

No. 869,511.

PATENTED OCT. 29, 1907.

C. H. OCUMPAUGH.
CALCULATOR.

APPLICATION FILED APR. 28, 1902.

2 SHEETS—SHEET 1.

Fig. 1.

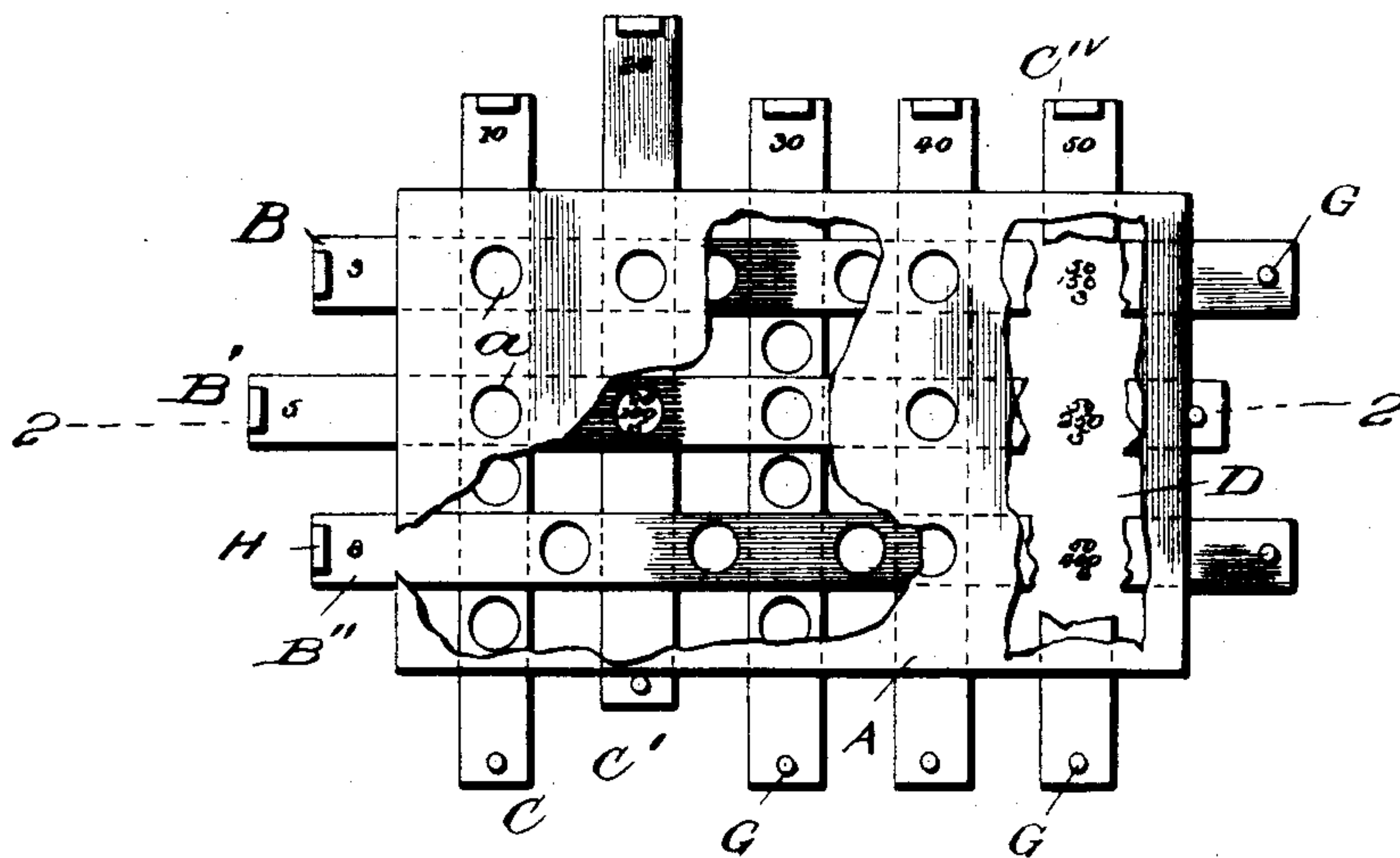


Fig. 2.

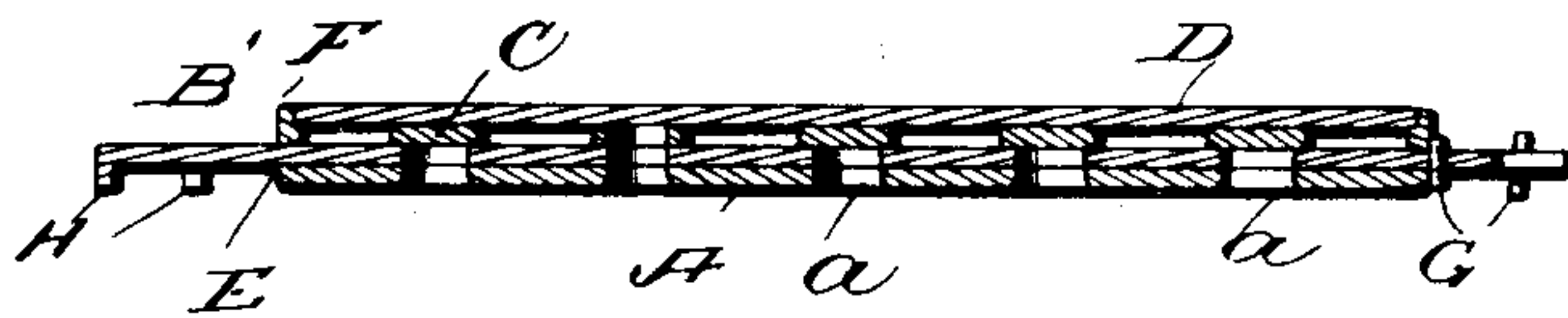
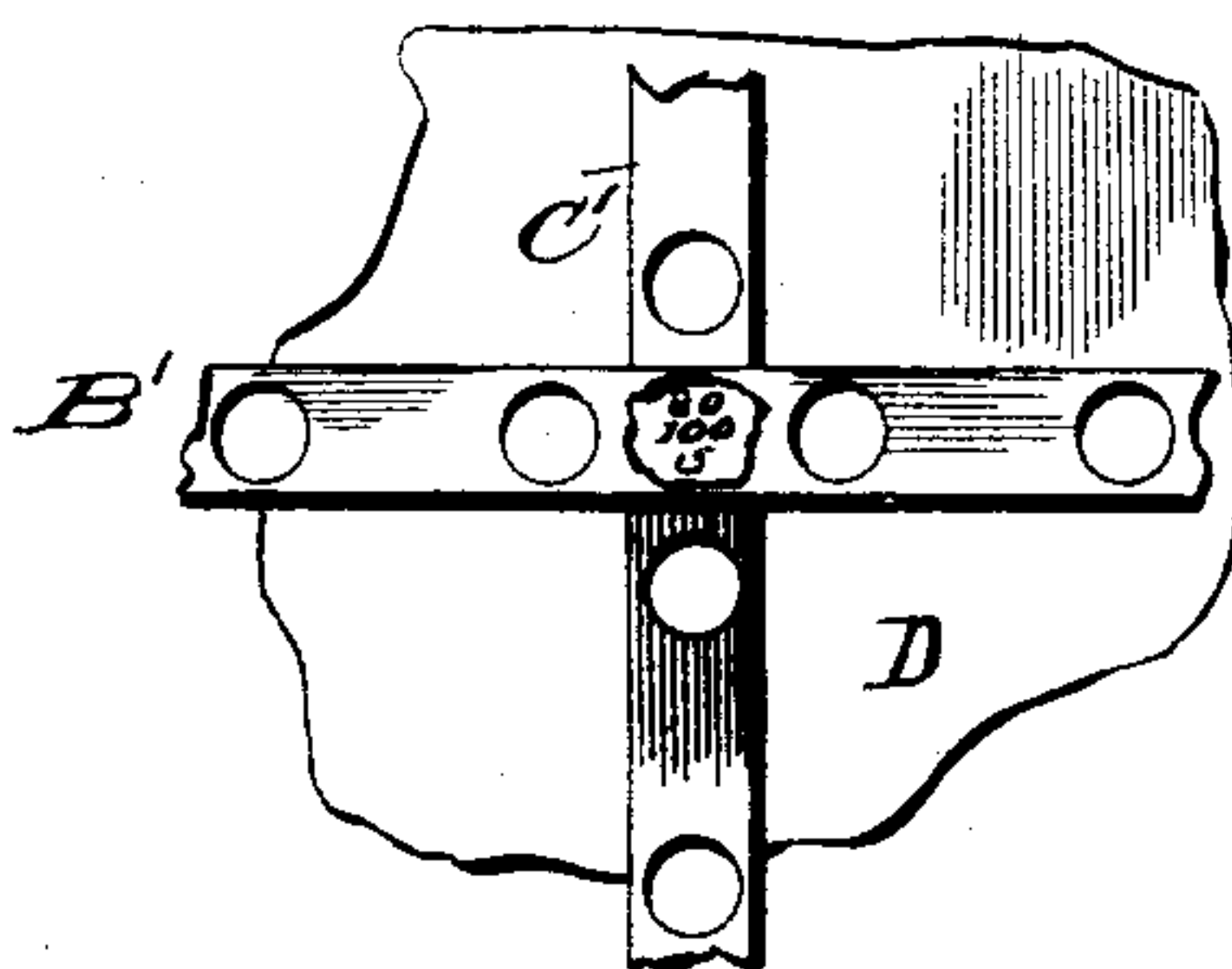


Fig. 3.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 4

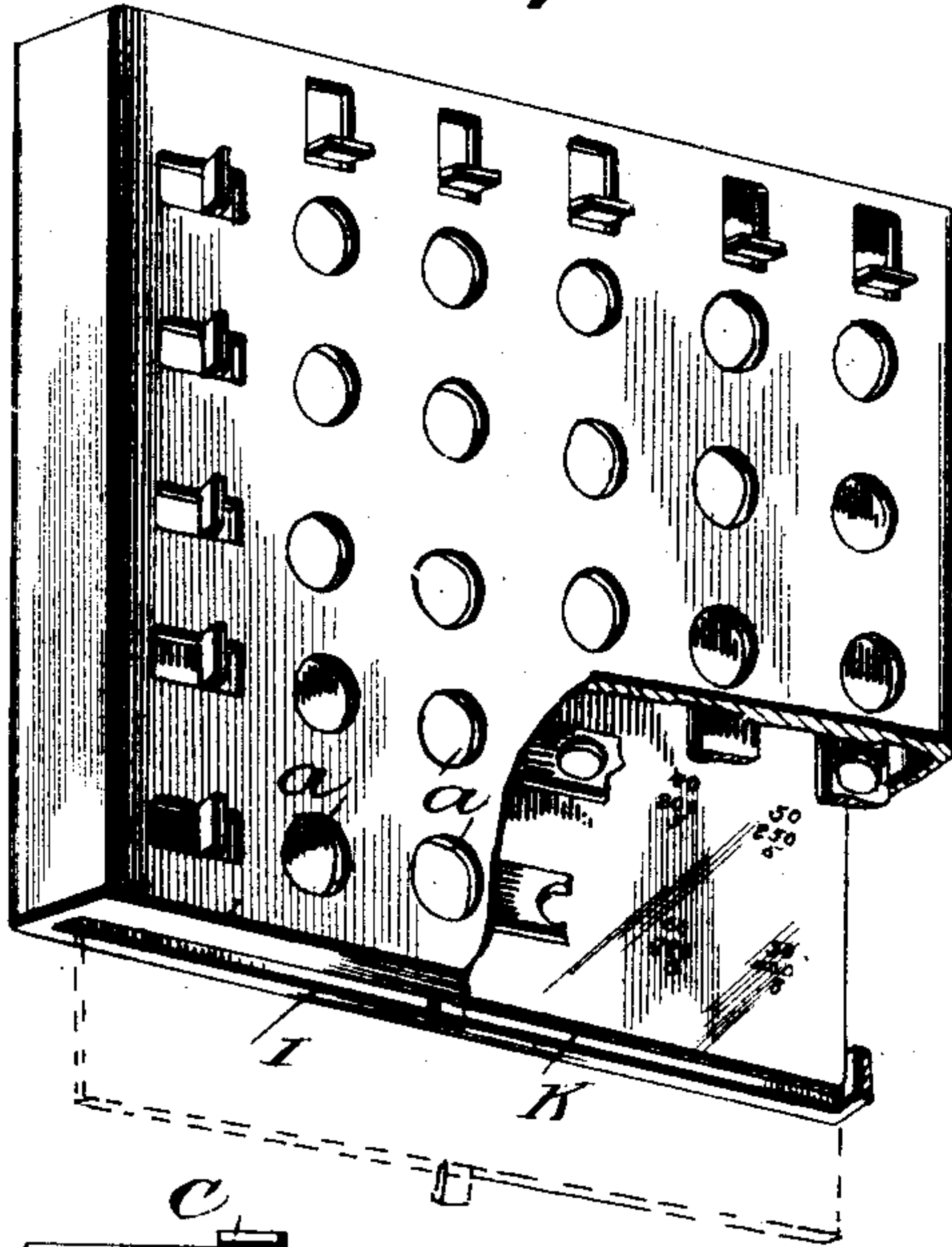


Fig. 5

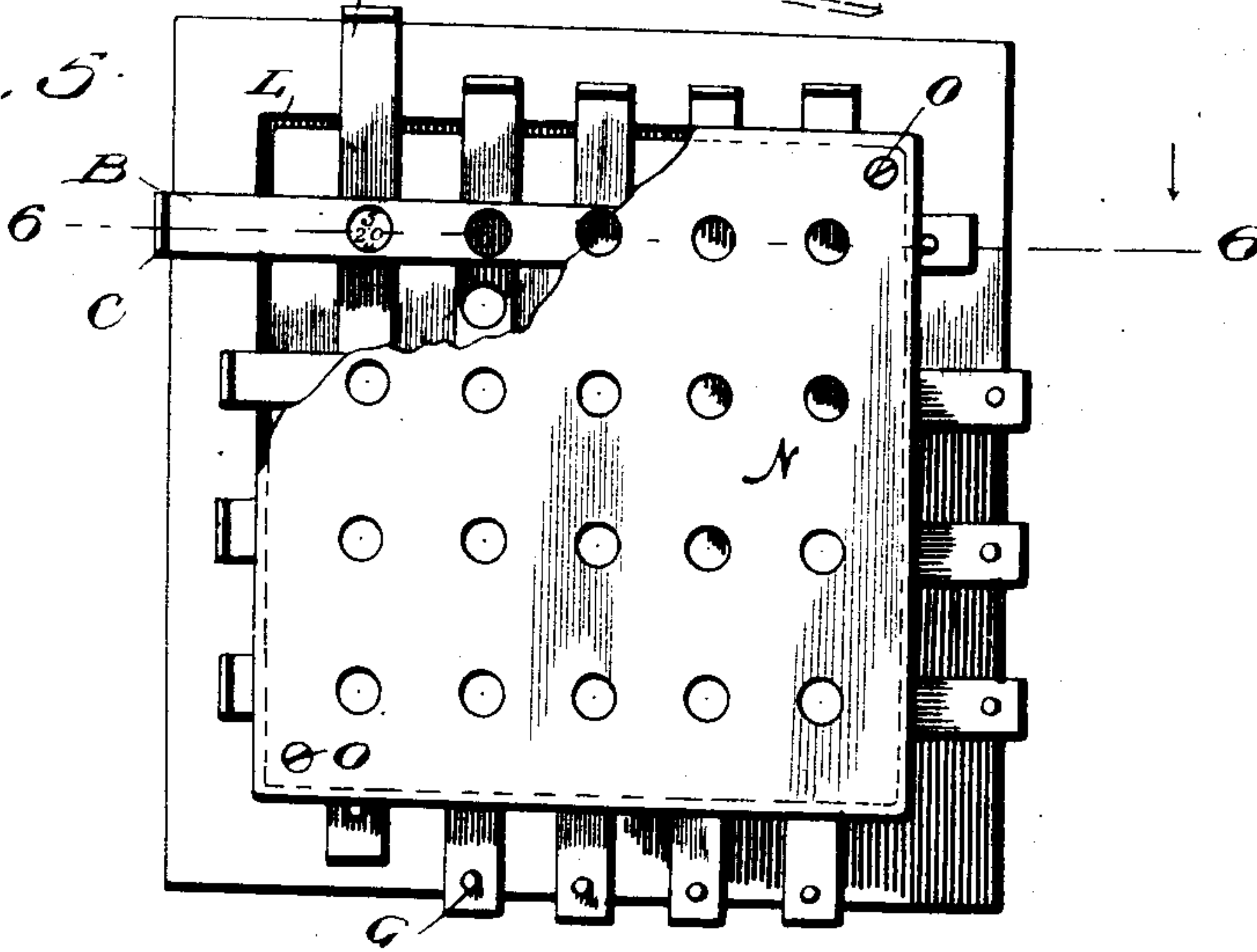
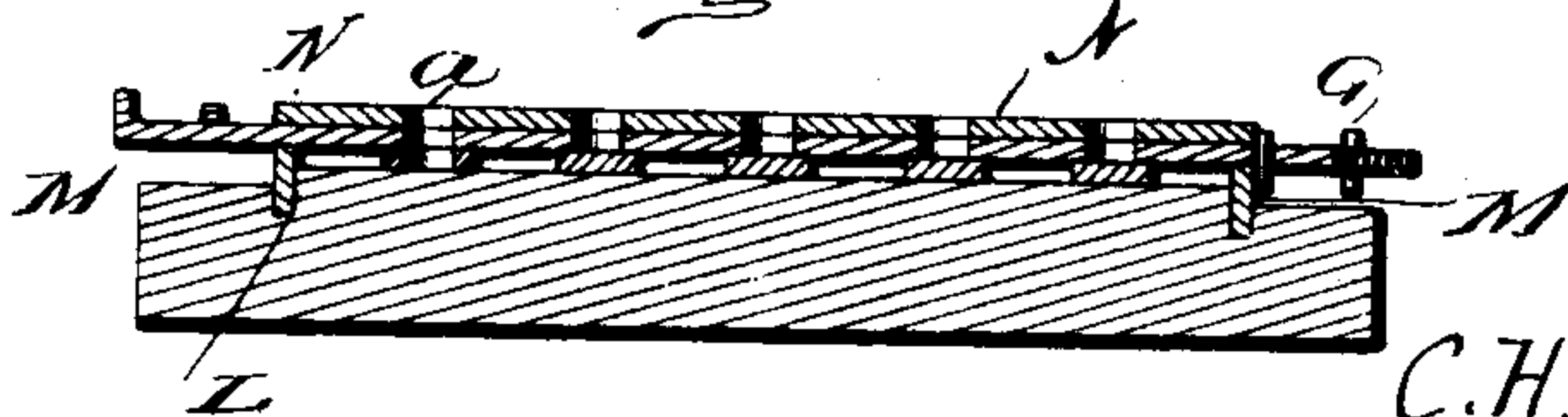


Fig. 6



Witnesses

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UNITED STATES PATENT OFFICE.

CHARLES H. OCUMPAUGH, OF ROCHESTER, NEW YORK.

CALCULATOR.

No. 869,511.

Specification of Letters Patent.

Patented Oct. 29, 1907.

Application filed April 28, 1902. Serial No. 105,066.

To all whom it may concern:

Be it known that I, CHARLES H. OCUMPAUGH, a resident of Rochester, in the county of Monroe and State of New York, have invented certain new and useful
5 Improvements in Calculators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

The invention relates to calculators, and has for its
10 object to indicate arithmetical operations by mechanical means in a simple, convenient and certain manner.

The invention consists in the construction herein described and pointed out.

In the accompanying drawing, Figure 1 is a broken
15 plan of the improved device; Fig. 2 is a section on line 2—2 of Fig. 1; Fig. 3 is a partial broken plan, the slides B' and C' being assumed to be in normal situation and the face plate removed; Fig. 4 is a perspective view, with a part broken away, showing a modification;
20 Fig. 5 is a plan view, with a part broken away, showing another modification; and Fig. 6 is a section on line 6—6 of Fig. 5.

Reference letter A indicates a front or face plate, and D a back plate or base, which plates may be con-
25 nected in any suitable or convenient manner, but so as to leave between them space for the manipulation of the inclosed series of slides or sliding strips B and C. These may be held and guided in any convenient manner as, for example, by suitable slots E in the
30 flanges F of the base plate.

G denotes stops, and H handles, on the slides. The individual numbers of each series are arranged at an angle with those of the other series, the arrangement in the present instance being at right angles.

35 The face and back plate constitute a case, one of the plates being preferably provided with flanges slotted to receive the slides which extend entirely through the case and are provided each with a stop adapted to bear on the exterior edge of the case and also with a
40 handle adapted to stop the slide in like manner. The stop of any slide being removed it can be withdrawn from the case for the substitution of another, or of the same after it has been re-marked for a different use.

The construction illustrated is adapted for indicating
45 the product of any two desired or prearranged numbers, being noted one on each of two transversely movable slides, as, for example, the product of a number of hours by a rate of pay per hour. The figures marked on the slides C, in the case illustrated, may be under-
50 stood to denote rates of wages per hour and those on the slides B numbers of hours, and the device is adapted to correctly indicate the product of any number that indicates hours into any number indicating wages per hour by suitably manipulating two appropriate trans-
55 versely movable slides. Three slides indicating respectively three, five and eight hours, and five slides

indicating respectively wage rates of from ten cents to fifty cents an hour, are shown, but the particular numbers and the particular denominations are not essential. The invention, however, is primarily intended for use
60 in indicating correct amounts to be paid to employees. The majority of laborers are paid so that their time is computed in fractions which requires complex and tedious calculations. With my improved device, however, it is only necessary to move two slides, one
65 representing the number of hours the laborer has worked, and the other the amount he is to receive per hour, and the result is instantly shown, and as no other figures appear there is no confusion. This device is adapted, however, to all kinds of computations.
70

The face plate A has series of apertures *a* equal in number to the sum of the two series of slides. These face plate numbers are situated adjacent the point of the intersection or overlapping of the slides, and each
75 slide has a series of apertures or perforations any one of which can be made to register with an aperture in the face plate and with an aperture in a transverse slide properly moved to bring it in alinement, with the effect to disclose figures on the back or base plate through the
80 three alined openings.

Referring to Fig. 1, the slides C' and B', marked respectively 20 and 5, are shown moved to a situation to cause an aperture in each to register with numbers on the back plate corresponding to those of the respective
85 slides, the product, 100, of said numbers being indicated in proximity (that is, between the slide numbers) on the back plate disclosed by the same operation. Slide B' remaining as shown, a similar movement of the slide C' would disclose a product of 250. Restoring B' to its normal situation and moving B'', C' re-
90 maining unmoved, a product of 400 would be disclosed—all as will be readily understood. It will also be understood that there is no limit to the number of series of slides, nor to the numbers, nor to the subject of the computations, and that the nature of the calcu-
95 lations can be varied as, for example, to addition, subtraction or division. For greater certainty and speed, the factors which are marked on the handles of the slides are also, together with their product, marked on the base plate, all to be exposed by suitable manipulation
100 as explained, the product and the factors therefore being visible at one glance. It is obvious in this construction that if one slide only is moved no figure is disclosed, and that none are disclosed unless two slides are moved from normal position.
105

A grouping of the figures to show the product and a factor at one glance and through one opening is adapted to other calculators and I consider it a valuable adjunct in a calculator and not limited to the construction
110 shown.

The face plate A, the base plate, and the intermediate vertical side walls constitute a case for the slides, and

affords means for guiding them, the slides projecting through the case walls for the purpose. Each slide is independently and directly movable. The apertures in each series of slides are equidistant, and an effective movement of a slide must equal the distance between the aperture centers in that particular slide. This distance is determined by the stops G. If a front plate is used the distance between its apertures must equal that between the aperture centers of the slide.

10 To adapt my calculator for various uses, provision is made for convenient change of the figures on the base or back plate either by the substitution of cards just above the base or by providing for a substitution of bases.

15 As indicated in Fig. 4, a space K is left immediately above the top of the base or back plate for the insertion of a notation card, and a card-receiving slot I is provided to permit the insertion or removal of a card, which thereby becomes as respects the notation a removable back plate. The figures on any card can be made in advance to agree with the particular arithmetical operation to be indicated by moving the slides, and the stops G can be made removable to permit the slides to be removed, if found necessary or desirable, for the purpose of marking them. This enables the same calculator to be applied to various uses. In some cases instead of using removable cards the base may be made detachable either for re-marking on its face or for the substitution of a different base previously marked.

30 Figs. 5 and 6 show a detached base having grooves L adapted to receive flanges M on one or more edges of the lower part of the body N of the calculator. O denotes screws to fix the parts together.

35 The term base plate is used herein to indicate a part which may or may not be interchangeable, said part having inscribed thereon the results of previous calculations whether that part is an integral detachable base or a base having a detachable part inscribed as stated,

40 the essential element being a notation plate or base

whether made in one or more parts and whether detachable or not.

This calculator is adapted to show the results in addition, subtraction, multiplication or division or any of their various combinations. It is also adapted for question answering, for railroad time tables showing the positions of railroad trains at given times, and the results attained at a given time by any machinery in operation, etc., etc.,—in fact it can be used wherever needed to save time in calculating, and I do not wish to limit myself to the examples shown in the drawings.

I am aware that calculators have been provided with perforated slides movable transversely in grooves or guideways in a case, said case being provided with flanges in the path of the slides, and also that removable charts or notation plates have been proposed. In my improved construction each slide is provided with an exterior removable stop and with a handle, each indicating the situation of the slide. Further when the stops are removed the slides can be readily withdrawn from the case through the slots in the edge thereof no grooves being required in the body of the base plate for said slides. And further in my construction the use of a hinged or removable case cover for the introduction of a notation plate is avoided.

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

In a calculator, the combination of a case, a removable back plate, transversely arranged series of perforated removable and numbered slides supported in the case above said plate and movable to cause these perforations to register and expose the back plate, numbers on said plate denoting the numbers of the actuated slides and their product, said numbers being exposed through the coincident perforations of said numbered slides, detachable stops for the slides, and means for securing the plate in operative situation, said means permitting the removal of the plate.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

CHARLES H. OCUMPAUGH.

Witnesses:

A. M. ZIMMER,
GEORGE A. GILLETTE.