

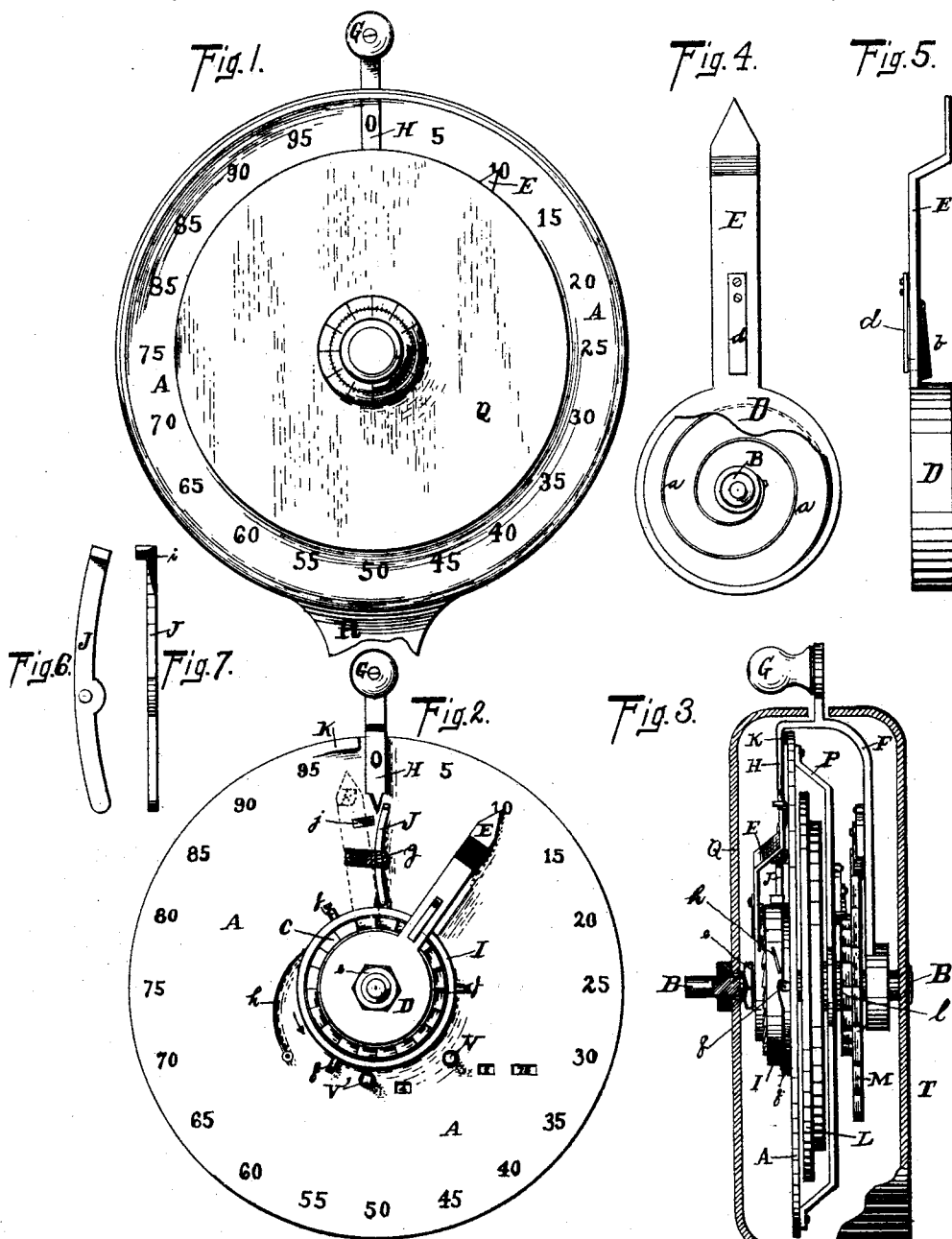
(No Model.)

2 Sheets—Sheet 1.

G. W. SPURR.
CASH REGISTER AND INDICATOR.

No. 477,340.

Patented June 21, 1892.



WITNESSES:

Fred^{rs} Schlesinger
H. W. Skinner

George W. Spurr.

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his ATTORNEY.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 8.

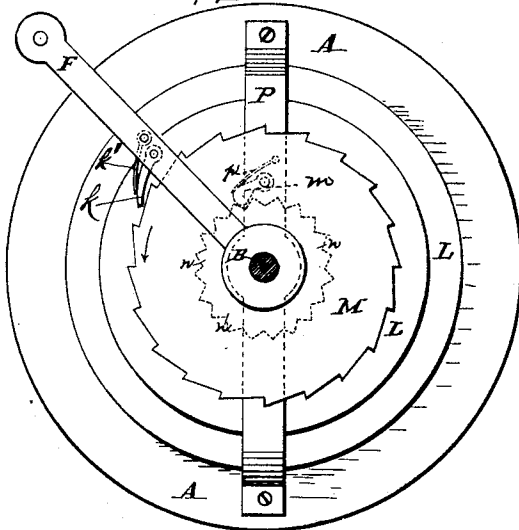


Fig. 9.

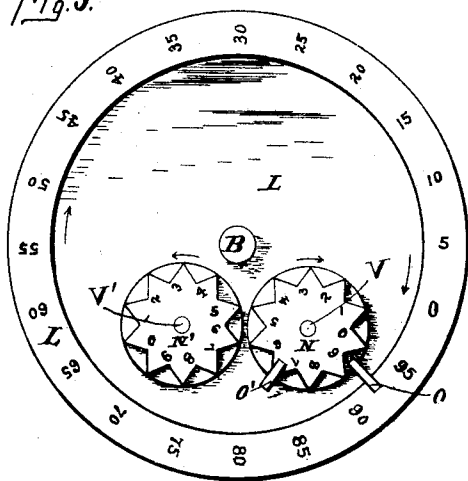
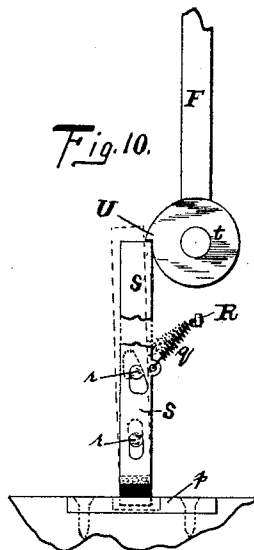


Fig. 10.



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GEORGE W. SPURR, OF NEW BRITAIN, CONNECTICUT, ASSIGNOR OF ONE-HALF TO ROBERT C. MITCHELL, OF NEW YORK, N. Y., AND FRED B. MITCHELL, OF NEW BRITAIN, CONNECTICUT.

CASH REGISTER AND INDICATOR.

SPECIFICATION forming part of Letters Patent No. 477,340, dated June 21, 1892.

Application filed March 15, 1892. Serial No. 424,966. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. SPURR, a citizen of the United States, residing at New Britain, in the county of Hartford and State of Connecticut, have invented a new and useful Improved Cash-Register, of which the following is a full, clear, and exact specification.

My invention relates to cash-registers; and it consists in the improvements hereinafter fully described.

The object of my invention is to construct a simple and efficient cash-register that shall indicate the amount of the purchase and automatically add the amounts of the different purchases.

My invention is illustrated by the accompanying drawings, in which—

Figure 1 is a perspective view of the face of the cash-register, showing the supporting base or pedestal broken away. Fig. 2 is a front view of the dial of the cash-register with the face-cover removed. Fig. 3 is a part sectional side elevation of Fig. 1. Fig. 4 is an enlarged front elevation of one of the details. Fig. 5 is a side elevation of Fig. 4. Fig. 6 is an enlarged front elevation of another detail. Fig. 7 is a side elevation of Fig. 6. Fig. 8 is a rear view of the cash-register mechanism. Fig. 9 is an enlarged diagram view of the adding-dials, and Fig. 10 is a front elevation of a drawer-locking device used in combination with my invention.

A is a dial, near the outer edge of which, as illustrated in Figs. 1 and 2, the numbers "5," "10," &c., to "100" are indicated.

B is an arbor, which supports the entire mechanism and upon which the dial A is firmly fixed.

C is a circular-shaped ring fixed to the dial A, surrounding the arbor B.

Upon the front edge of the ring C ratchet-teeth are cut, as indicated in Figs. 2 and 3. The number of these ratchet-teeth correspond with the number of the numerals round the edge of the dial A.

D is a drum of slightly smaller external circumference than the internal circumference of the ring C. The lower side of this drum is perfectly open. This drum is adapt-

ed to turn freely on the arbor B within the ring C. A nut *e* or other suitable means holds the drum D snugly upon the arbor B. From the side of this drum D projects the pointer E. (See Figs. 4 and 5.) This pointer is adapted to swing over the ratchet-teeth formed in the ring C.

Within the drum D a spiral spring *a* is placed, one end being fixed to the arbor B and the other end fixed to the inner side of the drum. A pawl *b* is hung under the pointer E and pressed downward by the spring *d*. The drum D ordinarily may be rotated in only one direction, for the reason that the pawl *b* catches against the teeth in the ratcheting C and the pointer E is prevented from being turned in the other direction until the pawl *b* is lifted.

F is an arm having a suitable bearing-box *t* and adapted to be rotated upon the arbor B. (See Fig. 3.) The upper end of this arm is shown as bifurcated, one end joining the handle G and the other end forming the pointer H. This pointer H lies close to the face of the dial A, as indicated in Figs. 1, 2, and 3. The end of the pointer E is so placed that when the handle G is revolved forward the pointer H will contact with the pointer E and push it ahead until it points to any desired number. The pointer H is then swung back to zero and the pointer E will be retained at the place where the pointer H left it by means of the pawl *b* and the ratchet-ring C. Assuming that the next charge to be registered by the pointer E is less than the last charge, it is obvious that some means must be contrived to permit the said pointer to return to its starting position and to begin its circuit over again with the pointer H. The mechanism for permitting this is constructed as follows: An outer ring I surrounds the ratchet-ring C. (See Figs. 2 and 3.) At three or more points on the lower side of this ring recesses are made, having one side inclined, as indicated in Fig. 3. Small rollers *fff*, supported on the dial A, are arranged as indicated in Fig. 2, and the ring I is supported on these rollers *fff*, which contact with the ring I at the points where the recesses are made, the top

of the ring I being on nearly the same plane as the bottom of the recesses forming the ratchet-teeth. Since the inclined side of the recesses all run in the same direction, it will be seen that if the ring I is revolved very slightly in the direction indicated by the arrows in Fig. 2 the inclined side of the recesses running up on the rollers *fff* will cause the top of the ring I to rise until its edge is in the same plane with the top of the ratchet-teeth, so that if the pawl *b* of the pointer E is resting in any one of these ratchets in the ring C the ring I will, in its raised position, free the pawl from the ratchet and allow the drum and pointer to swing back to its starting-place at zero under the influence of the coil-spring *a*. One or more pins *h*, fixed to the ring C, run in an inclined groove in the ring I (see Fig. 3) to limit the rotation and the rise and fall of the ring I. A lever-arm J (see Figs. 2, 6, and 7) is pivoted at *g* to the dial A. One end of this lever-arm J extends, as indicated in Fig. 2, slightly into the path of the pointer H. The other end of the lever-arm J has any suitable independent bearing in the ring I. As the pointer H advances it will contact with the lever-arm J and force it slightly ahead, which will cause the opposite end of the lever-arm J to revolve the ring I in the opposite direction, as indicated by the arrow in Fig. 2, causing the said ring I to rise and free the pawl *b* on the pointer E. The radius of the pointer H being greater than the radius of the arm J soon causes the pointer H to slip by the end of the lever-arm J before the said pointer H has reached the first number on the dial A, and the ring I will then be pushed back to its normal position by any suitable spring *h*. (See Fig. 2.) Before, however, this occurs the tension of the spring *a* will have been sufficient to cause the pointer E to whip back against the pointer H before the pointer H has reached the first numeral. As soon as the ring I is in its normal position again it allows the pawl *b* to contact with the ratchet-teeth in the ring C. When the pointer E indicates the proper number, the handle G is turned back to the zero position. In order that it may pass by the end of the lever-arm J, the under side of the upper end of the lever-arm J has the bevel *i* (see Fig. 7) sufficiently great to allow the end of the pointer H to get under the bevel, the natural spring of the lever-arm J permitting it to pass by. The contacting edge of the pointer H may be beveled, as indicated in Fig. 2, to more readily facilitate this movement. When it is required to register the amount of one dollar or more, I fix to the face of the dial A, directly in the way of the pointer E, preferably, an overhanging stop *j* to check the revolution of the pointer E just after it has passed the "95" point and before it has reached the zero-point, as indicated by the dotted lines in Fig. 2. At or near the outer edge of the dial, between the "95" point and the zero-point, I form a raised incline K. When the pointer H, pushing the

pointer E ahead of it, has advanced past the "95" point, it will begin to rise on the incline K until the end of the pointer H will slip over the side of the pointer E before the pointer E has advanced to the zero-point. The stop *j* is not absolutely necessary, but is preferably used to keep the pointer E close to the dial and prevent it from rising with the pointer H as it advances over the incline K to the zero-point. The next revolution would be the same as the first. If desired, a bell may be automatically struck with each revolution of the handle G to indicate that one dollar has been registered. As this feature is common, I do not show it in my drawings.

The mechanism thus far described shows how the amount of a purchase is registered or indicated on the dial. The mechanism for adding the amounts of the purchases together is as follows:

L is a disk of smaller diameter than the dial A. As indicated in Fig. 3, the edge of this disk is raised. Around this raised edge the figures from zero, "5," "10," &c., to and including "95," are placed at even distances from each other. (See Fig. 9.) This disk revolves freely around the arbor B and is connected (by means of the collar *l*, Fig. 3, surrounding the said arbor) to the ratchet-wheel M, Figs. 3 and 9, which turns with the collar *l* and the disk L freely on the arbor B. The number of ratchets in this wheel M correspond with the number of numerals on the disk L. The raised edge of the disk L, bearing against the rear of the dial A, leaves sufficient room for one or more disks N N' to be interposed and freely turn. These disks N N' are carried on axes or pinions V V', hung in the dial A. Round the edge of each of the said disks N N' notches are formed. (See Fig. 9.) A pin O projects inwardly from the raised edge of the disk L sufficiently far so that once in every revolution of the disk L this pin O will strike one of the points on the side of the wheel N and cause the wheel N to be turned ahead one point. One revolution of this wheel N will cause in the same manner the next wheel N' to be pushed ahead one point, a pin O' on the wheel N hitting one of the points in the wheel N' once in every revolution of the wheel N. Upon these wheels the numerals "0," "1," "2," "3," &c., to and including "9," are placed.

The disk L indicates the number of cents registered. The disk N will register the number of dollars to ten, and the combination of the disks N, N', and L will register the dollars and cents to the amount of ninety-nine dollars and ninety-five cents. Another disk may be introduced, if desired, in the same manner to indicate hundreds of dollars, and so on.

P is a supporting-frame fastened to the rear of the dial A and loosely surrounding the collar *l*. The object of this supporting-arm is to give the dial A more rigidity and at the same time afford a support for a pawl *m*, which plays in the ratchet *n*, fixed to the wheel M on its inner side. (See Figs. 3 and 8.) This

pawl and ratchet prevent the wheel M from revolving backward and serve to temporarily retain the said wheel M and the disk L at intermittent points. A pawl *k*, loosely pivoted to the arm F, bearing in the ratchets in the wheel M, causes the said wheel to advance with the arm F. A spring *k'*, fastened to F and bearing down on the pawl *k*, causes the said pawl to always press against the ratchet-teeth. A spring *p*, fastened to the frame P, serves to hold the pawl *m* in contact with the ratchets *n*. The axes V V' of the disks N N' are frictionally carried in the dial A, (see Fig. 2,) and preferably project slightly through the face of the dial, so that at any time by removing the front of the case Q (see Figs. 1 and 3) the dials N N' may be set to "zero" by turning the said axes or arbor-posts V V'. The disk L may be set to "zero" at the same time by turning the handle G until the zero-mark appears. A cover Q is preferably provided, and may be made of glass or of any other suitable substance, so long as its outer edge is transparent, to permit the inspection of the numerals near the edge of the dial A. If made of glass, it may be painted in the center, as indicated in Fig. 1, or otherwise rendered non-transparent, so that the inspection of the sum recorded in the machine cannot be made without the removal of the cover Q. As shown in Fig. 8, it is preferred that the edges of the cover retreat back over the edges of the dial A, in order that there may be no tampering with the interior mechanism.

The remaining feature is the drawer-locking device. The entire apparatus is mounted upon a suitable standard R, (see Fig. 1,) which is preferably fixed to a suitable stand containing a cash-drawer, and is fixed at a suitable point over the drawer, so that a lock-bar S (see Fig. 10) will catch in a mortise *p* in the drawer and prevent the said drawer from being opened. This lock-bar S is arranged to rise and fall in the following manner: A casing T supports the arbor B and the mechanism contained thereon, as indicated in Fig. 3. This casing is itself supported by the standard R, which is preferably hollow. Within this standard R the lock-bar S is carried. This bar is preferably hung on two pivots *r r*, which slide in grooves in the said bar S, the said grooves being sufficiently long to permit the bar S when raised to retract entirely out of the mortise in the drawer. One of the grooves in the bar S is preferably broadened at its lower end.

q is a suitable spring, one end fastened to the bar S and the other end to the stationary standard R. The bearing of the revolving arm F has formed on the outer side a cam U at the point where, when the pointer H at the upper end of the arm F is at "zero," the cam will depress the end of the rod S and cause the lower end of the said rod to enter into the mortise *p*. (See Fig. 10.) It will now be seen that as soon as the arm F is rotated to

the right sufficiently far the bar will be released and will be drawn upward by the spring *q* out of the mortise in the drawer, so that the said drawer may be opened. When an entire revolution of the arm F occurs, the extra width in the lower part of one of the grooves permits the said bar to be pressed to one side, as shown in dotted outline in Fig. 10, as the cam U passes by.

In operation everything starts at zero. An amount is to be recorded. The handle G is grasped and swung ahead to the proper mark. Just as it reaches the first mark the back bar S releases the drawer and it may be opened. When the proper mark is reached, the handle G is thrown back to the "zero" position, the pointer H passing under the lever-arm J, while at the same time the pointer E is checked by the ratchet-ring C at the registering-mark until the next purchase is to be indicated. An ordinary spring-hasp back of the mortise permits the drawer to be closed, even if the rod S is depressed, before the drawer has been shut. The disk L indicates the amount of the purchase through the perforations in the dial A. (See Fig. 2.) It is obvious that these perforations may be brought into alignment by the arrangements of the disks back of the dial A. It will also be seen that it is impossible to open the cash-drawer unless the pointer is turned ahead to at least the "5" point. The face-cover Q may be held in place, if desired, by means of a combination-lock, as shown in Fig. 1, which works on the outer end of the arbor B, or it may be otherwise suitably locked on.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A cash-registering mechanism consisting of the fixed arbor B, the dial A, rotating arm F, carrying the pointer H, and pointer E, adapted to rotate on arbor B, said pointer H, carried by the arm F, being adapted to advance said pointer E by contact therewith to point to any desired number on the dial A, substantially as described.

2. In a cash-register, the dial A, rotating arm F, drum D, spring *a*, pointer E, pawl *b*, ratchet-ring C, and ring I, rollers *fff*, and lever-arm J, arranged substantially as and for the purpose specified.

3. The combination, in a cash-register, of the dial A, rotating arm F, and pointer E, adapted to point to any desired number on the dial, with the stop *j* and raised incline K, all substantially as and for the purpose described.

4. In a cash-register, the combination of a lock-bar S and spring *q*, with the rotating arm F and cam U, said cam U being adapted to be brought into contact with and to depress said lock-bar S when the arm F is at zero on the dial and to be brought out of engagement with said lock-bar S when said arm F is rotated, substantially as described.

5. In a cash-register, as described, the ro-

tating arm F, its bearing *t*, and cam U, with a lock-bar S, moving on pins *r r*, sliding in grooves in the said bar, one groove being widened at its lower end, as described, and the
5 spring *q*, substantially as and for the purpose specified.

6. In a cash-register, the dial A, drum D, spring *a*, pointer E, pawl *b*, ratchet-ring C, ring I, spring *d*, rollers *f f f*, and lever-arm J,
10 having the bevel *i*, all substantially as described.

7. The combination, in a cash-register, of the revolving arm F, the pointer E, and the disks L M N', arranged and operating as described, with the drawer-lock bar S, spring *q*,
15 and cam U, substantially as and for the purpose set forth.

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Witnesses:

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