(No Model.)

T. W. MAXEY.

ADDING MACHINE.

No. 335,374. Patented Feb. 2, 1886.

Fig. 1.

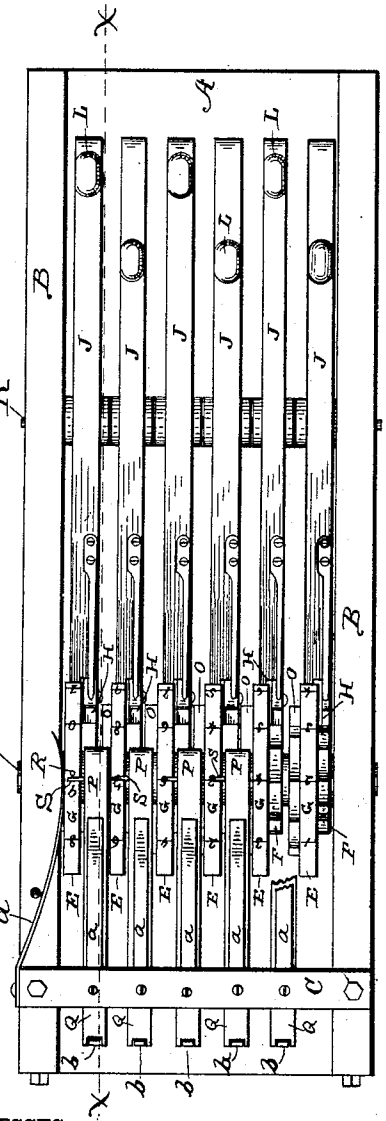
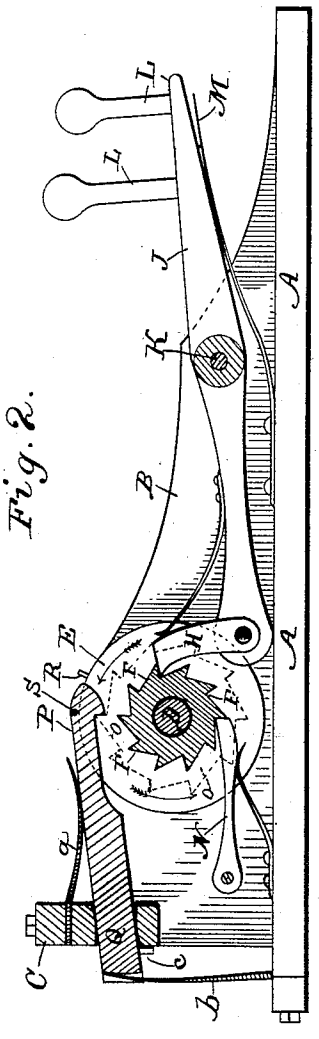


Fig. 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

THOMAS W. MAXEY, OF NEVADA, MISSOURI.

ADDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 335,374, dated February 2, 1886.

Application filed May 12, 1885. Serial No. 165,281. (No model.)

To all whom it may concern:

Be it known that I, THOMAS W. MAXEY, a citizen of the United States, residing at Nevada, in the county of Vernon and State of Missouri, have invented certain new and useful Improvements in Adding-Machines, of which the following is a description.

This invention relates to that class of adding-machines in which a number of wheels are journaled to be revolved on a shaft and provided circumferentially with figures to indicate the amount of an addition; and the object of the invention is to add mechanically the numbers in one or more columns of figures by moving levers representing the columns as many times as there are units in each column.

To this end the invention consists in the construction and combination of parts forming an adding-machine, hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view of my invention. Fig. 2 is a transverse vertical section of the same at the line *x x*.

The frame of the machine consists of a floor, A, two side pieces, B, rigidly fixed thereto, and a cross-piece, C, secured at the top edges of the rear ends of the sides.

D is a shaft fixed in the sides parallel with the bottom.

E represents a series of wheels journaled close against one another upon the shaft. Each wheel is provided with figures on its circumference G, numbering from 0 to 9, the 0 being the right-hand figure in 10, 20, &c., and each wheel is provided with ten ratchet-teeth, F, equally spaced around a portion of the wheel smaller than the figured portion G, the ratchet-teeth and the figures exactly corresponding with each other in a fixed relation. These teeth are engaged by spring-pawls H, mounted on finger-levers J, which are pivoted midway upon a shaft, K, which is fixed in the sides parallel with shaft D, one lever and pawl to each wheel. The finger ends L of the levers are pressed upward by springs M, so that the pawl ends of the levers rest normally on the bottom A. The finger ends L may be knobs of any form to suit the judgment or fancy, to serve as convenient projections upon which to place the operator's fingers to use the machine.

In order that more room may be given for the operation of each knob, I make one half of the levers a little shorter than the other half, the long and short ones alternating on the shaft K. The extreme amount of motion which it is possible to give to each lever is just enough to move the wheel which its pawl engages just one tooth, or one-tenth part of a circle. The motion of the levers is limited by their two ends striking upon the bottom A at each end of the sweep, the levers being adjusted when the machine is made to accomplish this result. The finger-knobs L are high enough to permit the finger of the operator to push each lever completely down to the bottom without coming in contact with the adjacent levers. The knobs thus raised above the levers form an essential feature of my invention.

N is a spring-detent pivoted to the frame to engage the teeth F of the first or units wheel E, to prevent the latter from being drawn back by the return motion of the pawl H. Each of the other wheels representing in the order of columns of figures tens, hundreds, thousands, &c., is provided with two circles of ratchet-teeth, F and O, one upon each face of the wheel, the circle of teeth F being smaller in diameter than the circle O.

P represents the carrier-hook placed between the faces of the wheels E, to engage the teeth O, and provided with a shank, Q, extending through a slot provided for it in the cross-piece C. By this means the hook is guided to move in a tangent direction relative to the wheel.

R is a pin projecting radially from each wheel, and S is a pin projecting from the side of the carrier across the path of pin R, to be engaged thereby at each revolution. The projecting length of the pin R is adjusted to move the carrier far enough to carry the tens-wheel one tooth by a movement of the units-wheel one tooth. Then the pin R escapes from the pin S. The location of the pin R on the circumference of the units-wheel is such that it performs the office of carrying at the time when the 0 figure on the units-wheel arrives at the reading-point. This reading-point may be a line established arbitrarily parallel with the shaft at any point in the circumference of the wheels. Suppose it to be in front of the car-

rier-pins S. In preparing to use the machine, bring the 0 figure of each wheel to the reading-line. Suppose we have a series of numbers to add in which 5, 3, 6, and 7 stand in the units-column. We proceed to operate the first finger-lever five times, three times, six times, and seven times. At the end we find 1 in the units-column and 2 in the tens, showing twenty-one to be the sum of the addition. At the tenth movement the carrier was operated and 1 appeared in the tens-column, and at the twentieth movement 2 appeared in the tens-column. Now, to this we may proceed to add the tens of the column to be added by operating the tens-lever, and so on until all the figures are added, when the whole sum will appear before the eye at the reading-line. The operator may, if he chooses, add three or four columns at a single operation by operating each lever to correspond with the figure set in the column indicated thereby, then, at any point where he may stop adding, the reading-line will show the amount thus far added up.

a a are springs pressing the carrier-hooks into engagement with their respective ratchet-wheels.

b b are springs which quickly return each carrier after it has done a service.

c represents a stop pin or screw in the carrier-shank serving as a shoulder to abut against the cross-piece to stop the carrier at a fixed point at each return movement.

d is a spring acting against the end of the wheels to hold them by friction from being thrown too far in operation. The first wheel may be exactly like all the rest; but the carrier-teeth O on it would be useless.

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

1. The combination of an adding-machine frame having sides and a cross-piece with holes in it, a shaft fixed therein, a series of wheels journaled on the shaft, each wheel divided on its circumference into ten equal spaces and marked with figures, and provided with a ten-toothed ratchet-wheel on each face, a series of finger-levers each pivoted midway in the frame opposite to one of the wheels, a spring for returning each finger-lever, a spring-pawl on each lever fitted to engage one of the two sets of ratchet-teeth on the corresponding wheel, a carrying-hook hung between each two adjacent wheels to engage the other of the two sets of ratchet-teeth referred to, and provided with a shank fitted to slide in one of the said holes in the cross-piece of the frame, a radial pin projecting from the rim of each wheel, a pin projecting from the side of the carrier-hook in the path of said radial pin, a spring to force the carrier-hook into engagement, and a spring to return the carrier-hook, substantially as shown and described.

2. The combination, with two wheels journaled on the same shaft, the one wheel provided with a pin projecting radially from its circumference and the other provided with a series of ratchet-teeth, of a carrier-hook hung between the two wheels to engage the said ratchet-teeth, and provided with a pin on one side crossing the path of the said radial pin, a shank for the said hook extending from the wheel in a tangent direction, a free bearing in the frame for said shank, and a spring acting against the end of the hook to return it, substantially as shown and described.

THOMAS W. MAXEY.

Witnesses:
W. H. SCHROEDER,
W. F. GORDON.