

No. 701,997.

Patented June 10, 1902.

F. W. DAVENPORT.
EDUCATIONAL DEVICE.

(Application filed Feb. 5, 1902.)

(No Model.)

Fig. 1

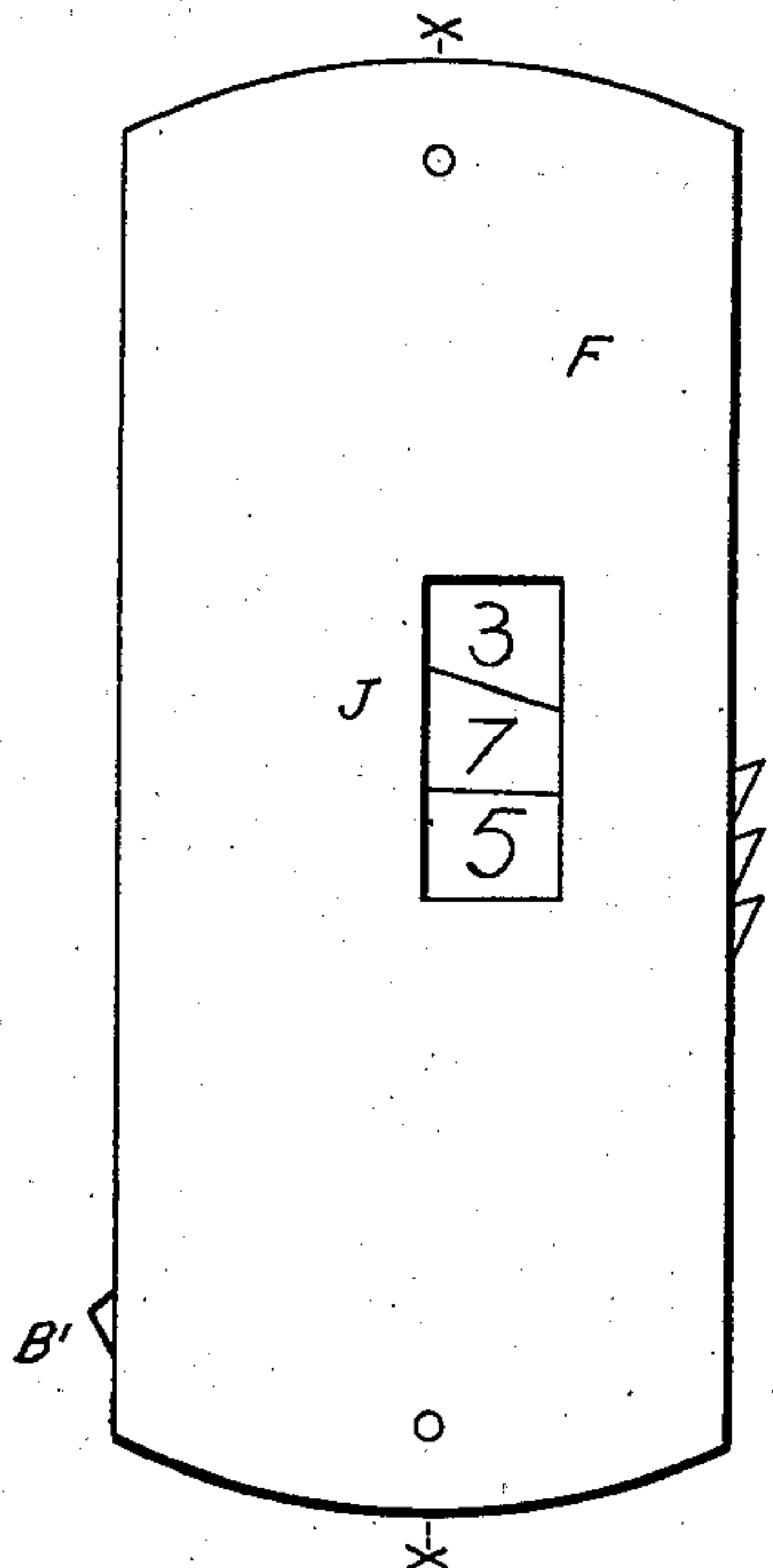


Fig. 2

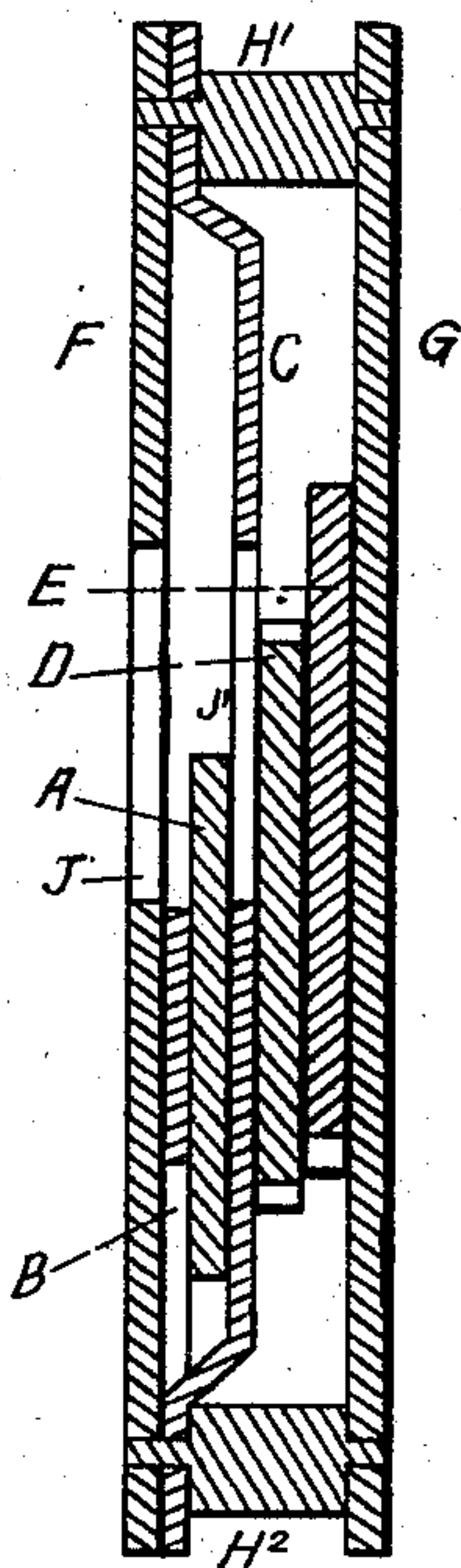


Fig. 3

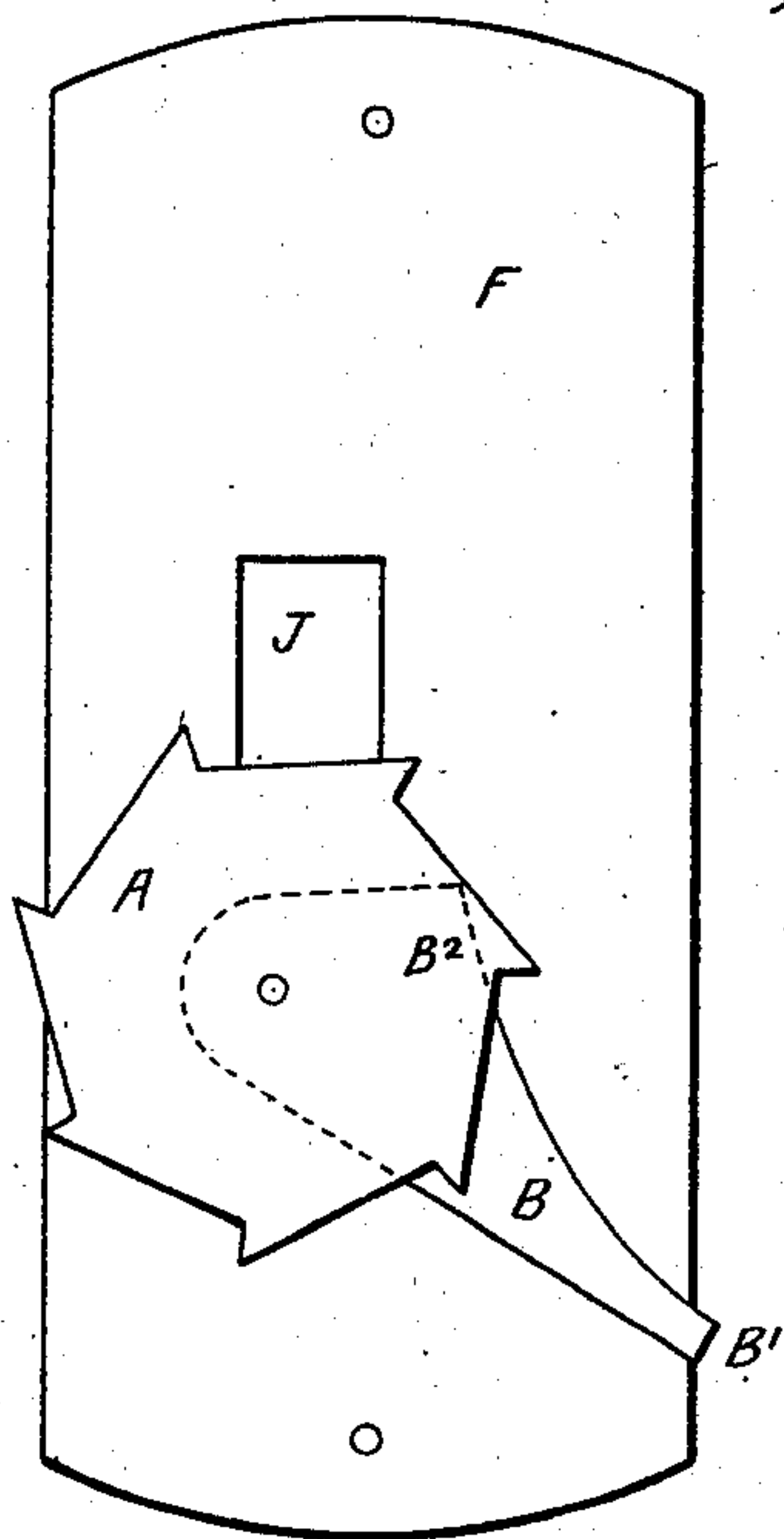


Fig. 4

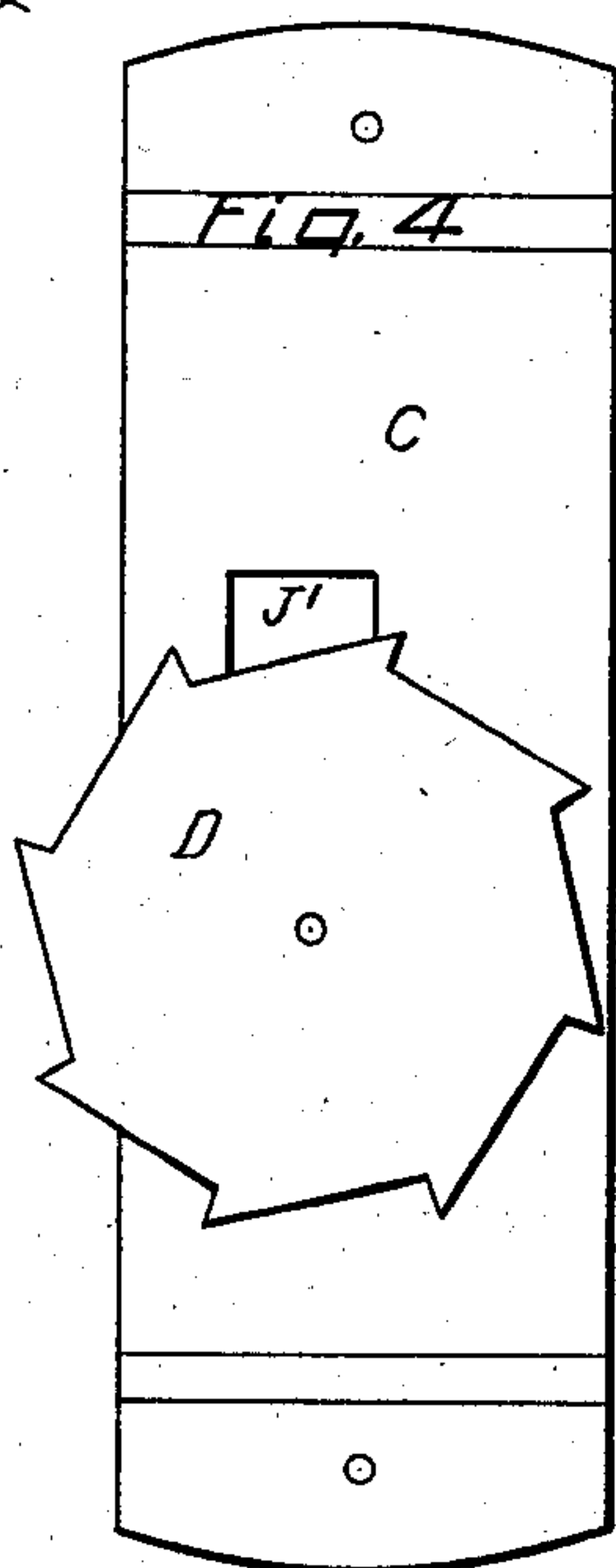
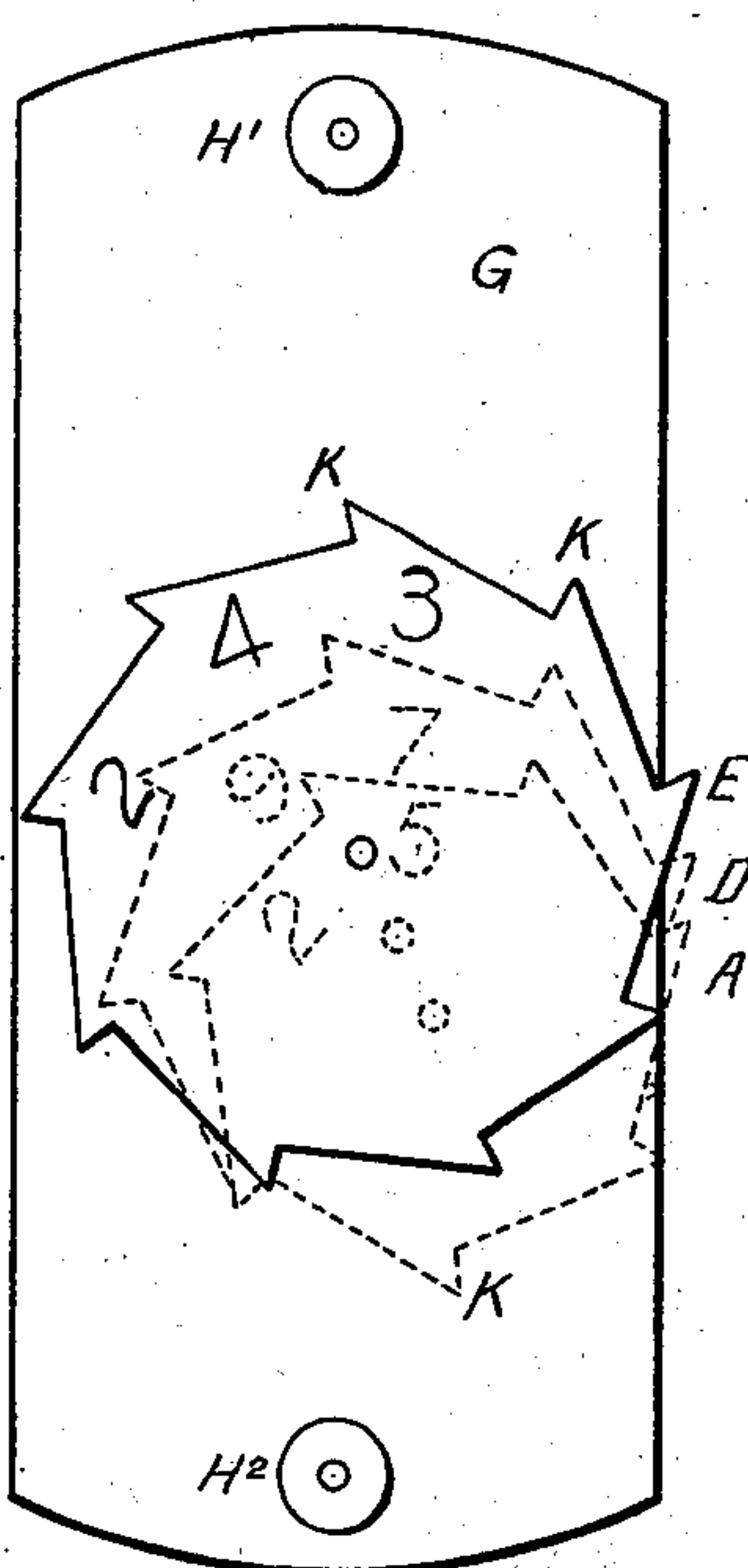


Fig. 5



Witnesses

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EDUCATIONAL DEVICE.

SPECIFICATION forming part of Letters Patent No. 701,997, dated June 10, 1902.

Application filed February 5, 1902. Serial No. 92,688. (No model.)

To all whom it may concern:

Be it known that I, FRANK W. DAVENPORT, a citizen of the United States, residing in the city and county of Providence and State of Rhode Island, have invented a new and useful Improvement in Educational Devices, of which the following is a specification.

My invention consists of independent revolvable disks bearing figures on their faces and means for automatically making varied combinations of such figures.

The object is to familiarize the pupil with different combinations so he will be able to name the sum of any two or three figures instantly. It is intended to accomplish this in the most direct manner and in the shortest possible space of time.

The device is illustrated in the accompanying drawings, in which—

Figure 1 is a front view. Fig. 2 is a section through line $x x$ of Fig. 1. Fig. 3 shows the front plate removed from the device and turned over with the disk and movable plate attached thereto. Fig. 4 shows the middle plate also removed and turned over with the disk attached. Fig. 5 shows the back plate with the disk attached, and the broken lines in this figure indicate the other disks, showing their respective positions when in operation.

Similar letters refer to similar parts throughout the several views.

Referring to Fig. 2, F and G are respectively the front and back plates of the device and are held together by the parts H' and H². The plate F is provided with an aperture J, as shown in the other figures. Through the aperture J is exposed a portion of each disk, all of which revolve in parallel planes, but have their centers of revolution differently placed, so their faces will overlap one another eccentrically. The disk A is pivoted to plate F, disk E is pivoted to plate G, and disk D is pivoted to plate C, all of which is plainly shown in Figs. 3, 4, and 5, respectively. The plate C is supported at H' and H² and is provided at J' with an aperture, which registers with aperture J in plate F. The broken lines in Fig. 5 indicate the relative positions of disks A and D when in operation. It will also be observed in this figure that all the disks reach slightly beyond

the edges of the plates and are provided with projecting or actuating points K. As the method of operating the device is by drawing the finger over the edge of the plates from top to bottom, it will be evident as it comes in contact with these projections on the several disks it will turn one after another a portion of one revolution and by repeating the movement different portions of their faces are presented before the aperture J, each of which portions I make to bear a figure, and by judicious arrangement of the figures on the disks different combinations are displayed as the device is operated. It would be possible to operate the disks without having the projections K at their peripheries; but as their movements would then be uncertain and unreliable I place the projections there, where they are certain to be caught by the descending finger and carried along until they disappear between the plates and the following projections are in position to operate. I thus secure a positive movement and perfect alinement of the figures of the aperture J.

It will be evident if the several disks each have the same number of projections the few combinations that would be possible would be repeated at each revolution of the disks, and the usefulness of the device would be limited. To avoid this, I provide disk E with nine projections and nine figures on its face, disk D with eight projections and eight figures, and disk A with seven projections and seven figures. Thus each disk requires a different number of impulses to make one complete revolution, with the result that upward of five hundred combinations of figures will appear at aperture J before any particular combination will appear a second time in the same order.

The disks may be all of the same diameter, if desired; but I prefer to accommodate the diameter of each disk to the number of its projections or actuating-points and make the spaces between said points the same on all the disks. I consider this a very important feature, as it presents all the projections close together for the finger to operate them almost as one and gives effectiveness that could not be obtained if they were widely separated. In order to bring the said projections exactly

where they are wanted at the edges of the plates, I locate the center of revolution of the disks at different points, as before described, and also by moving such points in relation to one another a larger or smaller surface of each disk may be exposed at J and admit the use of large or small figures, as desired.

Referring to Fig. 3, B is a movable plate. It is used for increasing or diminishing the size of the aperture J. It is pivoted at the same point as disk A, and by pushing the end B' up or down the part B² will be made to slide across the aperture and expose either two figures or three figures at once. The pupil is expected to master the two-figure combination before using the three figures.

The device is used by holding in the hand and drawing the finger down the edge to make the different combinations appear at regular intervals, naming to himself the sum of each combination and increasing the speed of the changes until the sum can be read instantly.

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

1. Two or more revoluble disks wholly disconnected, having figures on their faces and arranged to display some of the figures on each disk adjacent to some of the figures on the others, so they can be read in order, in combination with means that shall enable the finger by a single movement and by making individual contact with each disk, to turn

them all positively, and exactly a predetermined distance and continue such action indefinitely.

2. Two or more revoluble disks wholly disconnected, and having figures on their faces, and arranged to display some of the figures on each disk adjacent to some of the figures on the other disks so they can be read in order, in combination with means that shall enable the finger, in a single movement, and by making individual contact with each disk, to turn them all positively, and exactly a predetermined distance, and by repeating, cause each disk to make a complete revolution in a different period of time from its fellows.

3. A front plate, a back plate, and a central plate, a revoluble disk bearing figures on its face, pivoted to each plate, and free from connection with the other disks, all so combined that a figure on each disk shall be displayed at an opening in the front plate, and adjacent to figures on the other disks, means for concealing at pleasure one or more of the figures at the point of display, and means to enable the finger by a single movement, and by making individual contact with each disk, to turn them all positively, and a predetermined distance and continue such action indefinitely.

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Witnesses:

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