(No Model.) 2 Sheets—Sheet 1.

W. G. SCHICKNER & E. ROTHLISBERGER.

CASH INDICATOR AND REGISTER.

No. 376,262. Patented Jan. 10, 1888.

FIG. 4.

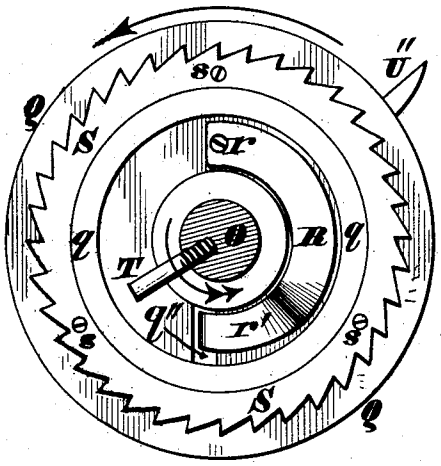


FIG. 5.

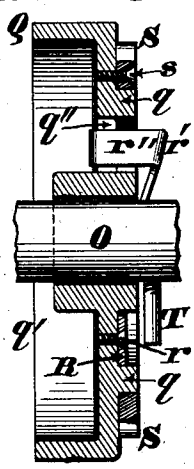


FIG. 11.

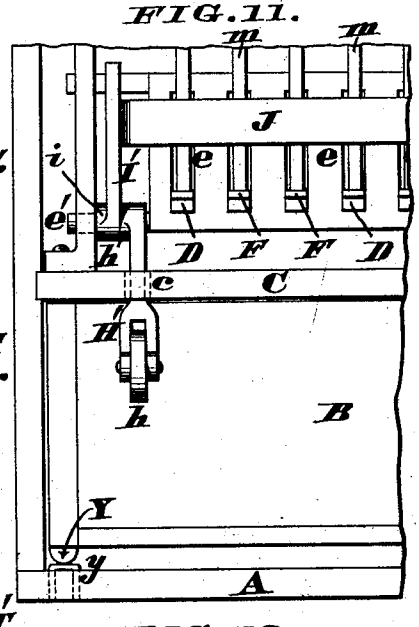


FIG. 6.

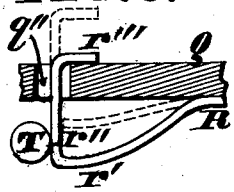


FIG. 7.

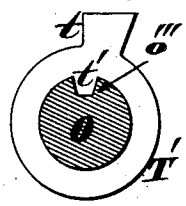


FIG. 8.

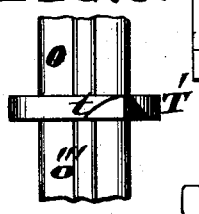


FIG. 12.

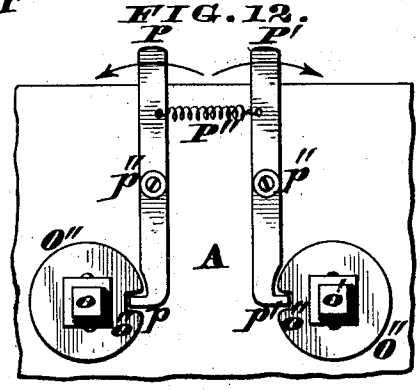


FIG. 9.

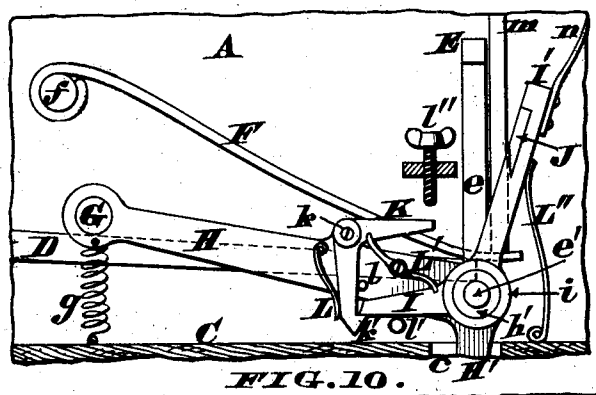


FIG. 13.

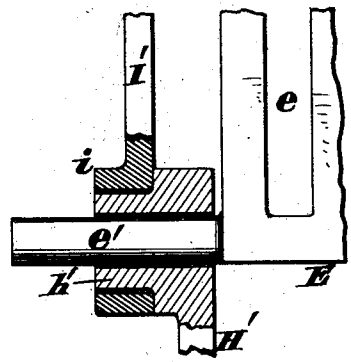
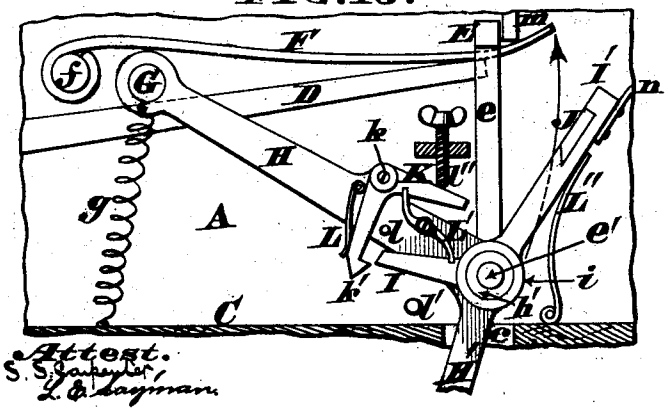


FIG. 10.



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(No Model.) 2 Sheets—Sheet 2.

W. G. SCHICKNER & E. ROTHLISBERGER.

CASH INDICATOR AND REGISTER,

No. 376,262. Patented Jan. 10, 1888.

FIG. 2.

FIG. 1.

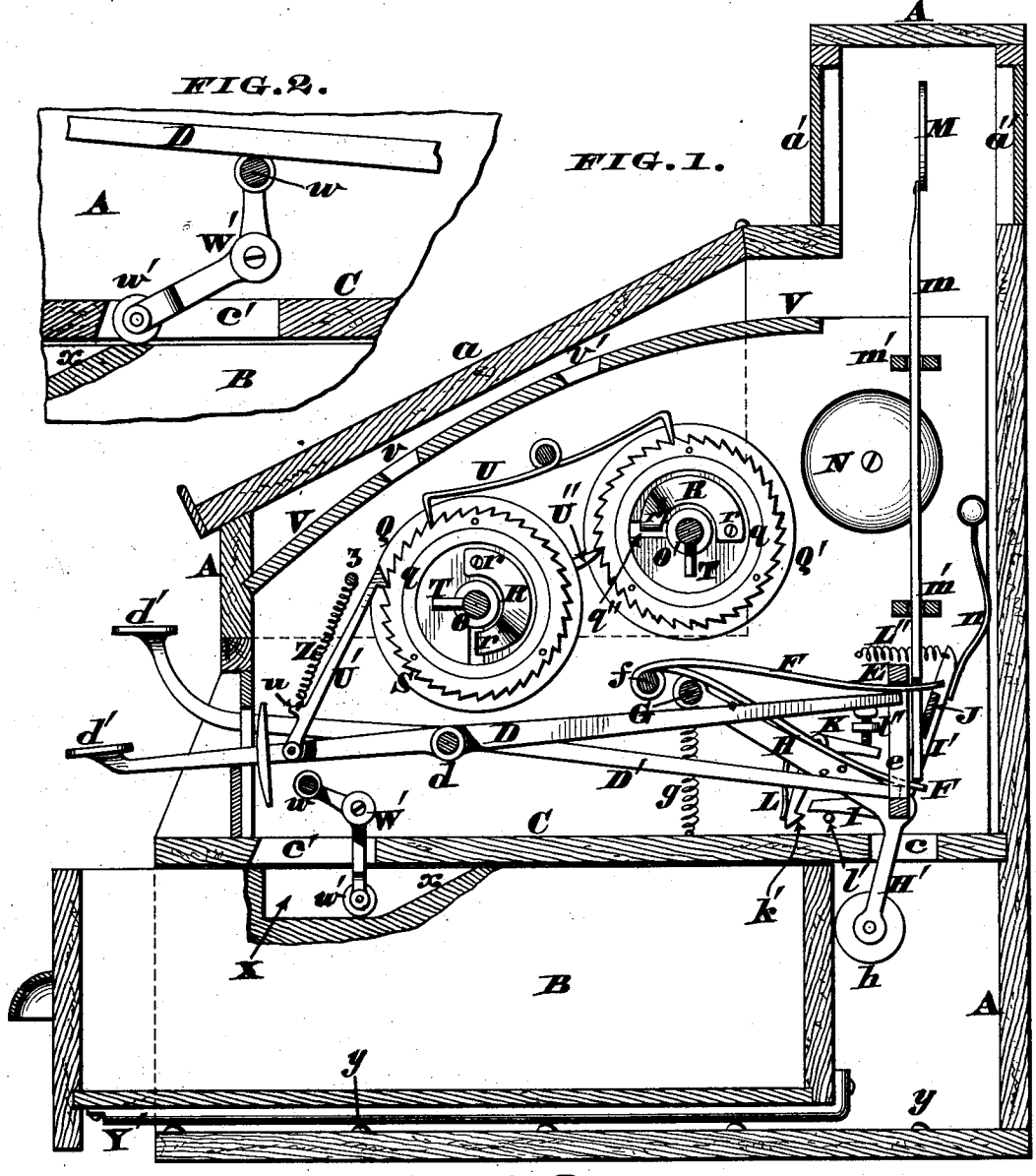
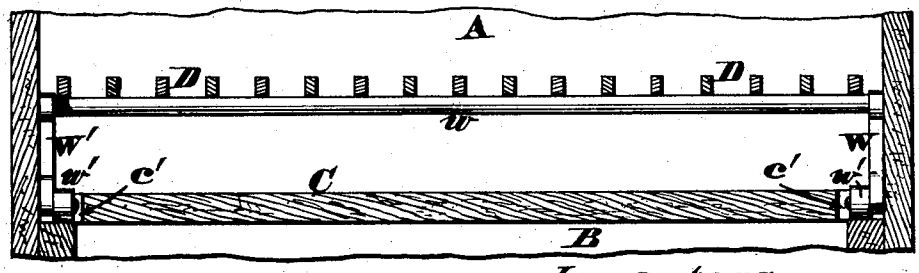


FIG. 3.



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UNITED STATES PATENT OFFICE.

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CASH INDICATOR AND REGISTER.

SPECIFICATION forming part of Letters Patent No. 376,262, dated January 10, 1888.

Application filed September 5, 1887. Serial No. 248,781. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM G. SCHICKNER and ERNESTE ROTHLISBERGER, citizens of the United States of America, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Cash Registers and Indicators, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to the peculiar construction of cash register and indicator seen in Letters Patent No. 349,522, granted to William G. Schickner September 22, 1886; and the first part of our improvements comprises a novel combination of secondary bell-cranks and triggers for operating the rest-bar that supports the elevated tablet-stems, as hereinafter more fully described.

The second part of our improvements comprises a novel resetting mechanism, as hereinafter more fully described.

The third part of our improvements comprises a novel combination of devices which prevents the operation of either of the keys after the money-drawer has been opened, thereby rendering it impossible to register another amount until said drawer is again closed, which act restores all the keys to their normal positions, as hereinafter more fully described.

In the annexed drawings, Figure 1 is a vertical section of our improved cash register and indicator, one of the keys of the same being shown depressed, so as to elevate a tablet and initiate the opening of the money-drawer, the lifter of said tablet being supported upon the rest-bar. Fig. 2 is an enlarged section of a portion of the machine, showing one of the keys locked, so as to be inoperative. Fig. 3 is a transverse section of a portion of the machine, showing all the keys locked. Fig. 4 is an enlarged front elevation of one of the primary disks, the shaft upon which it is journaled being sectioned. Fig. 5 is a vertical section of said disk. Fig. 6 is an enlarged section of a portion of the same. Fig. 7 is an elevation of a modification of the resetting mechanism. Fig. 8 is a plan of the same. Fig. 9 is an enlarged elevation of a portion of the machine, one of the secondary bell-cranks being shown in its normal position. Fig. 10 is a similar elevation, but showing the aforesaid bell-crank as having just completed its extreme rearward swing. Fig. 11 is a rear elevation of a portion of the machine. Fig. 12 shows the locks at the ends of the shafts of the primary and secondary disks. Fig. 13 is an enlarged vertical section through the bearings of the main and secondary bell-cranks.

A represents the case or cabinet of the register and indicator; *a*, the lid; *a' a''*, the windows, and B the money-drawer, which latter is situated below a horizontal partition, C, of said case.

d is a shaft that serves as a bearing for the upper and lower banks of keys, D and D', whose outer ends are provided with the customary buttons, *d'*, while their inner ends traverse the vertical slots *e* of a fixed plate or grating, E. Supported upon these keys and traversing said slots are the free ends of a set of lifters, F, one for each of the keys, the other or front ends of said lifters being hung upon a fixed bar, *f*. Furthermore, the rear or free ends of said lifters project some distance beyond the extremities of the respective keys, for a purpose that will presently appear. Maintained in contact with the upper edges of the keys by a spring, *g*, or otherwise, is a horizontal bar, G, uniting the long arms H H of a pair of precisely-similar bell-cranks, H H' H H', the shorter arms of which, H' H', project down through slots *c* of partition C and carry rollers *h*, adapted to bear against the rear end of the money-drawer B every time a key is operated. Located at the junction of these arms H H' of the main bell-cranks are hubs *h'*, journaled upon the spindles *e'* of grating E, and these hubs serve as bearings for the hubs *i* of the secondary bell-cranks, I I' I I', whose upper and longer arms, I' I', are connected by the rest-bar J.

K K are the triggers, pivoted at *k* to the long arms H H of the main bell-cranks, and having catches *k'*, that engage at the proper moment with the free ends of the shorter arms, I I, of the secondary bell-cranks.

L are springs that cause the triggers to engage with said arms, and L' are other springs interposed between said triggers and arms for the purpose of restoring the secondary bell-cranks to their normal positions, and, if desired, the action of these springs L' may be

supplemented by other springs, L″, arranged as shown in Fig. 1 or as seen in Figs. 9 and 10.

l are stop-pins that limit the motion of triggers K K, and *l′* are other stops, that prevent the secondary bell-cranks swinging too far in case all the tablet-stems should be raised at once.

l″ are trips for operating the triggers, said trips being usually thumb-screws tapped into suitable bearings projecting from the side plates of the machine, in order that the action of the trigger may be regulated to suit circumstances.

m are the tablet-stems, which stems traverse suitable guides, *m′*, and carry at their upper ends the customary tablets, M.

N is a gong or bell adapted to be struck by a hammer, *n*, attached to either of the long arms I′ or I′ of the secondary bell-cranks.

O O′ are the shafts of the primary and secondary disks, the outer ends of said shafts being provided with square arbors *o o′*. (Seen in Fig. 12.) These arbors are designed for the reception of an ordinary winding-key or socket-wrench, and have secured to them disks O″, the periphery of each disk being notched at *o″* to admit teeth *p p′* at the lower ends of levers P P′, the latter being pivoted to the case at *p″*, and being coupled together by a spring, P‴, that maintains said teeth in contact with said disks.

Q and Q′ are the primary and secondary disks, adapted to revolve freely upon their respective shafts O O′, and as these disks are alike a description of one will answer for all, reference to Figs. 4, 5, and 6 showing their details very clearly. The front face of each disk is perfectly flat, except where an annular flange, *q*, and the end of the hub project therefrom, while the back of the disk is chambered out at *q′* to afford room for the pin of the adjacent disk. Secured within the annular space between this flange *q* and hub by a screw, *r*, or otherwise, is a plate-spring, R, whose free end inclines outwardly at *r′*, is then furnished with a flat extension, *r″*, passing through a slot, *q″*, of the disk, and finally terminates with a lip, *r‴*.

S represents a ratchet-wheel fitting snugly around the raised annular flange *q*, and secured to the disk by suitable fasteners, as *s*, so as to be readily adjusted to said disk.

T are pins projecting from the shafts O O′; but said pins may be supplanted by a lug, *t*, projecting from a washer, T′, which washer has a tongue, *t′*, that enters a longitudinal groove, *o‴*, of said shafts.

U is a double-ended spring for preventing retrograde turning of the disks.

U′ is a feed-pawl that operates the primary disk Q, and U″ is a spur that communicates motion from the latter to the secondary disk Q′.

V is a curved plate inclosing the operating mechanism, and having slots *v v′* to permit the dials being inspected.

Z is a spring attached to a bar, *z*, and engaging with a lug, *u*, of feed-pawl U′, thereby holding the latter in contact with the ratchet-wheel S, and also assisting in elevating the front end of the key D.

c′ are slots in the partition C, to permit a free swing of bell-cranks W W′, which cranks are suitably pivoted within the case, and their upper arms carry a lock-bar, *w*, extending completely across the machine, as seen in Fig. 3. The lower arm of bell-crank W′ may have a small roller, *w′*, journaled therein, which roller normally occupies a pocket, X, in the side board of the drawer, the rear end of this pocket terminating with an inclined shoulder, *x*. Furthermore, the side boards of the drawer are shod with half-round metallic runners Y Y′, that slide upon hard bearings *y*, the latter being usually formed of staples driven into the bottom of the case, as seen in Fig. 11.

When our cash register and indicator is in its normal position, the operative parts of the same are disposed as seen in Fig. 9, the extremity of key D resting within the slot *e* and supporting the free end of lifter F, which lifter sustains the tablet-stem *m*. Furthermore, in this normal position of the machine the rod G, uniting the long arms H H of the principal bell-cranks, bears directly upon all the keys, and the stress of springs L′ and L″ swings the arms I′ I′ of the secondary bell-cranks forward until the rest-bar J comes in contact with the tablet-stems, while at the same time the springs L cause the triggers K K to engage with the ends of the shorter arms, I I, of these secondary cranks. The drawer B is shoved back into the case and the bell-cranks W W′ assume the positions seen in Fig. 1, the roller *w′* of said crank being now quite near the front end of pocket X, thus leaving all the keys free to be operated. The moment either of the keys is depressed the connecting-bar G is elevated, thereby causing the operative parts to assume the position seen in Fig. 1, but more clearly shown in Fig. 10. It is apparent this elevation of said bar causes the principal bell-cranks H H′ H H′ to turn on the spindles *e′* of the grating E, by which act the rollers *h* advance the drawer B a slight distance, said drawer being first unlocked by suitable internal devices that are automatically brought into service, the locking appliances seen in Schickner's patent, No. 349,522, being preferred for this purpose. This swing of the principal bell-cranks causes a corresponding movement of the secondary bell-cranks, I I′ I I′, because the latter are now locked to the former by the spring-triggers K K; but the moment the lifter raised by the key D reaches the top of slot *e* said triggers come in contact with the trips *l″*, thereby disengaging said triggers from the short arms I I of the secondary bell-cranks, as seen in Fig. 10. The springs L′ and L″ instantly restore these bell-cranks to their normal positions, thus bringing the rest-bar J in under the free end of lifter F while the key D is falling down to its original position. The raised tablet remains in this elevated position upon the lifter

until one or more keys are operated, and when this occurs the weight of said tablet and stem depresses the free end of said lifter as soon as the rest-bar J again reaches the position seen in Fig. 10. The arrow in this illustration shows the arc described by the free end of the lifter and indicates the clearance between the latter and the rest-bar.

From the above description it is apparent that the rest-bar J acts much more promptly than it would do if the arms I' I' were rigidly united to the bell-cranks H H' H H'. Owing to the location of the feed-pawl U' and the shape of the ratchet-teeth S, it is evident the primary disk Q must revolve in the direction of the single-headed arrow seen in Fig. 4, and as the shaft O is locked the inclined portion r' of spring R must come in contact with the pin T at every revolution of said disk, thereby gradually compressing this portion of said spring, as indicated by the dotted lines in Fig. 6. The free end of the spring is accordingly forced toward the face of the disk until said spring escapes from contact with the pin, when the spring at once regains its normal position. Consequently said pin offers no resistance to the proper turning of the disk; but when the disk is to be reset or turned around to the zero-mark the pin is brought into service, preparatory to which act the lever P is swung over in the direction of the arrow seen in Fig. 12, thereby disengaging the tooth p from the notch o''. A key is then applied to the arbor o and shaft O is turned in the direction of the double-headed arrow seen in Fig. 4, which act brings the pin T in contact with the flat extension r'' of spring R, and thus turns the disk Q around until its zero or starting point is directly under the slot v. This act is repeated until all the primary disks have been reset, and then the secondary disks are reset in a precisely-similar manner after the tooth p' has been disengaged from the notch o'' of the other arbor, o'. The drawer B is opened by the rollers h h only a slight distance, as seen in Fig. 1, and then it must be pulled out by hand to obtain any money contained therein, which complete opening of the drawer causes the inclined shoulder x of the pocket X to come in contact with the wheel w' of the bell-crank W'. This act swings the short arm of the bell-crank up to the position seen in Fig. 2, thus causing the bar w to bear against the under side of all the keys, as represented in Fig. 3. By this arrangement the bar w serves as a lock that prevents any of the keys being operated until the drawer is shoved in and the bell-cranks W W' are allowed to assume their normal positions. The limited friction generated by the runners Y Y' as they slide upon the hard bearings y enables the drawer to be advanced by the rollers h without exerting a severe pressure upon the operating-keys D of the register and indicator. Finally, by making the ratchet-wheels S separate from the disks Q Q' and attaching them to the latter with screws or other convenient fastenings, s, said wheels can be readily adjusted for the purpose of getting the teeth exactly in line with the numbers on said disks.

We claim as our invention—

1. In combination with a cash register and indicator having a set of keys, D, operating the tablet-lifters F and registering-disks Q, as herein described, the slotted grating E e, connecting-rod G, principal bell-cranks H H' H H', rollers h h, secondary bell-cranks, I I' I I', rest-bar J, triggers K K, springs L L', trips l'' l'', stems m, and tablets M, said triggers being pivoted to the arms H H at k, for the purpose described.

2. The combination, in a cash register and indicator, of the ratchet-disk Q S, journaled upon a shaft, O, provided with a fixed projection, as T, a spring, R, being attached to the side of said disk at r, which spring has a free end bent outwardly at r', whereby this bent portion is pressed toward the disk when the latter is revolved in one direction, but is brought in contact with the projection T when the shaft is turned to reset the disks, as herein described.

3. In combination with a cash-register having a set of keys, D, operating the tablets and registering-disks, as herein described, the bell-cranks W W', lock-bar w, and sliding drawer B, which drawer has a pocket, X, whose rear end terminates with an inclined shoulder, x, as set forth.

4. The combination, in a cash register and indicator, of bell N, hammer n, spring L'', and secondary bell-cranks, I I', the triggers K K, and the main bell-cranks H H' H H', as herein described, and for the purpose stated.

5. The combination, in a cash register and indicator, of the ratchet-disk Q S, journaled upon a shaft, O, having a fixed projection, T, a curved spring, R, being attached to the side of said disk at r, which spring has an outwardly-bent free end, r', lip r''', and lateral extension r'', which extension traverses the slot q'' of said disk, as herein described.

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

WILLIAM G. SCHICKNER.
ERNESTE ROTHLISBERGER.

Witnesses:
JAMES H. LAYMAN,
WM. B. THOMAS.