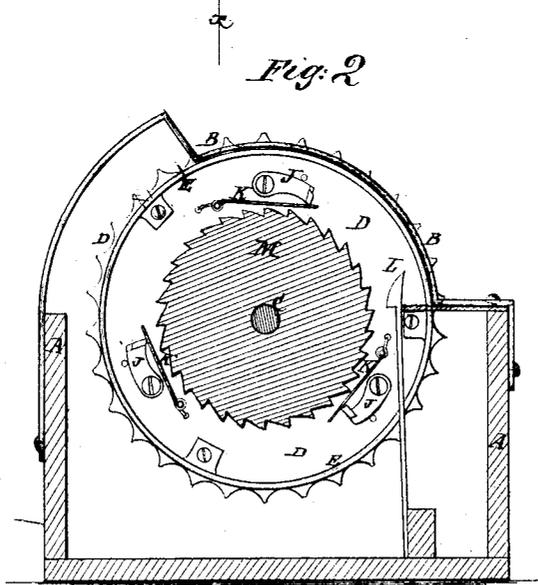
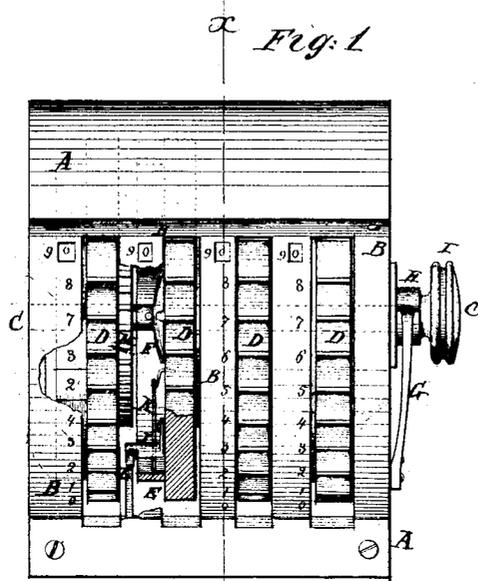


G. W. CHAPIN.
Adding Machine.

No. 106,999.

Patented Sept. 6, 1870.



Witnesses:
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United States Patent Office.

GILBERT W. CHAPIN, OF BROOKLYN, NEW YORK.

Letters Patent No. 106,999, dated September 6, 1870.

IMPROVEMENT IN ADDING-MACHINES.

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, GILBERT W. CHAPIN, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Adding-Machine; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

Figure 1 is a top view of my improved machine.

Figure 2 is a vertical section of the same, taken through the line *x x*, fig. 1.

Figure 3 is a detail side view of one of the spring washers.

Similar letters of reference indicate corresponding parts.

My invention has for its object to furnish an improved adding-machine, simple in construction, easily, conveniently, and rapidly operated, and accurate in operation; and

It consists in the construction and combination of the various parts of the machine, as hereinafter more fully described.

A is the box, case, or frame of the machine, the upper side of which is made curved or semicylindrical in form.

The forward part of the curved top of the box or case A is cut away, as shown in figs. 1 and 2, said part thus left uncovered being covered by a slotted plate, B, as many slots being formed as there are to be wheels in the machine.

C is a shaft, extending longitudinally through the machine, and the journals of which revolve in bearings in the end-plates of the box A.

Upon the shaft C, within the box A, are placed two or more wheels, D, the faces of which are scalloped with ten or any convenient multiple of ten scallops, to enable the wheels to be conveniently turned with the finger. The scalloped face or part of the face of the wheels D project through the slots of the plate or casing B, as shown in figs. 1 and 2, for convenience in operating them.

Upon the plain part E of the face, of the wheels D, or upon bands connected with the sides of the said wheels D, are placed the numerals 0 1 2 3 4 5 6 7 8 9, in their regular order, and repeated as many times as there are ten scallops upon the face of the wheels D.

The slots in the plate B are made of such a length as to allow ten scallops of the wheels D to project through them, and upon the strips of said plate, between the slots, are placed the numerals 0 1 2 3 4 5 6 7 8 9, a number being opposite each scallop. In the strips of the plate B, opposite the 9 of the series

of numerals, is formed a hole, through which the numbers upon the wheels D E may be read. The wheels D E are placed loosely upon the shaft C, so that the said wheels may be turned without turning the said shaft.

Upon the shaft C, at each side of each of the wheels D E, are placed spring washers, F, which are secured to the shaft C by pins, nuts, or other convenient means, or by making the shaft C and the holes through the spring washers F square, so that the said washers may always move with the said shaft. In case the shaft C is made square, the wheels should be placed and should revolve upon hubs having square holes formed through them, to fit upon the said shaft. The spring washers F should press against the sides of the wheels D E with such force that they will carry the wheels D E with them when the shaft is turned.

The spring washers F, I prefer to make convex upon their outer sides, concave upon their inner sides, and slitted or slotted radially, as shown in figs. 1 and 3.

The wheels D E are kept from carrying the shaft C with them when they are turned in operating the machine by a spring pawl, G, attached to the side of the box A, and which takes hold of the teeth of the ratchet-wheel H, attached to the projecting end of the shaft C.

The shaft C is revolved, when desired, by the knob or handle I, attached to its projecting end.

J are pawls, pivoted to the sides of the wheels D E, as many of said pawls being used as there are tens in the number of scallops formed in the faces of the wheels D, which pawls are held up by springs, K, attached to the side of the said wheels.

L are stationary inclines or pawls, connected with the box or case A, or other support, in such positions that the pawls J of each wheel may strike against the said inclines L, and be forced into contact with the teeth of the small ratchet-wheels M, formed upon the adjacent sides of the contiguous wheels D, just as the 9-mark of the wheel being operated leaves the opening in the strips of the plate B, so as to carry the next wheel forward one space or number, and thus "carry the tens."

When the operation is finished, and it is desired to set the machine for another operation, the shaft C is turned back by means of the knob or handle I. The said shaft, when turned back, carries all the wheels D E with it, until the wheels are stopped, one at a time, by the spring pawls J, striking against the shoulder of the stationary inclines or pawls L, so that, by a slight revolution of the shaft C, the wheels D E are in an

instant all brought into such a position that the zero-marks of all the wheels will show through the holes in the strips of the slotted plate B.

Having thus described my invention,

I claim as new and desire to secure by Letters Patent—

The loose scalloped finger-wheels D E, notched as set forth, and a shaft, C, having spring washers F fastened to the same, combined with a ratchet-

wheel, H, pawls G J, and spring cam L, all relatively arranged, as and for the purpose described.

The above specification of my invention signed by me this 13th day of April, 1870.

GILBERT W. CHAPIN.

Witnesses:

GEO. W. MABEE,

JAMES T. GRAHAM.