A. MENDENHALL.

Calculating Machine.

No. 67,786.

Patented Aug. 13, 1867.

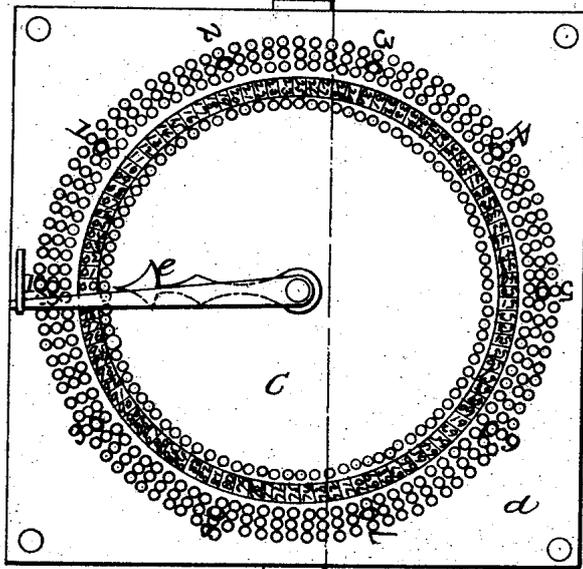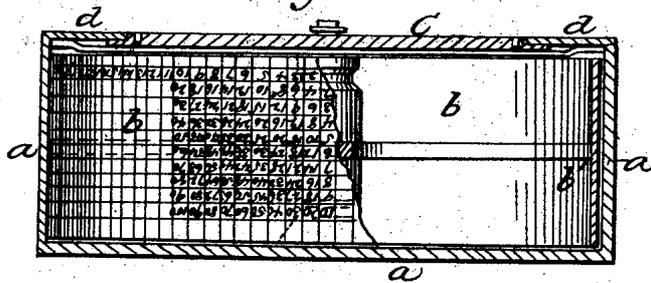*Fig. 1*

Fig. 2.
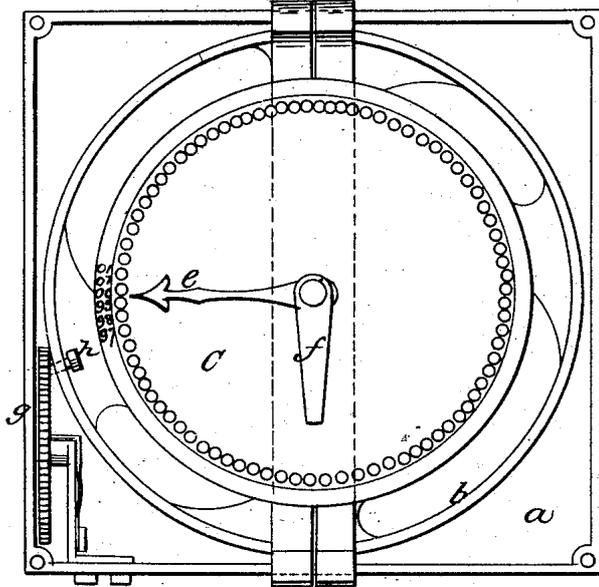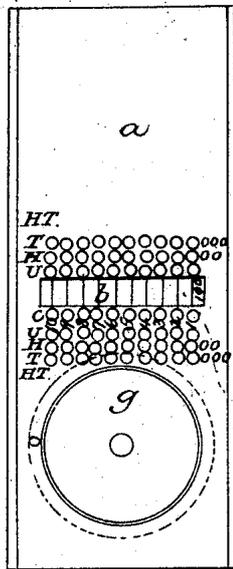
Witnesses:

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Fig. 3.

Fig. 4.

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A. MENDENHALL, OF CERRO GORDO, INDIANA.

IMPROVEMENT IN CALCULATING 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, A. MENDENHALL, of Cerro Gordo, Randolph county, Indiana, have invented a new and improved Calculating 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 drawirgs, forming part of this specification.

The object of this invention consists in constructing a machine by which figures of any desired magnitude may be readily added, subtracted, multiplied, and divided.

Figure 1, sheet 1, represents a plan of my improved calculating machine.

Figure 2, sheet 1, a sectional side elevation of the same, parts being broken away to show construction.

Figure 3, sheet 2, a plan of the same, with the top plate removed; and

Figure 4, sheet 2, is a side elevation of the same.

Similar letters of reference indicate corresponding parts.

This calculating machine consists of a square metal box, a; with a boss in the centre of the same inside, in which the shaft of the cylinder b is to turn; and c is a graduated plate on top of the cylinder b, which is keyed to the said cylinder, and will revolve with the same. d is a fixed graduated plate, which fits over the graduated ange of the plate c, and is provided with a space or slot, d, in its inner edge, through which to read the numbers on the plate c beneath.

In the accompanying drawings is given a sample of part of the table to be used. The table is to be a multiplication table, of which each figure from 1 to 100 inclusive is to be both a multiplicand and a multiplier, arranged in the order of the sample shown in the drawings. Figures 1 2 3 4 5 6 7 8 9 10, seen on the cover, shall be extended to 100, embracing each intermediate number, and each row of holes on either side of the said figures, and parallel therewith, shall be extended to 100 also. These holes will bear the following denominations, as indicated by the following letters, U H T, and at the left-hand margin C, which denotes cents, U units, H hundredths, and T thousandths of units, and these may be extended to any desired magnitude. On another side of the box will be seen three rows of holes on the lid or cover d, which numerate in the following the inside row next the figures on the lid denotes units, the next hundredths, and the last or outside row ndths of units, and these may be extended to any desired denomination.

Example.

Place the engraved hand e opposite the opening in the lid, then take the pin and place it in the hole in the e of the wheel c opposite figure 95, and turn to the left until the pin stops against the hand f, and 95 will seen through the opening in the lid. Now place the pin at figure 40, and turn to the left as before, and 35 l be seen through the opening in the lid; the 40 and 95 being added together make 135. In this operation addition it is seen that the engraved hand on the wheel c has passed the opening in the lid d, which shows in process of operation a pin, which should be placed in the hole denominated as hundreds, and opposite figure the lid. Now place the pin in the wheel at 90, and turn to the left as before, and 25 will be seen, and the raved hand has passed the opening again. Now move the pin in the lid opposite figure 2, which denotes =225. Now subtract 70, by turning the wheel back until the pin is opposite figure 70 on the lid, and re the pin in the lid opposite 2 back to 1, and we have the answer 155. By this method the operator does carrying and borrowing in addition and subtraction.

I will now proceed to show how the machine performs the operation independent of the operator. The face of a small wheel, g, is seen on the side of the box first examined. This shall be provided with everything similar to the wheel c, heretofore described, except the holes on the lid. On turning the cylinder around, a pin, h, is seen, which projects, and serves to work the small wheel g just spoken of, which is divided into one hundred grooves or teeth on its inner side, and the angle of these grooves or teeth is to be just sufficient to allow the wheel g to be turned one tooth for each revolution of the cylinder.

I will now proceed to show an example in multiplication and division. Multiply 5 by 3. The cylinder is urned so that figure 3 is seen at the right-hand margin of the cylinder; a pin is placed at 5 in the hole of units, nd 15 will be seen opposite 5 on the cylinder, which is the product. Again the pin is moved to the hole of

ᴢds, and the two ciphers 0 0 at the right hand are considered added to the right of the 15, and we have 1,500. If the pin is moved to thousands the three ciphers 0 0 0 are considered added, and we have ᴢ,000. And if the multiplier 3 is supposed to be 300, a pin is also placed opposite 3 on the lid, and in the second hole, and the two ciphers there to be added as before If the 3 is to be considered 3,000 the pin will be placed in the third hole, and the three ciphers added to the right of the product.

In working division we will consider the product in multiplication to be the dividend, the multiplier as a divisor, and the multiplicand as a quotient, ciphers considered as before.

I do not wish to limit myself to the size or shape of this machine; nor do I limit myself to constructing it of brass, as it may be made of wood, card-board, or any other suitable material.

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

The combination of the box a, graduated cylinder b, graduated wheel c, fixed graduated plate d, slotted and graduated plate forming the end of the box a, small grooved wheel o, pin h in the cylinder b, and the arm f, all constructed and arranged to operate as herein set forth for the purpose specified.

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Witnesses:
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