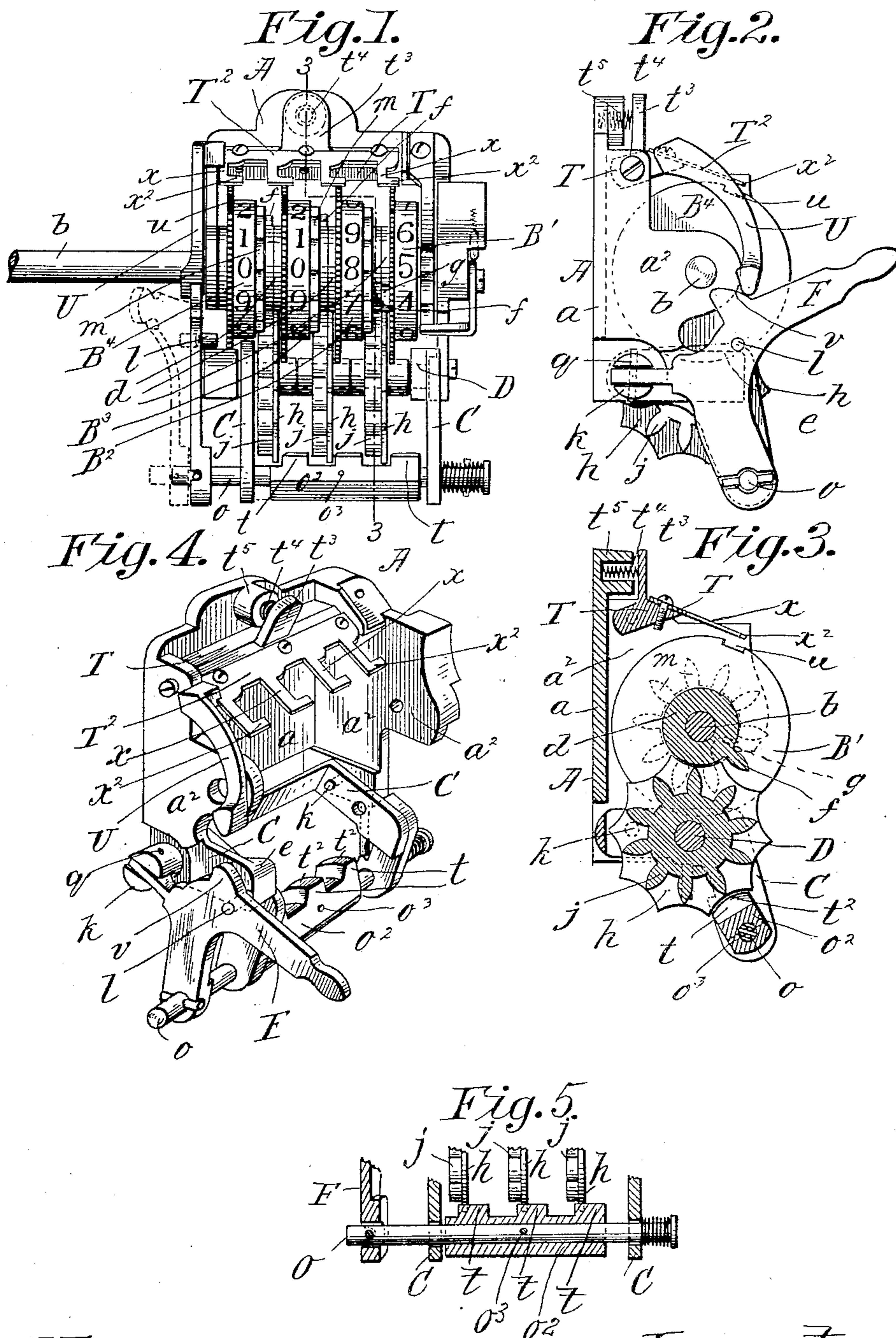


(No Model.)

C. H. LITTLE.
ADDING AND REGISTERING MECHANISM.

No. 579,115.

Patented Mar. 16, 1897.



Witnesses:
J. D. Garfield
H. J. Clemons

Inventor:
Charles H. Little
by Chapman & Co.
Attorneys

UNITED STATES PATENT OFFICE.

CHARLES H. LITTLE, OF MELROSE, MASSACHUSETTS, ASSIGNOR TO ROBERT F. HERRICK, TRUSTEE, OF MILTON, MASSACHUSETTS.

ADDING AND REGISTERING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 579,115, dated March 16, 1897.

Application filed May 4, 1896. Serial No. 590,094. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. LITTLE, a citizen of the United States of America, residing at Melrose, in the county of Middlesex and State of Massachusetts, have invented new and useful Improvements in Adding and Registering Mechanism, of which the following is a specification.

This invention relates to improvements in counting or adding and registering machines, the improved devices being applicable for employment in cash-registering and other mechanisms.

More definitely speaking, the improvements relate to devices which enable a person to reset the register-wheels to their "0" positions with greater facility and with the requirement of less care than has been heretofore requisite in machines of the same general character, and to provide by improved and simplified devices means to prevent, after the resetting and while the transfer and locking wheels are out of engagement with the register-wheels, any such displacement of the latter as might derange the reset register-wheels at the time said locking and transfer wheels are again carried into engagement with the register-wheels or adjuncts thereof.

The invention consists in constructions and combinations of parts, all substantially as will hereinafter fully appear, and be set forth in the claims.

Reference is to be had to the accompanying drawings, in which the present improvements are shown as applied upon a total-adding mechanism, and in which—

Figure 1 is a front view. Fig. 2 is a side view. Fig. 3 is a vertical cross-sectional view taken on line 3 3, Fig. 1. Fig. 4 is a perspective view showing the register frame or support, the adding or register wheels and locking and transfer wheels being removed, and showing the present novel devices which coact with the said register-wheels. Fig. 5 is a sectional view illustrating a detail of construction to be hereinafter referred to.

The same characters of reference indicate corresponding parts in all of the views.

In the drawings, A represents the support or frame for the adding or registering mechanism, comprising the vertical back *a* and the forwardly-extending cheeks or brackets *a*² *a*³, in and between which is the register-wheel shaft *b*.

B¹, B², B³, and B⁴ are the adding or register wheels, representing by the peripheral numbers on each, running from "1" to "9" and "0," respectively, cents, dimes, dollars, and tens of dollars, or in lieu of money these wheels may represent in decimal progression other measure, as that of time, force, action, or commodity.

The first wheel to the right, which in a cash-registering machine would be the cents-wheel B¹, may be fixed on the shaft and receive its rotational movements through motion which may, by appropriate mechanism, be transmitted to the shaft, or such first or cents wheel may be loose on the shaft and receive its rotational movements in any other adequate manner. This is immaterial so far as this invention is concerned. The other wheels B² B³ B⁴ are all loose on the shaft.

Each registering-wheel except the highest one of the set—that is, the ones B¹ B² B³—have at their left-hand sides the hubs *d* *d* *d*, each with a single tooth *f* in one plane and each with a single notch *g* in another plane.

On a second shaft D, which is mounted in a movable support C and which shaft is parallel with the shaft *b*, are the locking-wheels *h* *h* *h*, having scalloped edges, the arc of the ten concavities thereof each fitting against the periphery of the hub of the register-wheels B¹ B² B³, with which they are combined, they being located in the planes coinciding with that of the notch *g* of each hub *d*.

The term "locking-wheels" is applied to the wheels *h* *h* *h* as describing their function relative to the transfer-wheels *j*, with which they move as one. It is true that said wheels *h* are themselves held against rotation by the engagement of their scalloped edges with the hubs of the registering-wheels; but as their principal function in the invention is to lock the transfer-wheels *j* when the latter are disengaged from the registering-wheels it is in

this sense alone that the term "locking-wheels" is used.

Next to each of the scalloped locking-wheels h h are ten toothed wheels j , which move as one with said wheels h , their location being such as to be engaged by the single tooth f of the register once every rotation of the latter. These gear-wheels j are of such thickness that they are not only engaged by the single tooth on the hub of one register, but they are in meshing engagement with the ten tooth-gears m on each of the register-wheels, except the one B' for the lowest denomination.

When a register-wheel has made a complete rotation, the notch g on its hub comes opposite the apex between two of the scallops of the locking-wheel h , which scallop-wheel up to this time by its engagement with the hub of the given register-wheel was prevented from turning or being turned by any cause, accidental or otherwise.

Now when the conditions are established whereby the scalloped locking-wheel may turn, the single tooth f on the hub of the register-wheel comes into mesh with the gear-wheel j , which is as one with the locking-wheel and turns it and the scallop-wheel one-tenth of a rotation, the next concavity of the wheel now coming into its locking engagement with the hub of the register-wheel which had caused its rotational movement.

Each gear-wheel j is a transfer-wheel, its one-tooth movement, by reason of its mesh with the gear m on the register-wheel of the next higher order, turning that wheel at the appropriate time and in the proper one-tenth of a rotation.

The resetting of the register-wheel back to the "0" position is accomplished by moving the whole series of scalloped locking-wheels and the transfer-wheels bodily away from their locking and meshing engagements with the hubs d and gears m of the register-wheels, whereupon the register-wheels are, so far as these locking and transfer devices are concerned, free to be turned by hand.

The mechanism, so far as structurally described, is one which is quite extensively employed in cash-registering and other machines, and is not my invention; but it has been deemed desirable and advantageous to include the description thereof to the extent hereinabove given, whereby the features of improvements which constitute the subject-matter of this invention may be the more readily understood.

The support C , in which are mounted the locking and transfer wheels h j , consists of a clevis-shaped metallic frame pivotally mounted on the cheek members a^2 a^2 of the frame, as seen at k .

A shaft o is mounted in the support C below the wheels h j in such manner that it may both slide axially and have a rotational movement. This shaft has a bar o^2 longitudinally perforated and fitted thereon and held by the

pin o^3 , which bar has the series of lugs tt , the ends of which are rounded, as seen at t^2 , to fit the concavities of the scalloped locking-wheel.

The lever-arm F , pivotally hung coincident with the center of the swinging movement of the clevis-like support C , is also fixed to the aforesaid shaft o . This lever is so jointed, as seen at g , that it may have a laterally-swinging movement in addition to its downswinging movement in unison with the support C . The said lever F has the abutment-stud l , which, when in its normal position, engages a lug e or other suitable part of one of the cheek members of the register-supporting frame, so that it may not be unduly swung down.

In order to swing the lever F down and thereby swing with it the support C , the lever must be moved laterally, so as to carry its abutment-stud l off from its engagement with the part e of frame, as seen in Fig. 4. This lateral movement of the lever necessarily causes an axial movement of the shaft o and its lug-provided bar o^2 , whereupon, as the locking and transfer wheels h j are moved bodily away from the register-wheels, the lugs tt of the bar o are shifted from their position of disengagement from the locking-wheels seen in Fig. 1 to a position of engagement with such wheels, whereby the locking and transfer wheels cannot become accidentally turned in any degree. Thus after the register-wheels have been reset and the locking and transfer wheels are restored to their original positions it will be certain that the scallops of the wheels will just fit against the hubs of the register-wheels and the cogged transfer-wheels will come at once into mesh with the gear-teeth of the register-wheels without there being the slightest rotational movement imparted to the locking-wheel as it impinges against the hub of a register-wheel or to the register-wheel by reason of any crowding on its gear m by the replaced transfer-gear. Thus it will be here pointed out that a feature of novelty and advantage consists in the combination, with the scalloped locking-wheels h h , of the longitudinally-movable shaft or bar, having at proper intervals of separation thereon the lugs t , which are provided with the convex extremities t^2 , to fit and engage, upon the occasion of the endwise movement of the shaft, the concavities or scallops of the locking-wheels, as distinguished from devices for accomplishing the same result, which comprise radial pins on the shaft o and the formation of small radial notches in the locking-wheel located at the middles of the scallops.

The device last referred to, over which the present one is preferable and advantageous, required the greatest nicety of construction and adjustment to insure their required engagements, while in the construction here described and shown the radial notches re-

ferred to as provided in the locking-wheels are dispensed with and the lug-provided bar t may be produced and applied for its coöperative relation to the locking-wheels at greatly less care, labor, and expense.

The fact is to be pointed out that under the construction shown and described, reference being had particularly to the stud l on the lever and the parts e of the cheek-plate, there may be no downswinging of the locking and transfer wheels on their support until the lever F has been moved laterally, and with it the bar t endwise, to secure the locking up of the locking-wheels before the latter become unlocked or disengaged from the register-wheels.

The second feature of novelty comprised in the present invention consists in the combination, with the register-wheels, each having a single notch, of a series of fingers which normally are out of positions for engagement with the notched register-wheels, but which upon the unlocking of the register-wheels (by the lowering of the wheels h, j , as described) are thrown into positions relative to the register-wheels, so that as the latter are being by hand individually turned to their "0" position the said fingers will, when the register-wheels reach the "0" position, automatically snap into engagement with the notches of such wheels, whereby no care need be bestowed upon the resetting operation to prevent turning the wheels too far, and so that this operation may be easily accomplished in the dark or without looking at the wheels; and, describing this device in detail, T represents a bar which is mounted between the cheek-plates a^2, a^2 of the register-wheel frame for rocking movement. This bar has thereon a plate T^2 , which comprises a series of forwardly-extending spring-arms x , with the right-angular fingers t^2 , which are adapted, on the rocking of the bar, to be thrown into the notches u of the register-wheel. As specifically shown, the notches u are formed within flanged portions of the register-wheels, but this is not an essential.

The rock-bar T has the upwardly-extended lug t^3 , which receives the reaction of the spring t^4 , which is set within the socketed boss t^5 , provided upon the back plate of the register-framing. The said rock-bar T has at its end the lever-arm U , against which impinges the projection v , which is of a suitable cam or other form and which is formed upon or secured to the aforesaid handle-lever F , by the manipulation of which the carrier for the locking-wheels is lowered. To all intents and purposes this projection v may be regarded as a part of the carrier C .

The forms and arrangements of the projection v and the lever-arm U of the rocker-bar T are such that when the lever is upswung, bringing the locking and transfer wheels into their proper coöperative relations to the register-wheels for the expected and regular

operations of the registering mechanism, the rocker-bar T and its spring-fingers will be moved so that the latter will be clear from the register-wheels; and of course, as plain, the downswinging of the lever F , which enables the register-wheels to be individually and independently turned so displaces the projection v as to permit the spring-fingers, by reason of the spring t^4 , to ride peripherally upon the register-wheels and to seasonably act as detents therefor when such wheels have been properly set.

Although the present improved mechanism will perhaps become more frequently available for employment in cash-registering machines, such use will be merely dependent on circumstance, for as a matter of fact the said mechanism may be utilized, as will be obvious, in a great variety of other situations and for other purpose than that of an adder or register of units or amounts of money value.

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

1. In an adding mechanism, the combination of a fixed frame for a shaft having a series of suitably-notched registering-wheels thereon, and stop-fingers supported in proximity to said wheels, with a support pivotally hung on said frame for a shaft having thereon transfer-wheels and locking-wheels therefor, means on said support for locking together said locking-wheels in advance of the disengagement of the transfer-wheels from the registering-wheels, and means for automatically bringing said stop-fingers into position for engagement with the notches on said registering-wheels by the movement of said pivotally-hung support, substantially as described.

2. In an adding mechanism, the combination with the registering-wheels, each having notches, the locking-wheels and a movable carrier therefor, of a series of movable stop-fingers which normally are, by a member of said carrier, held out of position for engagement with the notched register-wheels, but which upon the shifting of said movable carrier are permitted to assume positions for engagement with said register wheels, substantially as set forth.

3. In an adding mechanism, the combination with a series of register-wheels each with a notch u , and each, except the one of highest denomination, having a hub with a single notch and a single tooth which is in an offset plane from the notch, and each register-wheel, except the one of the lowest denomination, having a series of gear-teeth m , a rocker-bar T , having the spring-fingers to engage said notches u , and having the lever-arm U , the support or carrier pivotally mounted to swing downwardly and having journaled therein the scalloped locking-wheels and the toothed transfer-wheels, substantially as described, the bar mounted for endwise movement on said carrier and having at intervals of sepa-

ration thereon the lugs which are provided
with the convex extremities, the lever adapted
to effect the downswinging of said carrier and
the endwise movement of said bar and the
5 projection *v*, which is movable as one with
the carrier and adapted, as the carrier is re-
turned to its normal position, to impinge

against said lever U, all substantially as and
for the purposes set forth.

CHARLES H. LITTLE.

Witnesses:

WM. H. CHAPIN,
H. A. CHAPIN.