

UNITED STATES PATENT OFFICE.

ANDREW SLAVIN, OF TAMPICO, WASHINGTON.

ADDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 462,334, dated November 3, 1891.

Application filed December 3, 1890. Serial No. 373,436. (No model.)

To all whom it may concern:

Be it known that I, ANDREW SLAVIN, a citizen of the United States, residing at Tampico, in the county of Yakima and State of Washington, have invented a new and useful Adding-Machine, of which the following is a specification.

This invention relates to adding-machines, and the object of the same is to provide certain improvements upon machines of this character heretofore existing.

To this end the invention consists of the details of construction hereinafter fully described and claimed, and as illustrated in the drawings, in which—

Figure 1 is a front elevation of my improved adding-machine. Fig. 2 is a plan view of Fig. 1 with the top of the casing removed. Fig. 3 is a section on the line 3 3, omitting the register. Fig. 4 is a section on the line 4 4. Fig. 5 is a section on the line 5 5. Fig. 6 is a detail in perspective of the units-disk.

Referring to the said drawings, the letter C designates a suitable casing in bearings B, in which is journaled a longitudinal shaft S, having a ratchet R on one end, and at about the center of this shaft a grooved wheel G is keyed thereon, over which passes an elastic band E, connected to a tension-regulating set-screw T through the rear of the casing. The shaft S is roughened, as shown in Fig. 2, and secured thereto are a number of flexible straps L, preferably of leather, which pass thence over friction-wheels F, mounted on a shaft *f*, supported in uprights U, and are connected at their front ends to keys K, which are pivotally supported at their rear ends on a shaft *k*, mounted in uprights *u*. The keys K are arranged in two banks, that at the left containing four keys numbered from 1 to 4 and working at the left of the center uprights U, and that at the right of this upright containing five keys numbered from 5 to 9. The bottom M of the casing beneath the front ends of these keys inclines toward the right and is provided with a shoulder *m* in front of the central upright, in order that when any one of the keys is depressed it may descend and strike the bottom, its limit of movement being different from that of all the others.

Upon the shaft S, adjacent its ratchet-wheel R, is loosely mounted a units-disk 0, upon

whose periphery is marked the ten digits, and fixed to this disk is a ratchet-wheel *r*, its teeth standing opposite to those of the ratchet-wheel R. A pawl *p*, pivoted to one of the bearings B, engages the ratchet-wheel *r* and prevents a retrograde movement of the disk 0, and a pawl P, carried by the disk 0, engages the ratchet-wheel R. It will thus be seen that when one of the keys K is depressed its strap L is drawn over the pulley F, the shaft S is turned forwardly, and with it the ratchet R, which is fixed upon said shaft S, the disk 0 is turned forwardly through the instrumentality of the pawl P, and as the elastic E returns the shaft S and ratchet R to their normal positions, the pawl *p* prevents a retrograde movement of the ratchet *r* and hence of the disk 0. As the bottom M is inclined properly the keys move through greater or less distances—that is to say, the key *l* moves only sufficiently to turn the disk 0, so that the next higher figure upon its periphery will be presented to view through the hole H in the cover C', Fig. 4, as will be clearly understood. Passing loosely through and hence pivotally mounted in eyes I in the bottom M is a wire W, adapted to be struck and depressed by each key as it is borne down, and the left end of this wire is turned up, as shown at V in Fig. 4, and is adapted to strike the ratchet-wheel *r* and to act as a brake against the same. When the instrument is very rapidly manipulated, the depression of a key might carry the disk by momentum farther than was desired; but just as the key reaches its lowest point the wire W is depressed and the brake V thrown against the ratchet *r*, whereby the impetus is overcome.

A bracket A is pivotally mounted in uprights U' within the casing, and is held in proper position by a screw or pin *a*, and in this bracket is a shaft *s*, which stands in alignment with the main shaft S, but is disconnected therefrom, upon which is mounted one or more disks having the digits upon their peripheries. In the present case I have shown a tens-disk 00 and a hundreds-disk 000, although it will be understood that the bracket A can be replaced by a larger or a smaller one carrying a greater or less number of disks without departing from the principle of my invention. Each of these disks has a gear *g*

with ten teeth, which gear is secured to one side thereof. Mounted in uprights U^2 , adjacent to and forward of the uprights U' , is a shaft s' , upon which is mounted a number of gears G' , corresponding to and engaging the teeth of the gears g , but being wider and therefore projecting longitudinally beyond their teeth, as seen in Fig. 1. Upon the disk 0 is a pin N , so placed that as the exposed digit changes from 9 to 0 the pin N will engage the gear G' and move it for the space of one tooth, thereby moving the disk 00 forward one number. This disk 00 is also provided with a pin n , which operates in a similar manner upon the second gear G' by reason of the fact that this gear, being wider than the gear g , is engaged by said pin, and this engagement turns the disk 000 forward one space between the figures 9 and 0 on the disk 00. It will thus be seen that when the units-disk reaches 9 its next movement increases the number upon the tens-disk by one, and the same may be said of the tens-disk. It will be understood that any number of disks may be arranged within the bracket A , the latter being changed in size to accommodate them; but each must have the pin n , and a gear G' must be provided for each, all arranged in the same manner as shown with reference to the two disks 00 and 000 here illustrated.

I preferably employ friction-springs f' , as shown in Fig. 4, to prevent a too free movement of the gears G .

The process of adding is well known, and its use upon this machine will be readily understood. As the different keys K are depressed different distances the disk 0 is correspondingly turned forwardly, and at each complete revolution of this disk the tens-disk 00 is turned forward one step. By reason of the fact that the pin N on the disk 0 only engages the gear G' during the time it is turning it, and at all other times is entirely free from contact therewith, all the disks above the units can be set by hand at any time. If it is desired to set the machine back for any purpose, this adaptability will be found to be highly advantageous.

Various changes may be made in the de-

tails of my invention without departing from the essential principles thereof.

What is claimed as new is—

1. In an adding-machine, the combination, with the casing having bearings therein, a shaft journaled in one set of bearings and keys pivoted thereon, of a shaft journaled in another set of bearings and having a roughened surface, disks connected to and operated by the rotation of said shaft, substantially as described, a grooved wheel thereon, an elastic connected to said wheel and leading to a tension device carried by the casing, a shaft mounted in another set of uprights, friction-wheels upon said shaft, and flexible straps leading from the keys over said friction-wheels and wound upon and connected to said roughened shaft, the whole operating as set forth.

2. In an adding-machine, the combination, with the main shaft, disks connected to and operated by the rotation thereof, substantially as described, a grooved wheel on said shaft, and an elastic connecting said wheel with the casing, of keys pivotally connected at their inner ends with the casing, and straps leading from said keys and connected to and wound upon said main shaft, the bottom of the casing being inclined beneath the free ends of the keys to permit them to have different degrees of movement, as and for the purpose set forth.

3. In an adding-machine, the combination, with a main shaft, and disks connected to and operated by the rotation thereof, substantially as described, of a pivoted key, a strap leading therefrom and wound upon said main shaft, a wire pivotally mounted in eyes beneath the free end of said key and adapted to be depressed with the key, and a brake connected to said wire and adapted to check the movement of said shaft, as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

ANDREW SLAVIN.

Witnesses:

HENRY TEAL,
FRED PARKER.