

(No Model.)

E. B. DENNIS.
CALCULATOR FOR PERCENTAGES.

No. 432,380.

Patented July 15, 1890.

Fig. 2.

H ³	I ³	J ¹	K	A	C	E ³
-	12	0	0	0	0	0
\$7000	711799	\$8000	82156	\$9000	92313	92313
\$700	7271799	\$800	82156	\$900	92313	92313
\$70	72071799	\$80	82156	\$90	92313	92313
\$7	720071799	\$8	82156	\$9	92313	92313

WITNESSES:
Dom Twitchell
& Sedgwick

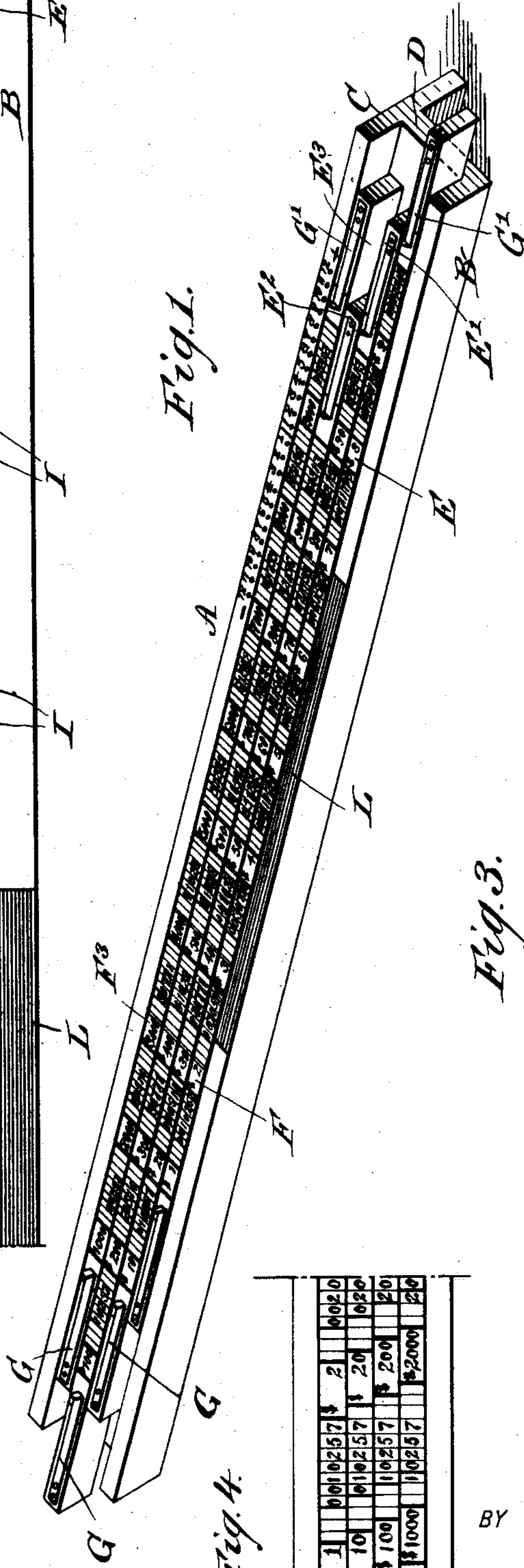
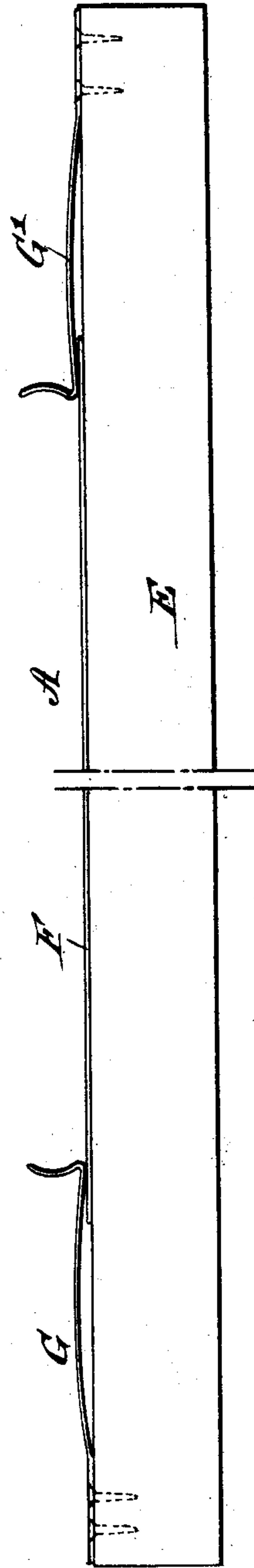


Fig. 4.

\$ 1	0010257	\$ 2	0020
\$ 10	010257	\$ 20	020
\$ 100	10257	\$ 200	20
\$ 1000	10257	\$ 2000	20

Fig. 3.



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UNITED STATES PATENT OFFICE.

EDWIN B. DENNIS, OF EXCELSIOR, MICHIGAN.

CALCULATOR FOR PERCENTAGES.

SPECIFICATION forming part of Letters Patent No. 432,380, dated July 15, 1890.

Application filed November 7, 1889. Serial No. 329,521. (No model.)

To all whom it may concern:

Be it known that I, EDWIN B. DENNIS, of Excelsior, in the county of Kalkaska and State of Michigan, have invented a new and Improved Calculator, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved calculator, which is simple and durable in construction and specially designed to rapidly and accurately calculate the percentage on a certain sum—as, for instance, taxes and the like.

The invention consists of certain parts and details and combinations of the same, as will be fully described hereinafter, and then pointed out in the claims.

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

Figure 1 is a perspective view of the improvement. Fig. 2 is an enlarged plan view of part of the same, and Fig. 3 is a side elevation of one of the bars enlarged, and Fig. 4 is a plan view of the device as arranged for finding the percentages.

The improved calculator is provided with a box A, open at the top and provided with a front B, and a back C, connected with the front by a bottom D, as is plainly shown in Fig. 1. The back C extends a short distance below the bottom D, so that when the box A is placed on a table the open top is in an inclined position, as is plainly shown in Fig. 1.

In the box A are fitted to slide a series of parallel bars E , E' , E^2 , E^3 , &c., each of which supports on its top a slip or strip of paper or other suitable material F , F' , F^2 , or F^3 , respectively, held in place by springs G and G' , secured on the ends of the bars E , E' , E^2 , and E^3 . The strip F contains, suitable distances apart, the units H , indicating dollars. The strip F' contains the tens H' , while the strip F^2 contains the hundreds H^2 , and the strip F^3 the thousands H^3 . If more bars E are used, the tens of thousands, hundreds of thousands, &c., will be represented on the said bars.

Between two succeeding numerals H H or H' H' or H^2 H^2 or H^3 H^3 is arranged a series of divisions I , I' , I^2 , and I^3 , respectively, in which is written the amount of the percent-

age of the sum H , H' , H^2 , or H^3 in front of it. For instance, as shown in Fig. 2, the percentage on seven thousand dollars, as indicated on the strip F^3 , is \$7.1799, at the rate or per cent. of \$1.0257 for one thousand dollars. In a like manner, on the strip F , after the numeral 9, follow in the divisions I the percentage \$.0092313, being at the same rate of per cent. as the seven thousand dollars previously mentioned, but for nine dollars only. The several spaces in the divisions I I' I^2 , &c., are equal in size, so as to form transverse columns for adding up numbers in the columns of the several divisions after the bars are adjusted.

On the top of the back C is arranged a series of recesses J , numbered from left to right from 1 to 12 +. A similar row of recesses J' is arranged on the said back and numbered from right to left from 1 to 12 —. A peg K may be inserted in one of the recesses J or J' to keep track of the surplus or deficiency of mills, which will be added or rejected from the amount of any tax.

On the top of the front B is arranged a piece or strip of paper, slate, or other material L , on which the sum of any addition may be written.

The operation is as follows: The several bars E , E' , E^2 , and E^3 are shifted forward and backward in the box A, according to the given sum on which the amount of the tax or percentage is to be found. Let it be required, for instance, to find the tax on five thousand six hundred and fifty-four dollars. The operator first moves the bar E^2 to the left until the 600 on its strip F^2 is under the 5,000 on the strip F^3 of the bar E^3 , which remains stationary. Then in a like manner the bar E' is shifted to the left until the numeral 50 is under the numeral 600, previously shifted on the bar E^2 . Then the strip F is moved to the right until its numeral 4 on the strip is accurately under the numeral 50 of the previously-moved strip, all as shown in Fig. 1. Now, it will be observed that the several divisions I , I' , I^2 , and I^3 at the right of the above-mentioned numerals form columns, and by adding up the numbers in the said columns following the said numerals the total of the percentage or tax is found. It is understood that the numerals in the columns I , I' , I^2 , and I^3

vary according to the different rates of per cent., and each set of strips F , F' , F^2 , and F^3 is placed on the set of bars E , E' , E^2 , and E^3 and held thereon by the springs G G' until the operator needs another set for a different rate of taxes.

As shown in the drawings, the device is capable of finding the amount of taxes on any sum from one dollar to nine thousand nine hundred and ninety-nine dollars. If the tax on the latter sum is to be found, the instrument is placed in the position shown in Fig. 2, being the last set of numerals on the line on the strips F , F' , F^2 , and F^3 , and adding up the numbers following the said numerals in the columns of the divisions I , I' , I^2 , and I^3 gives the amount of the tax, the rate being as previously mentioned. For larger sums additional strips E and corresponding slips F are necessarily used in the box A .

In practice I furnish the slips properly ruled, and having printed thereon numbers representing the several sums or amounts in dollars upon which percentages must be found in order to put the device in working order. Thus on one slip will be printed \$1, \$2, \$3, &c., to \$9, inclusive. Upon another \$100, \$200, \$300, &c., and another \$1,000, \$2,000, \$3,000, &c., so that the operator may know what numbers or amounts in dollars to use to effect the proper combinations. He then proceeds to fill out the spaces in the percentage-divisions I I' I^2 , &c., in the following manner: The operator finds the amount of tax upon one dollar at the particular rate of tax which he is about to spread or extend upon his assessment-roll, and then enters or places it in the proper spaces of the division I for percentage on the slip at the right of \$1. He next multiplies this tax on one dollar by two and places the result in the proper spaces or divisions on the slip at the right of \$2, and so on to \$9, inclusive. Having previously placed a set of slips on the sliding bars, the one for \$1, \$2, \$3, &c., being placed uppermost on the bar E^3 , the one for \$10, \$20, \$30, &c., coming next in position, followed by the one for hundreds, the last being for thousands, (see Fig. 4,) the second bar is now slid so as to bring its ruled slip under the ruled slip on the bar in such a position that its divisions I' of dollars in the percentage-columns will fall

directly under or in line with the left-hand columns of cents in the percentage-columns on the first slip. While in this position bring the figures in the percentage-columns of the first slip directly down upon the second slip, each in same column thus formed, omitting any cipher in the cents-columns above which would fall into the dollars-space below. Next slide bar E' under bar E^2 in like manner and copy figures from slip on bar E^2 onto slip on bar E' in the same way; and, lastly, obtain figures for bars E from bars E' in like manner. The position of the filled-out slips is then changed to the one above described, and shown in Figs. 1 and 2.

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

1. In a calculator, the combination of an open-top box having a series of numbered recesses on one of its upper edges, a peg adapted to fit in the said recesses, and a series of sliding bars containing numerals, substantially as herein shown and described.

2. An improved calculator consisting of the open-top box A , having its back extended below the bottom and provided with a series of numbered recesses in the upper edge of the back, a peg adapted to fit in the recesses, a series of sliding bars in said box, and a series of slips removably secured to said bars, substantially as herein shown and described.

3. In a calculator, the combination, with an open box, of a series of parallel bars held to slide therein, removable slips held on the said bars and each provided with divisions adapted to be arranged in columns, and springs for holding the said slips on the said bars, as set forth.

4. In a calculator, the combination, with a box provided with a series of numbered recesses and a peg adapted to indicate one of the said recesses at a time, of a series of parallel bars held to slide in the said box, and removable slips held on the said bars, each provided with divisions adapted to be aligned in columns, substantially as shown and described.

EDWIN B. DENNIS.

Witnesses:

HARVEY WRIGHT,
SARAH WRIGHT.