

UNITED STATES PATENT OFFICE.

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CALCULATING-MACHINE.

961,977.

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To all whom it may concern:

Be it known that I, JOHN AUGUSTUS LUTZ, a citizen of the United States, residing at St. Petersburg, in the county of Hillsboro and State of Florida, have invented certain new and useful Improvements in Calculating-Machines, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to means for adding columns of figures and has for its object to improve the construction and operation of such means.

With this object in view the invention consists of the improved construction, arrangement and combination of parts hereinafter fully described and afterward specifically claimed.

In order that the construction and operation of this invention may be readily understood I will now proceed to describe it in connection with the accompanying drawing, in which—

Figure 1 is a top plan view of the machine with a portion of the radiating disk removed and hidden parts of the accumulating disk shown in dotted lines; Fig. 2 is a transverse sectional view taken on the plane indicated by the broken line 2—2 in Fig. 1; Fig. 3 is a transverse section taken on the plane indicated by the line 3—3 in Fig. 1; and Fig. 4 is a transverse section taken on the line 4—4 in Fig. 1. Fig. 5 is a plan view of the hundred and thousand wheels, taken on a plane below the main plate, the pivots of the plates being shown in section.

Referring specifically to the drawings 1 indicates the main or top plate of the machine which preferably forms the top of a rectangular or other shaped box in which nearly all of the mechanism is contained.

In the plate 1 is formed a rabbet 2 in which a movable disk 3 is fitted to rotate, said disk being mounted upon a central pivotal pin 4 supported in any suitable bearing made stationary in the machine.

The main plate 1 is provided around the rabbet 2 with a series of graduated lines marked consecutively with the numbers from 1 to 100 while the outer edge of the rotating disk 3 is similarly graduated, the separating lines of the graduations coinciding with the graduations of the plate 1 and the graduations of the plate 3 being numbered the same as those of the plate 1, to wit, from 1 to 100.

Rotatably mounted upon the pivot 4 is a radial arm or pointer 6 of a sufficient length to extend beyond the periphery of the rotary disk 3 and provided with a downwardly bent outer end 7 to rest upon the plate 1, said arm being also provided with a downwardly projecting pin 8 adapted to engage, as may be desired, in any one of a series of holes 9 in the plate 3, corresponding in number and position with the graduations of said plate.

At 10 is indicated a disk mounted below the plate 3 on a pivot 11 supported in bearings suitably mounted in the box and in an arm 12 mounted upon the same pivot that supports the rotating disk 3 and extending radially beyond said disk and the graduations of the plate 1. This disk 10 is divided into ten segments numbered respectively, from 100 to 1000, each segment being provided with a laterally projecting tooth 12^a adapted at certain points in the operation of the machine to be operated by a radial tooth 13 projecting from the rotating disk 3.

Above the disk 10, in the plate 1, is an opening or window 14 by which the number on the particular segment of the disk 10 which happens to be beneath said opening may be observed.

15 indicates a disk preferably of the same diameter as the disk 10, which disk 15 is divided into segments in a manner similar to the division of the disk 10, each of the segments of the disk 15, however, being divided into inner and outer portions 16, 17 by means of a circle 18 inscribed on the disk about midway between the center and circumference, thus forming two circular rows of graduations on the face of the disk. One row of these circular graduations is marked from 1,000 to 10,000 and the other row from 11,000 to 20,000. The disk 15 is provided with teeth 19 similar to the teeth 12^a of the disk 10, and in position to be moved one step at a certain point in the rotation of the disk 10 by means of a tooth 20 projecting radially from said disk 10.

An opening or window 21, of a sufficient length to expose a figure in each of the two concentric rows of figures on the disk 15 is provided above the disk 15 in the plate 1 and the plate 22 is pivotally mounted on the plate 1 at 23 in a position whereby said plate 22 may be moved upon its pivot to cover either the inner or outer portion of the window 21, in order to expose either a

number in the inner row of figures or one in the outer row of figures on said disk 15 as may be desired.

In the operation of this machine the arm 6 which would normally rest over the top of the arm 12 with the point 7 resting against the edge of said arm 12, is moved on its pivot to the right, or clockwise, until the point 7 is over the number which it is desired to add or register. At this point the pin 8 is permitted to drop into the proper opening 9 of the disk 3, when by the movement of the arm 6 back to its normal position, the disk 3 will be rotated to the left or contra-clockwise until it has again reached its normal position.

If the number to which the arm 6 has been moved in the graduations on the plate 1, in the operation before described, has exceeded 99, say for instance that said number were 100, when the movement was concluded the disk 3 would have been rotated one hundred spaces. As a consequence the radial tooth 13 will have engaged, in the last mentioned step of its movements, one of the teeth 12^a of the disk 10, and rotated that disk one step so as to show the number 100 through the window 14. When the accumulated items added in the same manner by setting the arm 6 and rotating the disk 3 shall have reached 1000, the disk 10 will have moved ten steps and the radial tooth 20 will then have engaged one of the teeth 19 of the disk 15 and moved said disk 15 one step so that the number 1,000 will be exposed through the outer portion of the window 21 in the disk 15. When the disk 15 shall have been operated ten spaces, the number 10,000 will be exposed through the outer half of the window 21 when the plate 22 will be moved on its pivot 23 to cover the outer half of the window 21 so that the next succeeding ten steps of movement of the disk 15 will expose consecutively through the inner portion of the window 21, the parts contained in the inner row of the disk 15, being from 11,000 to 20,000.

The hundred plate may be manipulated independently by hand by means of the handle 24 and the thousand plate by means of a handle 25, the springs 26 and 27 serving to return the plates to their normal positions.

The machine as described will be found to be extremely practical, economical to construct, light and portable, not liable to get out of order, and by the provision of the plate or shutter for the window 21 the capacity of the machine has been increased from ten to twenty thousand.

While I have specifically described the

construction of the various parts I do not desire to confine myself to the exact construction as they may be varied without departing from the spirit and scope of the invention.

Having thus described the invention, what is claimed is:

1. A calculating machine comprising a rotatable plate having graduations around its periphery numbered from 1 to 100, means for rotating said plate, a second rotatable plate divided into ten graduated sectors numbered from 100 to 1000, connections between the main plate and the hundred plate for causing the latter to move one step at each complete rotation of the main plate, a third rotatable plate pivotally arranged adjacent to the other plates and divided into ten graduated sectors, each sector being divided by a circle passing through it about midway between its center and its circumference into two parts thus forming two circular series of spaces, the outer series being numbered from 1000 to 10,000 and the inner series from 11,000 to 20,000, an opening in the main plate extending over both series of numbers in the thousands plate, and means for covering one-half of said opening to expose one series only of said numbers.

2. A calculating machine comprising a rotatable plate having graduations around its periphery numbered from 1 to 100, means for rotating said plate, a second rotatable plate divided into ten graduated sectors numbered from 100 to 1000, connections between the main plate and the hundred plate for causing the latter to move one step at each complete rotation of the main plate, a third rotatable plate pivotally arranged adjacent to the other plates and divided into ten graduated sectors, each sector being divided by a circle passing through it about midway between its center and its circumference into two parts thus forming two circular series of spaces, the outer series being numbered from 1,000 to 10,000 and the inner series from 11,000 to 20,000, an opening in the main plate extending over both series of numbers in the thousands plate, a shutter pivoted to the main plate and extending across the opening over the thousands plate, said shutter being of a width to cover half of the opening and thus expose only one series of numbers.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

JOHN AUGUSTUS LUTZ.

Witnesses:

WILBUR DIVINE, Jr.,

LEON D. LEWIS.