S. POOL.

Adding Machines.

No. 143,184. Patented September 23, 1873.

Fig. 1.

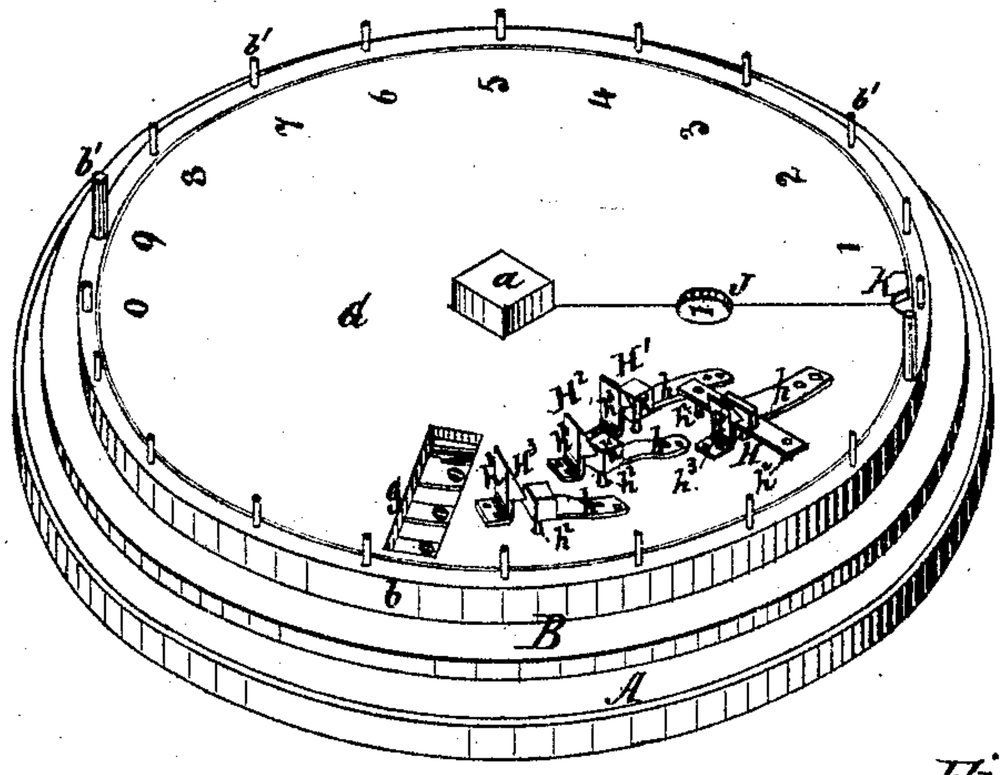


Fig. 2.

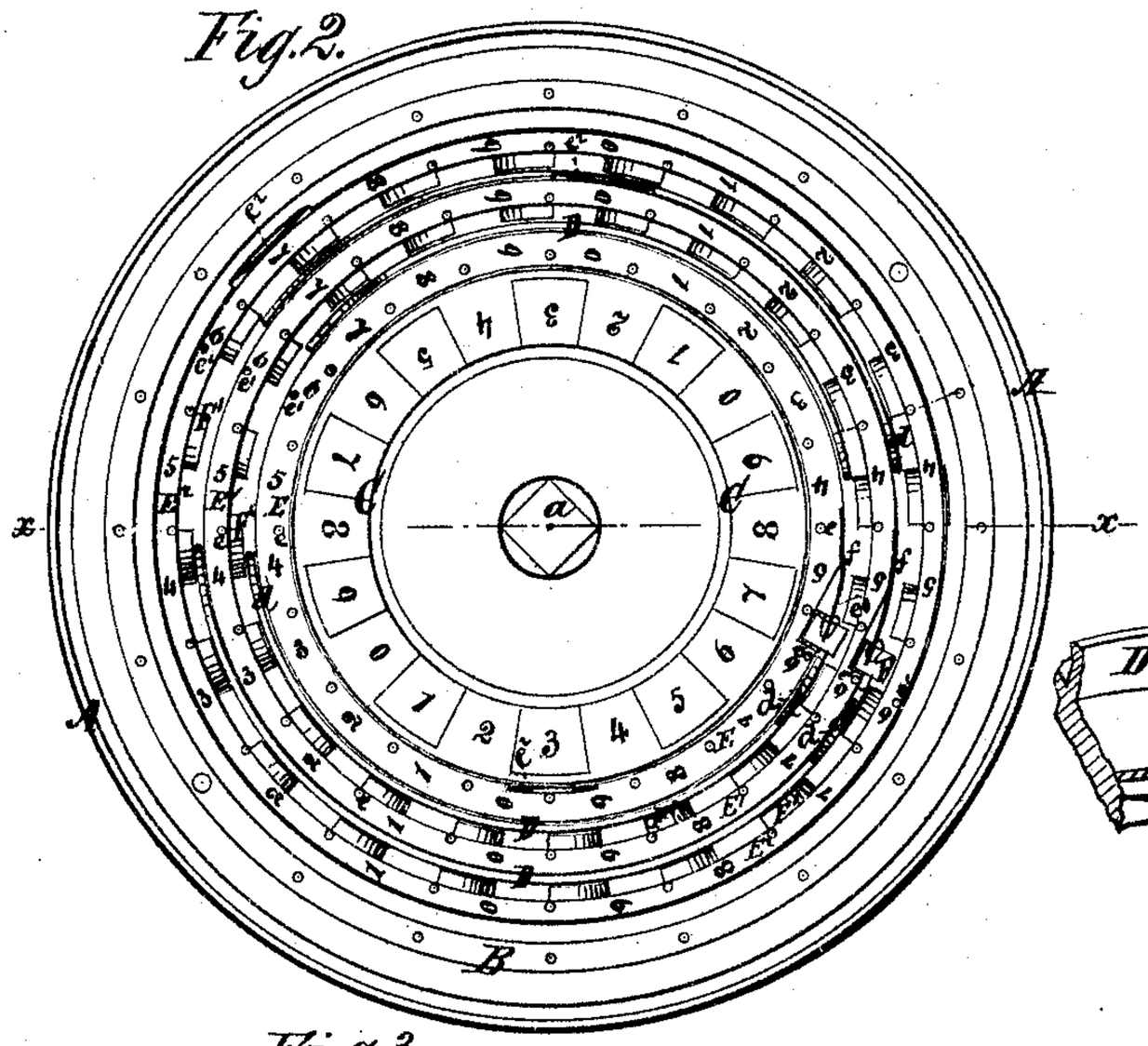


Fig. 3.

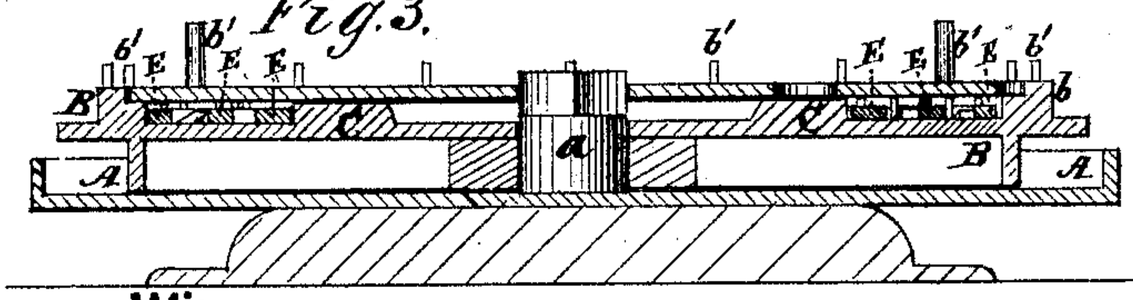


Fig. 4.

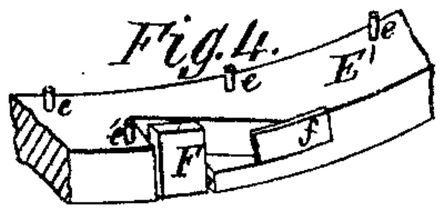


Fig. 5.

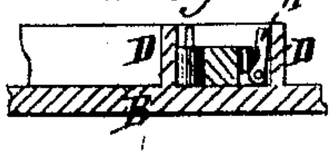
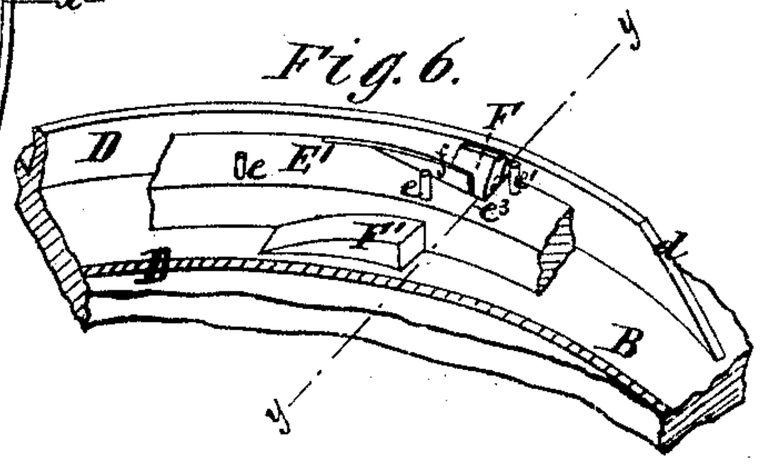


Fig. 6.



Witnesses:

G. Mattys

Solon C. Kemon

Inventor:

Solomon Pool

Per Munn & Co

Attorneys.

AM. PHOTO-LITHOGRAPHIC Co. N.Y. (OSBORNE'S PROCESS)

UNITED STATES PATENT OFFICE

SOLOMON POOL, OF CHAPEL HILL, NORTH CAROLINA.

IMPROVEMENT IN ADDING-MACHINES.

Specification forming part of Letters Patent No. **143,184**, dated September 23, 1873; application filed June 13, 1873.

To all whom it may concern:

Be it known that I, SOLOMON POOL, of Chapel Hill, in the county of Orange and State of North Carolina, have invented a new and Improved Adding-Machine; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1 is a perspective view. Fig. 2 is a plan view with the cover-plate removed. Fig. 3 is a vertical central section. Fig. 4 is a detail view of portion of ring E^1. Fig. 5 is a cross-section in line *y y* of Fig. 6. Fig. 6 represents, in perspective, a portion of revolving plate B, flanges D, and ring E^1.

The invention relates to adding-machines; and consists in certain improvements, which will be first fully described and then clearly pointed out in the claims.

In the drawings, A represents the base of a machine having the vertical center-pin *a*, and B a plate revolving on said base and around said pin. This plate has a vertical flange, *b*, on which are located vertical pins *b′*, ten in number, or any multiple thereof. I use in this exemplification of my invention twenty of these pins, ten on each half circle or section, of which two opposite ones are made larger than the rest, for the purpose of convenient manipulation. C is a circular ring fixed on the inside of plate B, concentric with flange *b*, and having a distinctly marked space opposite to each pin *b′*. The spaces opposite to the two large pins are marked 0, while to the right therefrom the spaces are marked successively with numerals, regularly increasing by one unit. The odd and even numbers are distinguished, respectively, by black and white colors. Between the flange *b* and ring C are made fast the pairs of arc-flanges D D, whose edges are inclined at *d d*, and are separated by a small intervening space. E E^1 E^2 are a series of loose rings, separated from one another by the flanges D, having vertical pins *e* near the inner edges, and having two diametrically-placed pins, e^1 e^1, on the outer edges. These rings E are securely held in their relative positions on the revolving plate B by lateral frictional springs e^2. Each of the rings, except the outermost, is provided with a side recess, c^3, in which is placed a loose block or pawl, F, hollowed out on one side, and held flat down by a spring, *f*, which is kept in this hollow until the ring is held, and the movable incline on arc-flange D is made to raise it. F′ are ratchet-teeth on the rings E^1 E^2, against which said blocks bear to carry the rings. This allows the ring-plate B to turn in either direction at will. As the addition of units, tens, or hundreds is made, the last figure will be exhibited through hole J, thus detecting any mistake as the work proceeds. After the addition has taken place, and it is desired to make the result appear through the slot *g*, the locking device, whether it be tens, units, or hundreds, is thrown down, so that all the rings are locked to rotary plate B, when the latter is turned until one of its large pins *b′* is opposite the notch K. G is a cap-plate, which has a square hole to fit on an end of center-pin *a* that is end-squared, to prevent the former from turning, and to compel it to remain stationary with the base and center-pin. *g* is a long radial slot in the cap-plate G, which extends across and over all of the notated rings E E^1 E^2, to enable the operator to see that all the rings have been brought to zero before the addition is commenced. H H^1 H^2 H^3 are a series of ring-holders, consisting of an elastic arm, *h*, head h^1, subjacent pin h^2, and spring-catch h^3. The holder H has three pins, h^2, while each of the others has but one. J is a hole, under which passes the face of the ring C as plate B is rotated. K is a notch, from which a line is drawn to the center-pin *a* through the diameter of this hole, while to the right of this line, and at intervals equal to the distance between pins *b′ b′*, are placed numerals from 1 to 0.

The operation is as follows: The first thing to be done is to cause the counting-rings E E^1 E^2 to register at 0 or zero, in transverse line under the slot *g* of cap-plate. In order to accomplish this, the holder H is pressed down and locked, while the operator takes hold of one of the large flange-pins *b′*, and rotates the plate B. Each notated ring E E^1 E^2 will then continue to move with plate B until a pin, e^1, comes against a pin, h^2, on holder H, when all will cease to revolve with plate B. The holder H is now unlocked, and leaves the counting-

rings held to the plate A by the friction-springs c^2. I may now add from right to left, or vice versa, or commence with the tens, and then take either the units or hundreds. In order to begin with the units, I press down the holder H^1, whose pin h^2 comes against one of the pins e on unit-ring E, and causes that ring to remain stationary with the cap and base plates G A, while the rings E^1 E^2 move with the rotary plate B. I then take the first figure in column to be added, and find the corresponding numeral on the edge of cap-plate, to the right of notch K. This numeral is brought opposite to said notch, and this is done successively with each unit in the column until they are exhausted. At every addition of ten the pawl F catches in a ratchet-tooth, F′, and carries forward ring E^1 (which is the ring of tens) a space that is allotted to each numeral. The units being all added, the holder H^1 is released and the holder H^2 locked to the ring of tens. The same operation takes place with tens and hundreds; and a ring for thousands, or rings for any number which represents a power of ten, may be employed. As soon as a person becomes familiar with the use of the machine, columns containing any number of figures may be added with great rapidity and unerring accuracy.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The loose rotary rings E E^1 E^2, each having a pin, e, combined with holder H, having the three pins h^2 h^2 h^2, to cause the rings to be brought to the 0 or zero, in the manner described.

2. The rotary plate B b b', counting-plates E E^1 E^2, held thereto by friction, and having pawl, ratchet, and pins e, stationary top notated cap-plate G g, having notch K, and holders H^1 H^2 H^3, all combined to enable columns of figures to be counted, in the manner described.

3. The ring C, fixed to a rotary plate, B, and having numerals placed at intervals to correspond to the distance between pins b', combined with a stationary cap-plate, G, having the hole J placed in the radial line from notch K to the center-pin a, to enable the counter to verify each addition.

4. The arrangement of the odd and even numerals on ring C upon different colors, to enable the eye to detect at a glance any mistake of the hand in bringing forward a figure from either side of the right one.

5. The loose block-pawls F, held by springs f in recesses of the rings E, combined with the end inclined arc-flanges D and teeth F′, to allow the plate B to revolve in either direction, at the times and in the manner set forth.

SOLOMON POOL.

Witnesses:

JAMES B. MASON,

JOHN WHITE.