A. M. STEPHENSON.

Adding-Machines.
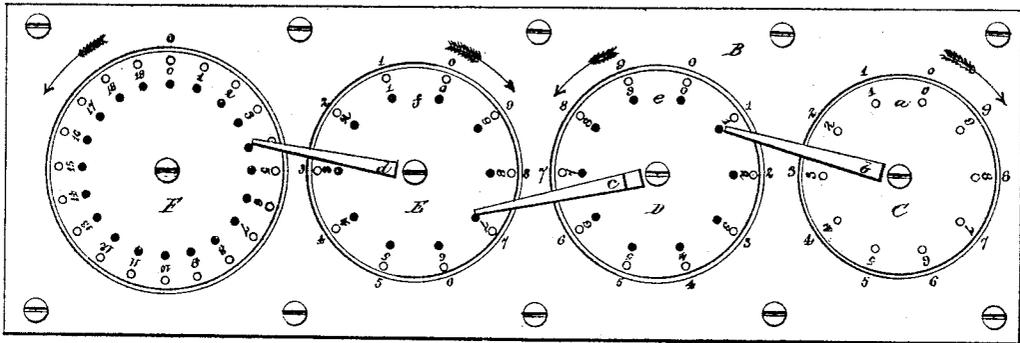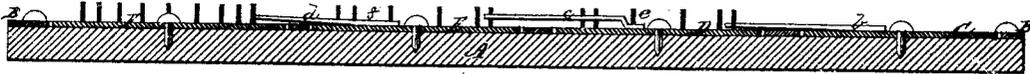
No. 137,107.

Fig.1.

Fig.2.

Witnesses
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UNITED STATES PATENT OFFICE.

ARCHIBALD M. STEPHENSON, OF MANTENO, ILLINOIS.

IMPROVEMENT IN ADDING-MACHINES.

To all whom it may concern:

Be it known that I, ARCHIBALD M. STEPHENSON, of Manteno, Illinois, have invented certain new and useful Improvements in Adding-Machines; and the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is a plan view. Fig. 2 is a vertical longitudinal section in which one arm is shown out of its proper position when set for use for the purpose of showing the form of this arm.

The object of my invention is to construct an adding-machine which will "carry" for the tens, hundreds, &c., automatically.

With adding-machines heretofore in use the person using the same has done the "carrying" mechanically, and hence there is with such machines greater liability to mistakes than with mine.

In the drawing, A represents a piece of wood, to which is secured a plate of metal, B, in which are circular openings to receive the disks C D E F. The wood A is provided with suitable countersinks beneath the disks to permit their free movement, and each disk is so pivoted to A as to move easily. C is the disk for units; D, for tens; E, for hundreds, &c., and the number of disks can be increased, if desired. Upon the plate B, and around each opening designed for a disk, are figures, as follows: 0 1 2 3 4 5 6 7 8 9, and on each disk are the same figures so arranged as to be opposite those on the plate, the figures in both cases being equidistant from each other. The figures on and around the units disk C are arranged from right to left; those on the tens disk from left to right; those on the hundreds disk from right to left, &c., alternating. a are holes in the several disks, into which a metal point may be inserted for the purpose of rotating them. b c d are arms severally secured to the disks C D E. e f are pins securely fastened to the disks D E opposite the figures thereon. The arm c is elevated, as should be each alternate arm, where a greater number of disks than shown are used, so as not to interfere with the arms upon the adjoining disks. The distance between the disks, commencing with the unit disk C, is

slightly decreased, and the arms b, c, and d are correspondingly decreased in length, so as to allow said arms to operate upon the pins of the nearest or next higher disk and escape the pins upon the opposite or next lower disk —that is, the arm d upon the disk E is of sufficient length to engage with the pins upon the disk F, but will not engage with the pins upon the disk E.

In place of the pins e f and the arms b c d, suitable cogs could be provided, a single cog or projection taking the place of each of the arms.

In use the several disks are to be so placed that the cipher on the disks will be opposite the ciphers on the plates surrounding them, when the disks and arms will be in the position shown in Fig. 1.

Suppose 58 and 69 are to be added; first add the units as follows: Place any suitable instrument—say a metal point—in the hole in the units disk C which is opposite the figure 8 on the plate, and turn the disk C around toward the right until such hole and the figure on the disk opposite such hole are brought opposite the cipher on the plate; then insert the point in the hole opposite the figure 9 on the plate, which will be 7, and turn the disk around and backward until such figure 7 is opposite said cipher; while this disk is being turned the arm c will strike one of the pins on D, bringing figure 1 on the disk D opposite the cipher on the plate. This figure 1 and the figure 7 on disk C opposite the cipher indicate the sum of the added units 8 and 9, which is 17. Then proceed in the same manner with the tens 5 and 6, using the tens disk D, when it will be found that 1 on the hundreds disk E, and 2 on the tens disk D, and 7 on the units disk C will severally stand opposite the corresponding ciphers on the plate B, indicating the sum of the added figures, which is 127. Or the device may be used in the following manner: Suppose 437 and 928 are to be added; place the disks so that the ciphers thereon are opposite those on the plate, as before; then place the figure on the units disk which is opposite 7 on the plate opposite the cipher on the plate; proceed in the same way with the tens and hundreds disks for the corresponding figures 3 and 4; then take the

next row of figures, 928, and add first the units, then the tens, then the hundreds. The result will be the same as though all the units were first added, then all the tens, then all the hundreds.

The arrows on Fig. 1 indicate the direction in which the disks are to be revolved.

The process described can be continued at pleasure.

What I claim as new is as follows:

The disks provided with figures, as de-scribed, and placed at a gradually-decreased distance from each other, and provided with arms of a corresponding decreased length, said arms being alternately raised and de-pressed to avoid interference, all arranged substantially as and for the purpose herein specified.

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Witnesses:
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