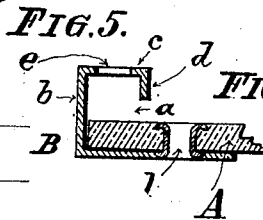
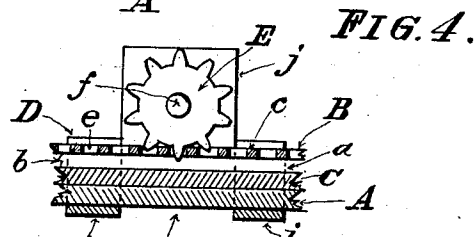
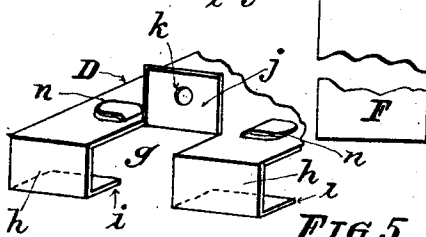
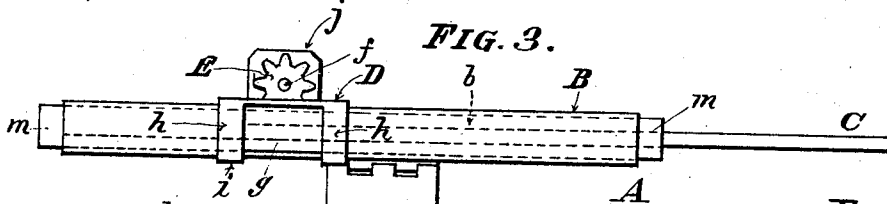
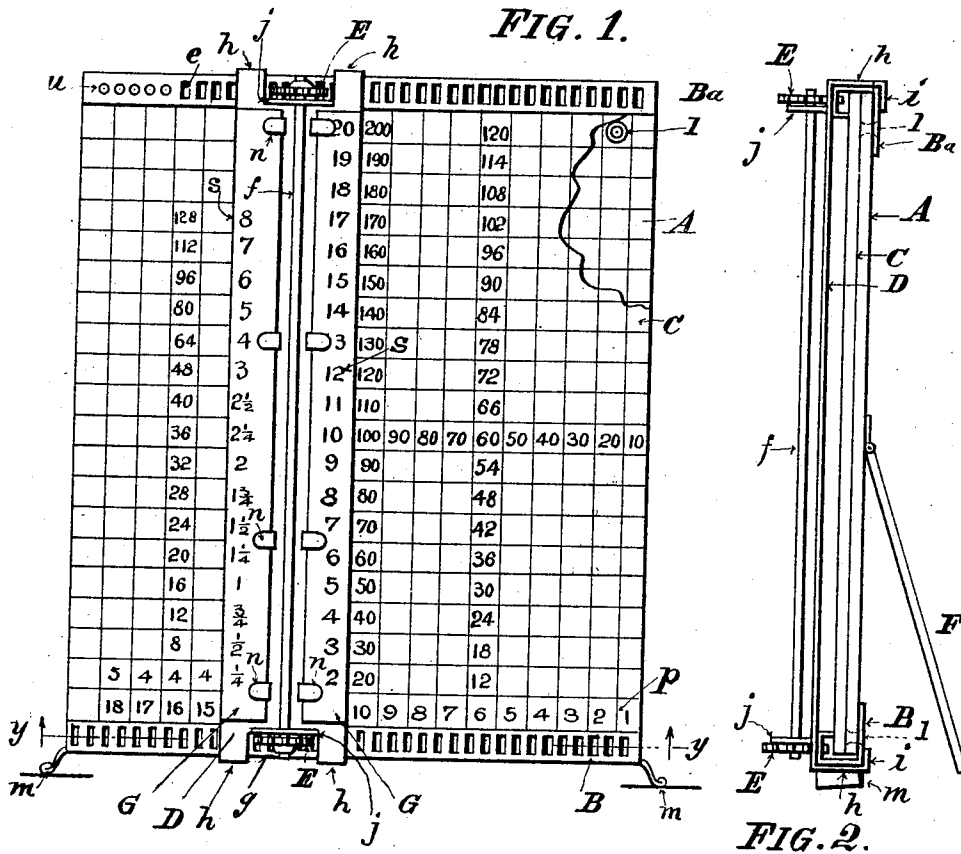


1,018,028.

Patented Feb. 20, 1912.



Witnesses:

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UNITED STATES PATENT OFFICE.

MARY A. BEALS AND MICHAEL J. STARK, JR., OF CHICAGO, ILLINOIS; SAID STARK
ASSIGNOR TO SAID BEALS.

PAYMASTER'S CALCULATOR.

1,018,028.

Specification of Letters Patent.

Patented Feb. 20, 1912.

Application filed October 16, 1911. Serial No. 654,965.

To all whom it may concern:

Be it known that we MARY A. BEALS and MICHAEL J. STARK, JR., citizens of the United States, and residents of Chicago, in the county of Cook and State of Illinois, have jointly invented certain new and useful Improvements in Paymasters' Calculators; and we do hereby declare that the following description of our said invention, taken in connection with the accompanying sheet of drawings, forms a full, clear, and exact specification, which will enable others skilled in the art to which said invention appertains to make and use the same.

The object of this invention is the production of an efficient, serviceable, accurate, and convenient calculator, by means of which the results of multiplications of various sums, etc., are instantly obtained.

To accomplish this end, the device consists, essentially, of one or more cards bearing upon one or both of their faces, preferably in print, the products of various multipliers and multiplicands, the lower one of said cards having guides at two opposing margins provided with ways to facilitate the sliding of said cards upon the lowermost one of said cards, there being located upon said guides a carriage or slide the longitudinal margins of which carry figures, said carriage being, preferably, provided with a longitudinal shaft having at its ends gear pinions constructed to engage racks on the guides to cause the carriage or slide to move equally at both of its ends, all as hereinafter first fully set forth and described, and then pointed out in the claims.

In the drawings already mentioned, which serve to illustrate this invention more fully, Figure 1 is a side elevation of the complete device. Fig. 2 is an end elevation of the same. Fig. 3 is an end elevation of the lower end of the device. Fig. 4 is a sectional view of a fragment of the device, taken on the line *y-y* of Fig. 1. Fig. 5 is a perspective view of a fragment of the carriage or slide, illustrating the specific construction of said carriage or slide. Fig. 6 is a sectional view of a portion of the lower, or base-board and the marginal guide thereon.

Like parts are designated by the same characters and symbols of reference in all the figures.

A, in the drawings designates the lowermost card or base-board of this device. It

comprises a rectangular board of proper thickness and suitable size. At two, oppositely-located margins of this board there are located guides B, B^a, which are preferably permanently secured to the base-board A, said guides affording ways or channels *a*, adapted to receive one or more of a series of cards C, said cards being preferably of approximately the same size as the base-card A. The guides B, B^a, are alike in construction so that a description of one will also apply to the other. Each of these guides is formed from a strip of sheet metal bent at right angles a certain distance from one of its longitudinal margins to afford a vertical wall *b*. It is then again bent at right angles to afford a further, horizontal, wall *c*, and finally again bent at right angles to afford a depending wall *d*, the latter wall being approximately parallel to the vertical wall *b*, but shorter so as to afford a guide-way for, and to retain the card or cards C, upon the base-card.

In the horizontally-disposed wall, which is parallel to the base-card, there are equally-spaced perforations *e*, which form a rack wherewith engages a gear pinion E, one of which is secured to each end of a shaft *f*, located upon said slide or carriage D, which slide is movably arranged upon the guides and in close proximity to the upper card C. This slide comprises a strip of metal of proper width, the ends of which are notched at *g*, as best shown in Fig. 5, the notched portion being bent at right angles to afford upstanding members *h*, arranged to engage and slide upon the vertical walls *b*, of the guides B, B^a, and then again bent at right angles to form underlying members *i*, engaging the lower sides of the guides B, B^a, to prevent the slide D from being detached from the guides. The portions of the slide which are produced by the notches *g* therein, are upwardly bent as illustrated at *j* in Fig. 5, and perforated at *k*, which perforations serve as bearings for the shaft *f*.

The guides B, B^a, are secured to the base-board A in any efficient manner, eyelets *l*, as shown in Fig. 6, being preferred, wherewith to fasten these guides to the base-board A.

In use, it is preferred that the device be placed in inclined position, it being, of course, evident that it may also be placed in horizontal position; and in order to support

the device in said inclined position, short feet m , are provided, preferably on the lower one of said guides, and a brace or easel F , hingedly connected to the back of the base-board A to function in the well-known manner.

Upon the faces or sides of the cards A and C there are placed, preferably printed, numerals and figures, and these are arranged in the following manner: The lowermost horizontal row of figures, p , are assumed to be multipliers. For instance, this row may represent dollars and cents; units of weight, hours and fractions of hours, or any other units of calculations. At each edge of the slide D there are similar figures s , representing multiplicands which are to be multiplied by the multipliers in the row p ; and upon the face of the card above the row p , there are horizontal rows of figures registering with the row of figures on the margin of the slide, and these horizontal figures designate the products of the multiplications of the multipliers and the multiplicands. Thus assuming that the figure 10 in the row p of the multipliers represents pounds, and that the figure 10 on the slide represents price: by sliding the carriage D so that its margin is adjacent to the figure 10 of the multipliers, the figure registering with the figure 10 on the slide, will indicate the product of the multiplication, viz., 100, as shown in Fig. 1.

In order to enable this device to solve instantly any problem in multiplication, (or inversely, in division) it is desirable that upon the slide D there are various columns of multiplicands; and in order to afford ready means for supplying the slide with these data, we form on the slide lugs or clips n , underneath which may be placed strips of card-board or other suitable material upon which one of the various units are indicated, which strips are to be properly marked for identification with their corresponding cards C bearing the products of multiplication, as already set forth.

It will now be readily understood that by preparing a set of cards C , having different multipliers and the products of multiplication with a certain series of multiplicands, and by placing these multiplicands upon the slide, any problem in multiplication can be instantly solved and the product thereof ascertained at a glance by properly manipulating the slide D in connection with the proper card C and strip G . The device, is, therefore a time-saver for timekeepers in figuring the total wages of employees, paymasters, store keepers, etc., in figuring costs, interests, and for many other purposes which will readily suggest themselves to persons and accountants.

In the foregoing specification we have described the details of construction of the parts with considerable minuteness, but we

desire it understood that changes in these details may be readily made without departing from the scope of our invention. Thus, instead of making the perforations in the guides oblong, they may be made round, as shown at u , in Fig. 1, or instead of placing removable strips G upon the slide D , separate slides may be provided; or the clips on the slide may be differently constructed, all of which is clearly within the province of the skilled mechanic.

Having thus fully described our invention, we claim as new and desire to secure to us by Letters Patent of the United States—

1. A device of the nature described, comprising, in combination, a base-board, guides fixedly secured to opposite margins of said base-board said guides having a member provided with a series of equally-spaced perforations, a slide movably mounted upon said guides, said slide having members embracing said guides, there being on said slide upstanding punctured members affording bearings, a shaft journaled in said punctured members, said shaft being located upon said slide and reaching from one end to the other end thereof, and pinions at the ends of said shaft constructed to engage the perforations in said guides.

2. A device of the nature described, comprising, in combination, a base-board, guides fixedly secured to opposite margins of said base-board, said guides having a member provided with a series of equally-spaced perforations, a slide movably mounted upon said guides, said slide having members embracing said guides, there being on said slide upstanding punctured members affording bearings, a shaft journaled in said punctured members, said shaft being located upon said slide and reaching from one end to the other thereof, pinions at the ends of said shaft constructed to engage the perforations in said guides, movable strips upon said slide, and means on said slide for retaining said strips in position thereon.

3. A device of the nature described, including, in combination, a base-board, guides fixedly secured to the top and bottom margins of said base-board, said guides having a rack, a slide movably mounted upon said guides, bearings on said slide, a shaft rotatably mounted in said bearings, said shaft being located above said slide and reaching from one end to the other thereof, pinions at the ends of said shaft constructed to engage said racks, means for raising the lower margin of said base board above the supporting surface of an object on which the device is constructed for use to afford space for the lower end of the slide to move horizontally on the lower guide, and means for supporting said base-board in inclined position.

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4. A device of the nature described, including, in combination, a base-board, guides fixedly secured to the top and bottom margins of said base-board, said guides having racks; a slide movably located upon said guides, upstanding bearings on said slide, a shaft rotatably mounted in said bearings, said shaft being located above said slide and reaching from one end to the other end thereof, pinions at the ends of said shaft constructed to engage said racks, there being upon the face of said base-board vertical and horizontal rows of figures, and at the margins of said slide a series of figures registering with the figures on said base-board.

5. A device of the nature described, including, in combination, a base-board, guides fixedly secured to the top and bottom margins of said base-board, racks on said guides, a slide movably mounted on said guides, upstanding bearings on said slide, a shaft rotatably mounted in said bearings, said shaft being located above the slide and extending from one end to the other end thereof, pinions at the ends of said shaft constructed to engage said racks; one or more separate cards adapted to be superposed on said base-board, there being ways in said guides to receive said cards, and separate strips, constructed to be removably secured to the said slide, at both sides of said shaft.

6. A device of the nature described, comprising, in combination, a base board, guides fixedly secured to said base board at the top and bottom margins thereof, said guides having a perforated upper member and inner, downwardly extending ledges which do not reach to the top surface of said base board to afford spaces between said base board and said ledges, a carriage movable on said guides said carriage having upstanding lugs near each end to afford bear-

ings, a shaft journaled in said lugs, said shaft reaching from one end to the other end of said carriage, and a pinion at the outer ends of said shaft constructed to engage the perforations in the upper members of said guides.

7. A device of the nature described, comprising, in combination, a base board, guides fixedly secured to said base board at the top and bottom margins thereof, said guides having a perforated upper member, and inner downwardly extending flanges which do not reach to the top surface of said base board to afford spaces between said base board and said flanges, a slide movable on said guides, said slide having upstanding lugs near each end to afford bearings, a shaft journaled in said lugs, said shaft reaching from one end to the other end of said slide, and a pinion at each outer end of said shaft constructed to engage in the perforations in the upper members of said guides, said base board having on its upper surface permanent rows of horizontal and vertical figures, a card of approximately the same size as the base board constructed to pass over said base board and move in the spaces between said base board and the lower margins of the depending flanges, there being on said slide removable cards having rows of figures coinciding in position with the horizontal rows of figures on the upper surface of the base board.

In testimony that we claim the foregoing as our invention, we have hereunto set our hands in the presence of two subscribing witnesses.

MARY A. BEALS.

MICHAEL J. STARK, JR.

Witnesses:

FRIEDA T. LEBERSTEIN,

MICHAEL J. STARK.