(No Model.)

H. C. PRITCHARD.

CASH REGISTER AND INDICATOR.

No. 491,593. Patented Feb. 14, 1893.

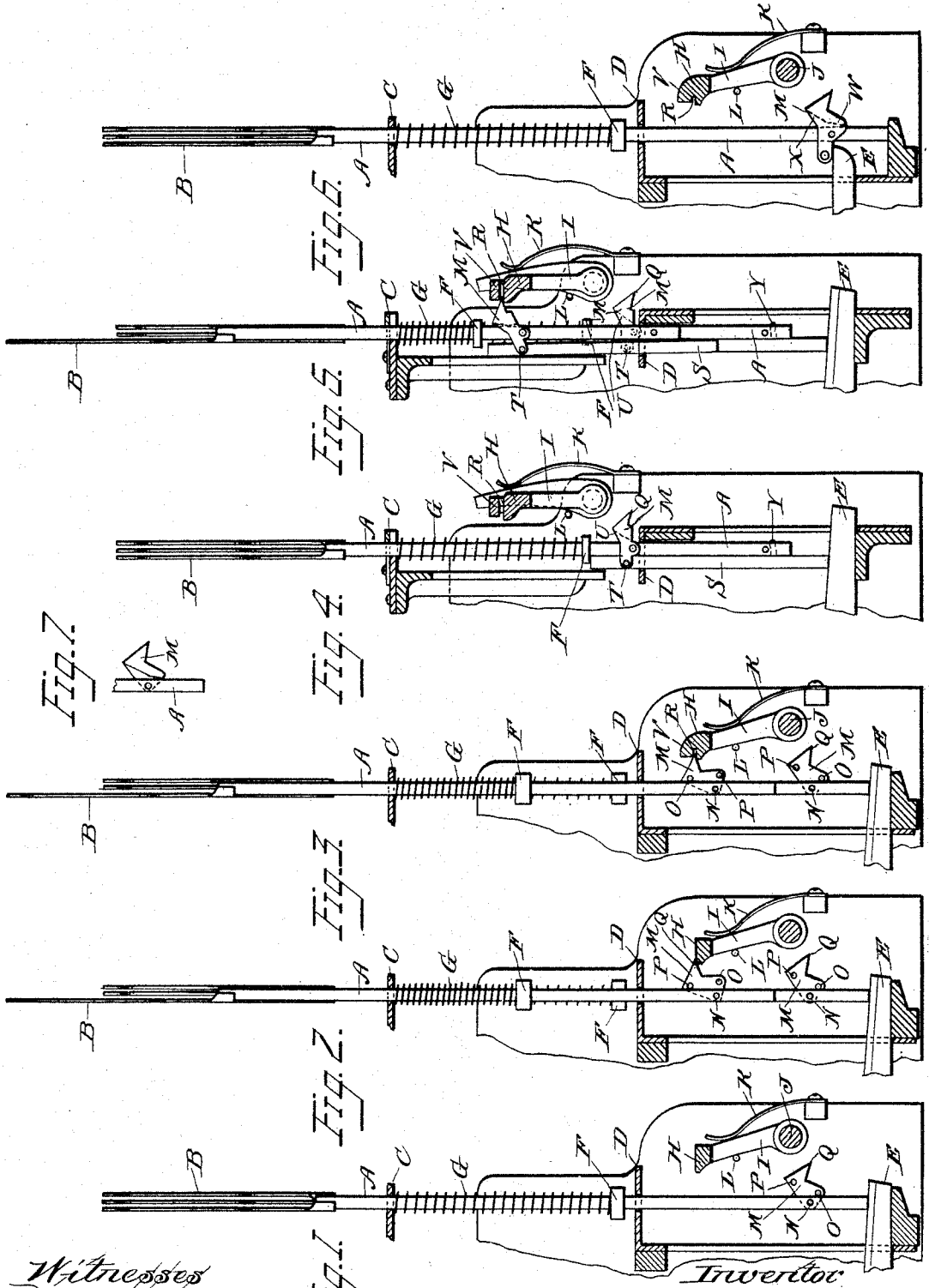


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

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CASH REGISTER AND INDICATOR.

SPECIFICATION forming part of Letters Patent No. 491,593, dated February 14, 1893.

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To all whom it may concern:

Be it known that I, HUGH C. PRITCHARD, 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 Cash Registers and Indicators, of which the following is a description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to the indicating mechanism of such machines and consists in novel means for releasing the exposed indicator when another indicator is brought into view. In many machines of this class the indicators consist of numbered tablets carried upon the upper ends of vertically-guided rods adapted to be lifted by the respective keys. These rods have been provided with projections or shoulders arranged to co-operate with a movable supporting bar, the bar being arranged in the path of travel of the projections upon the rods and moved aside as they pass it in their upward movement and then returning into their path of downward travel, so that when the operated key is released and the indicator rod starts to drop back to normal position this projection catches upon the supporting bar and sustains the rod and indicator in elevated position. It is essential that the elevated rod shall be released with certainty when another rod and indicator are lifted, and to that end it is necessary that the supporting bar shall be moved from under the projection of the elevated rod which is resting upon it. If the projections themselves are depended upon to give the supporting bar its releasing movement and the projections are of exactly the same size and their acting faces stand in precisely the same relation to the supporting bar the latter will, theoretically at least, be moved entirely from under the projection resting upon it when the projection upon the rising rod passes it; but in practice it has been found that as heretofore constructed the projections themselves could not be relied upon to effect the release of the elevated rod, since to that end the utmost accuracy of construction and adjustment was required and very slight wear or accumulation of dust or other material upon the acting surfaces of the projections and supporting bar would defeat the operation. Various means have therefore been devised for giving the supporting bar a movement in excess of that which the projection upon the rising indicator rod is capable of giving it, to thereby move it entirely from under and clear of the projection resting upon it. One form of such device has consisted in a train of mechanism interposed between the operating keys and the supporting bar and acting upon the latter independently of the indicator rods and their projections, to move it from under the projection of the elevated rod and allow it to return to normal position in time to catch under the projection of the newly lifted rod when the operated key was released. In another instance the indicator rods have been provided with two projections each, one a supporting projection adapted to catch upon the supporting bar to sustain the rod in elevated position, and the other a releasing projection adapted to move the bar farther than it was moved by the passage of the supporting projection and thereby carry it from under the supporting projection that might be resting upon it. In still other instances the movable supporting bar has itself been provided with two surfaces co-operating with single projections upon the rods, one surface of the supporting bar being a supporting surface or shoulder and the other a releasing surface. I have dispensed with the necessity of any of these releasing arrangements and devised a construction in which the elevated rod will be released with certainty by the action of the projection of the rising rod upon the supporting bar, and this I accomplish by forming the supporting and releasing projections of the rods of separate plates pivoted or otherwise movably attached to the rods and capable of slight play upon the rods. These plates are so arranged that when in normal position they are free to yield in an upward but not in a downward direction. If, therefore, during the upward movements of the rods they meet a yielding obstacle, such as the supporting bar, they will force it aside as they pass by it. In the downward movements of the rods, however, when the plates strike the supporting bar they will yield to the extent of their limit of movement upon the rods;

all in the manner and for the purpose hereinafter described.

In the accompanying drawings Figure 1 is a vertical section of the rear end of a cash register and indicator, showing so much thereof as is necessary to illustrate my invention; Fig. 2 a corresponding view with one of the tablet rods elevated; Fig. 3 a corresponding view showing a modified form of supporting bar; Fig. 4 a corresponding view showing a different arrangement of the pivoted plate; Fig. 5 a view corresponding to Fig. 4 with one of the tablet rods elevated; Fig. 6 a view similar to the others but showing a different method of lifting the tablet rods; and Fig. 7 a detail of one of the pivoted supporting and releasing plates.

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

In Figs. 1 and 2 the tablet rods A, carrying the numbered indicating tablets B at their upper ends, are vertically guided in cross plates C D of the framework and rest at their lower ends upon the rear ends of the usual operating key levers E. They have fast upon them collars F between which and the upper guide plate C are confined the coiled resetting springs G surrounding the rods. The supporting bar for temporarily holding the respective rods in elevated position consists of a bar H extending transversely across the machine in rear of the row of rods and supported by side arms I mounted upon a shaft or pivotal supports J. A spring K bearing against the rear side of one of the arms I presses the bar H forward and yieldingly holds it in normal position with the arm I bearing against a stop L upon the side frame of the machine. The supporting projections of the rods, which co-operate with the bar H, instead of being formed upon or rigidly secured to the rods, consist of plates M pivoted to the sides of the rods at N and provided each with two pins or equivalent stops or shoulders O P whose engagement with the rear side of the rod limits the movement of the plate upon its pivot. The gravity of the plates maintains them in the normal position shown in Fig. 1, with the pins O resting against the rear sides of the rods, though, if desired, springs may be applied to the plates in any suitable manner to yieldingly hold them in normal position. The plates are preferably so shaped that when in normal position their upper rear edges will be inclined forward from a vertical position, to present an inclined engaging surface to the supporting bar H when the rod is lifted. The under edges of the plates are also preferably cut away or otherwise so shaped that the rear and under edge of each plate will meet at an acute angle, to form a rearwardly projecting point Q, though this form of the plate is not essential.

With all of the rods in normal position, as indicated in Fig. 1, when any one of them is lifted by the operation of its corresponding key the inclined rear edge of its plate M will engage the forward edge of the supporting bar H and force the latter rearward against the pressure of the spring K as the plate passes the bar, the engagement of the pin O with the rod preventing the plate yielding in this direction. When the operated key is released and the lifted rod begins to move downward the under edge of the plate M or point Q thereof will strike the upper side of the bar H, and as the plate M is free to yield in this direction the plate will be tilted upward and forward until its pin P engages the rear side of the rod. This movement of the plate is not sufficient to permit its point Q to clear the forward edge of the bar H and the plate will be caught upon the bar by said point and the rod maintained in elevated position, as seen in Fig. 2. It will be seen, however, that the tilting upward of the plate of the elevated rod has carried its point Q some distance forward of the vertical line of the points Q of the unoperated rod. Now, when any other rod is lifted its plate M will force the bar H rearward of the vertical plane in which the points Q of the plates stand when in normal position, as before explained, and will thereby carry the bar entirely from under and some distance away from the point Q of the tilted plate which had been resting upon it, so that the elevated rod will be entirely released and drop back, or be thrown back by its spring, to normal position, while the plate of the newly lifted rod will be tilted and caught upon the supporting bar when said rod begins to descend, as before explained. In this manner at each operation of the machine the pivoted plate on the rising tablet rod will force the supporting bar rearward entirely away from the tilted projection of the previously-lifted rod which had been resting upon it, so that such previously-lifted rod will be released with absolute certainty and return to normal position.

From the foregoing explanation it will be apparent that the particular form of the plates M is immaterial, provided they be adapted to force the supporting bar aside in their upward passage and be tilted and caught upon it in their downward passage for the purpose described. It will also be generally found more convenient to provide the plates with shoulders instead of and for the same purpose as the pins O P, as seen for instance in Fig. 7, and I have shown pins in the drawings simply as a convenient way of illustrating the mode of operation of the invention. So, too, it is evident that the plates need not be pivoted to the rods, it being only essential that they should be capable of yielding thereon when they engage the supporting bar during the downward movement of the indicator rods.

Again, it is common in mechanical devices where two elements co-operate with each other through the instrumentality of some interposed-device to attach said device to either one of the main elements, as convenience and practicability may dictate, and in the present instance the general mode of operation of my

invention might be utilized in a construction in which the pivoted plates were carried by the supporting bar and arranged to co-operate with fixed projections upon the rods. This arrangement would be such an obvious substitute for that which I have illustrated in the drawings that it is not thought necessary to illustrate or describe it, further than to say that the plates would be so pivoted to the supporting bar and so held in normal position by springs or gravity that they would yield when engaged by the projections upon the indicator rods during the downward movement of the latter, but during the upward movement of said rods would be held rigid and cause the projections upon the rods to force the supporting bar aside.

In many machines of this character it is often desirable to simultaneously operate two or more keys in different sets, for the purpose of indicating and registering amounts which cannot be indicated and registered by the operation of any single key of the machine. Thus it is common to operate at the same time a key representing some amount in cents and another key representing some amount in dollars, to indicate and register a sale amounting to dollars and cents. In such case the indicator rods corresponding to both keys are caught and held up, with their indicators exposed to view. Should the next succeeding sale then happen to represent the same amount as either one of the single keys before operated such single key will have to be again operated to indicate and register the new sale, and in such case the indicator or indicators which had been lifted by the other simultaneously-operated key or keys must be released and dropped out of view. This result was accomplished by the various releasing devices described at the beginning of this specification, but in the construction shown in Figs. 1 and 2 it will be seen that when any key has been operated and its tablet rod lifted and its plate M caught upon the supporting bar further operations of said key will have no effect upon said supporting bar, so that if two keys should be operated at once and their indicator rods be caught and held the subsequent operation of either one of those keys would not release the indicator which had been lifted by the other key. The next step in my invention consists in providing means by which the operation of a key whose indicator rod is already up will so move the supporting bar as to release any other rod which may at the time be held in elevated position by it. The means I have illustrated in Fig. 3 for this purpose consist in providing the supporting bar H with what may be termed a releasing portion V, above the supporting surface or top of the bar, the two being separated by a longitudinal slot R. Under that construction when any rod is lifted it will force the bar H rearward as its plate M passes the front edge of the bar, and when the operated key is release and the rod begins to descend the point Q of its plate M will catch upon the forwardly projecting edge of the bar immediately in front of the slot R, the pressure of the spring K against the bar slightly engaging this slot R with the point Q of the plate, as seen in Fig. 3. If the key corresponding to the elevated rod be now operated again the latter part of its stroke will lift the rod a short distance, and as the plate M will be prevented from rising by the engagement of its point Q with the releasing portion V of the bar the lifting of its pivotal point N will tilt the plate to the position of the plates on the rods which are at rest, and thereby force the bar H rearward from under any other plate M which may be resting upon it. When the operated key is released its rod will move downward again to the position of the lifted rod shown in Fig. 3. In this manner at each operation of any one of the keys, no matter whether its corresponding indicator rod be up or down, the supporting bar will be forced rearward to approximately the vertical plane of the rearmost points of the plates M and thereby release any other indicators which may at the time be exposed to view.

It is of course evident that a separate recess for each plate M might be substituted for the longitudinal slot R in the supporting bar, H, or that instead of a slot in a solid bar the releasing portion V might consist of a separate bar fastened to the upper side of such a bar as shown in Figs. 1 and 2, with a slight space corresponding to the slot R left between the two bars, as will be hereinafter described in connection with another form of my invention.

In Figs. 4 and 5 the indicator rods A have combined with them a series of lifting rods S, one for each indicator rod, and resting upon the corresponding key lever E. The upper ends of the rods S pass through the guide plate D and their lower ends are provided with pins y which project through slots in the rods A. The collars F of the indicator rods rest upon the upper ends of these lifter rods and the plates M pivoted to the rods A have forwardly projecting ears which are pivoted to the lifter rods at T. Each of the plates M is in this instance provided with a shoulder U, indicated by the dotted line in Fig. 4, which by engagement with the rear side of the rod limits the upward and forward movement of the plate, while the connection of the plate to the lifter S and the engagement of the latter with the collar F upon the rod A prevents the plate M being tilted in the opposite direction. Under this construction when any key is operated its lifter rod S and indicator rod A are carried up by its rear end, the inclined rear edge of the plate M engages the supporting bar H and forces it rearward as it passes, and when the key is released and the parts begin to descend the point Q of the plate M will catch upon the supporting bar H and the plate be tilted to the position shown in its Fig. 5. The supporting bar H has secured to

upper side a second bar V, which corresponds to the releasing portion V of the bar in Fig. 3, the slight space between the two bars also corresponding to the slot R in Fig. 3, as before suggested in the description of the construction shown in said figure. When the lifted rod drops until its plate M engages the bar H and tilts and catches upon said bar the point Q of the plate M will rest upon the bar H immediately in front of the slot R, and if the same key be again operated the lifting of the rod S will tilt the plate M slightly rearward and engage its point Q with the slot R. The bar V will thereupon prevent any upward movement of the rear end of the plate and the continued upward movement of the lifter S and indicator rod will therefore cause the plate to force the bar H rearward and effect the release of any other rod which may at the time be supported by it.

In Fig. 6 I have illustrated a supporting bar H similar to that shown in Fig. 3, and plates M upon the rods A similar to those shown in Figs. 4 and 5, but instead of employing the lifter rods S as in Figs. 4 and 5, or of lifting the indicator rods directly the keys as in Figs. 1 to 3, the rear ends of the keys are arranged to engage the ends of the plates M which project in front of the rods A, and the rods are lifted by the engagement of the keys with these plates. The plates are in this instance provided with laterally projecting shoulders W X, indicated by the dotted lines, which limit the play of the plates upon the rods. When any key is operated its rear end lifts the corresponding indicator rod and holds the plate M thereon in the horizontal position shown, with its shoulder W against the rod. After the key has completed its movement and been released and the lifted rod begins to move downward the point Q of the plate M will catch upon the forwardly-projecting edge of the bar H and support the rod in indicating position. If the same key be again operated the engagement of its rear end with the forward end of the tilted plate M will tilt the latter in the opposite direction and engage its point Q with the slot R in the bar H and force the latter rearward in the manner before described.

So far as I am aware I am the first in the art to combine a movable supporting bar with a series of reciprocating indicator rods or supports, and a series of interposed yielding plates, adapted to force the supporting bar aside during the movements of the indicator rods to indicating position and to be tilted by the rods in their return movement and support them in indicating position, in the manner and for the purpose described, whether the interposed yielding plates be carried by the rods or by the supporting bar. My invention therefore consists in the broad combination and mode of operation described and not in details of construction and arrangement of the parts further than may be indicated by the terms of my respective claims.

Having thus fully described my invention, I claim:

1. In a cash indicator, the combination of a movable indicator-supporting bar, a series of reciprocating indicator rods or supports, and a series of interposed plates, one between each rod and the supporting bar, said plates being arranged to force said bar aside when the indicator rods are moved to indicating position and to yield and support the rods in the manner described when the rods move backward toward normal position, for the purpose set forth.

2. In a cash indicator, the combination of a movable indicator-supporting bar, a series of reciprocating indicator rods or supports, and a series of interposed plates attached to the respective rods and having limited play thereon and adapted to co-operate with the supporting bar in the manner described, to force it aside during the movement of the rods to indicating position and to yield and catch upon it during the reverse movement of the rods, for the purpose set forth.

3. In a cash indicator, the combination of a movable indicator-supporting bar, a series of reciprocating indicator rods or supports, and a series of interposed plates pivoted to the respective rods and capable of limited movement thereon, said plates being maintained in rigid relation to their respective rods during the movement of the latter to indicating position and operating to force the supporting bar aside during such movement, and adapted to tilt and catch upon the bar when they engage it during the return movement of the rods, substantially as and for the purpose described.

4. In a cash indicator, the combination of the movable supporting bar H, the vertically guided indicator rods A carrying the indicators B, and the plates M pivoted to the rods A and capable of limited movement thereon, said plates being adapted to force the bar H aside during the upward movement of the rods and to tilt and catch upon it during the downward movement of the rods, substantially as and for the purpose described.

5. In a cash indicator, the combination of a movable indicator-supporting bar having both a supporting and a releasing portion, as described, a series of reciprocating rods or indicator supports, and a series of interposed plates attached to the respective rods and capable of limited movement thereon, each of said plates being adapted to force the bar aside during the upward movement of its rod and to yield and catch upon the supporting surface of the bar during the downward movement of the rod, and being adapted also to engage the releasing portion of the bar and force the bar aside if the rod be again moved upward before being returned to normal position, substantially as and for the purpose described.

6. In a cash indicator, the combination of a movable supporting bar H having a support-

ing portion, and a releasing portion, as V, with the space R between them, a series of reciprocating rods or indicator-supports A, and a series of plates M pivoted to the rods A and capable of limited movement thereon, said plates being adapted to force the bar H aside during the upward movement of the rods and to tilt and catch upon the bar when they engage it during their downward movement, and being also adapted to engage the releasing portion V of the bar and force the bar aside if they are moved upward after they have been tilted and caught upon the supporting portion of the bar, substantially as and for the purpose described.

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