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PATENTED DEC. 1, 1903.

T. FINIGAN & E. F. W. WIEDA.
CALCULATING DEVICE.

APPLICATION FILED JAN. 19, 1903.

NO MODEL.

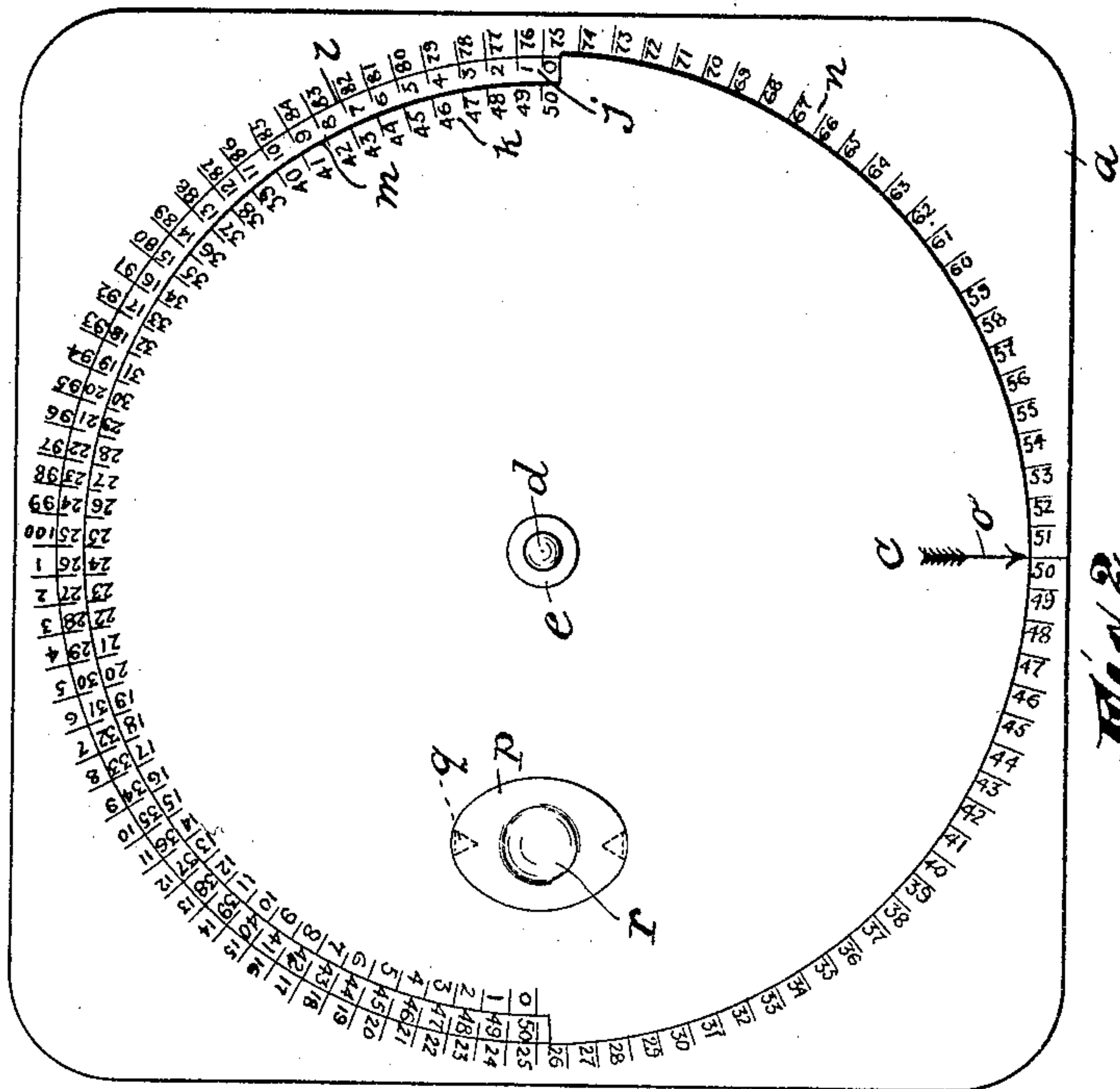


Fig. 2.

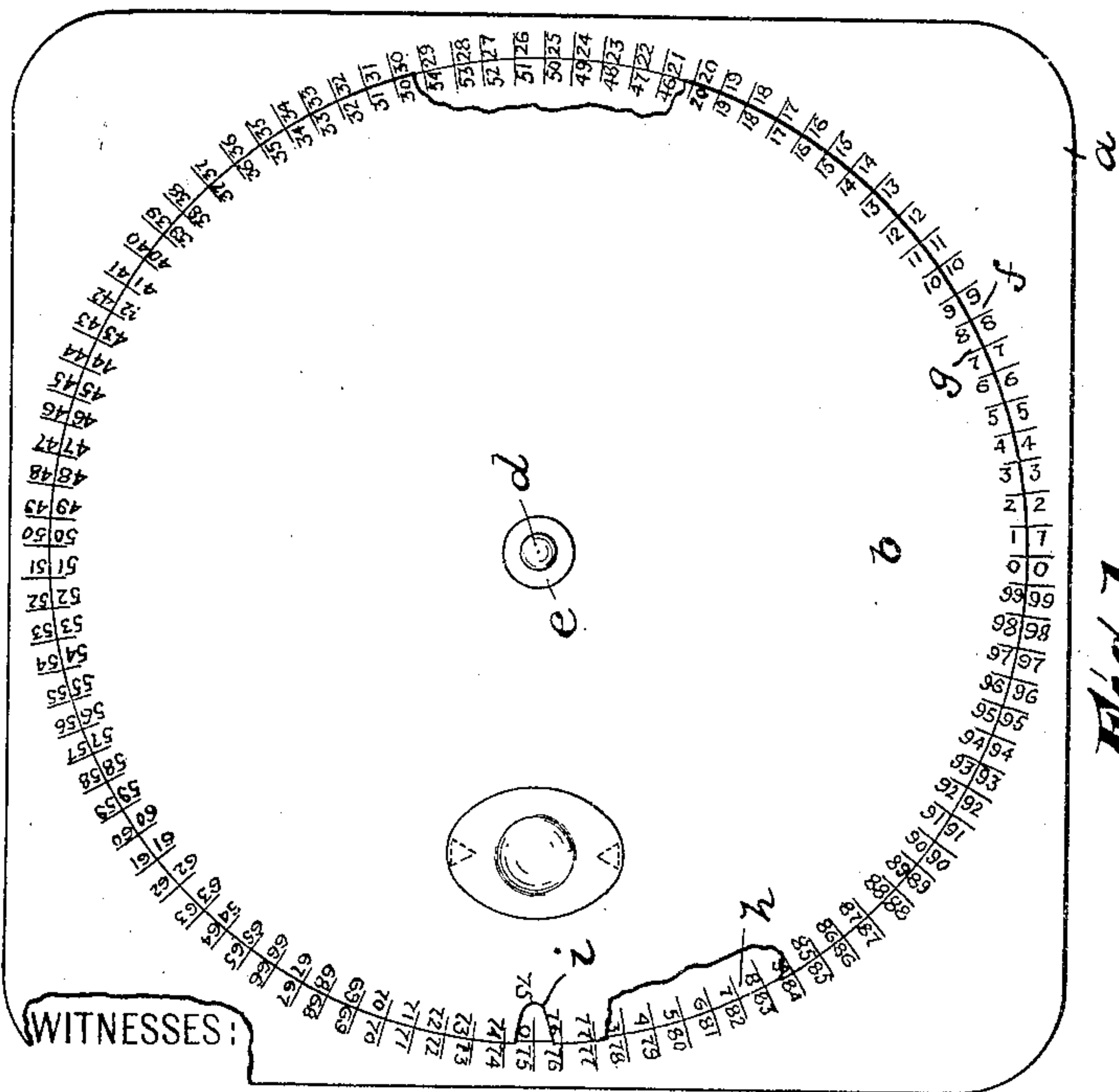


Fig. 1.

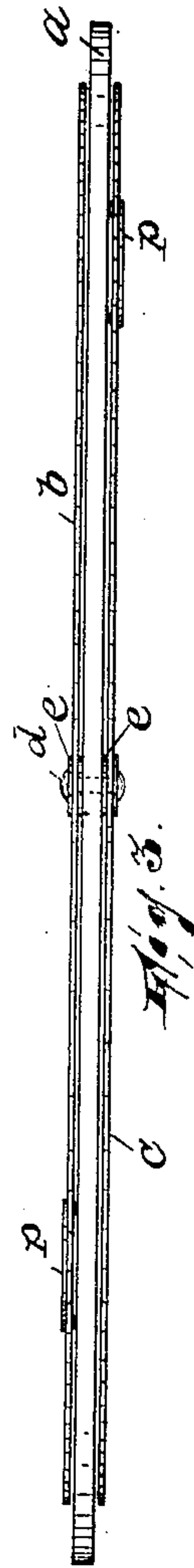


Fig. 3.

WITNESSES:

Wm. D. Bell.

James B. Munton.

INVENTORS

Thomas Finigan
and Ernst F. W. Wieda

BY

Gartner & Steward,
ATTORNEYS.

UNITED STATES PATENT OFFICE.

THOMAS FINIGAN AND ERNST F. W. WIEDA, OF PATERSON, NEW JERSEY.

CALCULATING DEVICE.

SPECIFICATION forming part of Letters Patent No. 745,586, dated December 1, 1903.

Application filed January 19, 1903. Serial No. 139,498. (No model.)

To all whom it may concern:

Be it known that we, THOMAS FINIGAN and ERNST F. W. WIEDA, citizens of the United States, residing in Paterson, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Calculating Devices; and we 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 appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Our invention relates to calculating devices; and it consists in an improved device of this nature adapted particularly for adding and subtracting.

Our invention will be found fully illustrated in the accompanying drawings, wherein—

Figure 1 is a plan view showing that side of the device on which the subtracting is effected. Fig. 2 is also a plan view, but showing that side of the device on which the adding is done; and Fig. 3 is a side or edge view of the device.

The essential feature of our invention consists in providing each of two parts, one of which is arranged to rotate on the other, with a series of numbers, beginning with naught, so arranged that by bringing the two series into a given relation—*i. e.*, so as to add or subtract any two numbers which may be comprised within the series—an indicator or index on one of the parts will designate the result on another series of numbers on the other part.

In the drawings, *a* is a base or body part of cardboard or other suitable material, while *b* and *c* are two disks which have a common pivot on a rivet *d* extending through parts *a*, *b*, and *c*, the said disks being each preferably disposed between washers *e* on the rivet.

Referring first to that portion of the device whereby subtracting is effected, base *a* and disk *b* have each a series of numbers *f g*, running from naught to ninety-nine and disposed concentrically close to the periphery of disk *b*. Under disk *b* is arranged another series *h* of numbers, this series likewise running from naught to ninety-nine and being disposed close to the periphery of disk *b*. When the

two naughts of the series of numbers *f* and *g* register, an opening *i*, which serves as an index, uncovers or discloses zero on the series of numbers *h*. It should be remarked that the several series of numbers run in the same direction. The series of numbers *f* are the subtrahend-numbers, the series of numbers *g* the minuend-numbers, and the numbers *h* the result-numbers. Now upon a view to Fig. 1 it will be seen that with the parts disposed as there shown the subtracting of any number on disk *b* from its neighbor on disk *a* will be the result shown at the index, “—0.” With this understood it will not be difficult to see that if disk *b* is moved one, eight, or any other number of points, so a corresponding number will show at the index. So that, suppose it were desired to subtract five from eight, since that would require moving disk *b* three points, “3” would be shown by the index, and of course the same would be the result if six were subtracted from nine, nine from twelve, and so on.

Referring now to that portion of the device whereby adding is effected, on the base *a* and disk *c* are inscribed reverse concentric series of numbers *j k*, respectively. The series *j* is disposed just inside of a circle *l* on base *a*, while the series *k* is disposed just inside a semicircular indentation *m* in the disk *c*. Outside of and concentric with the circle *l* is another series of numbers *n*, running from naught to ninety-nine. On disk *c* is a pointer *o*, serving as an index for the series of numbers *n*. On account of the reverse arrangement of series of numbers *j* and *k* the sum of any two coinciding numbers, one from each of these series, will be the same as the sum of any other two. Now if disk *c* is turned in the direction of the arrow, say, one point each number in series *k* will be brought opposite the number in series *j*, which is one higher than that at the previous position of disk *c*. Thus supposing the parts are arranged as in Fig. 2 and it is desired to add fifty and one or forty-seven and four or thirteen and thirty-eight, this will mean to advance the disk one point with the consequence that the pointer *o* is brought opposite “51,” a number which is higher by one than the previous number to which it pointed. If it is desired to add, say, fifty and three or

any two numbers having that corresponding relation at the start, the required movement of the disk three points will show "53" in the series n , and so on.

5 In order to facilitate turning the disks, a thin metallic plate p , having securing-spurs q , is attached against the outer surface of each disk, the plate being dished, as at r , to receive the end of the operator's finger.

10 Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

15 1. The combination of two members pivotally secured together and provided the one with two and the other with a single series of numbers, said series being concentric and all of them being adapted to be employed in performing each calculation, and an index forming a part of the member having the sin-

gle series of numbers and adapted to indi- 20 cate with reference to one of the series of numbers on the other part, substantially as described.

2. In a calculating device, the combina- 25 tion of two members provided with numbers of calculation, and one of which is rotative, and a dished plate secured against the outer face of the rotative member, substantially as described.

In testimony that we claim the foregoing we 30 have hereunto set our hands this 17th day of January, 1903.

THOMAS FINIGAN.
ERNST F. W. WIEDA.

Witnesses:

JOHN W. STEWARD,
ROBERT J. POLLITT.