No. 634,779. Patented Oct. 10, 1899.

C. TREGONING.

RECKONER.

(Application filed Mar. 20, 1899.)

(No Model.) 3 Sheets—Sheet 1.

Fig 1

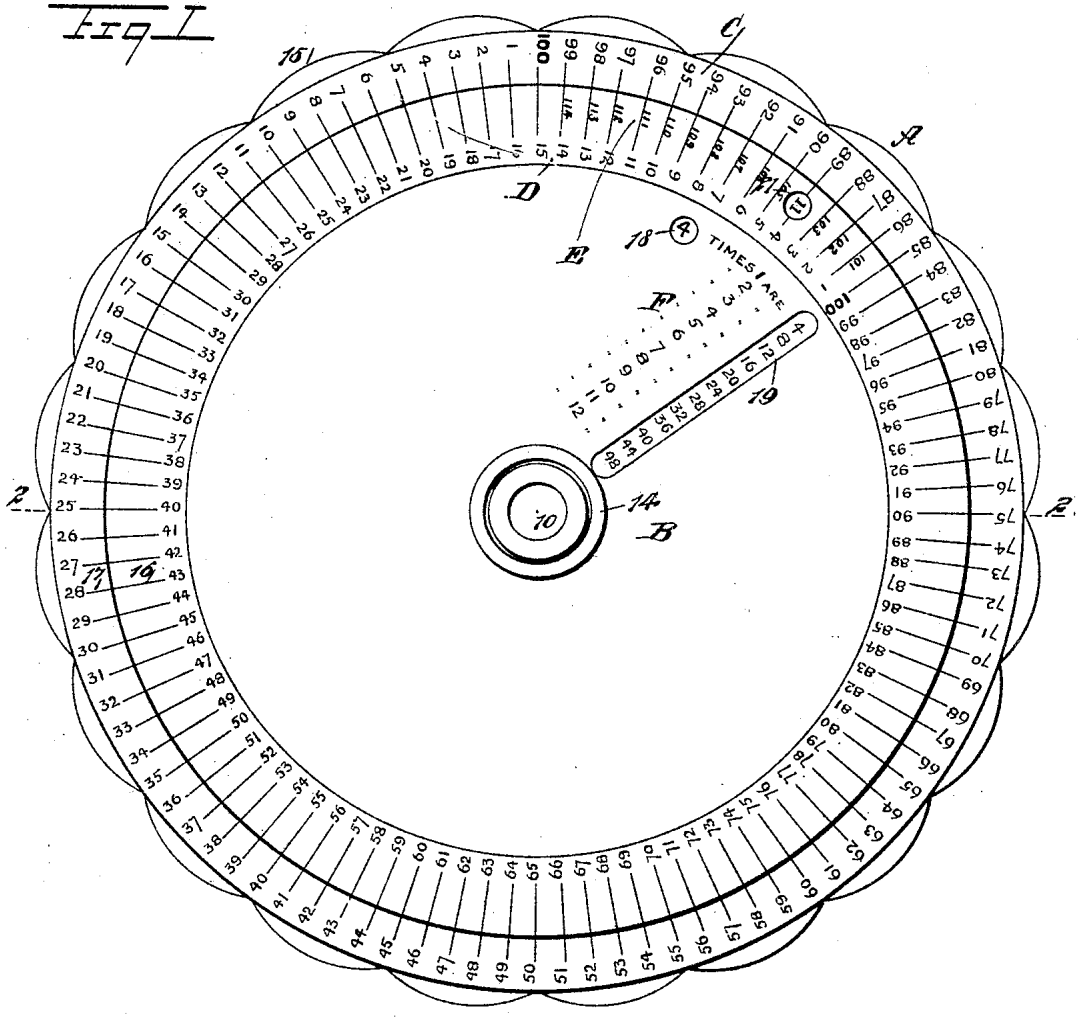

Fig 2

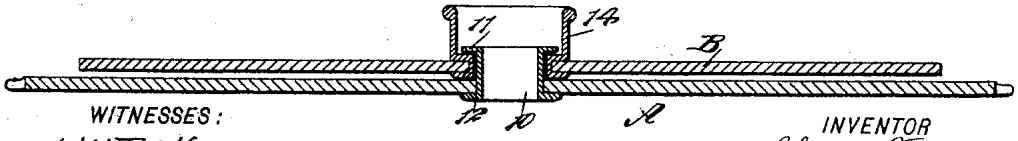

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Fig 3

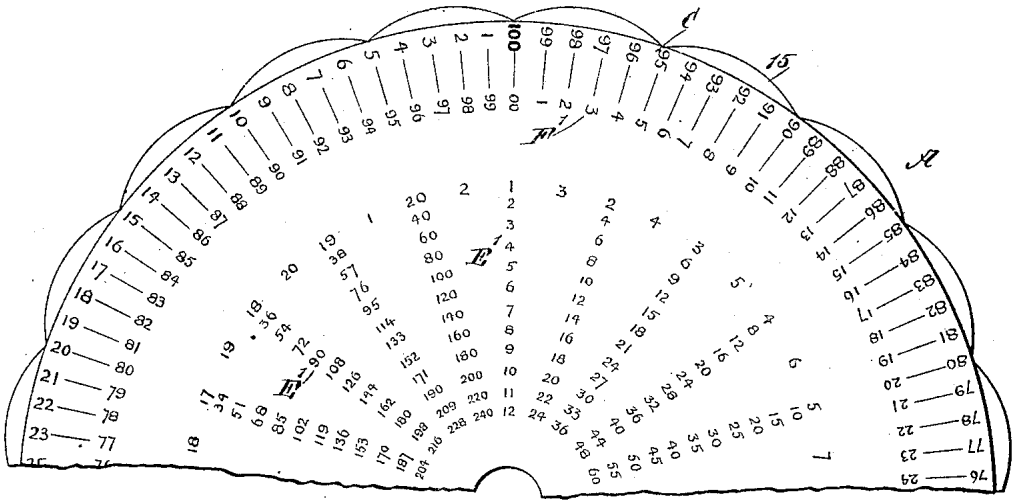

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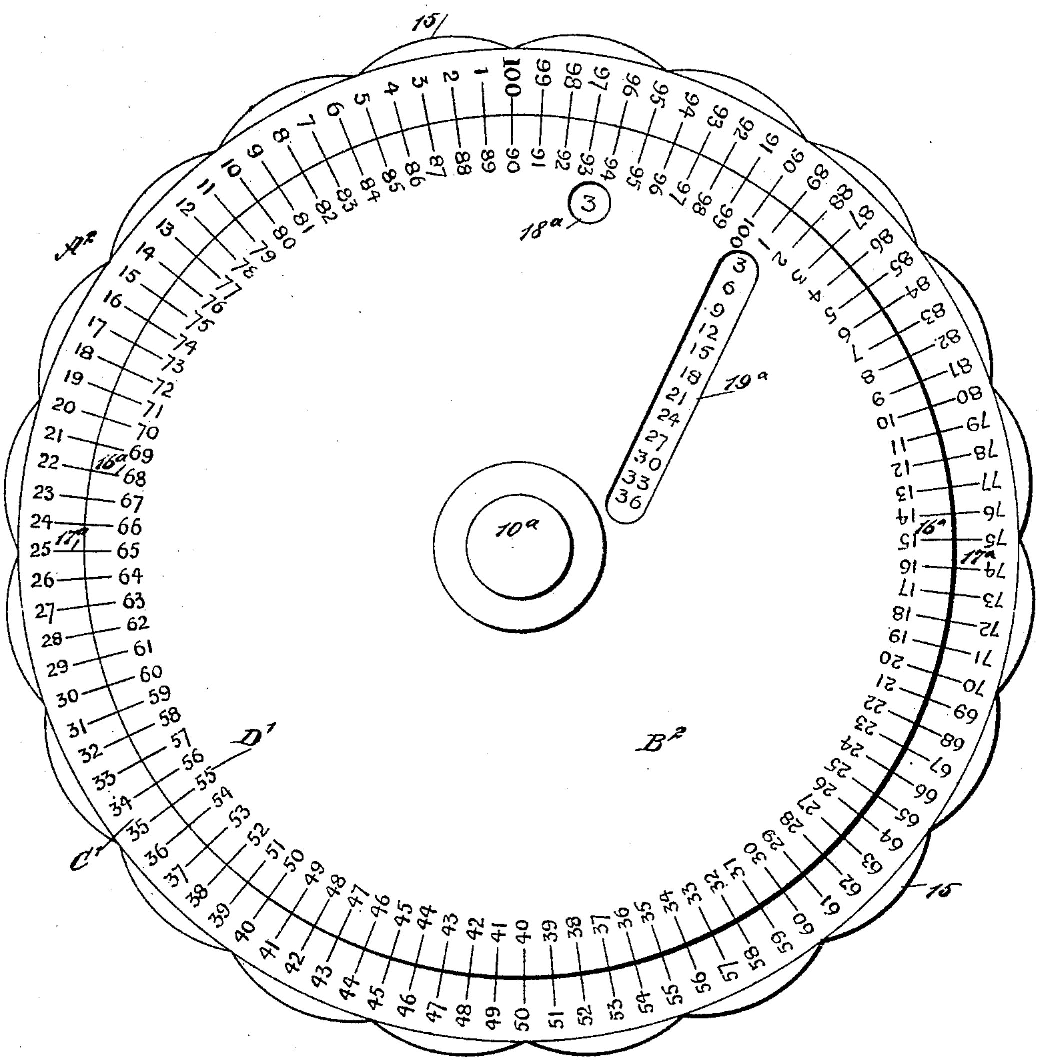
Fig 4



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CHARLES TREGONING, OF NEW YORK, N. Y.

RECKONER.

SPECIFICATION forming part of Letters Patent No. 634,779, dated October 10, 1899.

Application filed March 20, 1899. Serial No. 709,781. (No model.)

To all whom it may concern:

Be it known that I, CHARLES TREGONING, of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Reckoner, of which the following is a full, clear, and exact description.

The object of the invention is to provide a simple device through the medium of which various amounts may be added together and the sum total quickly and accurately obtained or whereby one number may be subtracted from another and the result be quickly and surely known.

Another object of the invention is to so construct the device that any one of a number of multiplication-tables may be instantly brought to view. The device also contains one hundred or more addition-tables and one hundred or more subtracting-tables, and it is particularly adapted to assist children in mastering the rudiments of arithmetic and is also useful to persons not well grounded in arithmetic.

A further object of the invention is to provide a device of the character above described that will be simple, durable, and economic in its construction and capable of being readily understood and easily manipulated.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of the complete device. Fig. 2 is a transverse section taken substantially on the line 2 2 of Fig. 1. Fig. 3 is a partial plan view of the under disk of the device, illustrating a portion of the tables carried by said disk. Fig. 4 is a plan view of the improved reckoner, illustrating a slight difference in the arrangement of the marginal numerals of the two disks.

In the preferred form of the device two disks A and B are employed, the disk A being of greater diameter than the disk B. The disk B is mounted to turn upon the disk A and may be pivoted thereto in any suitable or approved manner. The preferred means employed for attaching the two disks together is that shown in Fig. 2, in which a sleeve 10 is passed through the center of the larger disk A and is made to extend a suitable distance above the upper face of said disk, the sleeve being provided with an outwardly-extending flange 11 at its top and likewise with an outwardly-extending flange 12 at its bottom. A larger sleeve 14, which acts as a button, is attached to the central portion of the upper disk B, and said larger sleeve 14 is reduced in diameter at its lower portion, so that before the upper flange 11 of the pivot-sleeve 10 is turned down the reduced portion of the sleeve 14 may be slipped over the upper portion of said pivot-sleeve, and the two sleeves are held in place by turning the upper flange 11 downward to its normal position. (Illustrated in Fig. 2.) The button-sleeve 14 is provided with a flange at its bottom portion that engages with the under surface of the upper disk B. Thus it will be observed that the upper disk may be readily revolved upon the lower disk in either direction.

Numerals C are consecutively arranged near the margin of the lower or main disk A, said numerals reading from "1" to "100," as shown in the drawings, but they may read from "1" to "1,000," or more, if necessary. The numeral "100" in the drawings is practically a starting-point from which calculations are to be made in addition and subtraction. Preferably the margin of the under or larger disk A is provided with scallops 15, each scallop embracing six numerals. For example, the end of one scallop is over the numeral "5," the other end being over the numeral "10." The next scallop has one end over the numeral "10" and the other end over the numeral "15." In this manner it will be observed that the numerals may be readily separated by the eye in groups of five. The pivoted disk B is provided also with a series of numerals D, that are likewise consecutively arranged, and the numerals on the disk B correspond to the numerals on the disk A and read in the same direction. A line 16 is outwardly projected from each numeral on the disk B, and a corresponding line 17 is inwardly projected from each numeral on the lower or main disk A.

If, for example, it is desired to add fifteen

and fifteen together, the numeral "15" on the rotary disk is brought opposite the starting-point, or "100," on the main disk, and immediately opposite this numeral "15" on the main disk the sum of the two amounts—namely, "30"—will be read upon the rotating disk. If ten and forty are to be added together, the numeral "10" on the rotating disk is brought opposite the starting-point "100" on the main disk, and upon finding "40" on the main disk the figure "50" will be read on the rotating disk opposite the numeral "40" on said main disk. In the same manner any two amounts may be added together, providing the sum of the two amounts is not greater than the highest figure to be found on the disk.

If, for example, fifteen is to be subtracted from seventy, the numeral "15" (always the lesser numeral appearing on the revolving disk) is carried opposite the starting-point "100" on the main disk, as also appears in Fig. 1. "70" is then found on the revolving disk, and the answer, "55," will be read opposite "70" on the main disk.

The products of the multiplication-table—from "1" to "20," for example—are arranged in the customary column form on the upper face of the main disk within the circle described by the rotary disk, as shown at E' in Fig. 3, and the multipliers of the various tables are located adjacent to these columns, occupying such position that when an opening 18, made in the revolving disk B, is brought over the multiplier of a table a slot 19, made in said revolving disk B, will be brought over the product-column of that particular table, and adjacent to the slot 19, between said slot and the opening 18, the multiplicand-column F of figures is located, reading from "1" to "12," this column being used in connection with each of the tables. At one side of the upper numeral "1" the word "times" is produced, while at the opposite side of said numeral "1" the word "are" appears. Thus, for example, if the table of fours is to be used the numeral "4" is made to appear at the opening 18, whereupon the product-column of the table of fours will appear at the slot 19 and the table may be read as "4 times 1 are 4," "4 times 2 are 8," &c., and in this manner any of the tables contained upon the device may be quickly brought to view and studied or used whenever desired. The product-columns, and likewise the slot adapted to expose said columns, are radially disposed on the disks.

In addition to the numerals for simple addition, subtraction, and multiplication I provide a means whereby a child sent to purchase an article costing a fraction of a dollar and intrusted with a dollar can quickly and accurately ascertain the exact amount of change that should be received. To this end a second series of consecutively-arranged numerals F' is produced upon the main disk A reading from "1" to "100," or the highest numeral in the first series C on the same disk; but the second series of numerals F' read in an opposite direction to the first or outer series C, the numeral "1" in the series F' being opposite to and registering with the numeral "99" in the series C, as shown in Fig. 3. The revolving disk B is provided with an opening 21, so located that as the said disk is turned any one of the numerals in the series F' may be exposed to view, all the rest being hidden. If a child makes a purchase to the amount of eighty-nine cents, for example, the opening 21 in the revolving disk is carried opposite the numeral "89" in the series of numerals C upon the main disk, whereupon the difference between eighty-nine and one hundred—namely, "11"—will be exposed by said opening, as shown in Fig. 1.

The addition and subtraction tables are, in effect, the numerals which constitute the reckoner and appear in the series C and D. (Clearly shown in Fig. 1.) In the drawings the numeral "15," representing the addition-table of fifteens, is opposite the starting-point "100," and said table may be explained as follows: In an example in addition if "15" in the numeral series D be added to "1" in the numeral series C the answer appears opposite "1" in the numeral series D—namely, "16." If "15" is to be added to "5," the answer "20" may be read opposite "5" in the numeral series D, and so on.

It is obvious that each individual number in the series D when brought to the starting-point represents a table, so that one hundred tables in addition and subtraction are obtainable upon the dials, as illustrated in the said Fig. 1; but the number of tables and amounts are practically unlimited.

In Fig. 1 I have illustrated a portion of a third series E of numerals reading in the hundreds from "101" to "114," and other series reading to "1,000" or to "10,000" may be added. With reference to the third series E of numerals take an example in subtraction. Let fifteen be subtracted from one hundred and fourteen, "99" is the answer and may be read opposite "114" in the series of numerals C. If fifteen is to be subtracted from one hundred and thirteen, "98" is the answer and may be read in the numeral series C opposite "113," and so on.

In the form of reckoner shown in Fig. 4 two disks A^2 and B^2 are also employed. In fact, the disks A^2 and B^2 sustain the same relation to each other as do the disks A and B, (illustrated in Fig. 1,) the disk B^2 being of less diameter than the disk A^2 and mounted to revolve on the disk A^2 by means of any suitable form of pivot 10^a. The larger or main disk A^2 is provided, as is the disk A, (shown in Fig. 1,) with a series of numerals C', consecutively arranged and reading from "1" to "100," and the revolving disk B^2 is provided with a series of numerals D', corresponding to the series of numerals D heretofore described, and the series of numerals D' are also consecutively ar-

ranged, reading from "1" to "100;" but the series of numerals D' read in a reverse direction to the series of numerals C' on the main disk. The numerals of both series have equal spacing, so that the numerals of one series may be brought in transverse alinement with the numerals of the other series, and each numeral in the outer series C' is provided with inwardly-extending lead-lines 17^a, adapted to meet lead-lines 16^a, carried outward from each numeral of the inner series D'. If desired, the revolving disk may be provided with an aperture 18^a and a slot 19^a, the aperture being adapted to disclose a multiplier and the slot 19^a the product-column of a multiplication-table, the multiplicand-column being arranged between the slot and aperture in the same manner as illustrated in Fig. 1. When the numerals are arranged in the manner just described, the main or starting point is "100" on the disk A^2.

If it be desired to add two numbers together—as, for example, one and eighty-nine—the numeral "89" on the revolving disk is brought opposite "1" on the main disk, and the answer "90" will appear on the revolving disk opposite the main or starting point "100," and it will be observed that when any figure is opposite "100," the main or starting point, the said figure will represent the sum of any two transversely-alining numerals in the two series C' and D'. When one number is to be subtracted from another, the minuend is selected on the revolving disk and is brought opposite the main or starting point "100" on the main disk, and by finding the subtrahend on the revolving disk the answer may be read opposite the subtrahend on the main disk. For example, if ten is to be subtracted from ninety "90" on the revolving disk is carried opposite "100" on the main disk, and opposite "10" on the revolving disk the answer "80" appears on the main disk.

Should a child, for example, desire to know how much change should be had out of a dollar, a certain amount having been spent, the numerals "100" on both disks are brought in registry and the two series of numerals read from this given point in opposite directions, so that any two transversely-alining numerals in the two series are added together the result will be one hundred. Thus if a child has a dollar and has made a purchase amounting to twenty cents upon finding the numeral "20" on the revolving disk the answer "80," representing the amount of change that should be received, will be found opposite "20" on the main disk.

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

1. A reckoner, comprising a disk provided with radial product-columns and multipliers adjacent said columns, and a second disk mounted to revolve on the first disk and provided with an opening and slot through which the multipliers and product-columns respectively may be seen, substantially as described.

2. A reckoner, consisting of a main disk provided with numerals consecutively arranged adjacent to its periphery, said main disk being also provided with numerals representing the products of multiplication-tables and with multipliers adjacent to said columns, and a second disk of less diameter and mounted to revolve upon the larger disk, the smaller disk being provided with a series of numerals arranged in the same order and corresponding to the numerals on the larger disk, the numerals upon one disk being capable of varying relation to the numerals upon the other disk, the smaller disk being also provided with an opening adapted to expose the multiplier of a table, and a slot adapted to expose to view the column representing the products of multiplication, the multiplicands being produced upon the smaller disk between the said opening and said slot, the said multiplicands being common to all of the tables, as and for the purpose specified.

3. A reckoner, comprising a disk provided with a series of numerals consecutively produced thereon near its periphery and reading from "1" to "100" and a second disk of less diameter than the first disk and mounted to revolve thereon, said revoluble disk being provided with a series of numerals consecutively arranged and reading from "1" to "100," but in a reverse direction to the series of numerals of the first-named disk, the numerals of both series having equal spacing, whereby the numerals of one series may be brought in transverse alinement with the numerals of the other series, substantially as described.

4. A reckoner, comprising a disk provided with a series of numerals consecutively produced thereon near its periphery, reading from "1" to "100," or a higher numeral, and with a second and inner series of numerals arranged in the same order as the outer series but reading in a reverse direction, a second disk of less diameter than the main disk and mounted to revolve thereon, the revolving disk being provided with an opening and with a series of numerals near its periphery, corresponding in spacing and numerical order to the spacing and numerical order of the outer series of numerals upon the main disk and reading in the same direction, the revolving disk being adapted to cover all of the numerals of the inner series on the main disk except one that is exposed at the opening in said revolving disk, as specified.

5. A reckoner, comprising a stationary disk provided with a series of numerals consecutively produced thereon and reading from "1" to "100," and a second disk mounted to revolve on the first disk and provided with a series of numerals consecutively arranged and reading from "1" to "100" and in the same order as the numerals of the first disk,

and with a second or outer series of numerals reading in the hundreds from "101" upward, the numerals "101" being opposite the numeral "1" of the first series, substantially as described.

6. A reckoner, comprising a disk provided with two concentric rows of numerals consecutively produced thereon but in reverse order, and with radial product-columns of numerals and multipliers adjacent said columns, and a second disk revolubly mounted on the first disk and of less diameter than said first disk and provided with a series of numerals consecutively arranged and reading in the same order as the concentric rows of numerals of the first disk, said second disk being also provided with the openings 18 and 21 and slot 19, substantially as herein shown and described.

CHAS. TREGONING.

Witnesses:
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JNO. M. RITTER.