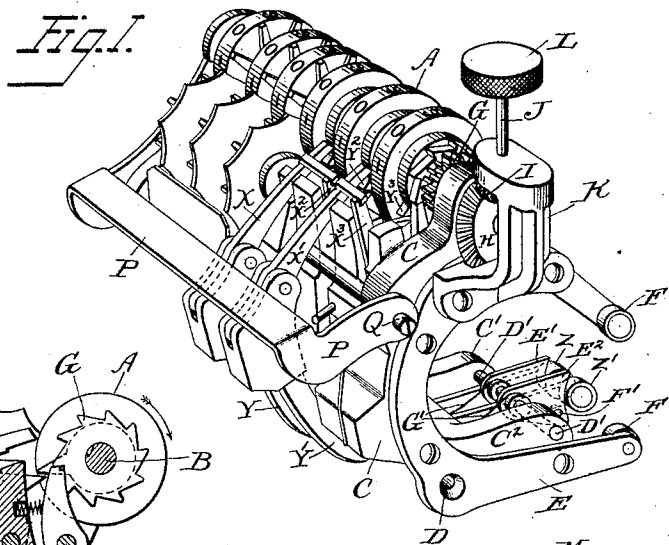
(No Model.)

F. BARNARD.

TRANSFERRING AND RESETTING MECHANISM FOR CASH REGISTERS.

No. 570,196

Patented Oct. 27, 1896.



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UNITED STATES PATENT OFFICE.

FAYETTE BARNARD, OF DAYTON, OHIO, ASSIGNOR TO THE NATIONAL CASH REGISTER COMPANY, OF SAME PLACE.

TRANSFERRING AND RESETTING MECHANISM FOR CASH-REGISTERS.

SPECIFICATION forming part of Letters Patent No. 570,196, dated October 27, 1896.

Application filed February 3, 1896. Serial No. 577,799. (No model.)

To all whom it may concern:

Be it known that I, FAYETTE BARNARD, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented a certain new and useful Improvement in Registering Devices, of which the following is a description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates more particularly to registering devices for cash-registering machines, and in the present instance is illustrated as applied to the register of the machine shown and described in Letters Patent of the United States No. 497,860, issued May 23, 1893, upon the application of Thomas Carney.

The first feature of my invention relates to the means for resetting the registering-wheels or returning them to zero or initial position at the end of a day's business or such other time as the reading is taken from the wheels; and it consists in the provision of an automatic stop which arrests the parts at the end of their resetting movement and prevents them being turned beyond initial position.

The second feature of my invention relates to the transfer devices between the several wheels; and it consists in the provision of locking devices controlled by the cams which actuate the transfer-pawls, whereby such pawls are normally locked from movement but are automatically released by the cams preparatory to the actuation of the pawls by the cams.

In the accompanying drawings, Figure 1 represents a perspective view of the register of one of the common forms of machines built under the patent before mentioned with my improvement applied to it; Fig. 2, a vertical section thereof; Fig. 3, an elevation of the left-hand end of the same—the end opposite that shown in Fig. 1; Fig. 4, a detail view of some of the parts shown in Fig. 3, but in a different position; and Fig. 5, a view corresponding to Fig. 4, with the parts in still another position.

The same letters of reference are used to indicate identical parts in all the figures.

The registering-wheels A are mounted upon a shaft B, journaled in the upper ends of the

opposite side arms of a frame C, which frame is pivotally supported at D in the framework of the machine in which the register is located. Secured upon the right-hand end of the frame C is a horseshoe-shaped plate E, whose rearwardly-extending arms carry at their ends friction-rollers F, which cooperate with rotary cams in the machine referred to, by which the frame C is rocked back and forth at each operation of the machine to gear and ungear the pinions G of the registering-wheels with the oscillating actuating-segments thereof, as fully described in the patent referred to. The shaft B, upon which the registering-wheels A are mounted, has fast upon its right-hand end a beveled pinion H, which meshes with a second smaller beveled pinion I, which is fast upon the lower end of a vertical shaft J, journaled in a supporting-bracket K and provided at its upper end with a thumb-piece L, by which it may be turned to rotate the shaft B. Interposed between the shaft B and the several registering-wheels are suitable devices for causing the shaft when turned in one direction to pick up the wheels at the different points at which they may be standing and carry them to initial position with it. In the present instance such means consists of pawls M, pivoted to the sides of the respective wheels, Fig. 3, and cooperating with a longitudinal notch or groove in the shaft B in the well-known manner.

Fast upon the left-hand end of the shaft B, Fig. 3, is a disk N, having in its periphery a single notch with which cooperates the rearwardly-extended end O of one of the supporting side arms of a frame P, composed of its two side arms and an integral cross bar or plate connecting their front ends. The frame P is pivotally supported by its side arms upon a rod Q, mounted in the frame C, while a spring R, interposed between the frame C and the under side of the cross-bar of the frame P, Fig. 3, presses the frame P upward and the rear end of its arm O downward, maintaining the latter in engagement with the periphery of the disk N. In the normal position of the parts the rear end of the arm fits in the notch in the disk N, as seen in Fig. 100

3, but when the shaft B is turned in the manner heretofore described to reset the registering-wheels the rear end of the arm O is lifted as the notch in the disk N is carried from under it, and the frame P forced downward against the resistance of the spring R. After the shaft B has been turned far enough to carry the notch in the disk N from under the arm O the latter will ride upon the periphery of the disk during the further movement of the latter until the notch is again brought beneath the end of the arm, whereupon the latter will spring into the notch again and the parts come to rest in normal position, as seen in Fig. 3.

The construction and operation of the parts above set forth are substantially the same as those found in the Carney machine, which has been referred to, and were old at the date of my invention, the first feature of which, as before stated, consists in the provision of means for arresting the parts at the end of the resetting revolution of the shaft B and preventing them being carried beyond normal position.

It will be understood that with nothing more than the parts above described it would be possible to turn the shaft B right on beyond initial position without stopping at that point, in which event it would be necessary to give the parts a further revolution in order to bring them to initial position.

In the absence of my invention the reengagement of the arm O with the notch in the disk N, as well as observation of the position of the numbers upon the registering-wheels, may be relied upon to determine when the parts have reached initial position, but I have found it advantageous to provide a positive stop for arresting them at that point and preventing the possibility of movement beyond it, so that no care in watching the numbers upon the wheels or in noticing the reengagement of the arm O with the notch in the disk N is required. To this end I mount upon the left-hand end of the rod Q, which supports the frame P, Fig. 3, a rearwardly-extending locking-arm S. This arm is loose upon the end of the fixed rod Q, but is provided with a stud T, which projects over the edge of a second arm U, formed integral with the frame P and extending downwardly and rearwardly therefrom for a purpose entirely independent of my invention and which need not be here described. So far as my invention is concerned the arm U could be dispensed with or be cut off immediately in rear of the stud T, it being only necessary that the locking-arm S be connected in some manner to the arm O, so as to be moved upward by said arm and permit said arm to move downward independently of it. A spring V, coiled around the rod Q, bears at its rear end against the stud T on the arm S and at its forward end upon the side arm of the frame P and serves to press the arm S downward and yieldingly hold it in normal position, with

the stud T resting against the upper edge of the arm U. Projecting from the side of the disk N, slightly below and in rear of the notch in the disk, is a stud W.

Now, under the construction and arrangement of parts above described, when the shaft B and disk N are turned to reset the registering-wheels and the notch in the disk is carried from under the end of the arm O and the latter caused to ride upon the periphery of the disk, as in Fig. 4, it will be seen that the locking-arm S is lifted into such position that its rear end stands directly in the path of the stud W upon the disk N. The result is that as the parts reach or slightly pass initial position the stud W will abut against the rear end of the arm S, the latter being slightly rounded out to fit the surface of the stud. At the same instant that the stud engages the end of the arm S and the further movement of the parts is thereby arrested the upper edge of the notch in the disk N will clear the rear end of the arm O and the latter will spring downward against the lower radial wall of the notch, with the result that the parts will be arrested in the position shown in Fig. 5. The engagement of the stud W with the end of the arm S will prevent the latter moving downward with the arm O, with the result that the rear end of said arm S will be held up in the position shown in Fig. 5 against the pressure of its spring V, which tends to throw it downward. The pressure of the rear end of the arm O upon the lower wall of the notch in the disk, under the action of the spring R, will tend to force the disk slightly backward from the position shown in Fig. 5 and permit the end of the arm to fully engage the notch, as seen in Fig. 3. As soon as the pressure upon the thumb-piece L, by which the parts have been turned forward, is released, the rear end of the arm O will be forced downward to the position shown in Fig. 3 by the action of the spring R upon the frame P. This will move the stud W slightly rearward and disengage it from the end of the arm S and permit the spring V to throw the latter downward to normal position.

From the foregoing description it will be understood that no matter how rapidly or violently the shaft B is turned in resetting the registering-wheels the parts will be positively arrested when they reach normal position, so that no further movement is possible without first releasing the pressure upon the thumb-piece by which the shaft has been turned. Any excessive movement of the parts through mistake or accident is therefore rendered impossible.

The second feature of my invention, as has been stated, relates to means for locking the transfer-pawls in normal position and preventing movement of them except by their actuating-cams. In the register shown in Fig. 1 the transfers between the first and second and second and third wheels are effected

by means of pawls X X', which coöperate with ratchets upon the hubs of the second and third wheels, said ratchets being hidden in Fig. 1 by the first and second wheels, but corresponding to the ratchet of the first wheel shown in Fig. 1. (See Fig. 2.) The transfers between the third and fourth and the higher wheels in the series are effected, in the present instance, by transfer devices of familiar construction which do not employ any actuating-pawls and to which my invention has no application and which need not be here described.

The transfer-pawls X X' for the second and third wheels are pivoted in and carried by the upper ends of long curved levers Y Y', which are fulcrumed at D in the frame C and extend horizontally rearward from their fulcrums and carry upon their rear ends friction-rollers Z Z', with which coöperate, respectively, cams A' A² upon a rotary shaft B', Fig. 2. Under this construction and arrangement of the parts at each revolution of the shaft B' the cam A² will engage the roller Z' upon the rear end of the lever Y' and rock said lever and throw the pawl X' rearward, while the cam A' will immediately thereafter engage the roller Z of the lever Y and in like manner throw the pawl X rearward. The two pawls are normally held up in inoperative position by latches X² and X³, which latches coöperate with projections Y² and Y³ upon the hubs of the first and second registering-wheels, by which at each revolution of either of those wheels the latch for the pawl of the next higher wheels is tripped and the pawl set to effect a transfer at its next rearward movement in the well-known manner.

The construction and operation of the transfer devices as above described are substantially the same as in the Carney machine referred to. Under such construction and arrangement it will be seen that there is nothing to prevent the levers Y and Y' being rocked at any time by any force applied either to them or to the transfer-pawls, so that should said levers be moved at any time, by accident or design, otherwise than by the cams upon the shaft B' improper transfers might be effected and the registration falsified. To prevent this, I have provided a locking device for each of the pawl-levers, which locking device normally locks said lever from movement by force applied to it in any manner and permits movement of it only after it has been unlocked or released by first moving the locking device, and this locking device stands in the path of the cam coöperating with such lever, so that it is struck by the cam and caused to release the lever immediately before the cam engages the lever to move the latter. As seen in Fig. 1, the lower end of the frame C is provided with two rearwardly-extending arms C' C² upon opposite sides of the rear ends of the pawl-levers Y and Y'. Hung upon a rod D', supported in these arms and extending across the upper sides of the

levers Y Y', are two locking-plates E' E², one beside each of the levers Y Y'. Each of these plates has projecting from its side a stud F', which fits in a notch in the edge of the adjacent lever, while springs G', coiled around the hubs of the plates E' E² and pressing upward at their rear ends against the lower edges of said plates, yieldingly maintain the studs F' in engagement with the notches in the levers.

Under the construction and arrangement above described if it be attempted to press the rear end of one of the levers downward the direction of the pressure thereby exerted upon the stud F' of the adjacent locking-plate is such, in relation to the pivotal point of such plate, that the stud will simply bind in the notch of the lever and the plate will not yield, but, on the contrary, will firmly lock the rear end of the lever from downward movement. If, however, the locking-plate is slightly depressed and its stud F' disengaged from the notch in the lever, the rear end of the latter may be freely depressed, the stud, as the lower edge of the lever contacts with it, slipping along the under edge of the lever in front of the notch in the latter. Now in the revolution of the shaft B' the cam A² will strike the upper rear corner of the plate E² and depress the latter, and thereby release the lever Y' before it contacts with the roller Z' upon the rear end of the lever and rocks the latter to throw its pawl X' rearward, and likewise the cam A' will contact with the plate E' and release the lever Y before it reaches the roller Z upon the rear end of said lever.

From the foregoing description it will be seen that the pawl-levers and pawls are normally locked and cannot be moved by any force applied to them without first depressing the locking-plates E' E² and disengaging the studs F' from the notches in the under edges of the levers, and that said plates are engaged by the cams upon the rotary shaft and the levers thereby automatically released preparatory to the engagement of the cams with the levers for actuating the pawls.

So far as I am aware I am the first in the art to provide a locking device of any sort for the transfer-pawl of a register, which device normally locks said pawl from movement and coöperates with the actuating device of such pawl to automatically release the pawl preparatory to its movement by the actuating device.

Having thus fully described my invention, I claim—

1. In a registering device, the combination, with the resetting-shaft for the registering-wheels, of a movable stop coöperating with a projection turning with the shaft, and means actuated by the shaft but independent of the projection for moving the stop into the path of the projection after the shaft has been turned from normal position, for the purpose described.

2. In a registering device, the combination, with the resetting-shaft for the registering-wheels, of a movable stop cooperating with a projection turning with the shaft, and means actuated by the shaft but independent of the projection for moving the stop into the path of the projection after the shaft has been turned from normal position, and permitting it to move out of the path of the projection again after the latter has engaged it and the parts been arrested by it, for the purpose described.

3. The combination of a rotatable shaft, a disk fast thereon or turning therewith and provided with a notch in its periphery, a member bearing against the periphery of the disk and cooperating with the notch therein, and a movable stop adapted to be moved by said member into the path of a projection turning with the shaft, to arrest the latter.

4. The combination of a rotatable shaft, a disk fast thereon or turning therewith and provided with a notch in its periphery and with a lateral projection, a member bearing against the periphery of the disk and cooperating with the notch therein, and a movable stop adapted to be moved by said member into the path of the projection, and permitted to move out of the path of the projection after the latter has engaged it and been arrested by it.

5. The combination of the shaft B, the disk N fast thereon and having the notch in its periphery and provided with the projection W, the spring-pressed arm O bearing against the periphery of the disk and adapted to cooperate with the notch therein, and the stop-arm S cooperating with the arm O and with the projection W, for the purpose described.

6. The combination of the shaft B, the disk N fast thereon and having the notch in its periphery and provided with the projection W, the spring-pressed arm O bearing against the periphery of the disk and cooperating with the notch therein, the stop-arm S cooperating with the arm O so as to be moved in one direction with said arm but not in the other, and the resetting-spring V for the arm S, substantially as and for the purpose described.

7. The combination of the shaft B, the registering-wheels A mounted thereon, means intermediate the wheels and shaft for causing the latter to pick up the wheels and carry them with it when turned in one direction, the beveled pinion H fast upon one end of the shaft, the beveled pinion I meshing with the pinion H, means for turning the pinion

I to rotate the shaft, the disk N fast upon the opposite end of the shaft and provided with the notch in its periphery and with the projection W, the spring-pressed frame P having the arm O bearing against the periphery of the disk N, the stop-arm S, the projection T intermediate the arm A and the frame P or parts moving with it, for causing the frame to carry the arm S with it in one direction but not in the other, and the resetting-spring V for the arm S, substantially as and for the purpose described.

8. In a registering device, the combination, with a registering-wheel provided with a ratchet, a reciprocating transfer-pawl adapted to cooperate with the ratchet, and actuating means for said pawl, of a locking device normally holding the pawl from movement and cooperating with the actuating means to release the pawl preparatory to its movement by said means.

9. In a registering device, the combination, with a registering-wheel provided with a ratchet, a reciprocating transfer-pawl adapted to cooperate therewith, and a cam for reciprocating said pawl, of a locking device normally holding the pawl from movement and cooperating with the cam to cause the latter to release the pawl preparatory to moving it.

10. In a registering device, the combination, with the registering-wheel A provided with the ratchet G, the lever Y', and the transfer-pawl X' actuated by said lever and adapted to cooperate with the ratchet G, of the spring-pressed pivoted locking-plate E² provided with a projection F' cooperating with a notch in the lever Y' in the manner and for the purpose described.

11. In a registering device, the combination, with the registering-wheel A provided with the ratchet G, the lever Y', and the transfer-pawl X' pivoted to and carried by the upper end of said lever and adapted to cooperate with the ratchet G, of the spring-pressed locking-plate E² pivoted at D' above the rear end of the lever Y' and provided with the projection F' cooperating with the notch in the under edge of said lever, and the cam A² cooperating with the plate E² and rear end of the lever Y' in the manner and for the purpose described.

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