(No Model.) 2 Sheets—Sheet 1.

W. H. SAUNDERS, J. J. RANGE & E. N. FOOTE.

CASH REGISTER.

No. 479,337. Patented July 19, 1892.

Fig. 1.

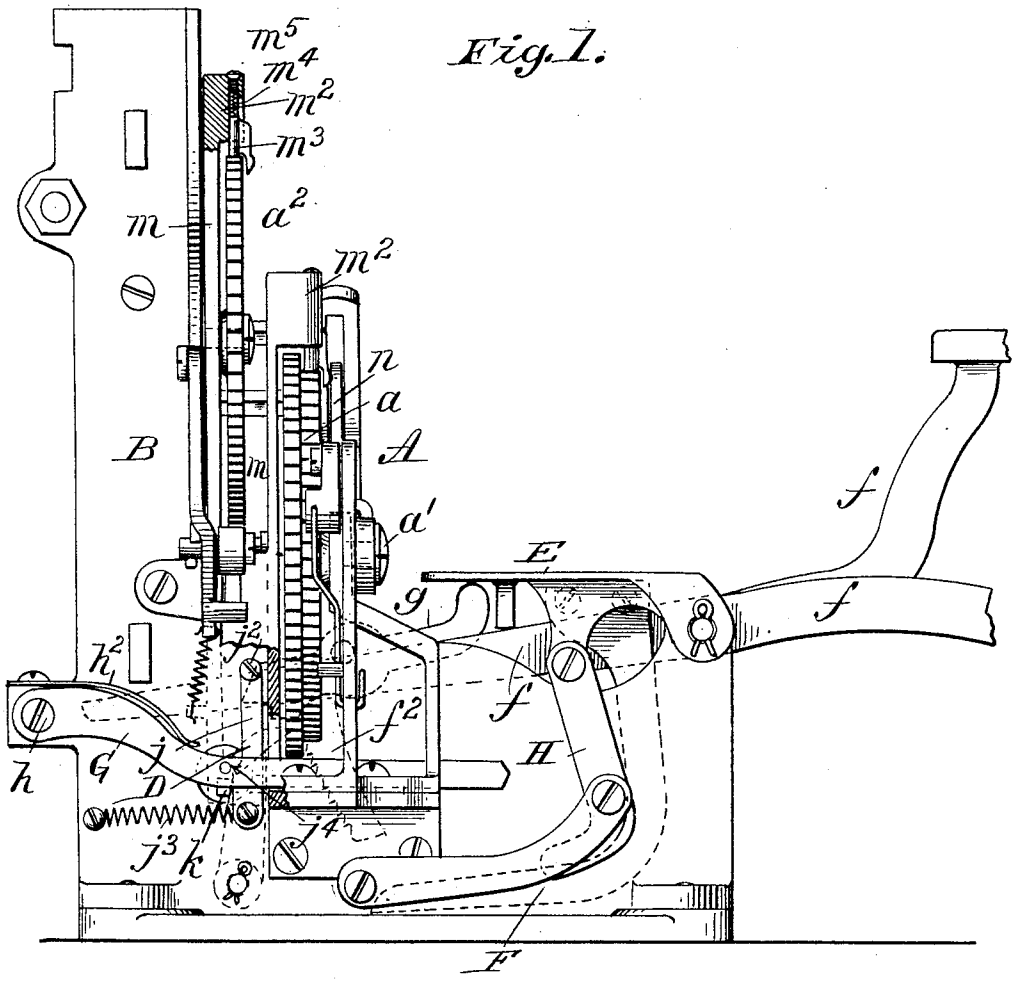
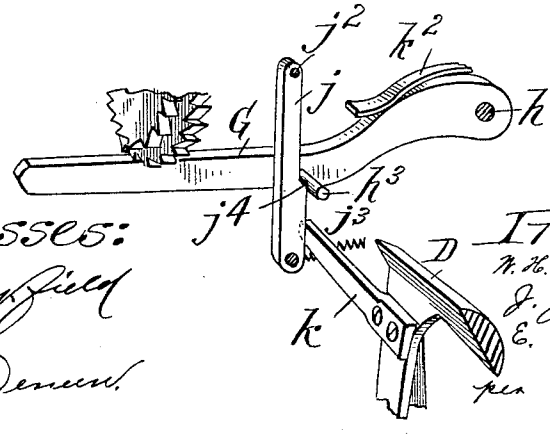


Fig. 3.



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(No Model.) 2 Sheets—Sheet 2.

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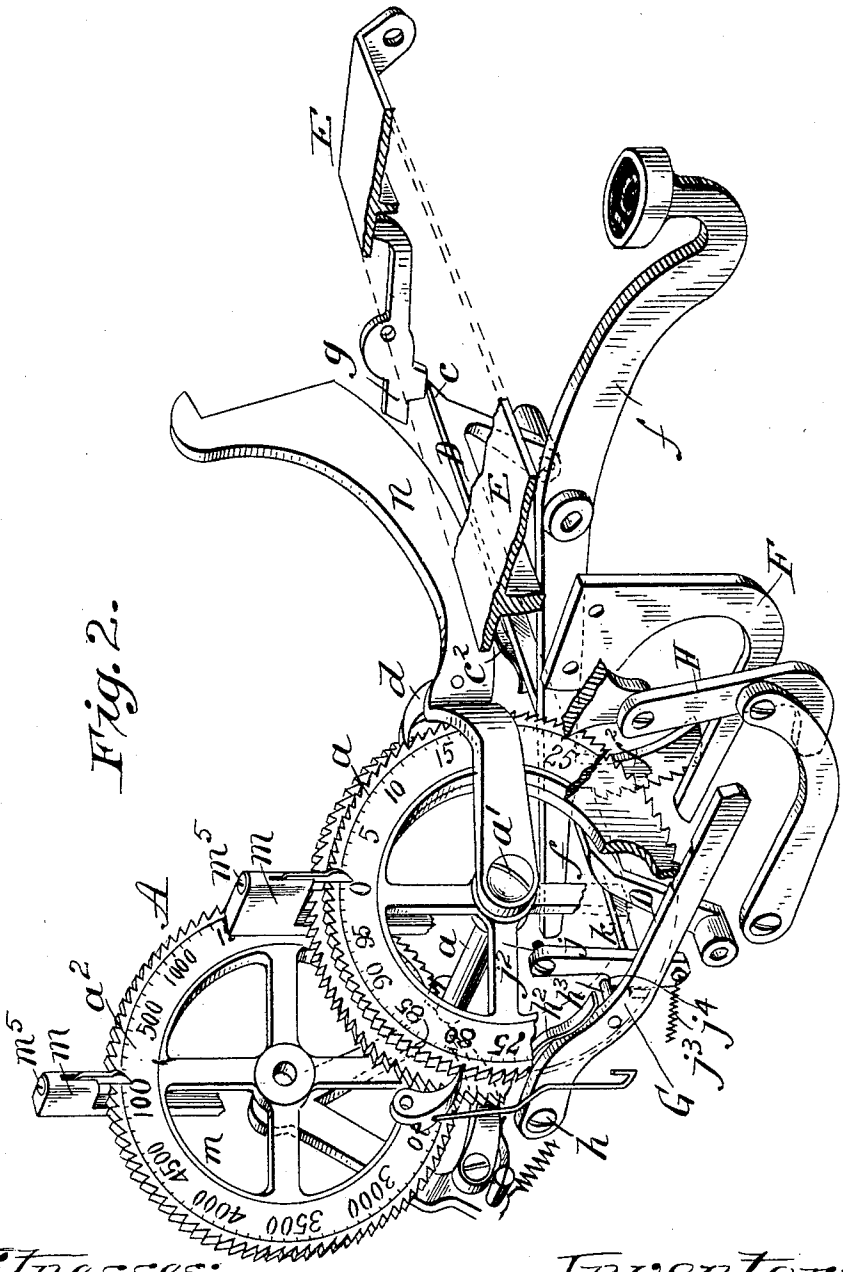

Fig. 2.

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UNITED STATES PATENT OFFICE.

WILLIAM H. SAUNDERS, JOHN J. RANGE, AND EDWARD N. FOOTE, OF NORTHAMPTON, MASSACHUSETTS, ASSIGNORS TO THE BOSTON CASH REGISTER COMPANY, OF SAME PLACE.

CASH-REGISTER.

SPECIFICATION forming part of Letters Patent No. 479,337, dated July 19, 1892.

Application filed February 16, 1892. Serial No. 421,769. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM H. SAUNDERS, JOHN J. RANGE, and EDWARD N. FOOTE, citizens of the United States, residing at Northampton, in the county of Hampshire and State of Massachusetts, have invented new and useful Improvements in Cash-Registers, of which the following is a specification.

This invention relates to improvements in cash-registering machines, and more particularly to improved means for preventing any undue manipulation of any of the register-operating key-levers after either of such levers has completed its working movement and is in its return to its normal position, whereby there might be unduly recorded a sum in excess of that to be registered by simple and continuous forward and return working movements of the register-operating key-lever.

The invention, to the end of providing simplified mechanism for the purpose above stated, consists in the combination or arrangement of parts, all substantially as will hereinafter more fully appear, and be set forth in the claims.

Reference is to be had to the accompanying drawings, in which exemplifications of the invention are illustrated, and in which—

Figure 1 is a side elevation of a cash-registering machine with some parts broken out and in partial section for purposes of clearer illustration. Fig. 2 is a perspective view showing the principal parts embodying the present improvements as in their operative arrangements the one with the other and with parts of the machine which are already well known, with which the novel parts have a co-operative arrangement. Fig. 3 is a view in perspective of some of the important parts of the improved apparatus as seen looking in the opposite direction from that assumed for the inspection of Fig. 2.

In the drawings, A represents the registering mechanism, which is here shown as consisting of a pair of integral or united ratchet-wheels *a*, mounted on a supporting-stud *a'*, which is sustained by the frame or casting B, having indicating characters on the face of the foremost wheel, and to the rear of this united pair of ratchet-wheels another ratchet-wheel a^2, also having indicating-characters on its face, and the latter adapted on a complete rotation of the foremost wheels to have imparted thereto a rotational movement to the extent of one of its teeth by means of pallet devices between the sets of ratchet-wheels, which require no particular description herein, as no novelty is claimed in the register by itself.

The swinging arm *n*, which has its one end pivotally hung upon the axis-forming stud for the double ratchet-wheel *a*, has a pallet *d*, which engages the teeth of said wheel and has its portion which extends transversely across the series of register-operating key-levers—one of which is indicated by *f* in Fig. 2—of a graduated curved form, so that the different levers swing the arm in respectively varying extents, effecting the proportionate rotational movement of the register-wheel, as is already well known. Each of the key-levers *f* has a depending curved arm f^2, the rear edge of which is ratcheted.

D represents a pawl-bar, which ranges from end to end of the machine and is adapted to be in engagement with and is common to all of the said ratcheted arms f^2 of the key-levers, so that as any of the levers has its rear portion upwardly swung to actuate the register there can be no return movement of the key until it has made its full upward stroke. The pawl-bar is extended at the end farthest from that which is adjacent the register-wheel and has the catch-lug *c*, Fig. 2.

The rocking plate E, which is adapted and caused to swing in unison with any one of the key-levers has as a part thereof the angular downwardly-extended arm F, which, as the key-lever and rocking plate complete their working movements and are ready to return to their normal positions, strikes and rearwardly forces the common pawl, freeing the engagement between the latter and the ratcheted key-lever arm f^2. The gravity-trigger *g* engages the catch-lug *c*, holding the common pawl in its rearwardly-swung position and against the stress of the comparatively strong spring, which is shown as applied thereto at c^2, Fig. 2, until the key-lever and rocking plate have resumed their normal po-

sitions, when the rocking plate trips the trigger, permitting the common pawl to return under the force of its said spring into the engagement with the teeth of all the ratcheted arms f^2.

The description thus far given has been in explanation, mainly, of the devices for preventing any retrograde of the lever while the latter is "going" to the limit of its working movement, so that it will not be permitted to take an intermediate supplemental "hitch" to record on the register an undue amount; but the novel and simplified mechanism of the present invention will be now described, whereby it will be seen in what manner, after a given key-lever has completed its working movement and is on the return to its normal position, such key-lever is prevented from being then given any upward or working motion to thereby unduly record on the register, and it will also be apparent in what manner the devices for preventing a working motion of the key-lever are freed to again permit the working movement of the lever at its proper time for actuating the register, and, therefore, referring to the drawings, G represents an arm pivoted on the rear of the frame at h and extended horizontally forwardly under the double-toothed registered ratchet-wheel a, and serving when upwardly swung to constitute a detent for the latter, so engaging it that there can be no motion thereof in the working direction. A spring, as k^2, may be provided for a depressing action on the detent-arm G should it be deemed advisable not to depend on the gravity of the arm.

H represents a member which is movable rearwardly and upwardly in conjunction with the operating movement of any one of the registering key-levers, and so formed and adjusted as to force the detent-arm G upwardly into engagement with the ratchet-wheel of the register at the instant the key-lever has completed its working movement, and accordingly effected the movement of said wheel.

The detent-arm has a catch member. (Seen to consist in the pin h^3.) A trigger is constituted by the vertical arm j, pivoted to a suitable support at j^2, and rearwardly drawn when permitted by the spring j^3. The lifting of the detent-arm into engagement with the ratchet-wheel carries the pin h^3 upwardly above the widened part of the trigger j, the spring then drawing the latter rearward, so that its notch or step portion j^4 is carried as a detaining abutment under the pin. The said long or common pawl D has a lug or member k, extended across the plane of the swinging movement and just at the rear of the said trigger j. At the time an operating key-lever and the tilting plate E have returned to their normal positions and the trigger g is tripped, releasing the common pawl for its forward spring-impelled movement, such movement insures, by the contact of the lug k against the trigger j, the release of the engagement between said latter trigger and the catch-pin of the detent-arm G, permitting the latter to downwardly swing out of engagement with the register-wheel. The spring applied to the trigger j is less powerful than the spring c^2 for forwardly forcing the common pawl, for the apparent reason that there must be such a forward forcing movement of the pawl as to swing the trigger j forwardly against its spring j^3.

The detent and pointer devices for the register-wheels (one or more) will be now described.

It will be noticed that the part or standard m upon which one of the register-wheels is mounted has a portion m^2, laterally extended and overlying the ratcheted edge of the register-wheel and has therein, substantially radially relative to the axis of the wheel, a socket or way in which is fitted for a sliding movement the pin or bar m^3, which constitutes the detent-pawl, the lower end of which is of suitable form for engagement with the teeth of the ratcheted wheel, and the spring m^4, set in the said socket between the upper end of the detent-pawl and the lower end of the screw-plug m^5 imparts the inward engaging pressure to the pawl, which pressure may be varied by turning the screw in or out. The pin which forms said detent-pawl has a laterally-offset finger, which is also extended downwardly or radially relative to the axis of the register-wheel to overlie the character-provided face thereof. The positive motions imparted to the register-wheel are not impeded by the said detent-pawl, which, however, prevents all retrograde movement of the register-wheel, and the successive rotational movements of the register-wheel bring the different characters and graduations into register with the pointer-finger of the detent.

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

1. In a cash-registering machine, in combination, a register-wheel having a series of teeth, operating key-levers, and mechanism between the key-levers and register-wheel for imparting on the working movement of the lever a registering movement of the wheel, and a rocker-plate movable with the key-levers and having the member H connected thereto, a detent-arm movable to engage and disengage the teeth of the ratchet-wheel and having its engaging movement imparted by the said rocker-plate member H on the completion of the working movement of the key, a trigger for engaging and retaining the detent-arm in its engagement with the register-wheel, and a movable device adapted to be released on the completion of the return movement of the rocker-plate to force the trigger out of engagement with the detent-arm, substantially as described.

2. In a cash-registering machine, in combi-

nation, a registering-wheel, and a series of operating key-levers therefor, the rocking plate E, having the arm F and the member H, the swinging member D, having an engagement member, as *c*, and the trigger *g* for engaging the latter, the pivotally-mounted detent-arm G, having the catch member h^3, and the pivotally-mounted and spring-constrained trigger *j* for engaging said catch member, all for conjoint operation, substantially as described.

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