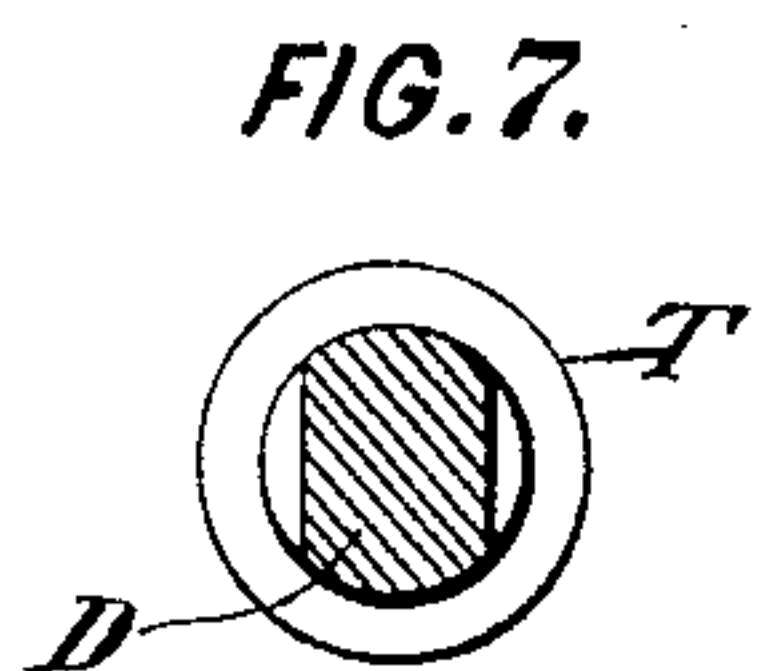
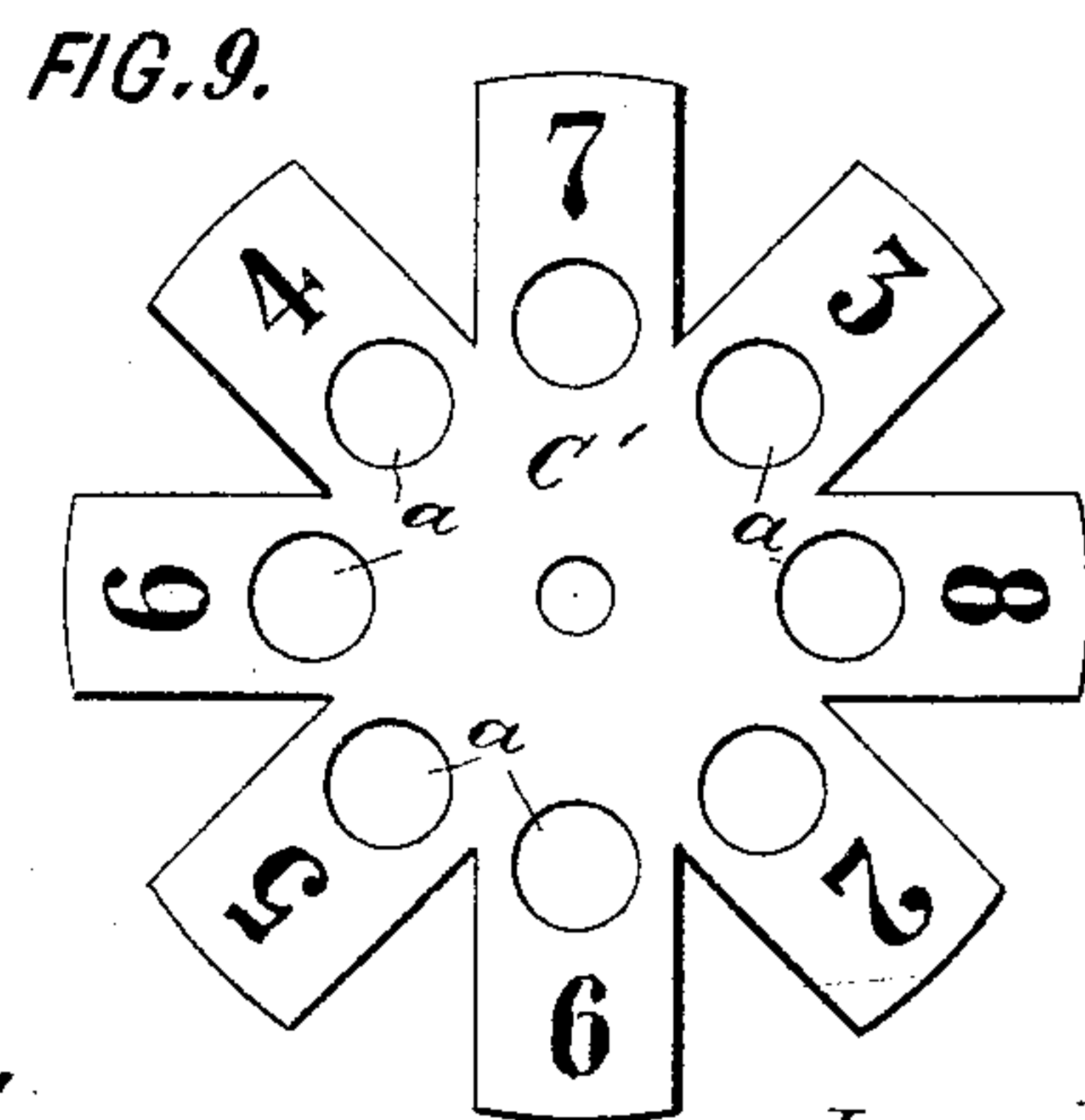
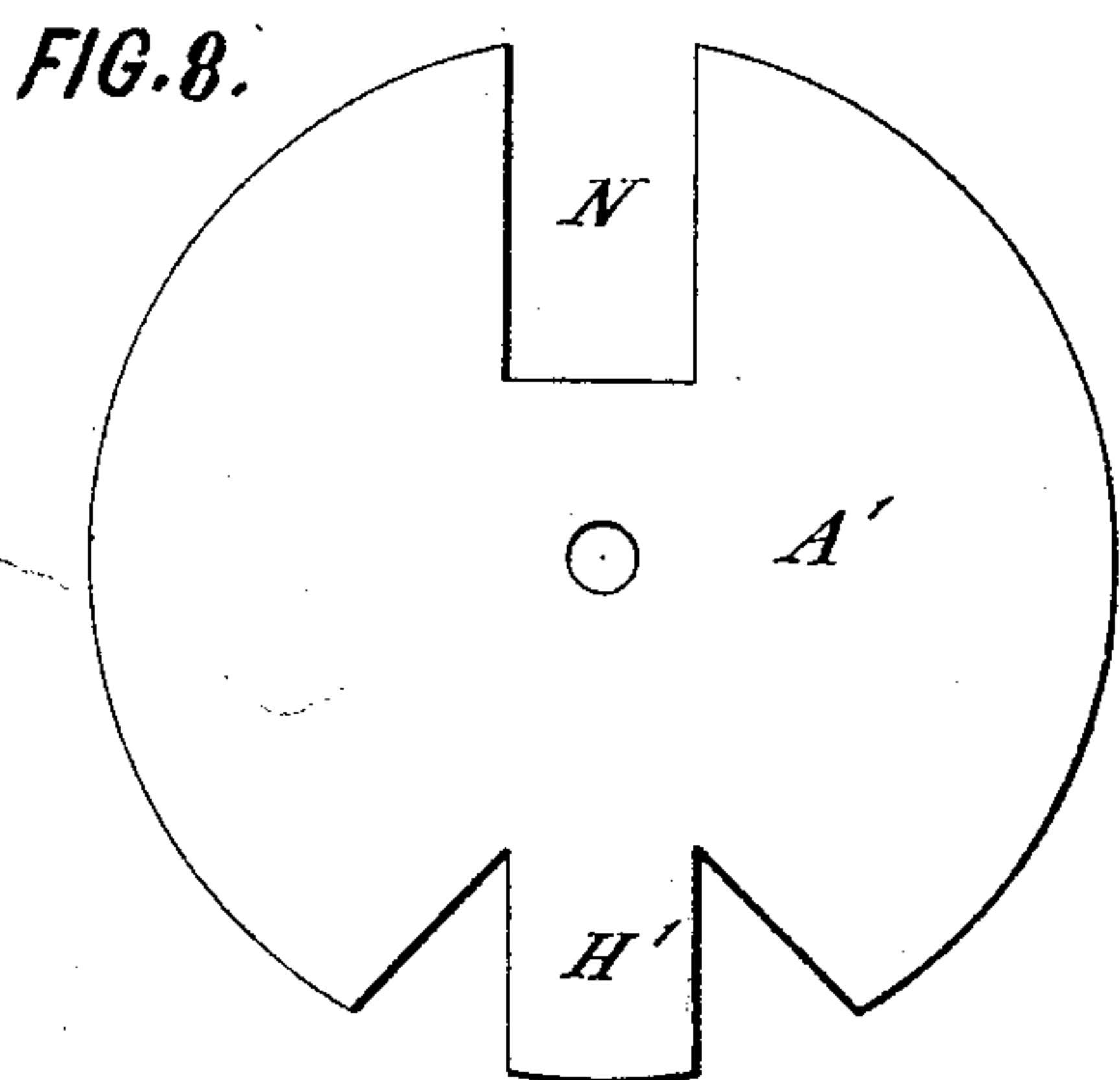
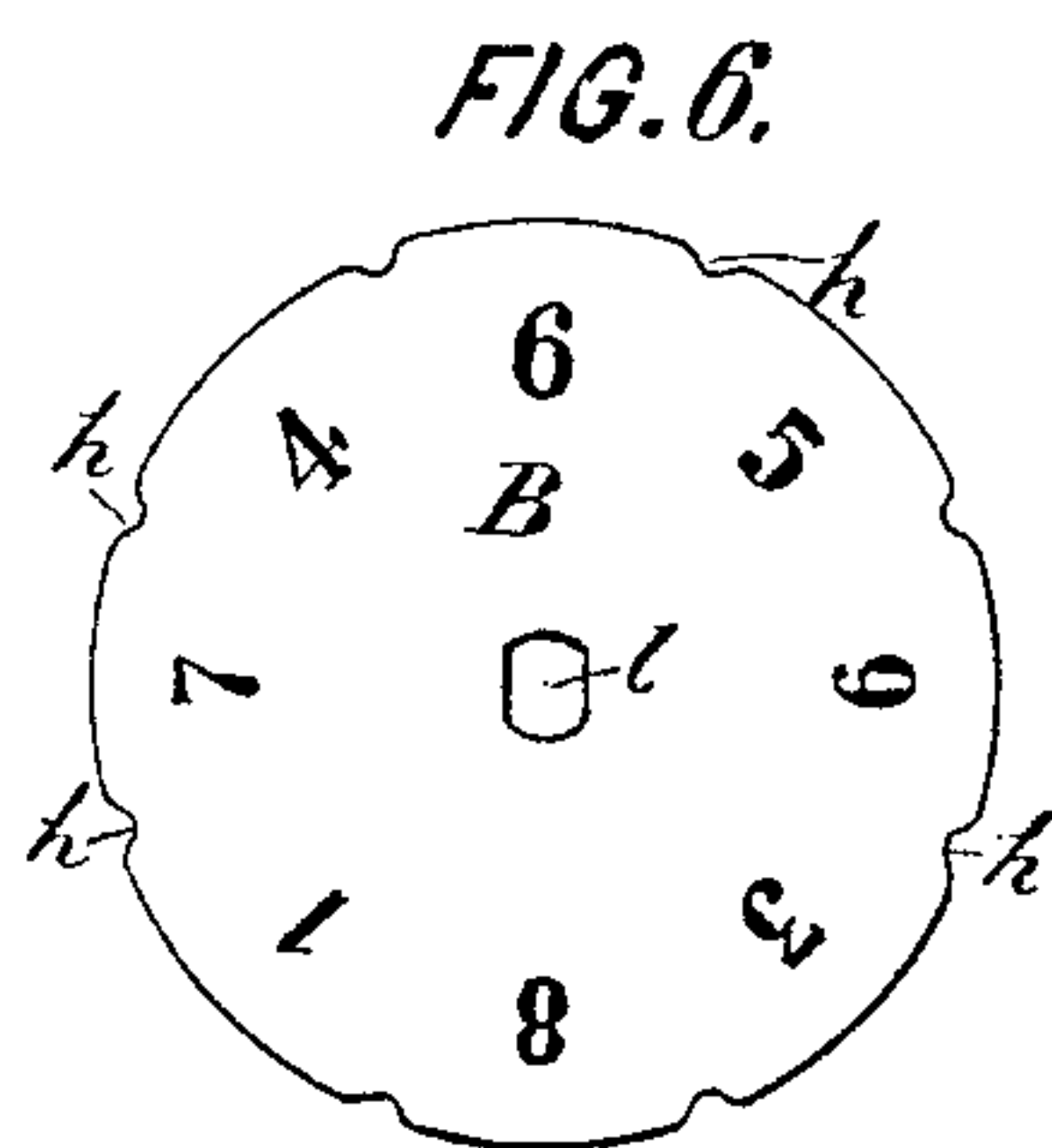
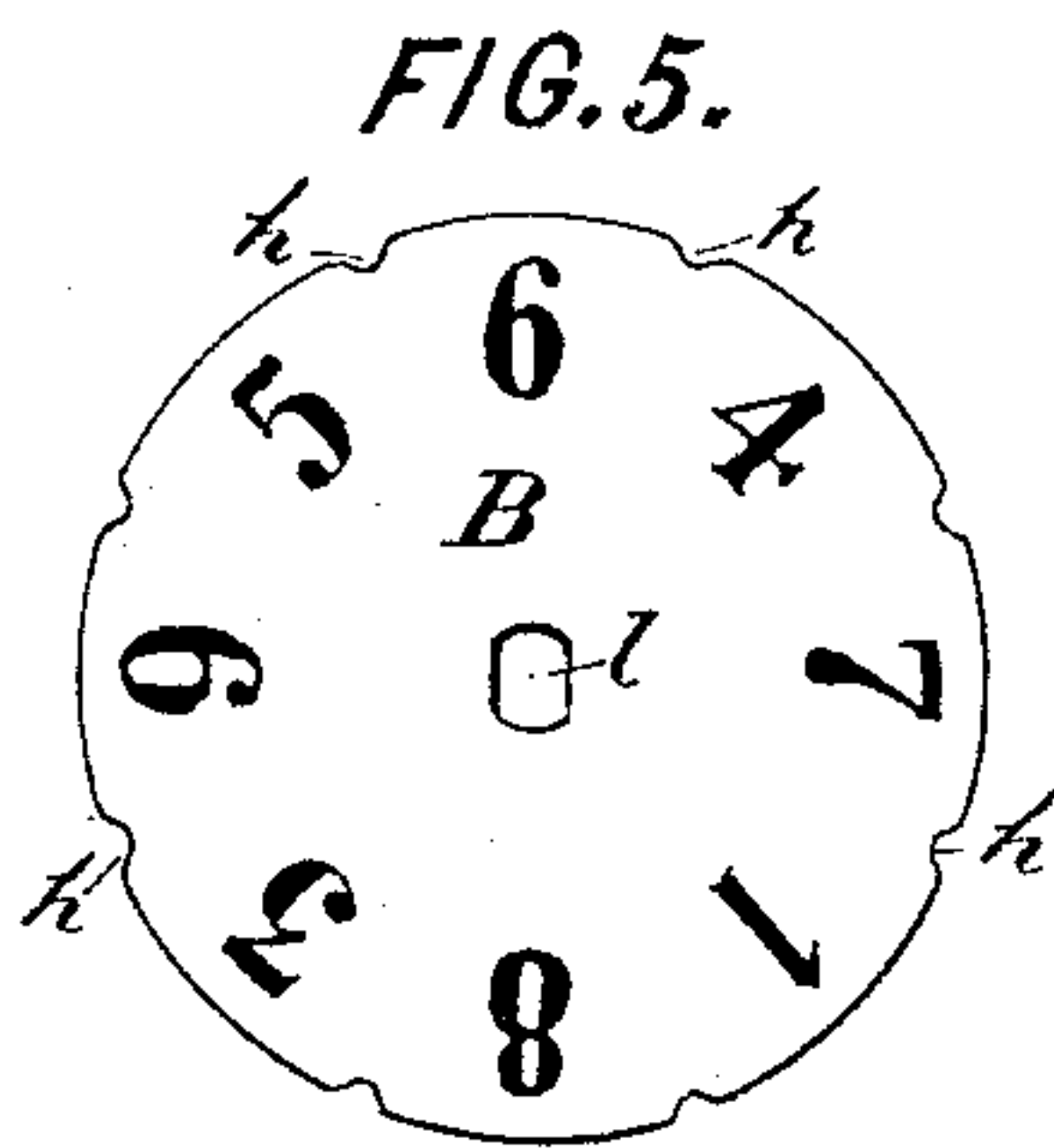
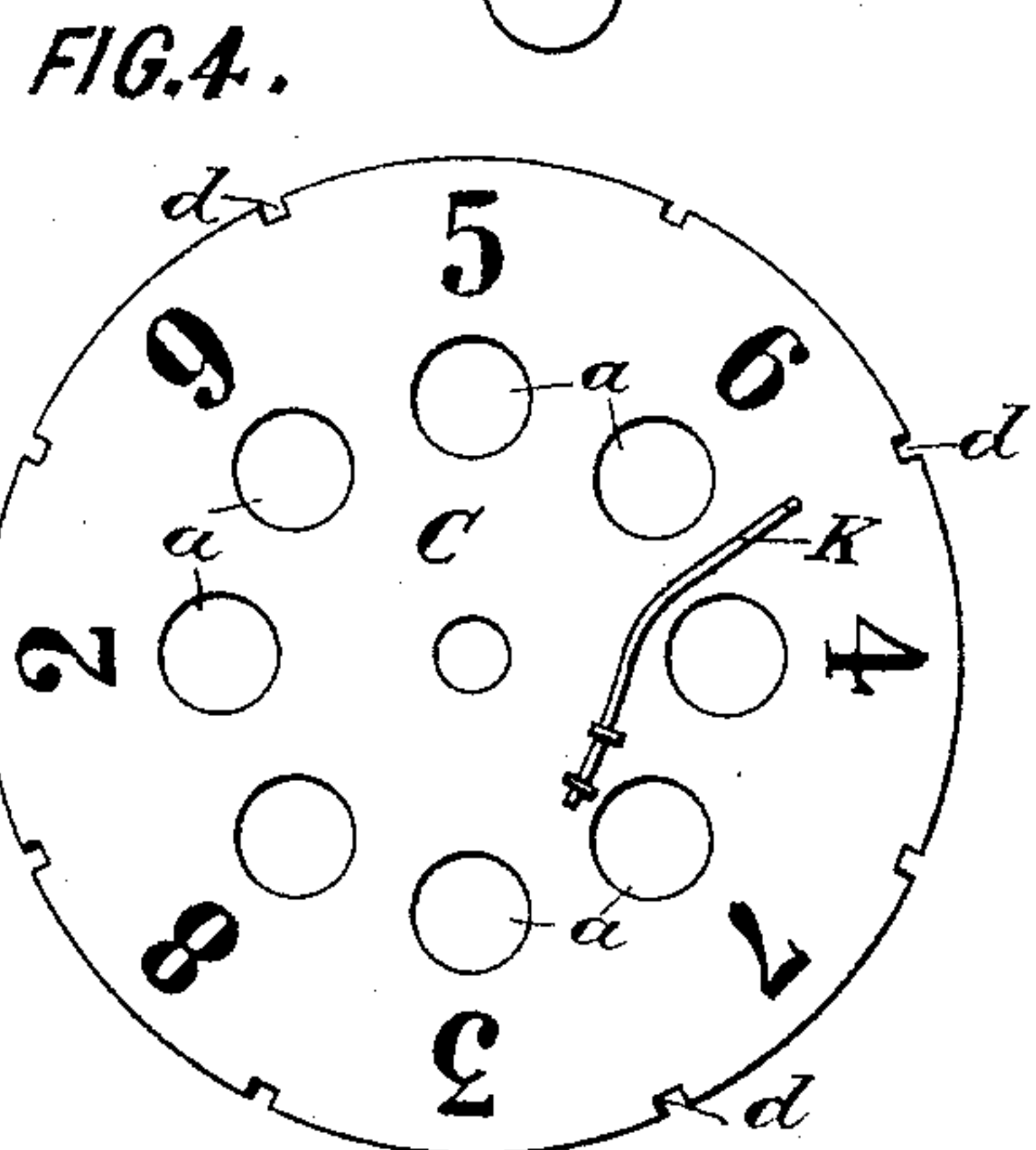
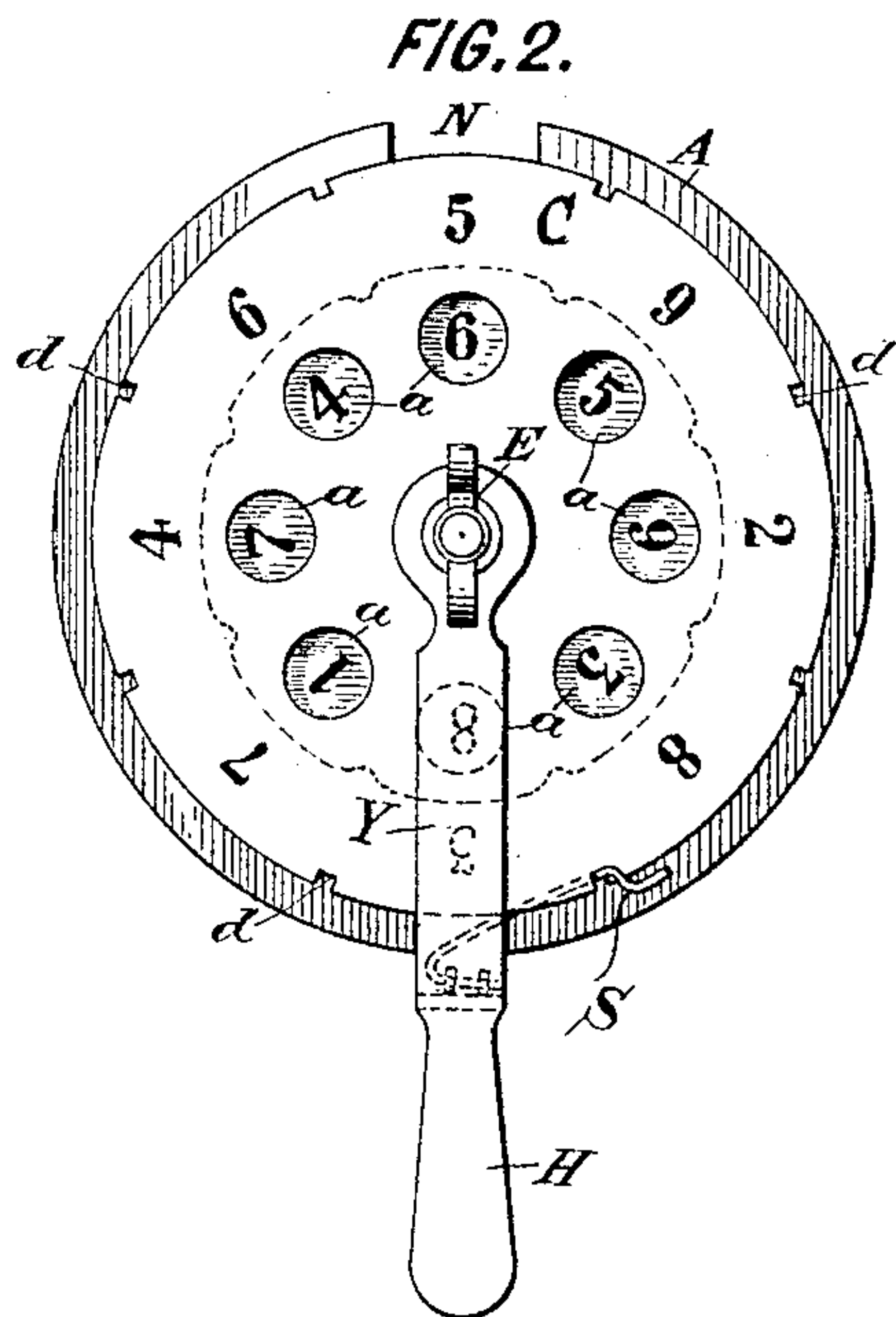
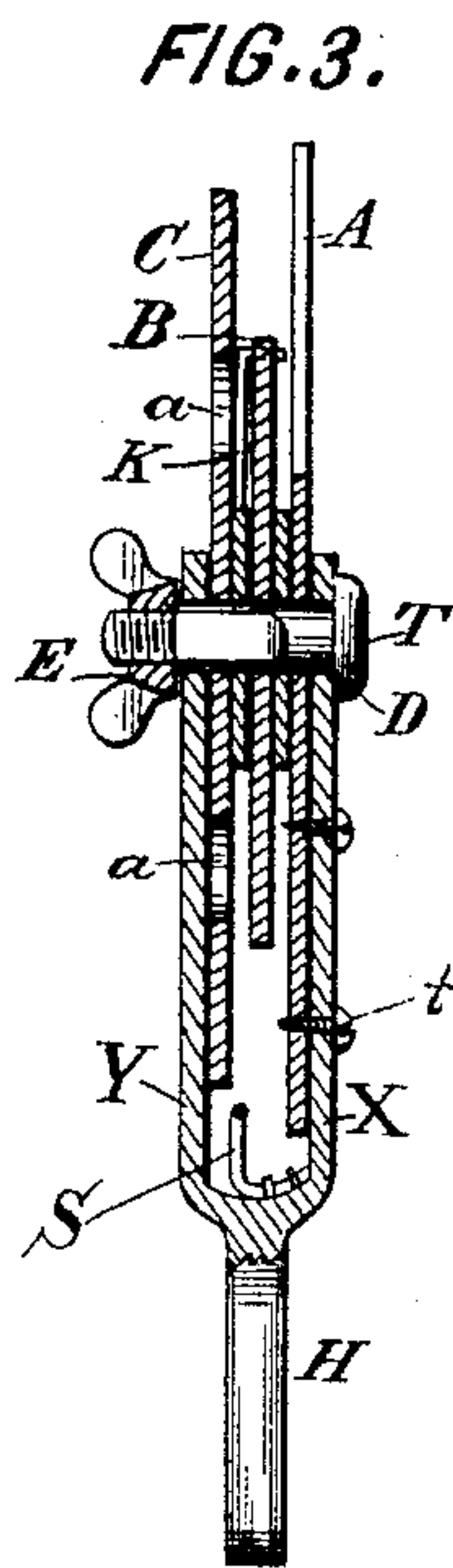
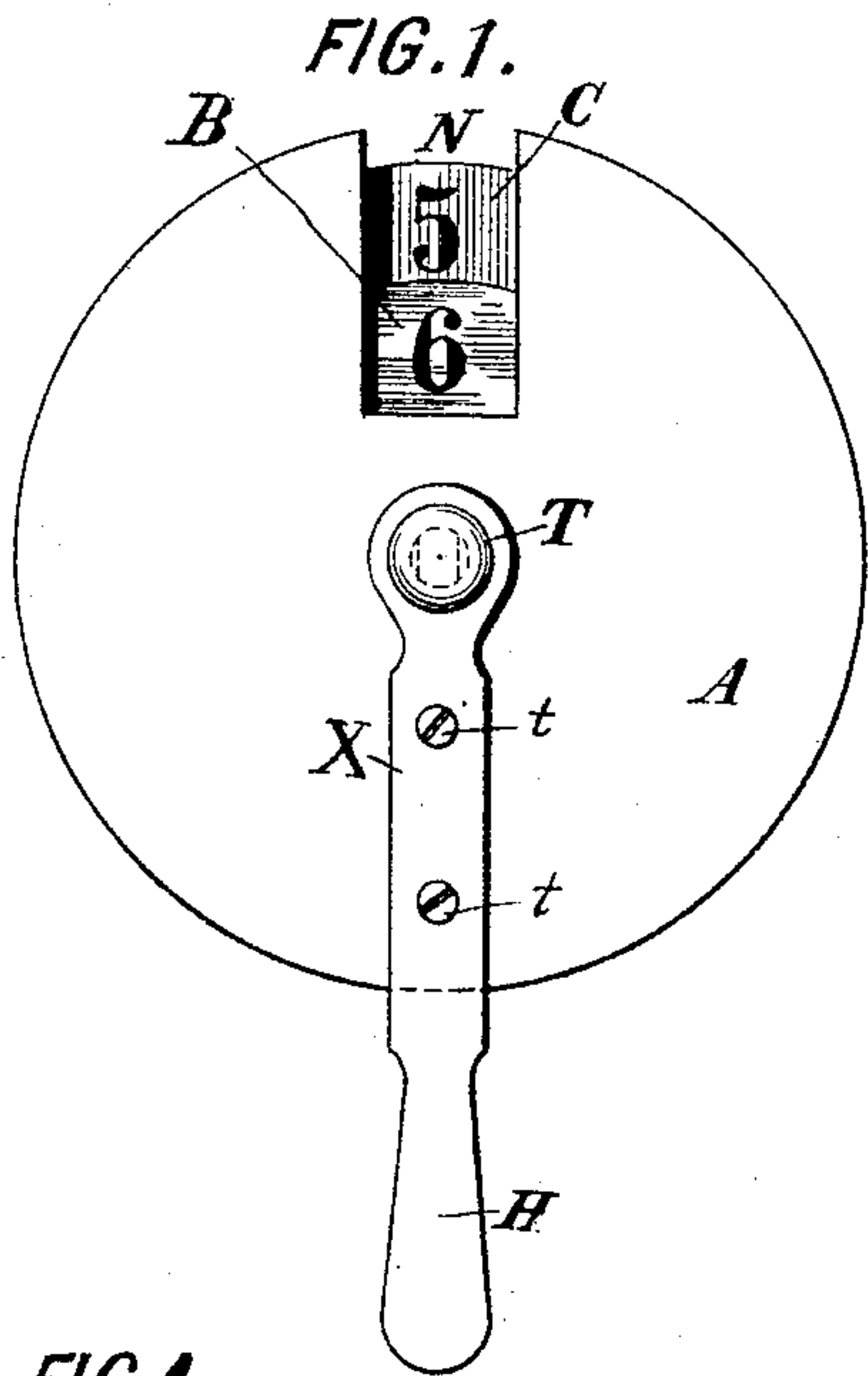


(No Model.)

H. C. BRISTOL.
EDUCATIONAL APPLIANCE.

No. 496,993.

Patented May 9, 1893.



Witnesses:
John Becker
Francis P. Reilly

Inventor:
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his attorney

UNITED STATES PATENT OFFICE.

HOMER C. BRISTOL, OF PATERSON, NEW JERSEY.

EDUCATIONAL APPLIANCE.

SPECIFICATION forming part of Letters Patent No. 496,993, dated May 9, 1893.

Application filed August 25, 1892. Serial No. 444,079. (No model.)

To all whom it may concern:

Be it known that I, HOMER C. BRISTOL, a citizen of the United States, residing at Paterson, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Educational Appliances, of which the following is a specification.

My invention relates to those devices by means of which problems are addressed to the eye, rather than to the ear, of the pupil; and more particularly those problems involving the combination of numbers in addition, subtraction, multiplication and division.

The object of my improvements is to provide a device which may be readily operated by the teacher, and the use of which is calculated to economize time and encourage rapid thinking on the part of the scholar.

My improved device consists essentially of two or more disks, of different diameters, mounted centrally upon a common axis. I shall describe the device as provided with only two disks. These disks are placed one immediately behind the other and are capable of being rotated independently of each other. Upon the face of each disk and near its periphery are marked figures, letters or other characters, so that by rotating the disks any two figures or characters may be brought into combination, one being under the other, for the purposes above mentioned. In order that the attention of the pupil may not be diverted, and to avoid confusion, by the visible presence at one time of a large number of figures or characters, and to prevent uncertainty as to the combination of characters meant to be made, I provide a shield which shall exclude from view all the figures or characters upon the disks except the two desired to be brought into combination. The idea thus outlined may be embodied in a variety of forms, but the one which seems to me to be the best adapted to accomplish the end in view is that shown in the accompanying drawings, in which—

Figure 1 is a front elevation of my improved device. Fig. 2 is a rear view of the same. Fig. 3 is a vertical section longitudinally through the axis D. Fig. 4 is a front view of the larger disk. Fig. 5 is a front view of the smaller disk. Fig. 6 is a rear view of the

smaller disk. Fig. 7 is an enlarged view of a cross-section of the axis of the device. Figs. 8 and 9 are views of modifications of parts of the device.

A is the shield provided at its upper end with the aperture N through which only one figure or character on each disk can be seen at one and the same time.

B is the smaller disk and C is the larger disk, upon the outer faces of which near their peripheries are marked figures, as shown in the drawings. The peripheries of the disks B and C are notched, as shown at *h* and *d*.

D is the axis upon which the disks are mounted, terminating exteriorly in the button T, and being provided at its rear end with a knob or thumb-nut E.

S is a spring one end of which is permanently fastened in the shield A or handle H, while the other or free end is adapted to engage the notches *d* on the periphery of disk C to prevent the rotation of the latter; K is a similar spring one end of which is permanently secured to the disk C while its free end is adapted to engage the notches *h* on the periphery of the disk B to temporarily arrest the rotation of the latter, as hereinafter described.

H is the handle by means of which the device is held in the hand. It consists of the lower part H and the two uprights X and Y, between which the disks B and C and shield A are placed, the axle D passing through the upper ends of the uprights, as shown in Figs. 1, 2 and 3. The upright X may be secured to the shield A by screws, or in any other convenient manner.

Upon the back of each disk are placed the same figures or characters, in corresponding order, that appear upon the outer face of the same; and in the disk C are cut openings *a* through which may be seen the figures or characters on the back of disk B—see Figs. 2, 4 and 6. Thus the operator while holding the device in front of him with its back part toward him, will know what figures or characters are visible through the aperture N.

It may be desirable to have the disk B rotate as the axis D is rotated, while the shield A and disk C remain stationary. This may be accomplished in any convenient manner, such, for example, as making the opening in

the disk B through which the axis passes, and the axis upon which the disk rests, of some shape other than circular, as I have shown in the drawings. See Figs. 5, 6, and 7. The openings in the disk C, shield A and uprights X, Y, through which the axis D passes, are circular in form, the diameter of said openings being equal to the larger diameter of the cross-section of the axis, so that when the disk C or shield A is held stationary, the axis may rotate in said openings. The friction of the disk C upon the axis should be such that unless the disk be held stationary by some outside means, as the spring S, it will rotate with the axis. Thus it will be seen that on rotating the axis D the disk B will always rotate, and the disk C will also turn unless prevented as above indicated. The disk C may also be rotated by hand independently of the rotating of the axle.

The notches *h* and *d* are so placed upon the peripheries of the disks B and C respectively, that when the free ends of the springs K and S rest in the same, a single figure or character on each disk will be plainly visible in the aperture N, as shown in Fig. 1. The notches *h* should be rather shallow with oblique sides, so that as the disk B is rotated the end of spring K will ride out of the same; whereas the notches *d* should be deeper and narrow, so that when the end of spring S drops into one of them it will remain there and prevent the further rotation of the disk C, until the spring be removed from the notch.

The manner of putting together the several parts of the device is, to remove the knob or thumb-nut E from the rear end of the axis D and insert the latter first through the upright X, then through the shield A, disks B and C and upright Y, respectively. The knob or nut E is then screwed upon the rear end of the axis and the button T prevents any of the parts from slipping off the forward end of the axis.

From the foregoing description, the operation of the device is apparent. The operator, holding the device in one hand by the handle H, can by means of the knob or thumb-nut E rotate at pleasure one or both of the disks B, C. The disk C may readily be released from the operation of the spring S by detaching the latter from the notch *d* with the thumb of the hand grasping the handle H. By observing the figures or characters on the backs of the

disks, the operator may cause any desired combination to appear in the aperture N.

The upright X of the handle H instead of being in front of the shield A, as shown in the drawings, may be placed behind the shield. Also the handle may be made integral with the shield, as shown at H', Fig. 8, in which case it would be desirable to make the disk C as shown at C', Fig. 9. The spring S could then be dispensed with, as the disk C would be held by the hand grasping the handle.

It is evident that other features of my improved device, as I have described it, may be altered, or altogether omitted, without departing from the principle of my invention. Also more than two disks may be used, if desirable.

What I claim as new, and desire to secure by Letters Patent, is—

1. In an educational device, the combination of two or more disks of different diameters, having characters marked thereon near their peripheries and adapted to be rotated independently of each other, an axis upon which said disks are centrally mounted, one behind the other, and a shield placed in front of said disks and provided with a single aperture through which only one character upon each disk can be visible at one time, substantially as described and for the purposes set forth.

2. In an educational device, the combination of two or more disks of different diameters, centrally mounted, one behind the other upon a common axis, said disks having characters upon their front and rear faces near their peripheries, the larger disk being provided with apertures through which the characters upon the rear of the smaller disk may be seen, and a shield placed in front of said disks and provided with an aperture through which only one character upon each disk can be visible at one time, substantially as described and for the purposes set forth.

3. The above-described educational device consisting of the combination of the disks B and C, having characters marked or placed thereon near their peripheries, the apertured shield A, the axis D, the springs S and K and the handle H, substantially as shown and described and for the purposes set forth.

HOMER C. BRISTOL.

Witnesses:

F. M. HARRINGTON,
IRVING S. COLWELL.