

(No Model.)

2 Sheets—Sheet 1.

J. H. VOSS.
CASH REGISTER.

No. 537,736.

Patented Apr. 16, 1895.

Fig. 1.

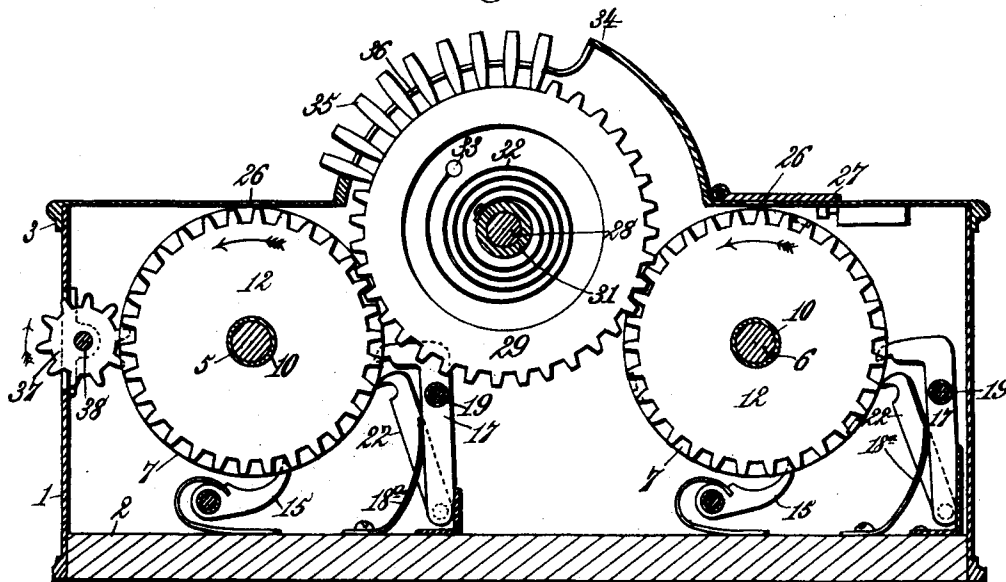
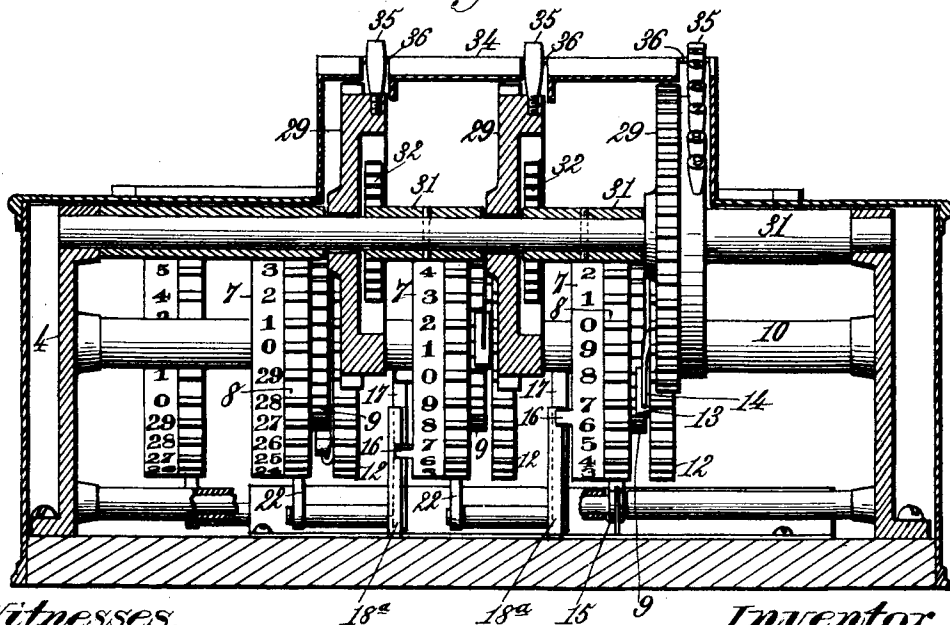


Fig. 2.



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By *James L. Norris*
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(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

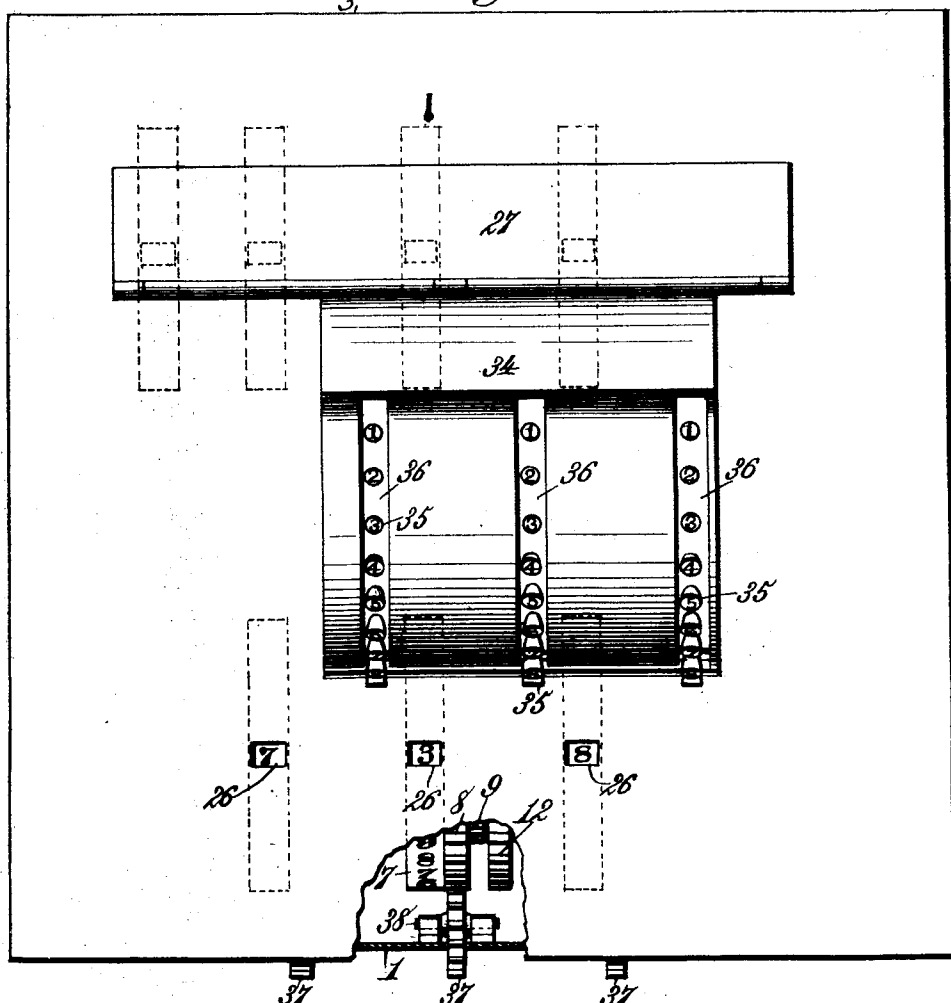


Fig. 4.

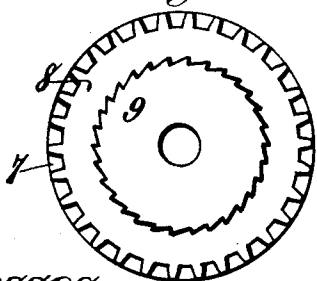
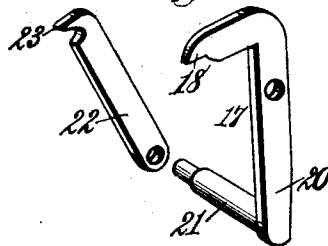


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOSEPH H. VOSS, OF CINCINNATI, OHIO.

CASH-REGISTER.

SPECIFICATION forming part of Letters Patent No. 537,736, dated April 16, 1895.

Application filed December 18, 1894. Serial No. 532,220. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH H. VOSS, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented new and useful Improvements in Mechanism for Adding and Registering Daily Cash-Receipts, of which the following is a specification.

My invention relates to mechanism for adding and registering daily cash receipts, my purpose being to provide an apparatus so simple that it may be operated by any person without special knowledge, or training, the function of said apparatus being to add the several cash items representing a series of sales of different articles, or of different lots, or quantities, and give a correct aggregate thereof, and to simultaneously perform a like operation and give correct aggregate indications upon a separate series of duplicate wheels which are concealed, the latter series being sufficiently extended to permit indications of successive cash sales and receipts, in the aggregate, during an entire day, or other suitable period.

It is my purpose, in other words, to provide a mechanism having two separate series of registering-wheels, operated simultaneously by a series of gears common to both, provision being made for the inspection of one series of wheels, only, and the other series being extended sufficiently to cover the successive totals resulting from the individual cash sales for a day, or other period, while the other, more limited series, can register only a maximum amount less than the daily average, after which its indications are repeated; the object being to enable an employé to perform the addition of a considerable number of cash items with rapidity, to obtain an aggregate sum with absolute accuracy, and to register the successive totals simultaneously upon the concealed wheels, thereby preventing knowledge of the amount in which one employé exceeds the cash sales made by another and removing a strong temptation to withhold the excess.

It is my purpose, also, to provide a mechanism of this type in which the registering dials are operated by a series of duplicate gears which are returned to initial position after each operation; the series correspond-

ing in number to three or more places in decimal notation, such as the units, tens, and hundreds gear, each being provided with a digital series of radial fingers, and provision being made whereby any sum in excess of ten and not exceeding one hundred cents may be registered by operating the tens gear through as many digital spaces as there are tens in the sum, the limit of movement of the gear being fixed without depending upon the eye of the operator.

My invention also comprises the provision of novel means for communicating registering movement from one dial to the next and for restoring the registering dials to initial position, and a novel construction and organization of the gearing and dials whereby one series of wheels is caused to register the total cash items for one day, or other period, and the other series to add a limited number of such items and then return to zero.

The invention consists, to these ends, in the several novel features of construction and new combinations of parts fully described hereinafter and then particularly pointed out in the claims.

To enable others to fully understand and to make and use my said invention, I will now proceed to describe the same in detail, reference being had to the accompanying drawings, in which—

Figure 1, is a vertical section taken from front to rear of a machine in which my invention is incorporated. Fig. 2, is a vertical section taken from end to end of the machine in the axial line of the shaft of the actuating-gears. Fig. 3, is a plan view of the same. Fig. 4, is a detail view of one of the registering-wheel gears with its ratchet. Fig. 5, is a detail perspective of one of the devices for transmitting movement to the registering-wheels.

The reference-numeral 1 in said drawings, indicates the casing, or box, within which the operative parts are arranged. The casing consists of vertical walls which are caused to inclose a solid base, or floor 2, and a cover which is provided with a molding, or any suitable form of flange 3, overlapping the upper edges of the vertical walls. These parts are permanently united in any suitable manner. In order to obtain access conveniently to the interior, for repairing, or other purposes, I prefer

to make the entire casing detachable from the bottom, or floor 2, and to support the operative parts on an independent frame, which is permanently secured to the base. Said frame consists of two uprights 4, on which are mounted two horizontal shafts 5 and 6, both being rigid with their supports. Upon each shaft is arranged a series of registering-wheels 7, each provided with a spur-gear 8, which is rigid with the registering-wheel. The shaft 5 will usually have three of such registering-wheels and spur-gears, and upon the flat face of each spur-gear 8, is rigidly mounted a concentric ratchet 9. Each registering-wheel, gear and ratchet, thus united in one, has support directly upon the shaft 5, lateral displacement being prevented by sleeves 10, which are loose upon the shaft. Upon the ends of these sleeves which lie adjacent to the ratchet 9 are mounted spur-gears 12, each provided upon its flat face with a pivotally mounted pawl 13, which is thrown, by a spring 14, into engagement with one of the ratchets 9. Thus, whenever the gears 12 are turned in one direction, the gears 9 and registering-wheels 7 will move in unison. The gears 12 may turn in the opposite direction without imparting movement to the registering-wheels, as the pawls 13 will merely ride over the teeth of the ratchets, and the spur-gears 9 and registering-wheels 7 are prevented from backward movement by holding pawls 15.

The gears 9 are preferably formed with thirty teeth, each, though this construction is not a necessity since I may use any number of teeth which is a multiple of ten. The registering-wheels are provided, on their peripheral faces, with three digital series of numbers, arranged in numerical order, from one up to and including nine, with a zero, or cipher, following. These indications are placed on the registering-wheels at uniform intervals opposite the teeth of the gear. This description applies to each of the registering-wheels in the series on shaft 5, excepting the last registering-wheel at the left hand side of the operator, which is provided with a series of numbers ranging from 1 up to and including 20, with a zero, or cipher, opposite the thirtieth tooth. The first registering-wheel 7, at the right hand of the operator, corresponds to the place of units, in the scale of decimal notation; the second registering-wheel to the place of tens, and the third to the place of hundreds. In other words, the first registering-wheel can register any number of pennies up to, but not including ten. The second registering-wheel registers the tens, or dimes, and the third registers the hundreds, or dollars. The first and second registering-wheels can register three successive series of nine units, and nine dimes, respectively, in each revolution. Periodical advance of a single numerical space is imparted from each registering-wheel to the next, at the end of each digital series, by means of lugs 16, projecting laterally from each registering-wheel, in line

with the zero, or cipher, at the terminus of each digital series. Between the first registering-wheel 7 and the adjacent gear 12 lies an angular dog 17, which has support upon a rigid shaft 19, parallel with the shaft 5. The end 18 of this dog lies in the line of movement of the lugs 16, and is tilted in the arc of a circle, concentric with the shaft 19, by the passage of each lug and then returned to place by the action of a spring 18^a. On a hanger 20, forming part of the dog, is a laterally projecting spindle 21, on which is pivoted a pawl 22, its tooth, or nose 23 being held in engagement with the teeth of the spur-gear 12, on the next registering-wheel, by its own gravity.

The series of registering wheels on the shaft 6 is a duplicate of the series described. The only difference is that said series may, and preferably will, comprise one, or more, registering-wheels in excess of the number upon the shaft 5, as indicated in Figs. 2 and 3. In all other respects, save those noted hereinafter, this series is the counterpart of the other. The shafts 5 and 6 are arranged near the front and rear of the casing, respectively, and openings 26 are provided in the cover, to exhibit the numerical indications on the registering-wheels. The series upon the shaft 6 are wholly inclosed, however, and concealed from inspection, a lid 27 being provided, which can be opened with a key.

Upon a shaft 28 centrally arranged between, and parallel with the shafts 5 and 6 are mounted the actuating gears 29. These gears are equal to each other in diameter and are somewhat larger than the gears 12 with which they mesh. The actuating gears are loosely mounted on the shaft 28, between the ends of sleeves 31, which are pinned to the shaft. On the ends of said sleeves are mounted spiral re-setting-springs 32, having one end rigidly attached to the sleeve and the other to pins 33, on the flat faces of the gears which are chambered to receive the springs, as shown in Fig. 2. By the tension of the latter the gears are always returned to their initial position, as seen in Fig. 1. Upon the upper side of each gear, which lies in a semi-cylindrical housing 34, rising from the cover, are mounted nine counting-fingers 35, which project radially from the periphery at intervals corresponding with the spaces separating the teeth. These fingers are numbered upon their outer ends, the numbers corresponding with those upon the registering-wheels actuated by said gears, excepting that the numbers on the fingers carried by the gear in the third place do not run higher than nine. The ends of the fingers project from slots 36 in the housing and the finger bearing the numeral nine rests against the closed end of the slot, next to the front of the casing. The housing is raised, at the other ends of the slots 36, to permit the fingers to pass into it, but to arrest the finger of the operator at the point where the movement should cease in

order to give a correct indication on the registering-wheel. The operator's finger being removed at this point, the re-setting-spring immediately returns the gear to its original position, the gears 12 moving back with it, and drawing the pawls 13 over the teeth of their ratchets.

The method of operation is as follows:

Upon making one or more sales, the cash receipt, or receipts are registered, or added and registered, by operating the gears 29. Suppose that an item of eight cents is to be registered. In this case, the operator places the end of his finger upon the radial counting finger 34 which bears the number eight and pushes it until further movement is arrested by the raised part of the housing. The numeral 8 will then appear on the first, or units registering-wheel 7, on the shaft 5. If the item is eighteen cents, the units wheel will be operated in the same manner, for the eight units, and the next gear will be moved a single tooth for the single ten. If the item is one dollar and eighty-three cents, the units gear will be moved three spaces, for the three cents, the tens gear will be moved eight places for the eight tens, or dimes, and the hundreds gear will be advanced a single space for the one dollar, and the corresponding registering-wheel indications will be shown through the openings in the cover. A similar indication is also made, simultaneously, by the registering-wheels on the shaft 6. A series of successive items are added in the same way, and registered at the same time. For example, supposing the items three dollars and forty-two cents, six dollars and fifty-three cents, and four dollars and thirty-one cents are to be added. The operator can move the units gear two places, the tens gears four places, and the hundreds gear three places for the first item, and proceed in the same way for each of the others; or he can operate the units gear for two places, then for three places and finally for one place, then operate the tens gears four, then five and finally three places, and lastly move the hundreds gear three, six and four places, the result being the same by either method.

The third registering-wheel 7 on the shaft 5 will register up to and including twenty-nine, and after reaching twenty-nine dollars and ninety-nine cents, all three registering-wheels will return to zero. The series may, of course, be extended, if desired, as compared with the other series, so that the latter may register the successive totals for a full day, while the former is merely used to obtain accurate sums total.

After each item, or series of items, is registered the registering-wheels 7 on the shaft 5 should be returned to zero, which is done by setting, or restoring gears 37 shown in Figs.

1 and 3. The gears 37 are journaled on an axis 38 and each one meshes with one of the registering-wheel gears 8. By rotating the re-setting gears 37 on their axis 38, in the direction shown by the arrow in Fig. 1, the registering-wheel gears and registering-wheels will be turned back to their initial position, the pawls 13 riding over the teeth of the ratchets 9, on the registering-wheel gears. The series of registering-wheels on the shaft 5 are thus returned to zero after each series of cash items registered. The other series, on the shaft 6, are not disturbed.

What I claim is—

1. In an apparatus of the type specified, the combination with a series of actuating gears of two separate series of registering wheels both operated by said actuating-gears, one series being exposed for inspection and the other series wholly concealed, and a series of restoring gears having part of their peripheries projecting from the wall of a housing which incloses the apparatus and meshing with the gears of the exposed series of registering wheels, and operating the latter without disturbing the concealed series of registering wheels.

2. In an apparatus of the type specified, the combination with a series of actuating gears, of a series of re-setting springs, two separate series of registering-wheels, both operated by the actuating gears simultaneously, and a series of restoring-gears having part of their peripheries projecting through openings in a housing or casing which incloses the registering apparatus said restoring gears being adapted to act upon one series of the registering wheels which are exposed to view, the other series being wholly inclosed and concealed, substantially as described.

3. In an apparatus of the type specified, the combination with registering wheels having spur-gears rigid therewith, of actuating gears having radial counting-fingers projecting from slots in a housing and numbered consecutively, re-setting springs to restore the actuating gears to place, the slots of the housing being terminated at a raised portion of said housing which acts as a stop to arrest the movement of the operator's finger and a series of restoring gears meshing with the gears of one series of registering-wheels and having part of their peripheries projected through the wall of the housing, substantially as described.

In testimony whereof I have hereunto set my hand and affixed my seal in presence of two subscribing witnesses.

JOSEPH H. VOSS. [L. S.]

Witnesses:

AUSTIN E. CASS,

ARNOLD SPEISER.