(No Model.) 3 Sheets—Sheet 1.

H. G. O'NEILL.

CASH REGISTER.

No. 480,616. Patented Aug. 9, 1892.

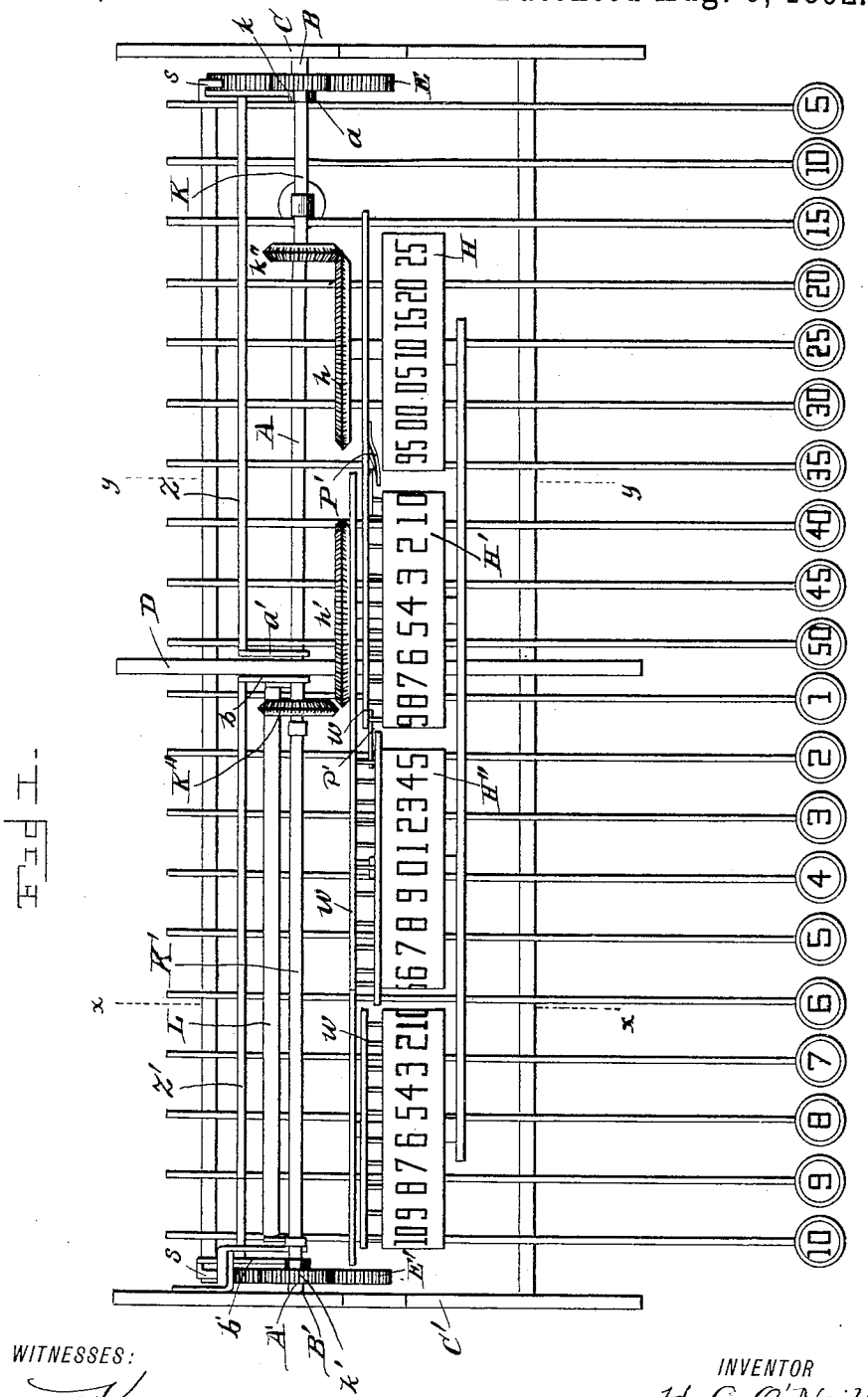


FIG. 1.

WITNESSES:

Samuel Kurt

Philip Lemasi.

INVENTOR

H. G. O'Neill

BY

E. W. Anderson

his ATTORNEY.

(No Model.) 3 Sheets—Sheet 2.

H. G. O'NEILL.

CASH REGISTER.

No. 480,616. Patented Aug. 9, 1892.

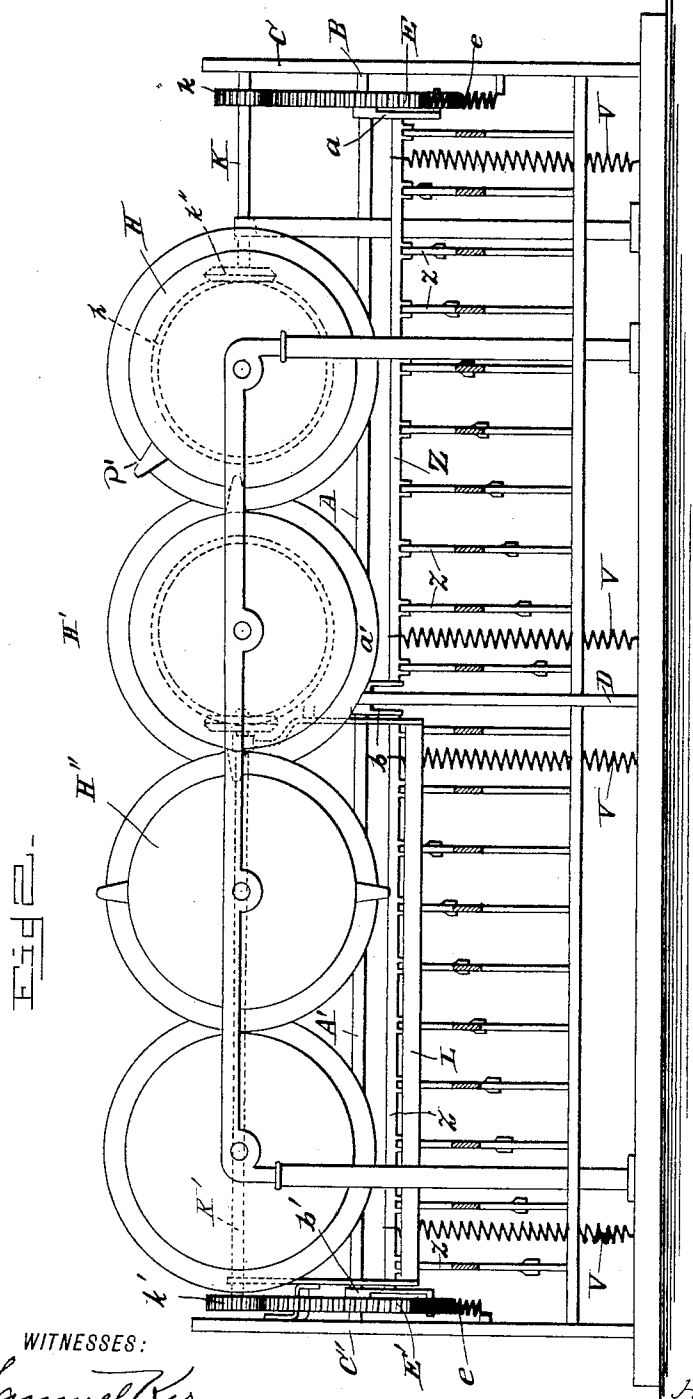


Fig. 2.

WITNESSES:

Samuel Ker

Philip C. Masi.

INVENTOR

H. G. O'Neill

BY

E. W. Anderson

his ATTORNEY.

(No Model.) 3 Sheets—Sheet 3.

H. G. O'NEILL.

CASH REGISTER.

No. 480,616. Patented Aug. 9, 1892.

Fig 3.

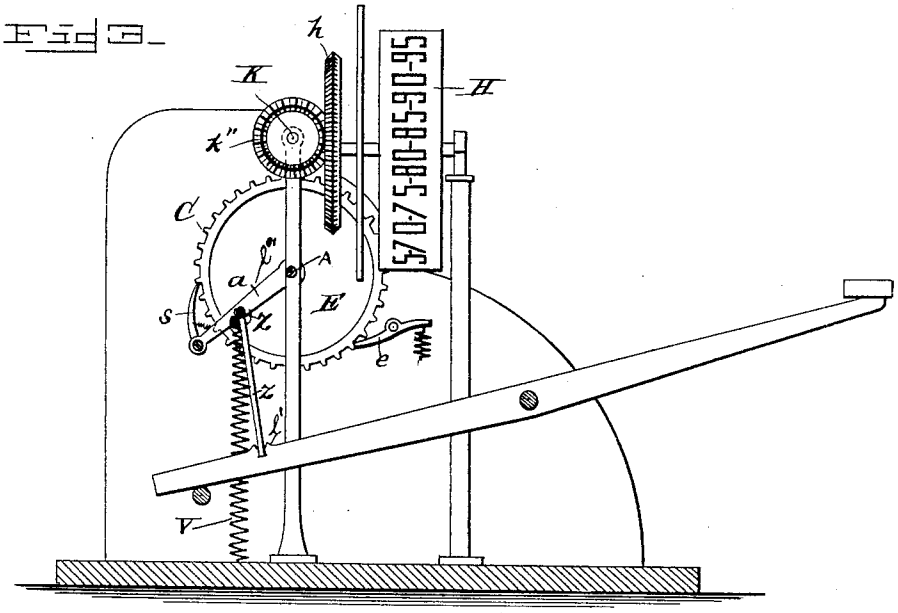
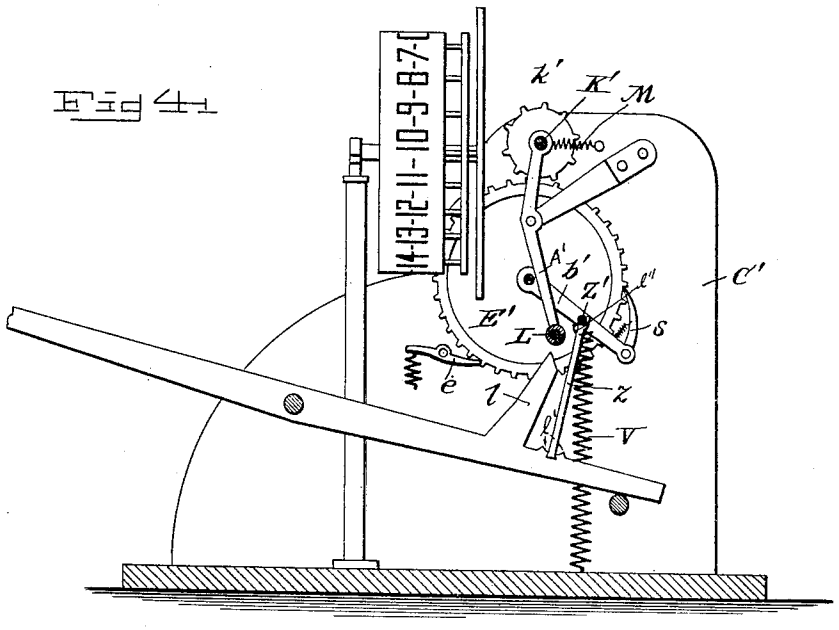


Fig 4.



WITNESSES:

Samuel Ker.

Philip B. Masi.

INVENTOR

H. G. O'Neill,

BY E. W. Anderson

his ATTORNEY.

UNITED STATES PATENT OFFICE.

HENRY G. O'NEILL, OF LOUISVILLE, KENTUCKY, ASSIGNOR TO THE STANDARD REGISTER COMPANY, OF BOSTON, MASSACHUSETTS.

CASH-REGISTER.

SPECIFICATION forming part of Letters Patent No. 480,616, dated August 9, 1892.

Application filed November 2, 1891. Serial No. 410,565. (No model.)

To all whom it may concern:

Be it known that I, HENRY G. O'NEILL, a subject of the Queen of Great Britain, and a resident of Louisville, in the county of Jefferson and State of Kentucky, have invented certain new and useful Improvements in Cash-Registers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a top plan view. Fig. 2 is a front elevation partly in section. Fig. 3 is a vertical transverse section on line *y y*, and Fig. 4 is a vertical section on line *x x*.

This invention appertains to that class of devices known as "cash-registers," and has for its object, mainly, the improvement of that type of machines that at present only itemize and indicate each transaction by providing therefor an attachment that will aggregate the entire volume of business or, in other words, show the sum-total value of all business transacted at a glance.

This improvement is applicable to many forms of cash-registers and can be added to the present machines without any alteration in their construction or change in the special machinery now used to produce their various parts. It has been designed so that it will not in any manner interfere with the use of key-arresters, drawer and bell mechanism, or other necessary devices for affording the various safeguards against errors, either intentional or otherwise.

The invention particularly relates to that class of improvements described and shown in my pending application, Serial No. 410,333, filed October 30, 1891, and differs therefrom, mainly, in the arrangement of the adding mechanism and its connection with the bail devices operated by the key-levers.

In the accompanying drawings, the letters A and A′ represent two shafts, each being about one-half the entire length of the machine, the shaft A being supported at a point B on one side of the lateral frame C and by an upright D, located about the center of the machine from the floor of same, and A′ being supported at a point B′ on the other side of the lateral frame C′ and by the same middle upright D.

a and *a′* and *b* and *b′* in the annexed drawings are pairs of arms pivoted, respectively, at the ends of the shafts A and A′, said arms carrying the bail-bars Z and Z′, which have downwardly-extending graduated projections *z*. These bail-bars extend transversely of the machine, and are therefore respectively common to the keys of the cent series and dollar series. Spring-pawls *s* are pivoted, as indicated, to the graduated transverse movable bars Z and Z′. Theoretically it is possible to dispense with one of said bars and to use a single bail-bar extending arcoss all the keys; but in practice in large machines because of the great space the levers would have to pass through to make additions of a dollar and upward two bail-bars are preferred as more practical. Nevertheless for machines of small limit one bail-bar and wheel will suffice.

E and E′ are two toothed wheels located conveniently at points on the inner sides of the lateral frames C and C′, respectively, in such position as to be turned by one of the pawls *s* upon movement of the graduated transverse bail-bar Z or Z′, as the case may be. Pawls *e* are designed to hold the wheels E and E′ in position when the graduated transverse bar is resuming its normal position, having passed through an arc of a circle corresponding to the number of the key struck.

The letter V designates springs attached to said graduated bail-bars for the purpose of causing them to resume their normal position positively; but they may be dispensed with, although gravitation cannot always be relied upon. The springs are preferred.

z represents the downwardly-extending shoulders, arms, or projections of the bail-bars, so graduated as to produce the correct movement of the toothed wheels E and E′ through the proper space or arc of a circle required to make the addition or move the wheel a number of teeth corresponding to the denomination of the key struck. Since the levers have a uniform movement and in these machines are alike in moving through a given equal space and since they have each to add

different amounts to the sum of previous transactions, it follows that the differential allowance may be made by proportionately graduating the length of the downward shoulders, arms, or projections *z z*, which are connected to the transverse movable bar aforesaid. In order to provide for the radial swing of these downward projections *z* of the bail-bars and avoid undue friction with the keys, it is preferred that these projections or arms be pivoted to the bail-bars and provided with stop-shoulders *l* and springs *l'*, the stops serving to locate their normal position and the springs to cause them to take such normal position after operation and disengagement of the key-levers. These downward projections *z* of the transverse graduated movable bars Z and Z' are normally in position to come into engagement and be operated by any key that may be struck to move the wheel E or E', as the case may be, the correct number of teeth required by the denomination of the key struck. At an elevation above said wheels E and E' and between the sides of the frame C and C' and a support consisting of an upright extending from the bottom of the machine extend transversely two shafts K and K', on which, so arranged as to be in engagement with the teeth of the wheels E and E', respectively, are the pinions *k* and *k'*, and upon suitable bearings is arranged a series of aligned wheels for adding purposes, turning in a plane parallel to said shaft. These adding-wheels each have twenty numbers around their peripheries. The first of the series H is numbered around its periphery from "00" to "95," inclusive, in odd and even multiples of five, and attached to the side of said wheel H is a spur-like projection acting at the number "95," or rather just after it passes the reading position, for the purpose of transferring any amount after that to the next adding-wheel H'. There is also attached to the side of this wheel H a toothed wheel *h*, preferably a bevel-wheel, that engages at right angles with the pinion K'' on the shaft K, and said wheel is provided with a carrying projection P'. Facing this wheel H', periphery to periphery, is another wheel H'', having a similar spur, and to the wheel H' is attached a toothed wheel *h'*, and a series of other wheels, as many more as may be desired, may be added, each having on its periphery twenty numbers—that is to say, from "0" to "9," inclusive—and these numbers repeated. These wheels must be so arranged that the spur-like projection of one shall engage with a toothed wheel *w* of the next wheel. These wheels *w* (shown in Fig. 1) are attached to the side of their respective adding-wheels and comprise each a disk having a series of inward projections or pins, which are designed to be engaged by said spurs to effect the carrying. The toothed wheel *h'*, attached to the wheel H', is designed to be normally out of engagement with the pinion K'', the spring M retracting the pinion-shaft; but when any of the keys of the dollar series are depressed this pinion K'' is by means of the bail-lever L brought into engagement with said wheel, when the amount corresponding will be immediately added on the dollar-adding wheels, all the cent-keys being added to their amount to the first of the series. The pinion-shaft K' is carried by the upright arms of the bail-lever L, which is brought into action to move the pinion-shaft by any one of the lugs *l* of the dollar series of key-levers.

Having described the construction of this machine, the working will readily appear manifest. Any key of either series being actuated, its inner portion rises and engages the corresponding arm or projection of the transverse bail-bar common to all the keys of its series, which moves by its pawl the driving toothed wheel through an arc of a circle corresponding in degrees to the key used, said wheel moving the pinions on the shafts K or K' accordingly the required number of teeth, and this movement being communicated to the first or second adding-wheel, as the case may be. The amount registered is added to the sum of previous transactions on the adding-wheels where the total appears.

What I claim, and desire to secure by Letters Patent, is—

1. The combination, with a series of key-levers having numbered finger-pieces, of a bail-bar extending transversely over said levers and carrying a graduated series of downward projections designed to be engaged by said keys, a pawl connected to said bar, a toothed wheel operated thereby, a pinion engaging said toothed wheel, and a series of adding-wheels facing periphery to periphery and turning at right angles to the pinion on said shaft and actuated thereby, substantially as specified.

2. In an accounting-machine, the combination, with a series of key-levers, of a transverse movable bar common to all the dollar-keys, another transverse movable bar common to the cent-keys, said bars extending over the respective sets of key-levers and having each a graduated series of downward projections, a pawl carried by each said bar, a toothed wheel operated by each said pawl, the pinion-carrying shafts having gear actuated by said toothed wheels, the series of adding-wheels arranged periphery to periphery, and a pinion on said shafts arranged to operate gear on said adding-wheels, which turn at right angles thereto, the pinion-shaft of the dollar-adding wheels carrying its pinion normally out of engagement with the gear-wheel of said adding mechanism, and bail mechanism operated by a projection on the key-levers for effecting the engagement when a dollar-key is operated, substantially as specified.

3. In an accounting-machine, the combination, with a key-lever and graduated transverse movable bars, respectively, common to all the dollar-keys and common to all

the cent-keys and their pawls, of toothed wheels operated thereby, their pinion-carrying shafts, the pinion-shaft for the dollar series having its pinion normally out of engagement with the gear of the dollar-adding wheels, the bail device actuated by lugs on the dollar key-levers for effecting the engagement, and the series of adding-wheels facing periphery to periphery, substantially as specified.

4. In an accounting-machine, the combination, with a series of dollar-adding wheels arranged periphery to periphery and actuated by a pinion at right angles thereto and key-levers, of a transverse bail-bar and pawl, the toothed wheels engaging said pawl, a normally-disengaged pinion, and a bail-lever device whereby said pinion is brought into engagement upon depressing any key of said series, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY G. O'NEILL.

Witnesses:
PHILIP C. MASI,
CHAS. L. TAYLOR.