

I. G. HUBBS.
MACHINE FOR ADDING NUMBERS.

No. 15,565.

Patented Aug. 19, 1856.

Fig 1.

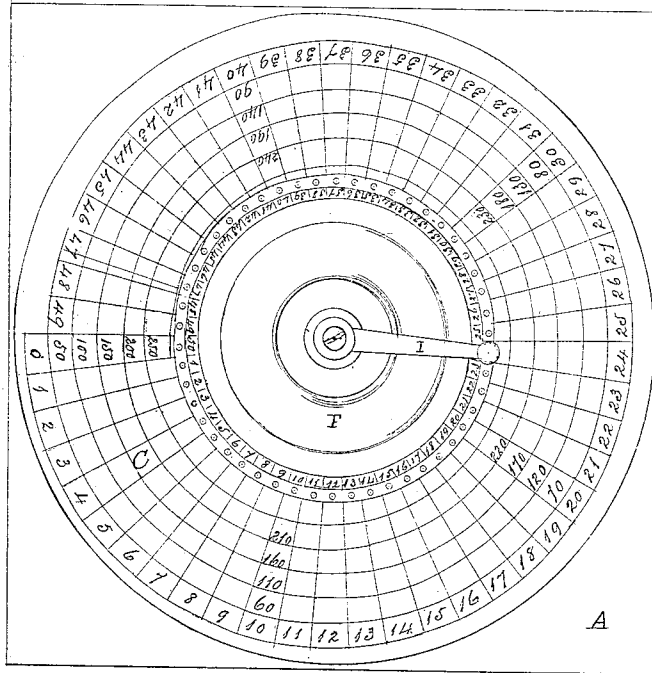


Fig 2

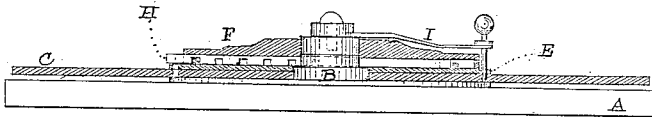


Fig 3

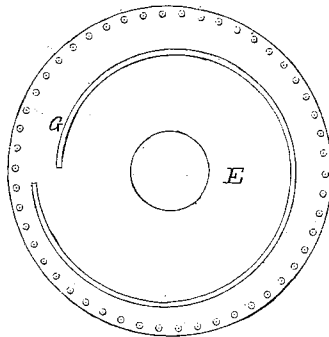


Fig 4



Witnesses
M. Haskell
Francis S. Low

I. G. Hubbs

UNITED STATES PATENT OFFICE.

ISAAC G. HUBBS, OF NEW YORK, N. Y.

MACHINE FOR ADDING NUMBERS.

Specification of Letters Patent No. 15,565, dated August 19, 1856.

To all whom it may concern:

Be it known that I, ISAAC G. HUBBS, of the city, county, and State of New York, have invented an Improved Machine for the Summation of Numbers, which I term "Hubbs' Adder;" and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawing and to the letters of reference marked thereon.

The nature of my invention relates to an improved manner of operating the index and dial of a machine for adding numbers, and to returning the index to the zero indicator after the machine has been operated.

Figure 1 in the accompanying drawings is a top view of the machine with a portion of the numbers left out for clearness. Fig. 2 is a transverse section of the same. Fig. 3 is a plan of the metallic disk E detached and Fig. 4 is a side view of the index detached.

A is a table or bed piece of wood upon which the machine is supported; B, a metallic plate—secured to the table A—with a hub in the center of its upper to form a pivot; C, the dial, formed of a disk of firm paste or binder's board or other convenient material, perforated at its center to fit and revolve upon the pivot of the plate B; E, a metallic disk securely attached to the upper face of the dial C, concentric and revolving with it upon the pivot of the plate B. The upper surface of the dial C, between its periphery and the outer edge of the disk E is divided into six spaces of equal width by a continuous spiral line generated from the periphery toward the center, and is also divided by lines radiating from the center into fifty equal angular spaces. Within the spaces thus formed by the intersection of the spiral and radial lines are inscribed the series of numbers from and including 0 to 250, commencing with the first space on the periphery and continuing to the last space at the edge of the disk E. The disk E is perforated near its outer edge with a number of holes corresponding to the number of radial lines on the dial C, opposite to the inner row of spaces on it. It has a stationary cover F, by which it is kept in place, affixed to the hub or pivot on the plate B, enough smaller than itself to leave the perforations exposed, with a circular column of numbers upon its margin commencing with 1 and

equaling in number the number of the perforations for purposes hereinafter mentioned.

G is a spiral projection on the upper face of the disk E, struck by, and coincident with, a continuation of the spiral lines on the face of the dial C, to serve as a tooth or worm to move and operate the index H whose under side is cut into cogged teeth with a pitch equal to the pitch of the spiral projection. The ends of the spiral tooth or worm are cut off to leave between them a space equal to the width of the index H for purposes hereinafter mentioned. The index H is retained in position sideways by a groove or mortise equal to its width cut through the hub of the plate B and by a similar groove cut into the cover F. Its outward end moving over the spaces on the dial C point to, and indicate, that number on the dial which is the sum of the numbers that have been added.

I is a spring indicator, which serves also as a crank to rotate the dial C, having one end secured by a pin to the upper end of the pivot on the plate B—to allow it to rotate freely—and having a pin in the other end fitted to the perforations in the edge of the disk E.

The operation of my machine is as follows: Place the dial C, as represented in Fig. 1, with the zero indicator on it in line with the number 50 on the cover F—draw out the index so as to have its outer end reach to the inner line of the zero space on the dial. The sum of the numbers 24, 12, 14 and 32 being required, the pin in the end of the indicator I is moved and placed into the perforation in the edge of the disk E opposite to the number 24 on the cover F and that disk, and with it, the dial C is rotated by the indicator (to the left) to and over the number 50 on the cover F, the inward motion of the index H being coincident with, causes it to follow, the spiral line on the dial. The pin in the indicator is then released and the indicator carried around to, and the pin placed in, the perforation in the disk E opposite the number 12, and the disks are moved as before, the sum of the two numbers, 36, appearing in line with, and at the end of, the index H. The same operation is repeated with each of the numbers 14 and 32 and the sum of the four numbers, 82, is shown as before.

The operation may be continued with any series of numbers whose sum is within the limit of the scale of the dial. When the sum of the given numbers is found and it is required to commence the operation anew, the dial C is carried around to bring the zero indicator on it in line with the index H, so that the index covers the space between the ends of the spiral projection G and can be drawn out so that its end reaches to the inner spiral line of the zero indication as at first, avoiding the necessity of reversing the operation of the machine to bring it from the indicated number back to the zero indication on the dial which involves a loss of time and wearing out of the machine.

The dial of my machine as made for use is about 14 inches in diameter and is divided into 100 radial and 24 spiral lines making 2300 spaces with a series of 2300 numbers marked upon it. The disk E has also a series of 100 perforations on its edge and its cover F a series of 100 numbers upon it, giving the machine a capacity to show the sum of a series of numbers up to 2300, which capacity can be increased

by increasing the size of the dial, but I find it sufficiently large for general use.

The addition of numbers as ordinarily performed requires constant mental effort and is enervating and wearisome to both the body and mind of the performer and requires repetition to furnish proof of its correctness, while by my machine it is reduced to a mechanical operation performed with mathematical exactness and accuracy and can be effected by any person who can read the scale of numbers inscribed on the dial.

I do not claim the scale of numbers inserted in the spaces formed by the spiral and radial lines on the dial C as that is known and used, but

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

The disk E with its continuous spiral tooth, the racked index H and the indicator I, substantially as, and for the purposes set forth.

ISAAC G. HUBBS.

Witnesses:

M. HASKELL,
FRANCIS S. LOW.