

C. M. YOUNG.
CALCULATING DEVICE.
APPLICATION FILED JAN. 3, 1905.

2 SHEETS—SHEET 1.

Fig. 2.

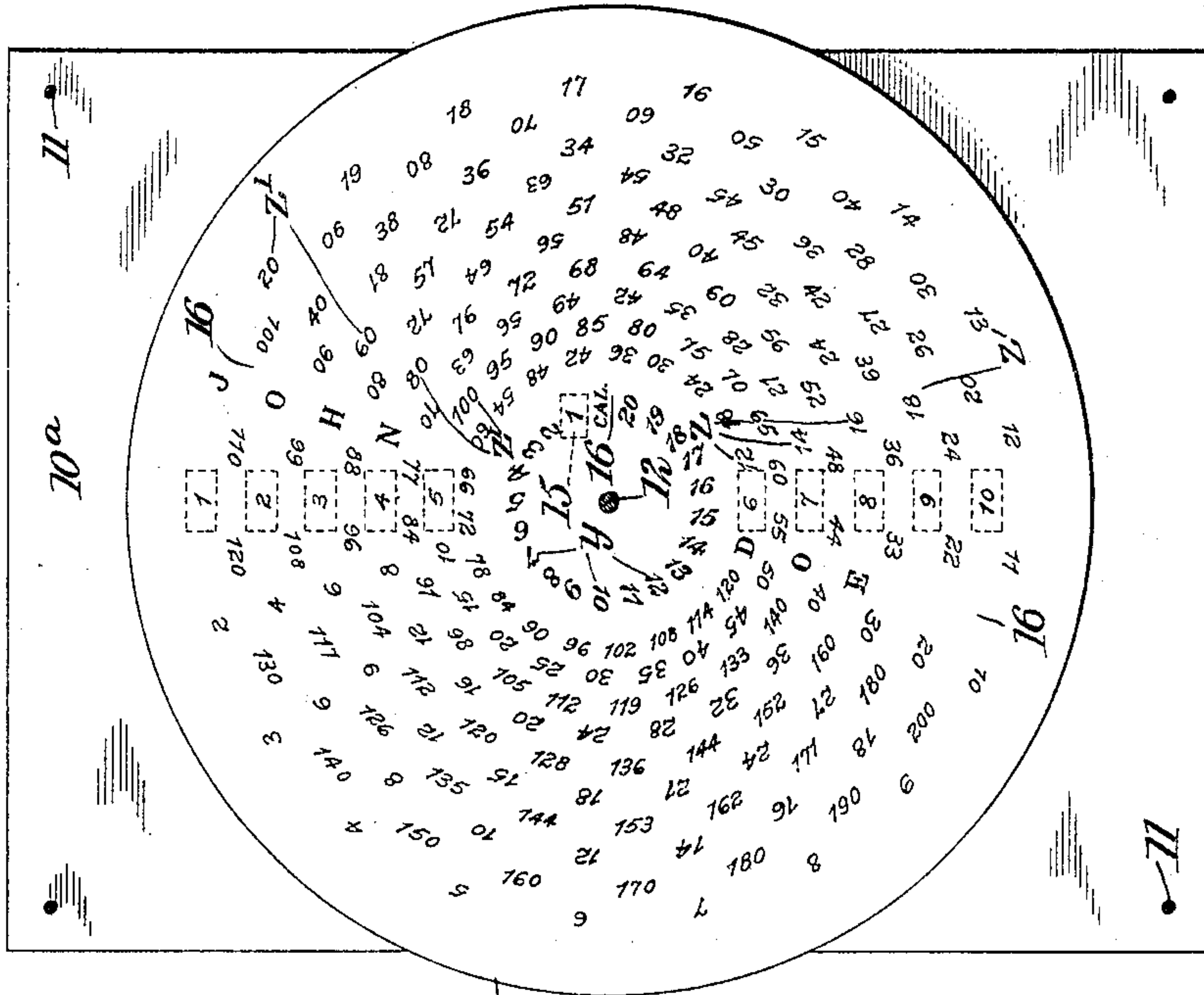
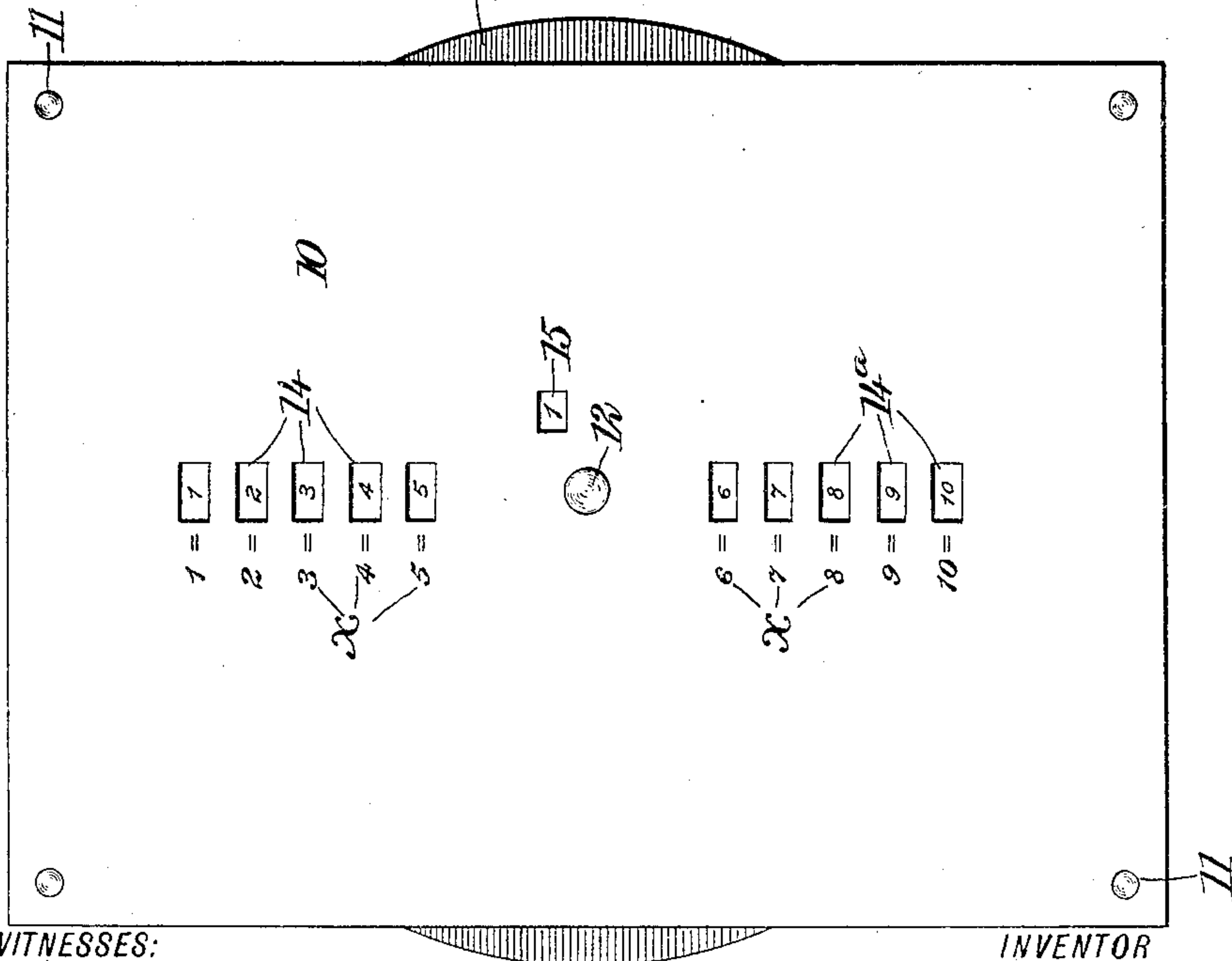


Fig. 1.



WITNESSES:

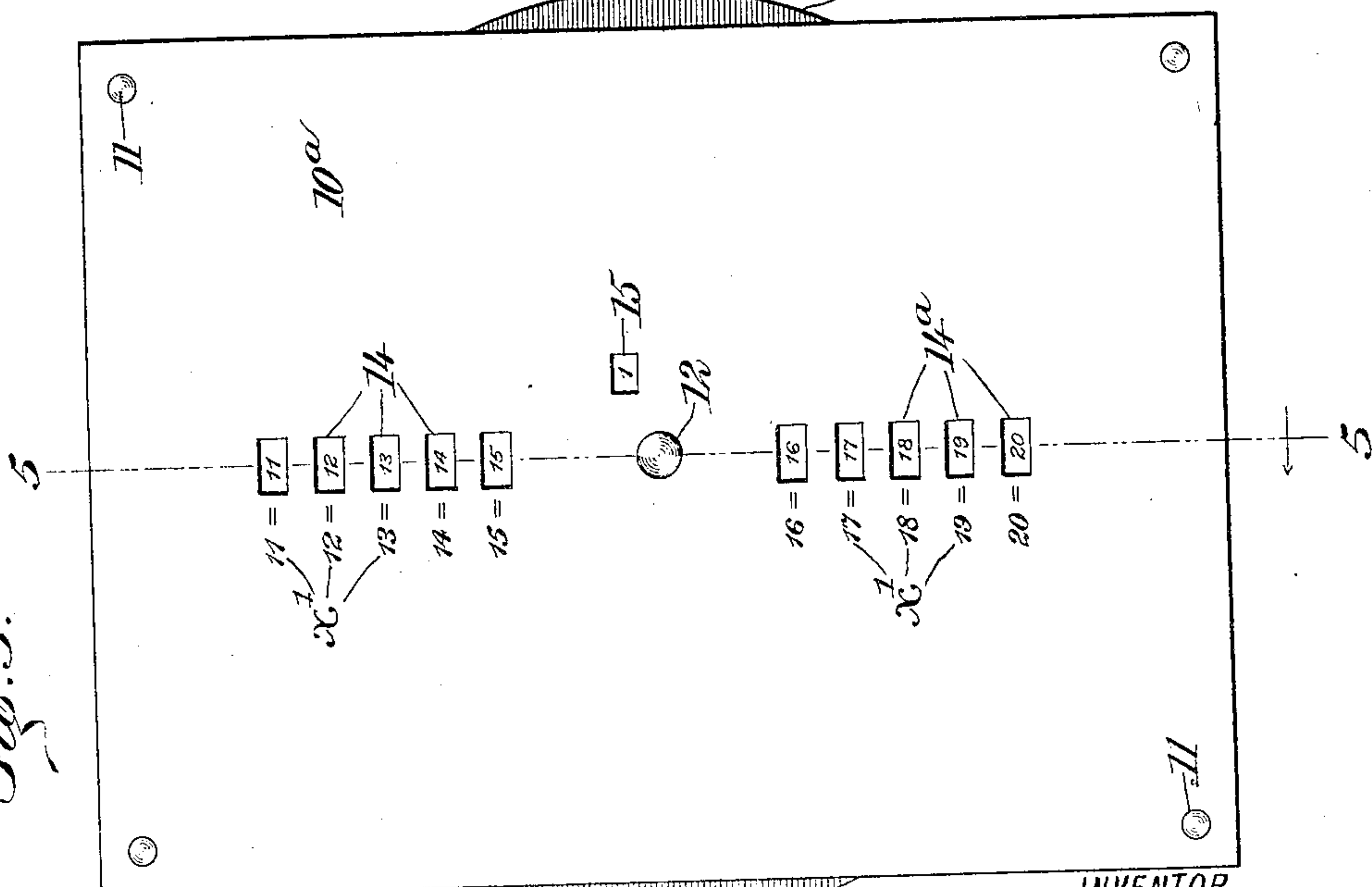
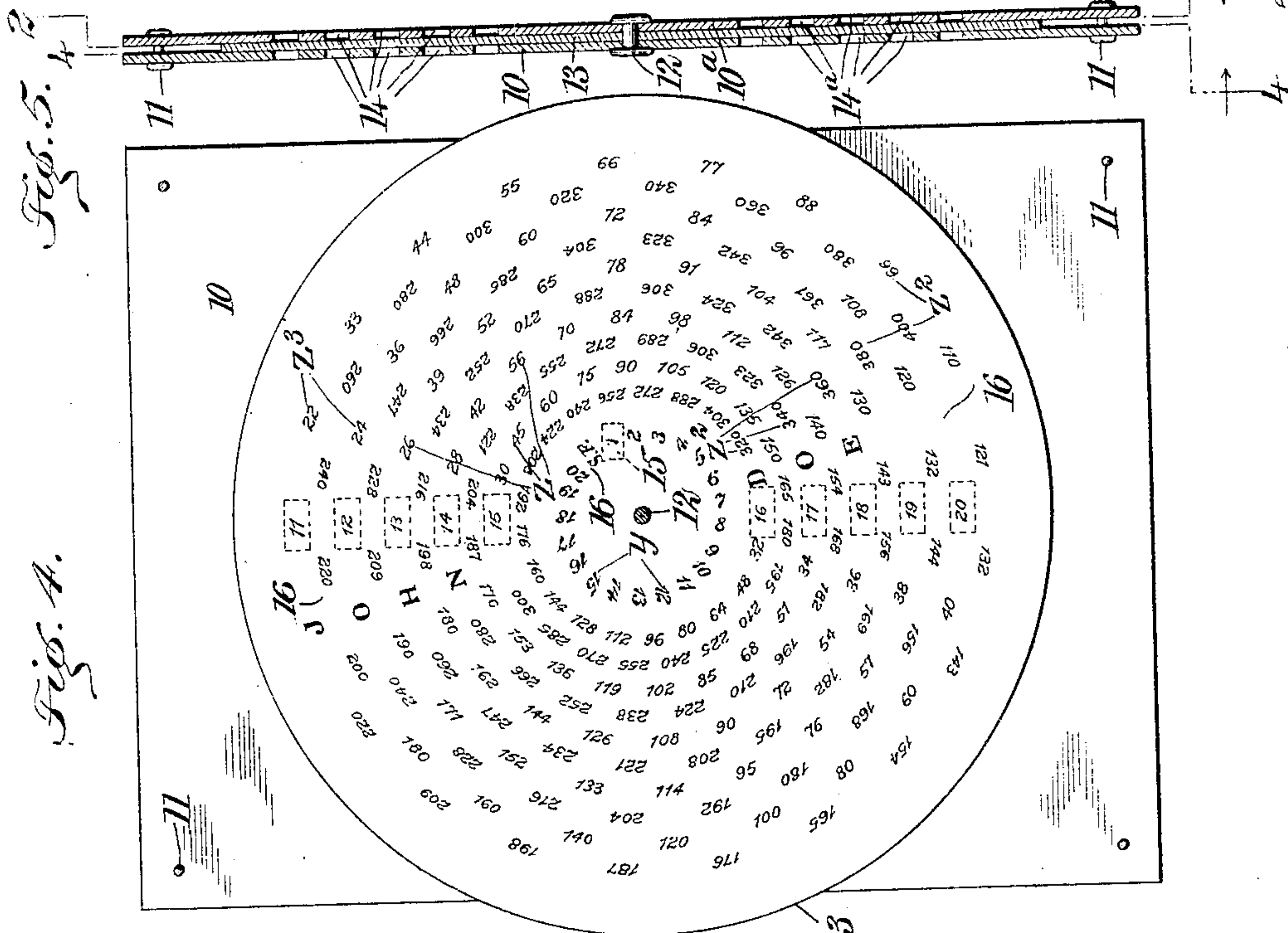
R. C. Abbott
J. H. Cobb

INVENTOR

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2 SHEETS—SHEET 2.



WITNESSES:

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UNITED STATES PATENT OFFICE.

CHARLES MICHAEL YOUNG, OF SAN FRANCISCO, CALIFORNIA.

CALCULATING DEVICE.

No. 804,646.

Specification of Letters Patent.

Patented Nov. 14, 1905.

Application filed January 3, 1905. Serial No. 239,431.

To all whom it may concern:

Be it known that I, CHARLES MICHAEL YOUNG, a citizen of the United States, and a resident of San Francisco, in the county of San Francisco and State of California, have invented a new and Improved Calculating Device, of which the following is a full, clear, and exact description.

My invention relates to calculating devices, and more particularly to those applicable to performing the operation of multiplication. Its principal objects are to provide a simple and accurate device of this character.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 shows one embodiment of my device in front elevation. Fig. 2 is a section therethrough on the line 2 2 of Fig. 5. Fig. 3 shows in elevation the opposite side of the device from that illustrated in Fig. 1. Fig. 4 is a section on the line 4 4 of Fig. 5, and Fig. 5 is a transverse section on the line 5 5 of Fig. 3.

A support is here illustrated consisting of opposite sheets 10 10^a, which may be of some suitable and preferably opaque material and are conveniently of rectangular form. The sheets are secured to one another, preferably near their corners, by rivets or attaching means 11 and have extending between them at their center an axial pin 12. Between the rivets the support members are separated sufficiently to receive a movable calculating member or disk 13, which is mounted to rotate upon the pin 12 and is of such diameter that at least a portion of its periphery will project beyond the edge of the support. In each of the supporting-sheets is formed a series of openings, which are preferably arranged in two groups 14 and 14^a, radial with respect to the axis and situated at different distances therefrom—that is, although the openings of each series are uniformly spaced from one another the corresponding openings of each group are at different distances from the center. Each series of openings is designated by a set of numerals or factors to be multiplied—such, for example, as the multipliers—those upon one sheet ranging in the present instance from “1” to “10” and being indicated by the character x , while the openings of the opposite sheet are designated by the character x' , extending from “11” to “20.” Between each of the numerals and its open-

ing is shown a sign of equality. At one side of the line of openings in each sheet is an independent opening 15, situated adjacent to the axis. Upon the rotatable member, arranged in a circular series about the axis upon each side, is a second set of factors y , constituting the multipliers and being so located that any one of them may be brought into registration with the openings 15. Outside each multiplier series y is a plurality of series of result-numerals arranged in two groups, those upon the side of the movable member toward the sheet 10 being designated by the characters z and z' , while upon the other side they are indicated by z^2 and z^3 . The inner series of each group and each alternate series thereafter (z and z^2) are so situated that their characters stand in an upright position when read through the group of openings 14^a, while the second series and every other series beyond (z' and z^3) are inverted and appear in their upright positions through the group of openings 14.

In using the device—if, for example, it is desired to multiply the numerals “15” and “15”—the sheet 10^a is held toward the user and the calculating member turned upon its axis until the number “15” of the multiplier series appears through the opening 15. Then upon referring to the opening 14, which is designated by the numeral “15,” the result, “225,” of the second series z^2 will be seen. In the same manner by using the proper side of the device and setting the multiplier-numeral, as has been indicated, the product of any two factors from one to twenty may be quickly and accurately secured. Obviously instead of from one to twenty any other range of numerals might be selected and the corresponding result-numerals substituted in the series $z z'$.

The device may be used either to impress the values of products of factors upon the minds of pupils, facilitating their learning of the multiplication-tables, or for performing more complicated calculations.

The circular series of numerals upon the member 13 are shown as separated by a radial space 16, in which, if desired, letters forming names or advertising words may be placed, these being visible through the openings in the support-sheets.

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

1. A calculating device comprising a pair of outer members furnishing supports for the re-

maining elements of the device, the said members being each provided with a series of openings arranged in two groups radial with respect to the axis, the groups being at opposite sides of the axis and in line with each other, the corresponding openings of each group being at different distances from the axis, each of said openings being designated by a multiplicand, and an independent opening, at one side of the line of openings and situated adjacent to the axis, a pin extending through these outer supporting members, and a disk rotatable about the pin and projecting beyond the supporting members, said disk being provided on each face with a plurality of circular series of numerals arranged in two groups corresponding to the two groups of openings and adapted to appear through the same, the said disk being also provided with numerals arranged in a circular series about the axis and adapted to register with the independent opening.

2. A calculating device comprising a pair of outer rectangular members furnishing supports for the remaining elements of the device, the said members being each provided

with a series of openings arranged in two groups in line with each other and radial to the axis, the corresponding openings of each group being at different distances from the axis, each opening being designated by a factor-numeral, and an independent opening, adjacent to the axis, rivets connecting the supporting members near their corners, a pin extending through the supporting members near their axes, and a disk rotatable about the pin and projecting beyond the sides of the rectangular supporting members, said disk being provided with a plurality of circular series of numerals arranged in two groups corresponding respectively to the two groups of openings and which may appear through the same, the disk being also provided with a circular series of numerals which may register with the independent opening.

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

CHARLES MICHAEL YOUNG.

Witnesses:

FRANK A. BRADLEY,

WALDEMAR C. J. OTTMANN.