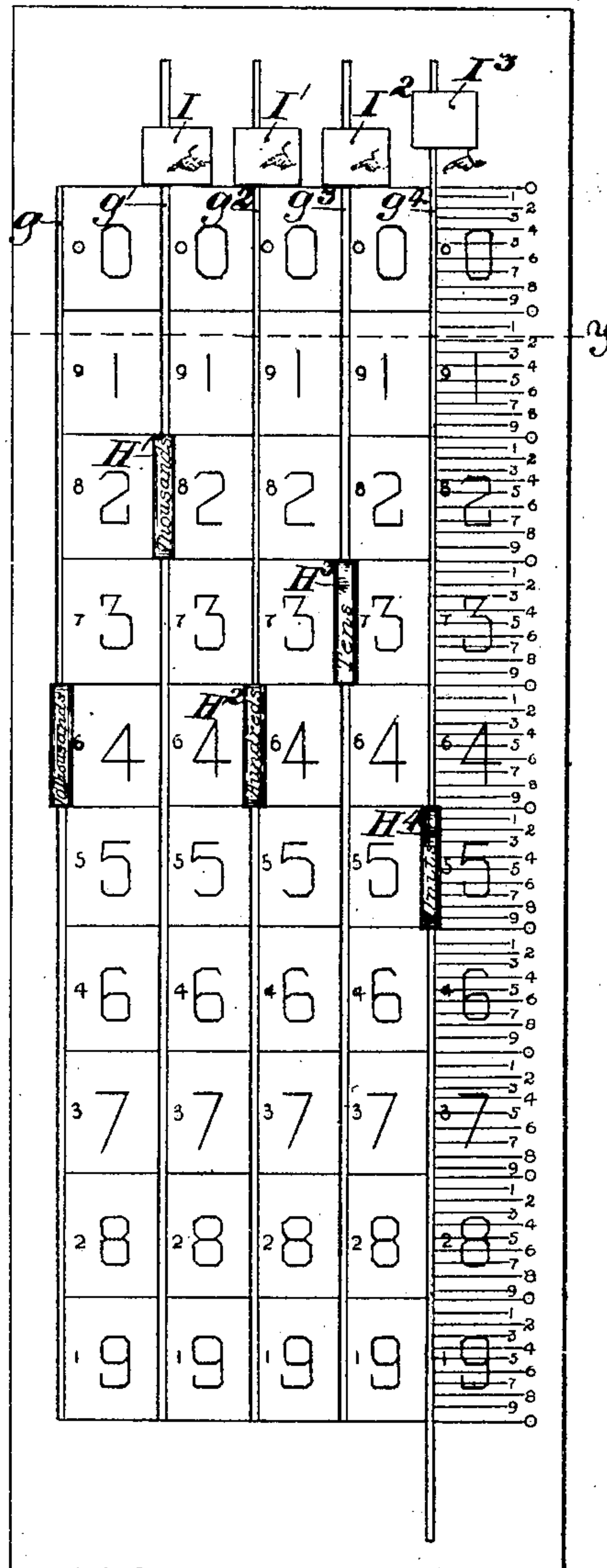
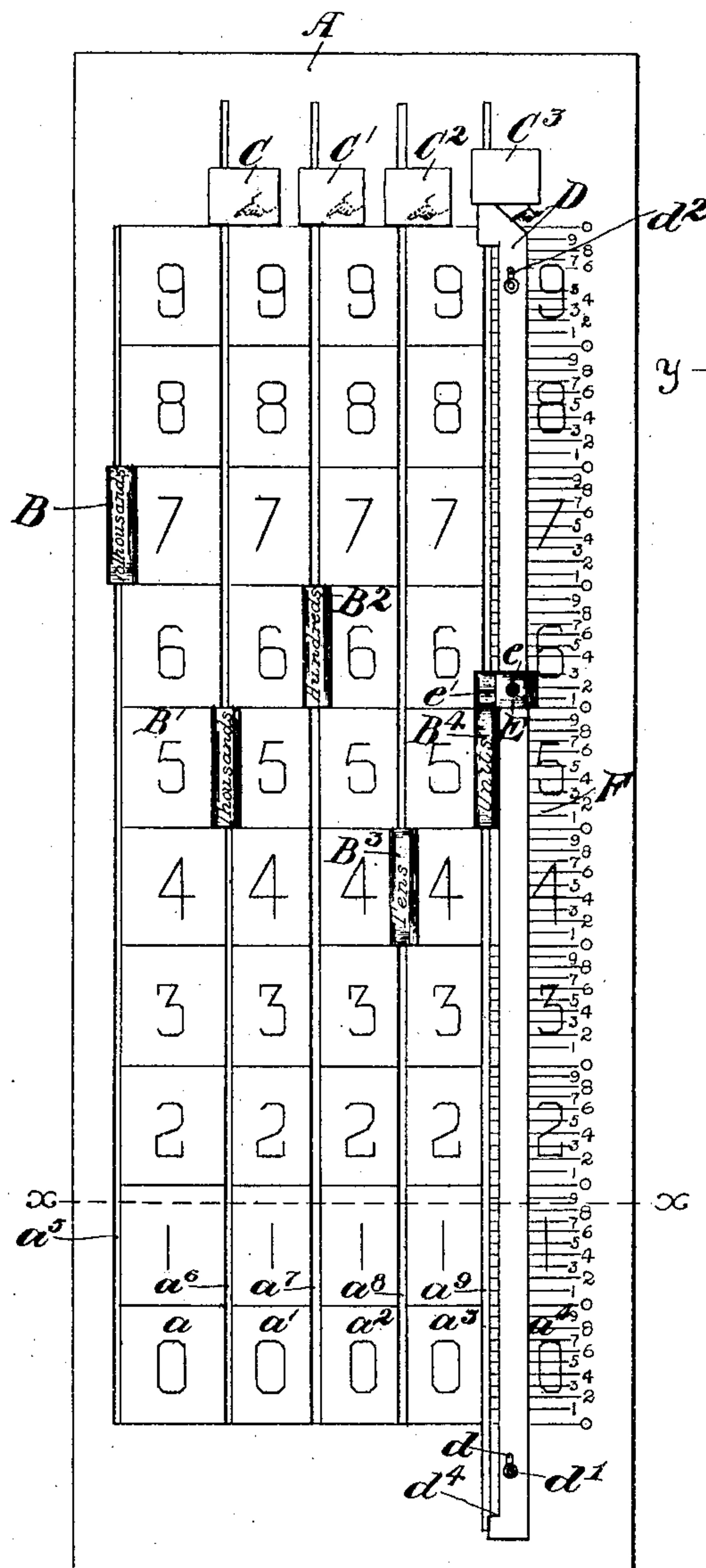


L. L. FROST.  
TALLY DEVICE.

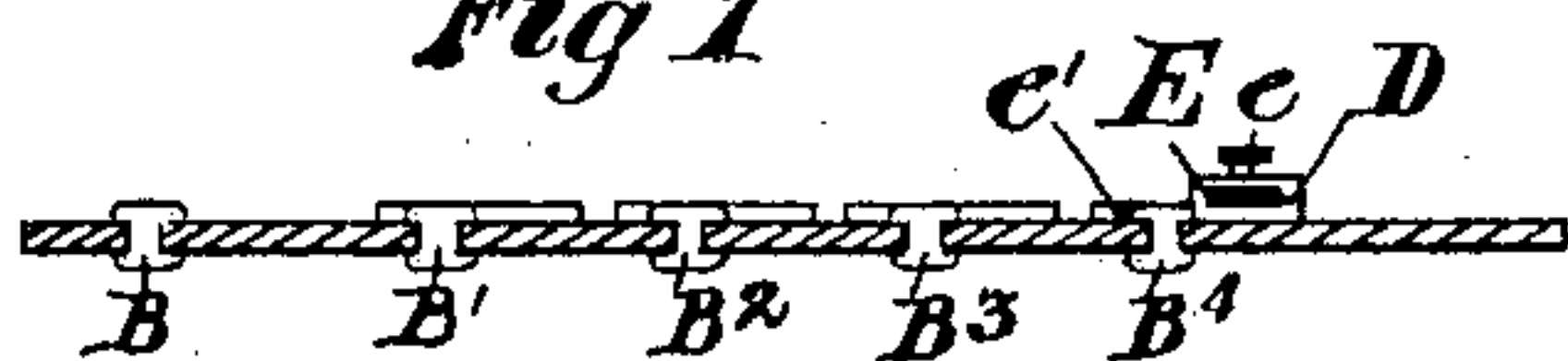
APPLICATION FILED MAY 16, 1903.

NO MODEL.



*Fig 1*

*Fig. 3.*



### *Witnesses*

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## UNITED STATES PATENT OFFICE.

LEONARD LEEDS FROST, OF HIGHLAND, KANSAS.

## TALLY DEVICE.

SPECIFICATION forming part of Letters Patent No. 744,058, dated November 17, 1903.

Application filed May 16, 1903. Serial No. 157,472. (No model.)

*To all whom it may concern:*

Be it known that I, LEONARD LEEDS FROST, inventor, of the city of Highland, in the county of Doniphan, State of Kansas, have invented certain new and useful Improvements in Tally Devices, of which the following is a specification.

My invention relates to improvements in tally devices; and the objects of my invention are to devise certain improvements to be applied to the tally device described and claimed in my Canadian Patent No. 80,536, whereby computing with such tally devices may be facilitated; and it consists, essentially, of a card or tablet having columns of figures thereon, a slot located at the side of each column, a slidable figure-indicator in each slot, and slidable carrying-indicators preferably at the upper ends of said slots, adapted to indicate when the lower orders are to be rendered in the higher orders, or, in other words, when the figure-indicator of the next higher order is to be moved up or down one space, a longitudinal bar adjustably secured to the face of the tablet, a projection adjustably secured to said bar, said bar being adapted to operate with said carrying-indicators to indicate when lower orders are to be rendered in higher orders, the various parts of the device being constructed and arranged in detail and operated as hereinafter more particularly described.

Figure 1 is a plan view of one form of tally device which I employ for adding. Fig. 2 is a section through the same on the line X X. Fig. 3 is a plan view of the form of the device which is adapted to be used in subtracting. Fig. 4 is a detail sectional view of the same on the line Y Y, Fig. 3.

In the drawings like letters of reference indicate corresponding parts in each figure.

Referring now to Figs. 1 and 2, A is the card or tablet. This card has a plurality of principal columns  $a$   $a'$   $a^2$   $a^3$   $a^4$ , representing the units, tens, hundred, thousands, and ten thousands, respectively. The columns are numbered, preferably from bottom to top, with the numbers from "0" to "9" consecutively. Each division of the right column is preferably divided into ten parts, which are also numbered consecutively from "0" to "9" in the same order as the dominant columns. It

may here be mentioned that the dominant columns referred to herein are the columns whose figures are shown in the drawings in larger type, and the numerals of these columns constitute the amount to be added or subtracted, as the case may be. Slots or grooves  $a^5$   $a^6$   $a^7$   $a^8$   $a^9$  are formed in the tablet, preferably at the left-hand side of each column of dominant figures. Sliding figure-indicators B B' B<sup>2</sup> B<sup>3</sup> B<sup>4</sup> are provided and are adapted to slide in the slots  $a^5$   $a^6$ , &c., and to be placed opposite the numerals of which the number to be registered is composed. All the slots except the one beside the column of the highest order are extended beyond the upper extremity of the columns. Slidable carrying-indicators C C' C<sup>2</sup> C<sup>3</sup> are provided in these slots, which extend beyond the upper extremities of the columns, and these indicators when pushed upwardly in their slots by the sliding indicators B B', &c., expose to view a hand or pointer printed or stamped on the card and directed toward the column of the next higher order to indicate that the slidable figure-indicator belonging to the column of the next higher order is to be moved up one space. As soon as this has been done the indicator C, C', C<sup>2</sup>, or C<sup>3</sup> must be returned to its normal position, as shown in the drawings.

As it is frequently desirable to add quantities expressed in two denominations—for example, pounds and ounces, bushels and pounds, or the like—I have devised an additional means for facilitating the adding of such quantities. This consists of a bar or rod D, which is slidably secured to the tablet by suitable means, such as the pins  $d$   $d'$ , which extend through slots  $d^2$   $d^3$ , formed in the bar, and are securely fastened to the tablet. A movable or adjustable slide E is provided on this bar, and this slide may be adjusted to any desirable position, for reasons hereinafter explained, and may be fastened in such position by means of a set-screw  $e$ , extending therethrough and abutting the rod, or by any equivalent device. A projection  $e'$  extends laterally from the slide E and is adapted to be engaged by the movable indicator B. It may here be mentioned that the length of the motion of the bar D is exactly the same as the distance between two of the smallest divi-



sions F. The upper extremity of the bar is formed in such a way that when it is forced upwardly it will raise the sliding indicator C and will leave the pointing-hand exposed.

5 The lower end of the bar is provided with a slight projecting shoulder  $d^4$  or any equivalent projection, which is adapted to be engaged by the slidable indicator B when the indicator is moved to the limit of its down-  
10 ward motion.

To explain the use of the carrying-indicators at the upper extremities of the slots, the device may first be considered without any reference to the bar D. In the drawings, Fig. 1, the indicators B B', &c., are shown pointing or opposite to the figures "7," "5," "6," "4," and "5," (from left to right,) or, in other words, the number indicated is "75,645." If, for example, seven units were to be added to  
20 this number, the indicator B<sup>4</sup> would be moved in the direction of the order of the figures through seven spaces—that is to say, it would be moved upwardly to "9," which would be four spaces. Then it would be brought to the  
25 bottom of the slot and moved up three more spaces. It would then be opposite the space marked "2," but whenever the slidable figure-indicator is moved up to "9" it is to be moved a little past the "9" space, so as to  
30 move the carrying-indicator C. This exposes the pointer or hand, which was beneath the sliding piece C, and indicates that the slidable indicator of the next higher order is to be moved up one space. Consequently the  
35 slidable indicator E' will be moved up to "5," and the resulting number will be "75,652."

As soon as the indicator of the column of higher order has been moved up the one place required the indicator C will be moved back  
40 to its normal position.

Referring now to the case where amounts expressed in different denominations are to be added—for example, bushels and pounds—in this case the bar D will come into use. If  
45 we say, for example, there are sixty pounds in a bushel of any given material, the slide E will be so adjusted on the bar that when the bar is in its extreme downward position the slide will be opposite the division numbered  
50 "59." It will now be seen that on adding first the pounds of the composite amounts the sliding indicator B when moving from "59" to "60" would engage the projecting extension  $e'$  of the slide E and would force it up one division.  
55 This would force the bar upwardly, which in turn would force up the carrying-indicator C and would expose the pointer or hand, thus indicating that one bushel was to be recorded. The slidable indicator B' would then be moved  
60 up one space, and the adding would be continued.

Having now explained the construction and working of the device as applied to the adding-card, I will proceed to explain the subtracting-card. G is the tablet used for this  
65 purpose, and this tablet is divided into columns of dominant figures similar to the col-

umns described in the adding device, with the exception that the numbers preferably run from "0" to "9," from top to bottom. 70 Supplementary columns of figures are provided in the same spaces as the dominant figures, but are arranged in the reverse order, the figure "9" of the supplementary column coming in the same space with "1" of 75 the dominant column, and so on. Each space of the units-column is also divided into ten divisions, which are numbered in the same order as the dominant figures. Slots  $g$   $g'$   $g^2$   $g^3$   $g^4$  are provided, preferably on the left of 80 each of these columns. Slidable figure-indicators H H' H<sup>2</sup> H<sup>3</sup> H<sup>4</sup> are provided in these slots, and the carrying-indicators I I' I<sup>2</sup> I<sup>3</sup> I<sup>4</sup> are provided at the upper ends of the slots and are adapted to normally cover indicating or 85 pointing hands, arrows, or other similar indicating devices, which point toward the column of the next higher order to the column in which they are located.

It may here be mentioned that the supplemental figures above referred to are the differences between the corresponding dominant figures and ten. For example, where "8" is the dominant figure the figure in the supplemental column is "2," &c. 95

In subtracting the device is operated as follows: If, for example, the minuend is taken to be "42435," as shown in Fig. 3, and the numeral "7" is taken for the subtrahend, the numeral "7" is added to the number 100 which appears in the same division as "5" in the supplementary column, the numeral "5" being the right-hand numeral of the minuend. The sum of seven and five being twelve, the figure-indicator is moved to the 105 space in which the figure "2" appears in the supplementary column; but care must be taken that it is moved always in the opposite direction to the order in which the figures appear—that is to say, it will be moved up 110 to the top of the slot—thereby raising the carrying-indicators. It will then be brought back to the bottom and moved upwardly again till it comes to "2" in the supplementary column. It will then be opposite the 115 numeral "8" of the dominant column; but the carrying-indicator having been moved up the figure-indicator of the next higher order must be moved up one place. The result will be that the figure-indicator of the units- 120 column will be at "8" and the figure-indicator of the tens-column will be at "2," the resulting difference or answer being "42428."

The object of having the column of small figures at the extreme right of the units-column 125 is for adding or subtracting dollars or cents or the like. The indicator H<sup>4</sup> can in such case be set with its end opposite any one of the small divisions, thus representing so many dollars and so many cents. 130

It will be understood that in constructing this device I may make a number of variations which need not be pointed out in detail. For example, the method of slidably



securing the indicators to the tablet might be varied. It might also be desirable to bring the carrying-indicators down to the lower end of the slots; but it will be understood that I do not wish to limit myself to the exact details of construction, as such changes as the above may be made without departing from the spirit of my invention.

What I claim as my invention is—

1. In a device of the class described the combination with the tablet having the columns of figures with their adjacent slots, and the slidable figure-indicators, of slidable carrying-indicators covering indicating-hands adapted to be moved during the latter portion of the motion of said figure-indicators so as to reveal said indicating-hands as and for the purpose specified.

2. In a device of the class described the combination with the tablet having the columns of figures with their adjacent slots, slidable figure-indicators and the slidable carrying-indicators, said figure-indicators and carrying-indicators being slidably held in said slots, of pointers or indicating-hands at the upper end of each column of figures, said pointers being normally covered by the slidable carrying-indicators, said carrying-indicators being adapted to be moved upwardly by the figure-indicators during the latter part of their upward motion thereby revealing the pointers as and for the purpose specified.

3. In a device of the class described the combination with the tablet having a plurality of columns of figures and slots adjacent thereto, of the figure-indicators and the carrying-indicators slidably held in said slots, a bar or strip slidably secured to the tablet and

adjustable means whereby the figure-indicator adjacent to said bar may be caused to engage the same at any desired point of the upward motion of said figure-indicator, and means whereby the upper end of the bar will force the carrying-indicator upwardly thereby exposing a pointer as and for the purpose specified.

4. In a device of the class described the combination with the tablet having columns of figures thereon and slots opposite said columns, the slidable figure-indicators and the slidable carrying-indicators movably held in said slots, of a bar or strip slidably secured to the tablet, a projection extending from said bar and means for securing the same adjustably thereto, said projection being adapted to be engaged by the figure-indicator adjacent to the bar in its upward motion as and for the purpose specified.

5. In a device of the class described the combination with the tablet having the columns of figures thereon, and the slots adjacent to said columns, the figure-indicators and the carrying-indicators slidably secured in said slots and the pointers or indicating-hands normally covered by said carrying-indicators, of means whereby a figure-indicator may during any portion of its upward motion be caused to move the carrying-indicator thereby exposing to view the pointer as and for the purpose specified.

Signed at the city of Ottawa this 11th day of May, 1903.

LEONARD LEEDS FROST.

Witnesses:

EDWARD P. FETHERSTONHAUGH,  
MAY LYON.