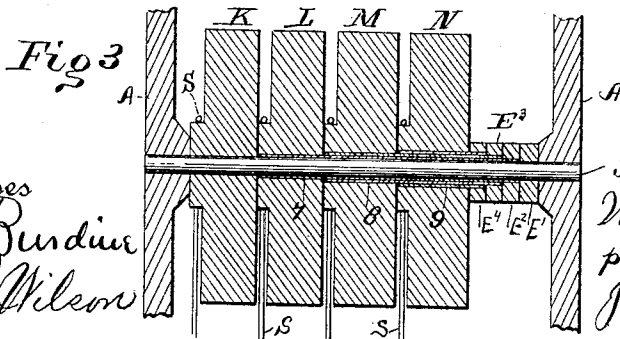
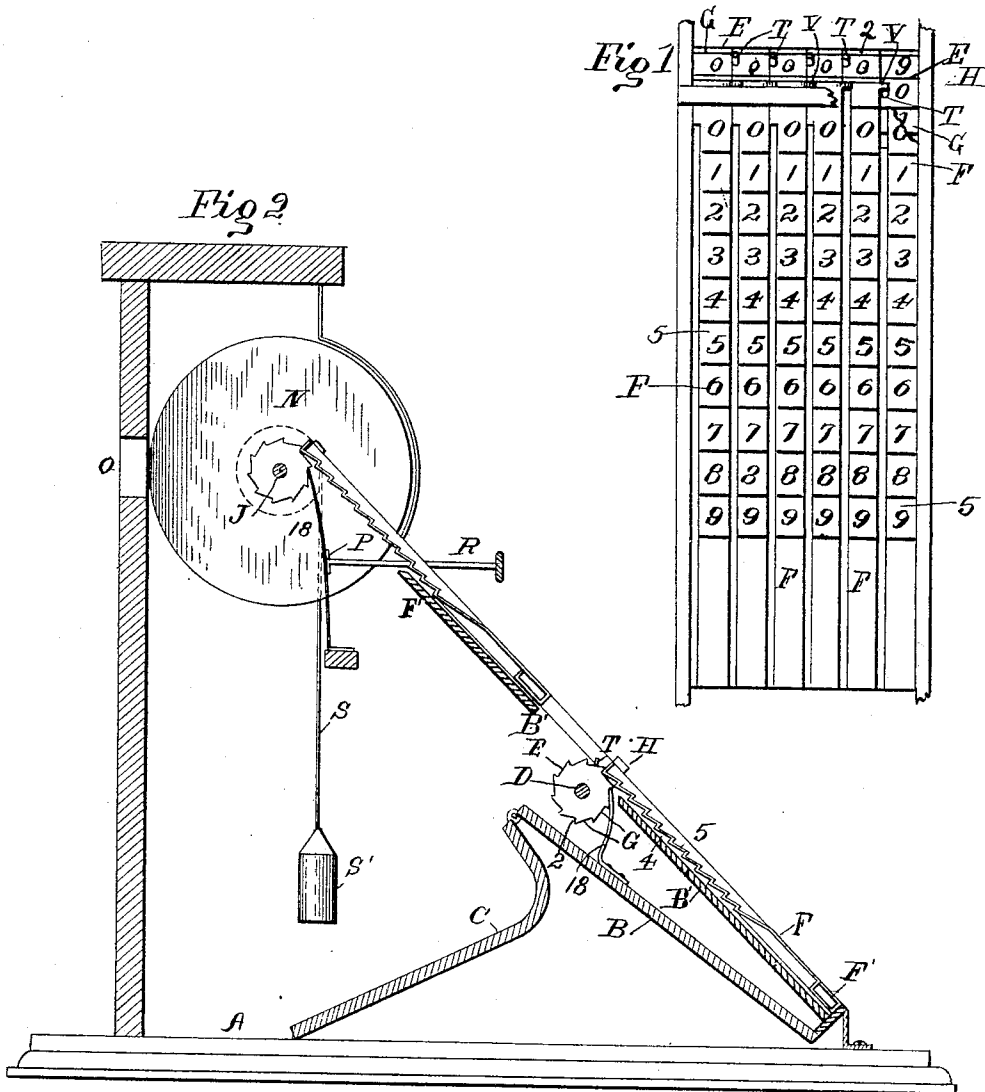


(No Model.)

W. H. WILSON.
ADDING MACHINE.

No. 479,343.

Patented July 19, 1892.



Witnesses
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ADDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 479,343, dated July 19, 1892.

Application filed December 2, 1891. Serial No. 413,759. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HARMON WILSON, a citizen of the United States, residing at Moline, in the county of Rock Island and State of Illinois, have have invented certain new and useful Improvements in Adding-Machines; 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 the letters and figures of reference marked thereon, which form a part of this specification.

My invention has reference to improvements in adding-machines, and is susceptible of application in a variety of circumstances and conditions and is advantageous in aggregating the successive sales in mercantile establishments.

The purpose of my invention is to afford mechanical means for aggregating a succession of numbers, each added number increasing the next preceding aggregate to the extent of its own amount, thereby exhibiting each time the aggregation of the numbers which have thus far been merged since a given starting-point.

In addition to the foregoing mechanism, but forming no part of the present invention, I may use a supplementary mechanism adapted to temporarily exhibit in succession the several amounts added, as aforesaid, into an aggregate. In the case of sales of commodities or goods this *seriatim* exhibition of the several amounts coincidently entering into the preceding aggregation would indicate in each instance the amount of the last purchase, and in my device remains on exhibition until succeeded by the next purchase, which is in its turn exhibited until in like manner succeeded. I attain the objects above referred to by the use of parallel notched movable bars adapted to be actuated to a predetermined limit by the pencil or finger of the operator at each operation. These bars have each outwardly-presented depressions, which are serially numbered from top to bottom "0" to "9," inclusive, (there being eleven of said depressions in all, the upper one being blank, Fig. 1.) Each of these bars is adapted to be

moved longitudinally and upward, and each one corresponds with an ordinary vertical column of written or printed figures, the right bar being the units-column, the next the tens and so on indefinitely, but in this application shown only as extending to millions. The bars aforesaid have recesses upon their under sides corresponding with those on their upper sides, which under notches in the upward movement of said bars are adapted to engage and partially rotate a wheel having a corresponding notched and numbered periphery on which the upper ends of said bars respectively normally rest.

In the indicator referred to as supplementary to the adding mechanism there is no mechanical union between the adding and indicating devices; but the indicating-machine, as hereinafter shown, is adapted to be operated coincidently with the operation of the adding-machine.

The mechanism referred to is illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of the adding mechanism proper, a portion of it being broken away to more clearly show the location and construction of said parts. Fig. 2 is a side elevation of the same with the like representation of one form of the indicating devices in their relation in use to the adding mechanism. In said figure the side of the frame of the machine is removed to exhibit the conformation and interrelation of the interior mechanism. Fig. 3 is a vertical cross-section of the exhibiting-wheels of the indicating department, each with an actuating similar wheel on the right axially connected therewith, said smaller wheels being notched and numbered to correspond with the upper series of wheels in the adding mechanism. In Fig. 3 but four indicating-wheels, corresponding with four vertical columns of figures, are shown for the reason that separate purchases will not exceed that number of numerals; but it is obvious that the number of indicating-wheels may be increased as desired.

Referring to Fig. 2, which shows the machine in cross-section, A is a suitable base which may be attached to the counter or other framework or may be an independent frame provided with a cash-drawer directly beneath

the machine. B is the frame which contains the adding mechanism E F and which stands at an elevation of about forty-five degrees from the base and rests at its lower end upon the latter and is supported at its upper end by lid C, which being hinged at the lower edge of the upper corner of the frame B is readily folded under the machine to serve as a leg for said frame B, as shown in said figure, and which when the machine is not in use can be folded over the face of the latter and serve to close it. D is a transverse rod rigidly seated in the upper end of the frame B and serves as the pivotal seat of the parallel series of wheels E, arranged to rotate intermittently or otherwise independent of the shaft D and of each other. The periphery of the wheels E is formed into ten notches G, each having an abrupt shoulder 2 and an oblique shoulder 3. F F are independent longitudinally-movable bars, notched on both their lower and upper surfaces, the lower notches 4 therein being formed like the notches G in wheels E, except that the abrupt shoulder of notches 4 is seated oppositely of the abrupt shoulder 2 in wheel E, so that in the upward movement of the bar F the abrupt shoulders of the underlying notches 4 will successively engage the abrupt shoulders 2 of the corresponding notches G in the wheels E. The outer notches 5 of the bars F F are opposite to and the reverse of the notches 4 therein in having their abrupt shoulder upward, whereby the upper sides of each notch 5 presents an abrupt or nearly-perpendicular wall, against which the operator can place his pencil or finger in moving the bars F upward.

As shown in Fig. 1, the notches in the bars F are numbered downward from "0" to "9," and the upper ends of said bars F rest, respectively, on the peripheries of the wheels E in position for notches 4 of said bars to engage the notches G of the wheel E at the initiative of the upward thrust of said bars F. The lower ends of bars F are each formed into a loop F', which loop forms a bearing for the lower end of the bar and traverses a platform B', located in frame B. A cross-bar H is rigidly attached to the frame A outside of and near the upper ends of the bars F when the latter are in their normal position, which serves the double function of holding said bars F down into engagement with the notches G of the wheel E, and is also so located with reference to said wheels E as that when the propelling pencil or finger which is placed in the selected notch of the bar F is moved upward until it strikes against said bar H the desired action of the bar F will have been accomplished. A separate retaining pawl-spring 18, seated in frame B under bars F², steadies the rotation of wheels E and prevents their retrogression.

In Fig. 2 there is shown the indicating apparatus seated in the frame A above and in the same plane of the lower frame B. The indicating device consists of a suitably-sup-

ported rotating shaft J and four indicating-wheels K, L, M, and N, carried mediately or immediately thereon, as hereinafter described, and shown in cross-section in Fig. 3. The wheel K is seated rigidly upon the rotating shaft J and carried thereby, being actuated by the outer wheel E', also rigidly seated on the said shaft J. Said wheel E' and three inner wheels E², E³, and E⁴ (shown in Fig. 3) are each provided with notches and numbered and actuated independently by notched bars F² in the same manner as the wheels E of the adding-machine are by the bars F. The indicating-wheel L is rigidly seated on the sleeve 7, encircling the shaft J and extending from the locality of the wheel L to and within the wheel E² second from the end, said last-named wheel E² being also rigidly seated on sleeve 7. Wheel M is rigidly seated on the sleeve 8 outside of sleeve 7, which sleeve 8 extends from the interior of wheel M to the interior of the third wheel E³, the latter wheel being rigidly seated upon the sleeve 8, and wheel N is rigidly seated upon the sleeve 9, extending from within the sleeve 9 to within the fourth or inner wheel E⁴, which latter wheel E⁴ is rigidly seated upon the sleeve 8, so that any degree of rotation imparted to any of the four wheels mounted on the shaft J or on one of the several sleeves will be imparted proportionately to said exhibiting-wheel, with which said actuated wheel is connected. The wheels K, L, M, and N have around their peripheries the figures from "0" to "9" in the usual manner.

As the indicating device forms no part of the present invention, I have not deemed it necessary to illustrate or describe the numbering of the wheels further than to say that the series upon N represents units of cents, those upon M the tens of cents, and those upon L units of dollars, and those upon K tens of dollars, and the series may be laterally extended at will, as before mentioned.

The peripheral figures upon the indicating-wheels K, L, M, and N can be seen and read by the purchaser in a horizontal transverse line through the visual opening O, located in front of said wheels. A cross-bar P connects the springs 18 of each wheel E', E², E³, and E⁴ laterally, and a pull-bar R is suitably connected to the cross-bar P, by means of which all of the springs 18 may be coincidently released and the wheels and their related indicating-wheels be drawn back to zero by ropes or cords S and weights S' attached to the axle of each of said indicating-wheels, so that after the indicating-wheels have exhibited the amount of the last addition aforesaid (which amount, in the case of sales, would be that of the last purchase) by drawing upwardly on the pull-bar R all of the indicating-wheels will be rotated reversely by means of the cords and weights until the ciphers thereon are seen through the opening O aforesaid, and said indicating-wheels are in position for the next impulse.

Means are employed, as hereinafter described, for coincidently and in the same proportion to actuate the bars F of the adding-machine and the bars F² of the indicating-machine; but I make no claims for the indicating mechanism, nor for the means for operating it coincidently with the adding-machine, but have only shown the indicating-machine in connection with the adding-machine to more fully illustrate the use and adaptability of the adding-machine.

On each wheel E in the recess C, which carries the cipher, there is seated a slight radial spur T near the left hand of said recess, and at the head of each bar F on the right-hand edge there is a slight lateral lug V, so that when the figure "9" on any of the wheels E is moved upward to a certain point the spur T engages the lateral lug V and moves the bar F next on the left, and thereby the wheel beneath said last-named bar is moved one degree of rotation. This provision carries into the next left-hand column the excess over nine in the column next adjacent on the right.

The frame which contains the indicating apparatus is substantially the counterpart of that which contains the adding mechanism heretofore more specifically described, and these two frames can be seated in one general frame, as shown in Fig. 2, or they may be separate frames simply placed in the proper relative position.

The operation of my invention is as follows: Referring to the operation of the adding-machine, all of the wheels E in the adding-machine being turned in such position that the notches on which the cipher is indicated are just above the bar H, suppose the first number to be considered is four units. The operator will place his pencil upon the recess 5 of the unit-bar F upon which the numeral "4" is impressed and push said bar F upward until the pencil shall strike the lower edge of said transverse bar H, when by withdrawing the pencil the bar F will drop back by gravity into its original position and the wheel E will have been actuated thereby four of the degrees or notches G marked on its periphery, which will present the figure "4" of said wheel E just above the bar H in the locality formerly occupied by the "0." Should the next addition be seven units, the operator in like manner will place his pencil on the recess marked "7" in the unit-bar F and move said recess up until the pencil strikes the bar H, as aforesaid, when it will be found upon removing the pencil and permitting the bar F to drop back into place that the numeral "1" has taken the place occupied by the "4" and that the radial spur T in the recess marked "0" of the units-wheel E has engaged the lug V of the next bar F on the left, or what might be called the "tens-bar," and thereby actuated the tens-wheel E one degree, presenting above the bar F in transverseline the amount "11." The like operation is extended throughout all of the wheels E. Whenever the number in-

creased by the last addition in any of the columns exceeds nine, the engagement of the spur T and lug V occurs, and is one carried to the next wheel to the left by the rotation of the adjacent wheel one step or a sufficient distance to expose the figure "1."

When the indicating mechanism is used in connection with the adding mechanism instead of the pencil, there will be used an instrument having two legs like a compass, one of which legs will be placed upon the bar F of the adding-machine, as before described, and the other upon the corresponding bar F², and at the same locality thereon of the indicating devices, and the bars F of the adding mechanism and the bars F² of the indicating mechanism will be coincidently moved upward, as before described in reference to the operation of the adding-machine.

As the function of the indicating-machine is not to exhibit the aggregate, but simply the individual numbers thereof, after each impulse of the indicating-wheels the releasing-rod R will be pulled, when all of the indicating-wheels which may have been moved from O will be by the cords S and weights S' brought back to their starting-point or zero.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

1. A series of separately-pivoted wheels E, provided with peripheral notches G, serially numbered, and bars F, provided with the double series of notches 4 and 5, the notches 5 being serially numbered and the bars being adapted to be separately moved longitudinally to engage and actuate, respectively, the wheels E, substantially as shown, and for the purpose described.

2. The combination of a transverse series of wheels E, provided with serially-numbered peripheral notches G, bars F, having lower engaging and upper serially-numbered notches and adapted to be carried upon and actuate, respectively, said wheels E, and a retaining-spring 18 for each bar, substantially as shown, and for the purpose specified.

3. The combination, with a frame, of a series of notched wheels journaled therein, each notch being provided with a number, a series of longitudinally-movable notched bars engaging with said wheels, the outer notches of said bars being provided each with a number, and a cross-bar secured to the frame outside of and near the upper ends of the bars when the latter are in their normal position, whereby the movement of each bar upwardly until the desired notch in the bar is adjacent to the lower edge of the cross-bar the wheel will have been rotated the distance, substantially as set forth.

4. The combination, with a frame, of a series of notched wheels journaled therein, each of the notches being provided with a number and one of them with a radially-projecting pin, a notched bar for each wheel, the upper end of each bar being provided with a laterally-pro-

jecting lug upon the right-hand edge, whereby it may be engaged by the pin upon the next adjacent wheel to the right, substantially as set forth.

- 5 5. The combination of a series of separately-rotating wheels E, having a common axis of rotation and being peripherally notched and numbered, as described, and provided in their "0" notches with the radial spur T, and
10 the separately-movable bars F, notched and numbered, as described, and provided with

lateral lug V, adapted to be engaged by spur T, and thereby impart partial rotation to the next adjacent wheel E, substantially as shown, and for the purpose specified. 15

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

WILLIAM HARMON WILSON.

Witnesses:

BELLE MANAHAN,
ADDA E. WARD.