No. 811,205. PATENTED JAN. 30, 1906.

E. C. DILWORTH.

ADDING DEVICE.

APPLICATION FILED MAR. 29, 1905.

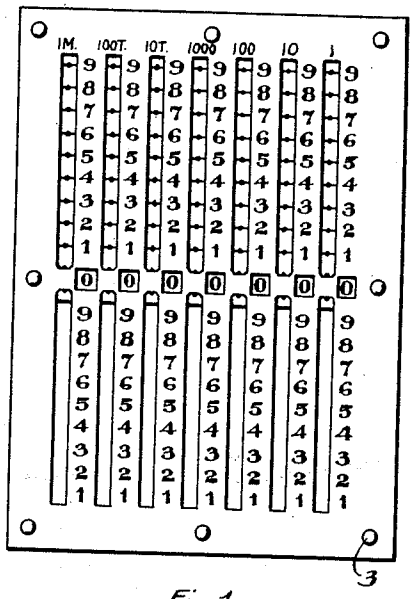


Fig. 1

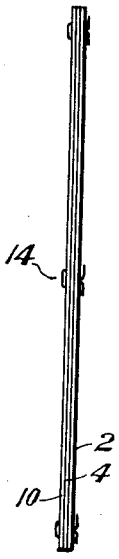


Fig. 2

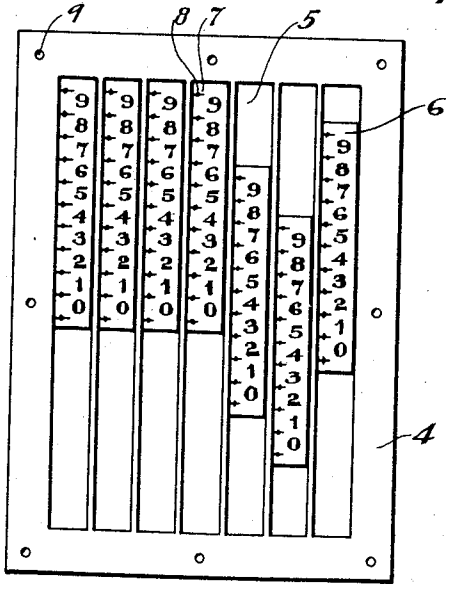


Fig. 3

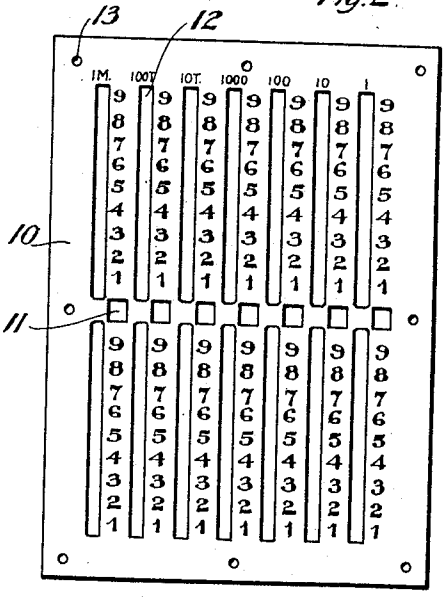


Fig. 4

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## ADDING DEVICE.

No. 811,205. Specification of Letters Patent. Patented Jan. 30, 1906

Application filed March 29, 1905. Serial No. 252,691.

*To all whom it may concern:*

Be it known that I, EDWARD C. DILWORTH, a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Adding Devices; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to adding devices, its object being to provide a device of this character simple in construction, easily operated, and the parts readily accessible in case of the device getting out of order, while at the same time of such a compact form that it may be conveniently carried about in the pocket.

To these ends my invention comprises, generally stated, an adding device composed of three plates secured together, the inner or back plate, an intermediate plate having a series of guideways therein, slides bearing numbers adapted to engage said guideways, said slides being of approximately half the length of said guideways and adapted to slide to and fro therein, and the front or outer plate having a line of openings substantially at the middle thereof, and a series of slots breaking joint with said openings above and below said openings, together with numbers arranged in the places between said slots, the numbers on said slides and those adjacent both series of slots all running consecutively in the same direction, all as hereinafter more specifically set forth and claimed.

To enable others skilled in the art to make and use my invention, I will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is a face view of my improved adding device. Fig. 2 is an edge view thereof. Fig. 3 is a face view of the device, the front plate being removed; and Fig. 4 is a view of the front plate removed.

Like numerals indicate like parts in each of the figures.

In the drawings the numeral 2 designates a rear plate, which may be formed of metal, cardboard, or any other suitable material and of suitable dimensions, it being preferable, however, to make it of a size which can be conveniently carried about in the pocket. This back plate 2 may be stamped out of a sheet of metal or cardboard and has the apertures 3 formed therein at the corners and midway thereof on its sides and ends. The middle plate or sheet 4 may be formed of like material, said sheet being formed with the guide-slots 5 therein. Engaging the guide-slots 5 and adapted to move readily up and down therein are the slides 6, bearing the numerals "0 1 2 3 4 5 6 7 8 9," arranged one above the other, beginning at the bottom thereof. The slides 6 are further provided with the lines 7, drawn between the numerals, and at or about the middle of said lines are small indentations 8, adapted to receive the point of a pen, pencil, or other sharp-pointed instrument and by means of which the slides 6 may be moved up and down in the guides 5. This plate 4 is also provided with apertures 9, adapted to coincide with the apertures 3 of the back plate. The front plate 10 may also be stamped out of like material, said plate having the openings 11 at intervals, extending across the same at substantially the midpoint thereof. Extending from said openings in both directions in the plate 10 are the slots 12, which are intermediate of the openings 11. To one side of the slots 12 are the numerals "1 2 3 4 5 6 7 8 9," both series of said numbers beginning at the bottom of each slot and running upwardly. This outer plate 10 is also provided with the apertures 13, which coincide with the apertures 9 and 3 of the sheets 2 and 4.

In assembling the sheets so as to form one complete whole the intermediate sheet 4 is brought into contact with the back sheet 2, and the slides 6 are then inserted in the guides 5, said slides resting upon the back sheet 2. The front sheet 10 is then brought into position over the middle sheet 4, and by means of the clips or fasteners 14, passing through the openings 3, 9, and 13, the sheets are held securely together and in close contact with each other, as clearly indicated in Fig. 2. When all the slides 6 are moved to the top, as indicated in Fig. 1, the lines 7 will come opposite the numerals on the front plate 10, while the numerals on the slide 6 will be concealed, except the particular numerals which are exposed through the openings 11 in the front sheet 10 which are in line with the numerals on the slides 6. Accordingly when all the slides 6 are in their uppermost position the openings 11 will show zeros throughout.

When it is desired to make a calculation with my improved adding device, the device is operated in the following manner: By way of illustration, suppose it is desired to add up the following numbers: "5,736," "574," "3,745," and "39." The operator first inserts the point of the pen or pencil in one of

the slides 6 to the lift of the figure "5" in the thousands-column and pulls down the slide as far as the point will go or until it strikes the bottom of the slot 12. He next pulls down the slide in the hundreds-column by inserting the pencil to the left of "7" in said column. He next inserts the pencil to the left of "3" in the column of tens, drawing it down, as before, and then inserts the pencil at "6" in the column of units and draws it down. He then places the point of the pencil opposite the "5" in the lower half of the hundreds-column and pushes it up as far as the pencil will permit him to go and then immediately pulls down "1" in the next slide to the left, or the thousands-column. He then places the pencil at "7" in the lower half of the column of tens, pushes it up as far as the pencil will permit, and pulls down "1" in the next column to the left or the hundreds-column. He then pushes up the "4" in the units-column in the same manner and pulls down "1" in the tens-column. He then pulls down the "3" in the upper half of the thousands-column and pushes up the "7" in the hundreds-column, and as the slide of the thousands-column is down at "9" pushes this slide back to "0" and pulls down "1" in the tens-of-thousands column. He then pulls down the "4" in the tens-column and the "5" in the column of units. He then pulls down the "3" in the tens-column, pushes up the "9" in the column of units, and pulls down "1" in the tens-column. The answer, "10,094," is read in the apertures 11. The rule to be followed in calculating is that every time a slide is pushed up immediately pull down "1" in the next higher column—that is, the next column on the left—or, if this slide is down at "9," push it back to "0" and pull down "1" in the second column to the left, and so on.

I have provided a very simple form of an adding device, which is composed of three thin sheets of metal or other suitable material so held together as to form a device of very little thickness, while at the same time by having the slide of substantially half the length of the guide-slots I am enabled to very materially shorten the length of the plate so that it is of a size which is conveniently handled or carried about in the pocket, if desired.

It is a very simple matter to remove the fastenings or clips which secure the plates together in order to get at the working parts in case it is desired to clean or repair the same, and as the parts are so few and simple there is very little to get out of order or nothing that even the most inexperienced could not correct.

What I claim as my invention is—

1. An adding device, comprising a frame provided with a series of guides and having its face provided with a series of openings extending across the same and two series of slots, and bearing numbers adjacent to each of said slots, and a series of slides bearing numbers mounted in said guides opposite said openings and provided with means accessible through both series of slots for the engagement of moving means, the numbers on said slides and those adjacent both series of slots all running consecutively in the same direction.

2. An adding device comprising a frame having a series of guides therein, slides substantially half the length of said guides carrying numbers adapted to be moved from one end to the other of said guides, and a front plate having two sets of slots formed therein at its opposite ends and having openings intermediate of said slots and numbers running parallel with said slots, the numbers on the slides and those adjacent the two sets of slots running consecutively in the same direction.

In testimony whereof I, the said EDWARD C. DILWORTH, have hereunto set my hand.

EDWARD C. DILWORTH.

Witnesses:

ROBERT C. TOTTEN,

ROBT. D. TOTTEN.