No. 99,226. PATENTED JAN. 25, 1870.

H. PARMELEE.

ADDING MACHINE.

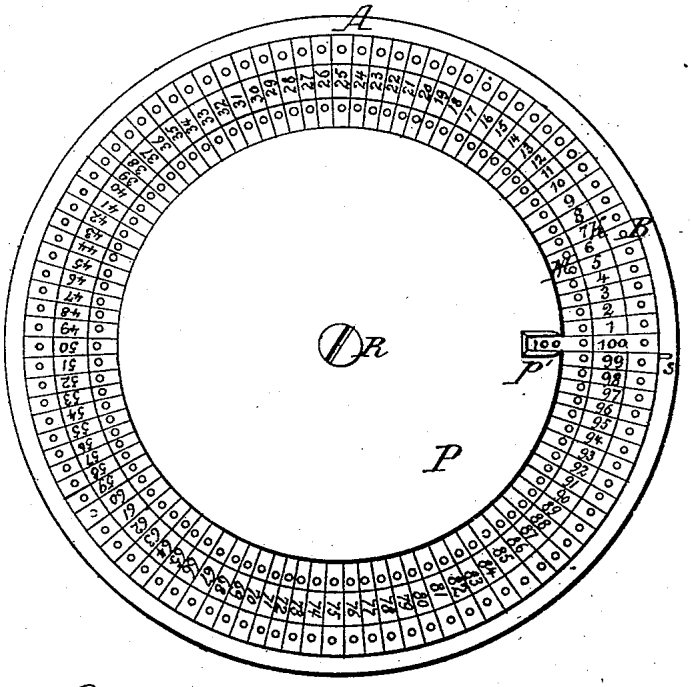


Fig. 2.

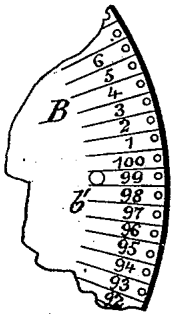


Fig. 3.

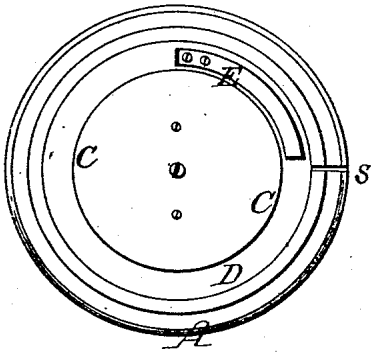


Fig. 4.

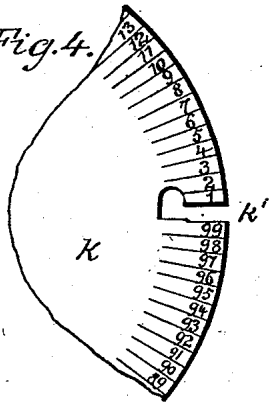
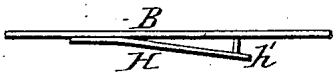


Fig. 5.



Witnesses.

Edw^d Braun.

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Inventor.

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HOMER PARMELEE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO EDWARD D. PECK, OF SAME PLACE.

Letters Patent No. 99,226, *dated January* 25, 1870.

IMPROVEMENT IN ADDING-MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, HOMER PARMELEE, of Philadelphia, Pennsylvania, have invented a new and improved "Adding and Subtracting-Machine;" and I do hereby declare the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and the letters of reference marked thereon.

The nature of my invention consists in the arrangement of the dial-plate and numeral-plates in concentric circles, one within the other, so that each interior numeral-plate can be operated independently of the exterior plate, thus adding two or more columns of figures, according to the number of dials employed; also, in the device for moving the interior dials by the motion of the exterior ones.

To enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation.

Figure 1 is a plan of the machine.

Figure 2 is a portion of the numeral-plate.

Figure 3 is a plan of the base-plate.

Figure 4 is a portion of the dial-plate.

Figure 5 is an edge view of the numeral-plate.

A is the circular base-plate to which the works are secured.

B is the first numeral-plate, having near its edge the numbers 1 to 100, as shown in fig. 2, set out at regular distances. Between these numbers and the edge is a circle of pin-holes, one for each number, by which the wheel is turned.

This wheel has a large hole in its centre, which fits upon the pin C of the base-plate, and around which pin it turns.

A groove, D, is cut in the base-plate, into which is fastened a spring, E, the end of which presses against the under side of the numeral-plate B.

This plate B has likewise a similar spring, H, on its under side, working in the same groove. (See fig. 5.)

Immediately upon this plate B, and concentric with it, is placed the dial-plate K. (See fig. 4.) It has upon its edge a series of numerals from 1 to 99. At the place for the figure 100, the plate is notched out, as shown at *k'* in fig. 4. This wheel does not turn.

Upon this dial-plate is another numeral-plate, M, similar to B, and turning concentric with the others, upon a centre-pin.

P is a wooden cap, held down by screw R. It is notched at *p'*, to expose only one number at once upon the plate M.

The machine is operated in this way:

The two dial-plates are set so that the numbers 100 come opposite each other, as in fig. 1. Then, suppose the first number in the column to be added is 20, the pin is inserted in the hole of the wheel B, opposite to 20 on the dial K. The wheel is then turned till the pin comes in contact with the stop S. Suppose four more twenties are added, this will make one hundred. At this intant the numeral-plate M turns to figure 1, and the amount reads 100.

The motion is communicated from B to M in this way:

As B turns on its axis, the spring H passes over the spring E, at which time the pin *h'* is pressed up through hole *b'* into contact with the plate K, in consequence of spring E being stronger than spring H, so that as soon as the pin arrives opposite the notch *k'*, it rises through it and enters a pin-hole in plate M, and carries the plate M along with it one point, at which time the spring H slips off the end of spring E, and the plate M remains stationary till B has made another revolution, when the same operation is repeated.

When the first column of one or two figures has been added up, the second column to the left hand may then be added up by moving the wheel M instead of wheel B.

More numeral-wheels may be placed inside of wheel M, and operated in the same manner; in which case three or more columns may be added up, according to the number of numeral-wheels, a result hitherto unattainable in such a small compass.

To do subtraction, employ the interior wheel M of the combination, which set with the top number at the notch *p'*. Then, with the pin in the hole opposite notch *p'*, turn the wheel till the pin is opposite the number to be subtracted, and the result is shown at the notch *p'*. This wheel is free to move in either direction, a result unattainable in other machines.

I am aware that other machines have been made with the dials and numeral-wheels arranged in concentric circles, but operating in a different manner.

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

1. The mode of operating the interior wheel M from the exterior one B, by means of the pin *h'*, projected through the pin-holes by the operation of the springs H and E, acting in conjunction in the manner described.

2. The combination of the circular numeral-wheel B with the interior stationary dial-plate K, one or more interior numeral-plates, M, and springs H E, which, together with pin *h'*, operate the several plates, so as to turn in the same direction, and also add up two or more columns of figures, as described.

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Witnesses:

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