N. OCKERLUND.

ADDING MACHINE.

No. 105,717. Patented July 26, 1870.

Fig. 1

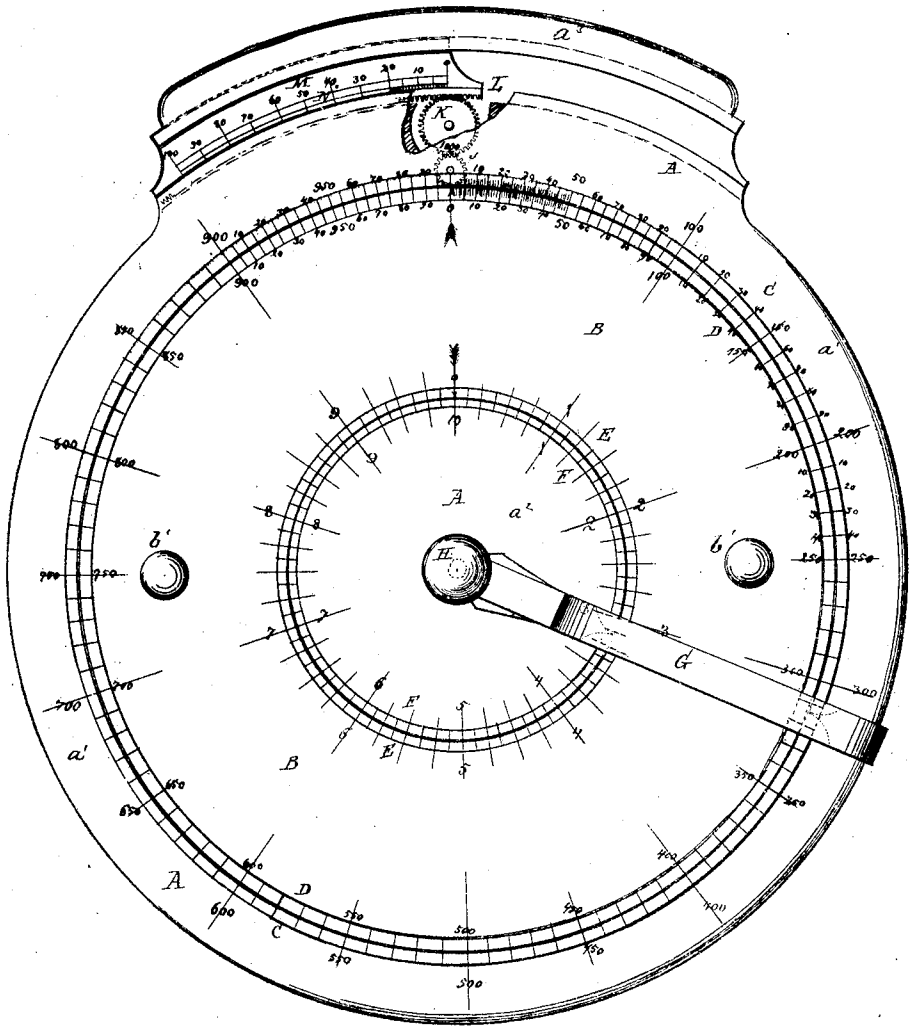
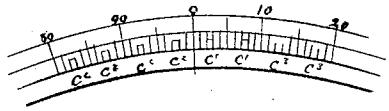


Fig. 2



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NELS OCKERLUND, OF NEW YORK, N. Y.

Letters Patent No. 105,717, *dated July* 26, 1870.

IMPROVEMENT IN ADDING-MACHINE.

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, NELS OCKERLUND, of the city of New York, in the county 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 front view of my improved machine, part being broken away to show the construction.

Figure 2 is an enlarged detail view of a portion of the scale of division marks, illustrating its formation.

Similar letters of reference indicate corresponding parts.

My invention has for its object to furnish a simple and convenient machine, by means of which numbers may be added and subtracted quickly and accurately, and which will enable the several amounts or differences to be registered as obtained; and

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

A represents a plate, circular in general form, and which has a wide circular groove formed in its face, in such a way as to leave a narrow rim, a^1, around its outer edge, and a small circle, a^2, at its center.

B is a ring-plate, fitted into the groove of the plate A, and which is made of such a thickness that its face may be flush with the faces of the rim a^1 and center a^2 of said plate A.

The ring-plate B is provided with two knobs or handles, b', for convenience in moving it in making the additions and subtractions.

Upon the inner edge of the rim a^1 is formed a scale, marked C, of one thousand divisions marks, and, upon the outer edge of the ring-plate B is formed a similar scale, marked D, of one thousand division marks, the two scales C D exactly coinciding with each other.

In forming the scales C D the division marks indicating hundreds are made long, and are numbered with the hundreds they represent. The division marks representing fifties are made a little shorter than the hundreds marks, and are numbered 50, 150, 250, &c., The division marks representing the tens between each fifty and hundred division marks are numbered 10, 20, 30, 40, &c., and are made of the same length, and shorter than the fifties. The division marks representing the fives between the tens are made of the same length as the tens, and are not numbered.

The four division marks between the fives and tens may all be made of the same length, and the two middle ones connected by a cross, as shown at the points c^1, fig. 2, or the two middle marks may be made shorter than the outside marks, and connected at their upper ends by a cross mark, as shown at the point c^2, fig. 2, or the two middle marks may be made shorter than the two outside marks, without any cross mark, as shown at the point c^3, fig. 2.

Either of these three methods will enable the eye to distinguish the particular mark indicated, or to be indicated, which is the object sought by these peculiar constructions of the scales.

Around the inner edge of the ring-plate B, and around the outer edge of the circle a^2, are formed scales, marked E F. The scales E F are formed by dividing the circles in which they are to be formed into ten equal spaces by ten division marks, which are marked 1, 2, 3, 4, 5, 6, 7, 8, 9, 10. The spaces between the numbered division marks are divided into sixteen parts by division marks. The scales E F thus represent units and sixteenths, and are designed to be used for subtracting and adding pounds and ounces.

G is the index, which is made with two pointers, one pointing to the scales C D, and the other to the scales E F, and which is pivoted to a thumb-screw, H, screwed into the center of the circle a^2, so that, by turning the screw down, the index may be clamped in any position into which it may be adjusted.

To the outer edge of the ring-plate B is attached a single tooth, I, which, for convenience, I prefer to place directly opposite to the zero mark of the scale D, which tooth, at each revolution of the ring-plate B, takes hold of a tooth of the small gear-wheel, J, pivoted in a recess in the rim a^1, and which must be made so small, and with such a number of teeth, that the tooth I, in passing, may revolve the wheel J exactly the space of one tooth, and bring its next tooth into such a position that it will be struck by the tooth I at the next revolution of the ring-plate B.

The teeth of the gear-wheel J mesh into the teeth of the gear-wheel K, also pivoted in the recess in the rim a^1, and the teeth of which mesh into the teeth of the segmental rack L, attached to the segmental ring M, which moves in the segmental groove formed in a projection, a^3, of the plate A.

Upon the segmental ring M is formed a scale, N, similar to the scales C D, that is to say, so formed that the spaces between the division marks may each be the one thousandth part of the circle of which the said scale forms a part.

The gear-wheels J K, and toothed rack L, must be so formed that each revolution of the ring-plate B will move the segment M one division mark. The segment M may be of any desired length, or, if desired, it may be extended entirely around the rim a^1, and form a ring.

In the same manner another segment or ring may be arranged outside of the segment M, when said segment is extended into a ring.

In using the machine for adding, it should be so arranged that the zero marks may correspond with each other. Then, for example, suppose the two first numbers to be added are seventy and forty; the ring-plate B is turned forward until the zero mark of the scale D coincides with the 70 mark of the scale C, and the amount of the two numbers will be found upon the scale C, directly over the mark 40 of the scale D. The index G is then moved until its outer pointer points to the amount, in this case one hundred and ten. The ring-plate B is then turned until the zero mark of the plate D corresponds with the 110 mark of the scale C, and so on.

The thousands of the amount are carried by the gearing I J K to the scale N of the segment or ring M. If the operator is interrupted at any point of his addition, a turn of the screw H will clamp the instrument, which will then show the amount reached and the number last added, so that the operation can be taken up where it was interrupted. For subtracting, the operation is simply reversed.

Having thus described my invention,

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

The plate A, having annular recess on its face, and the knobbed ring-plate B *b'*, fitting and rotating therein, each having respectively the scales C E and D F thereon, combined with the scaled arc-plate M, traveling in groove of plate A, arranged and operated in the manner and for the purpose described.

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Witnesses:

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