# C. C. & J. B. MOORE.
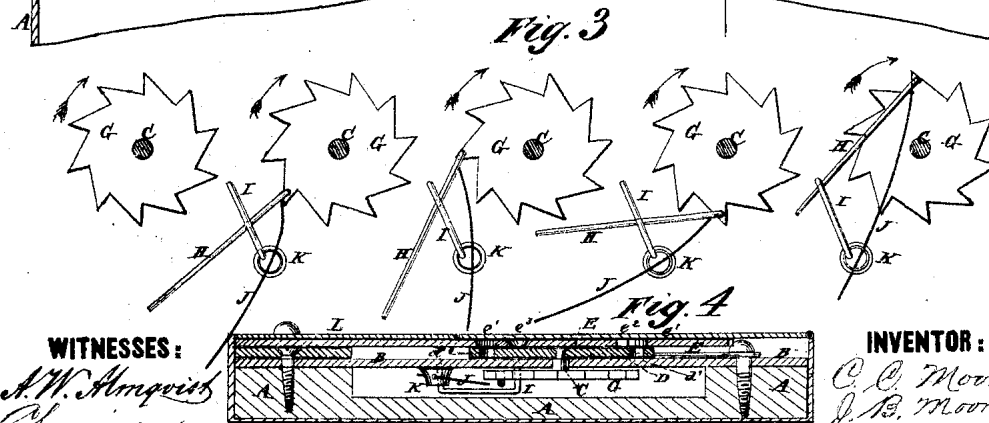## Adding Machines.

No. 152,670.

Patented June 30, 1874.



*Fig. 1*

10000    1000    100    10    1

*Fig. 2*

*Fig. 3*

*Fig. 4*

*Fig. 5*

WITNESSES:

A. W. Almquist
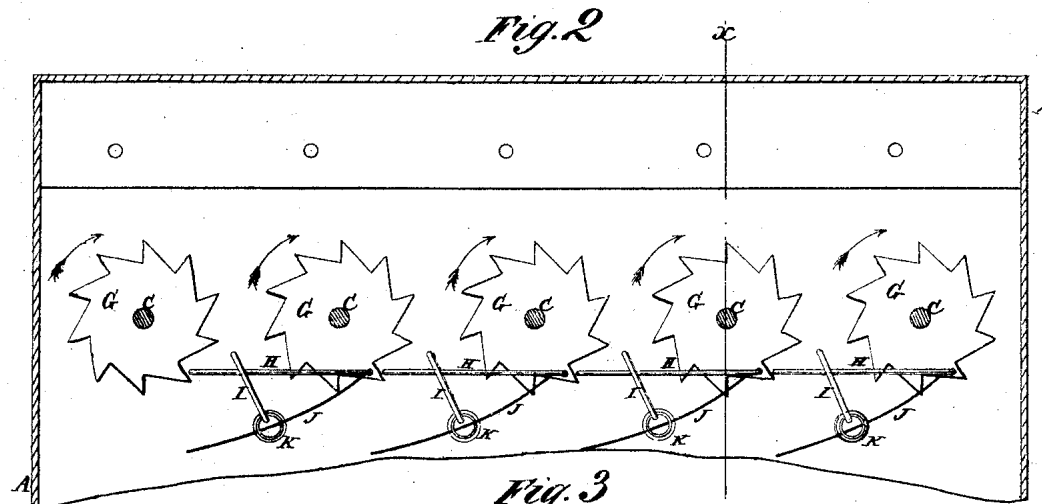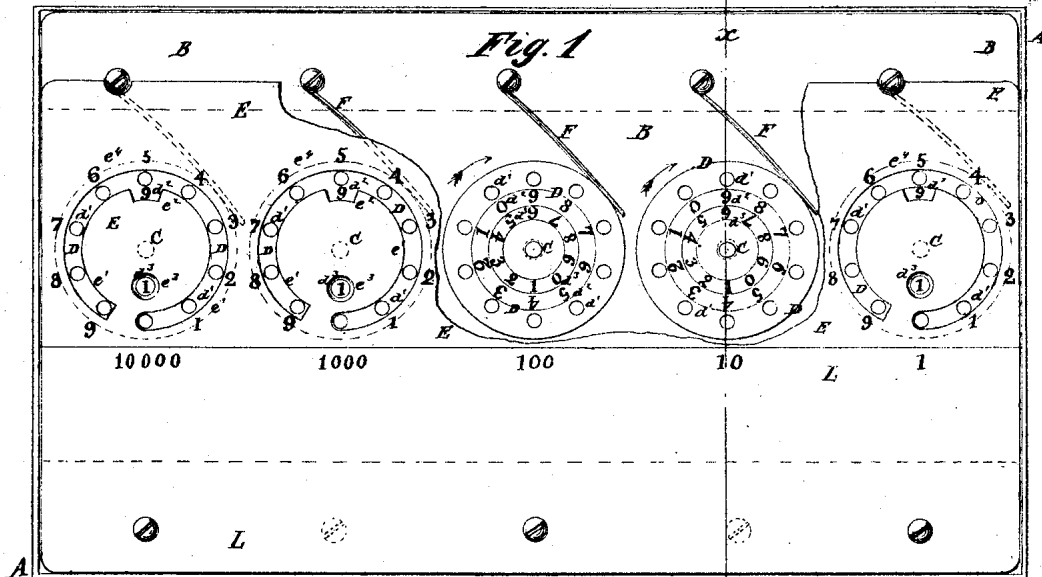
Sedgwick

INVENTOR:

C. C. Moore
J. B. Moore

BY

ATTORNEYS.

# UNITED STATES PATENT OFFICE.

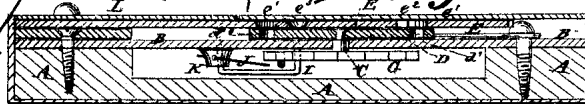## CHARLES C. MOORE AND JACOB B. MOORE, OF NEW YORK, N. Y.

## IMPROVEMENT IN ADDING-MACHINES.

*To all whom it may concern:*

Be it known that we, CHARLES C. MOORE and JACOB B. MOORE, of the city, county, and State of New York, have invented a new and useful Improvement in Adding-Machine, of which the following is a specification:

Figure 1 is a front view of our improved machine, part of the face-plate being broken away to show the counting-wheels. Fig. 2 is the same view as Fig. 1, with the face-plate, the counting-wheels, and the main plate removed, and showing the ratchet-wheels in the position which they have when the counting-wheels all stand upon the 9-point. Fig. 3 is the same view as Fig. 2, but showing the carrying device in various positions. Fig. 4 is a cross-section taken through the line $x$ $x$, Figs. 1 and 2. Fig. 5 is a side view of a tool for working the machine.

Similar letters of reference indicate corresponding parts.

Our invention has for its object to furnish an improved adding-machine, which shall be so constructed as to carry accurately whatever number of wheels be used, bringing each wheel exactly to the required point and leaving it there, and which shall have no lost motion from the imperfection of gearing-teeth. The invention consists in the push-rods, the keepers, the guide-rods, and the loose sleeves, in combination with the ratchet-wheels of the counting-wheels for transmitting motion from one of said wheels to another in carrying.

A represents the box or base-frame of the machine, which is made with a cavity in its forward part to receive the ratchet-wheels and the carrying devices. To the plate or frame A is secured the main plate B, in bearings, in which works a row of short shafts, C, to the forward ends of which are attached the counting wheels or disks D, in which, near the circumference, is formed a circle of ten holes, $d^1$, to receive the point of an instrument for turning said wheels D. In the faces of the wheels D, just within the circle of holes $d^1$, and concentric therewith, is formed a circle, $d^2$, of numbers, consisting of the nine digits and the cipher, also placed equally distant from each other, and in the same radiuses with the holes $d^1$. Upon the faces of the wheels D, with-

in the circle of numbers $d^2$, concentric therewith, and upon the same radiuses, is formed a second circle, $d^3$, of numbers, consisting of the nine digits and the cipher, and so arranged that each number of the inner circle may be the complement of the number of the outer circle $d^2$ of numbers upon the other side of the centers of said wheels. In the face-plate E, that covers the counting-wheels D, are formed circular slots $e^1$, directly over the circle of holes $d^1$ of the said wheels D, the ends of which do not quite meet, a neck being left equal in width to, or a little less than, the distance between the consecutive holes in the circle of holes $d^1$. In the upper edge of the disk formed by the slot $e^1$ is formed a notch, $e^2$, of such a size as to allow one number, and only one, of the circle of numbers $d^2$ to be seen. Upon the opposite side of the centers of the wheels D, and in the same diameter with the notch $e^2$, is formed a hole, $e^3$, of such a size and in such a position as to allow one of the numbers of the inner circle of numbers $d^3$ to be seen. By this arrangement the numbers seen through the notch $e^2$ and the hole $e^3$ will always be the complements of each other, so that the number seen through the hole $e^3$ will always indicate through the space of how many holes the wheels D will have to be turned to bring the wheels to the 0-point. The neck of the disk formed by the curved slot $e^2$ serves as a stop to the instrument, by which the wheel D is turned, and should be in such a position that when the instrument is stopped its point may be in line with the notch $e^2$, hole $e^3$, and the center of the wheel D. Upon the plate E, around the outer edge of the slot $e^1$, and equally distant apart, except the first and last, are placed the nine digits $e^4$, beginning at the stop and passing around to the left, the wheel D being turned to the right in counting.

In using the machine, the instrument is inserted in the hole of the wheel D, opposite the digit of the scale $e^4$ that represents the number to be added, and is moved around to the right until it strikes the stop. The units, tens, hundreds, &c., are added by turning the proper wheels. In turning either of the wheels D, as each ten of the column of figures being

added is reached, the next wheel is turned one space, the carrying being thus done automatically.

The wheels D are kept from being jarred out of place, or accidentally turned forward or back, by springs F, attached to the plate B, and which rest against the edges of said wheels with sufficient force to give steadiness to their movements, and to prevent them from being accidentally jarred or moved out of their places. To the other end of the shaft C, upon the under side of the main plate B, are attached ratchet-wheels G, to a tooth of each of which is pivoted a push-rod, H, of such a length and in such a position that when the figure 9 of the scale $d^2$ shows through the notch $e^2$, the forward end of the said push-rod may rest against a tooth of the next ratchet-wheel, ready to move it one tooth when the first ratchet-wheel is again moved. The push-rod H passes through a long keeper, I, attached in an inclined position to the plate B. To the push-rods H, at or near their pivoted ends, are attached the ends of the guide-rods J, which are curved so as to pass farther and farther away from the said push-rods H. The guide-rods J pass through eyelets or tubular sleeves K, placed upon the lower arm of the keepers I, as shown in Figs. 2 and 3, which gives it a play of half its cavity upon the said arm.

By this construction, as soon as a push-rod H has pushed the next ratchet-wheel G through the space of one tooth, it drops away from said wheel, and as its own ratchet-wheel continues to move forward the keeper I, guide-rod J, and sleeve K so control and guide its movements as to keep it away from the teeth of the next ratchet-wheel until it is time for it

again to operate said next wheel, when it moves forward, moves the said wheel one tooth, and again drops away. It will be observed that when the figure 9 of the scales $d^2$ of all the wheels D show through the notches $e^2$ all the push-bars H are in line, as shown in Fig. 2, so that a movement of the first wheel one space will move all the wheels one space. The figures of the inner scale of digits, seen through the hole $e^3$, are simply used for bringing all the wheels D to the 0-point to adjust the machine for beginning a calculation, and to tell in what hole $d^1$ to place the instrument to bring the wheel to said point. L is a plate having a blackboard or · slate surface, and which is combined with the counting mechanism for convenience in writing down the numbers to be added, the results, and other desired memorandums. Any desired number of wheels may be used, and each ratchet-wheel, except the last, should be provided with a carrying device, and the result is read from the figures seen through the notches $e^2$ in their consecutive order.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

The push-rods H, keepers I, guide-rods J, and loose sleeves K in combination with the ratchet-wheels G of the counting-wheels D, for transmitting motion from one of said wheels to another in carrying, substantially as herein shown and described.

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JACOB B. MOORE.

Witnesses:
   JAMES T. GRAHAM,
   T. B. MOSHER.