

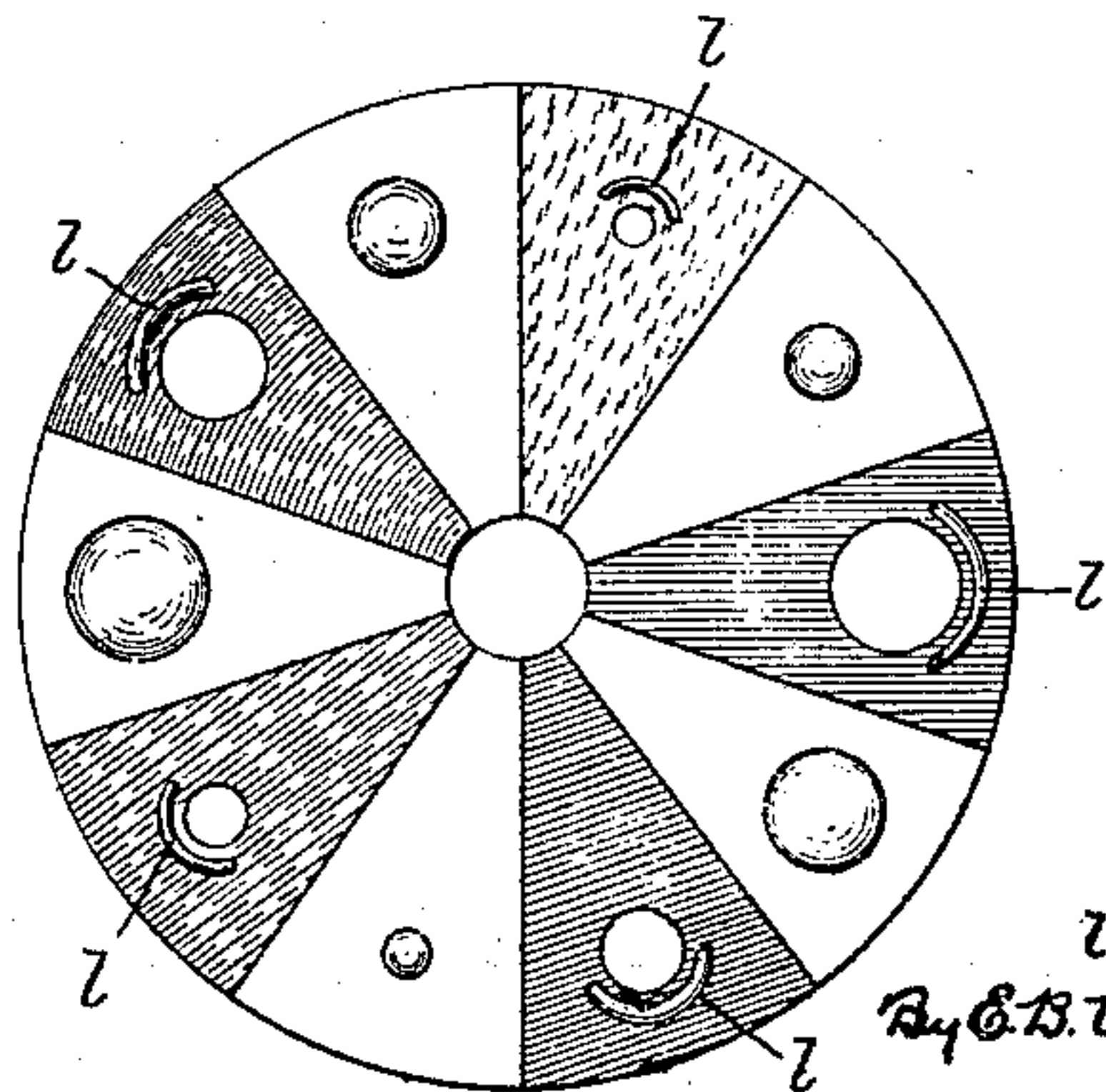
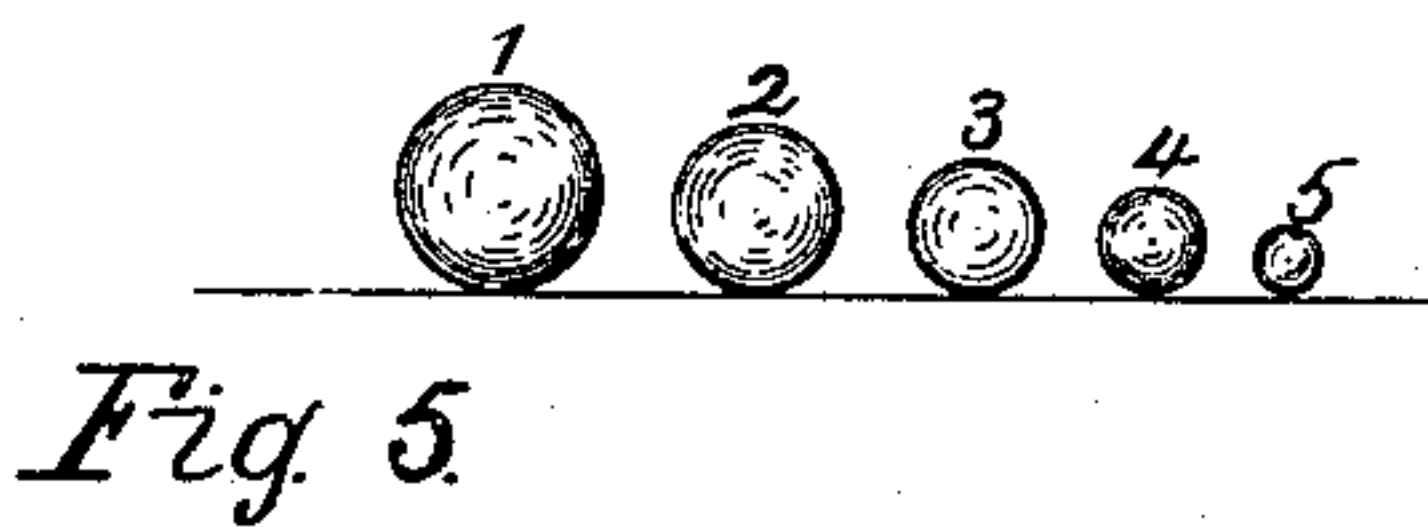
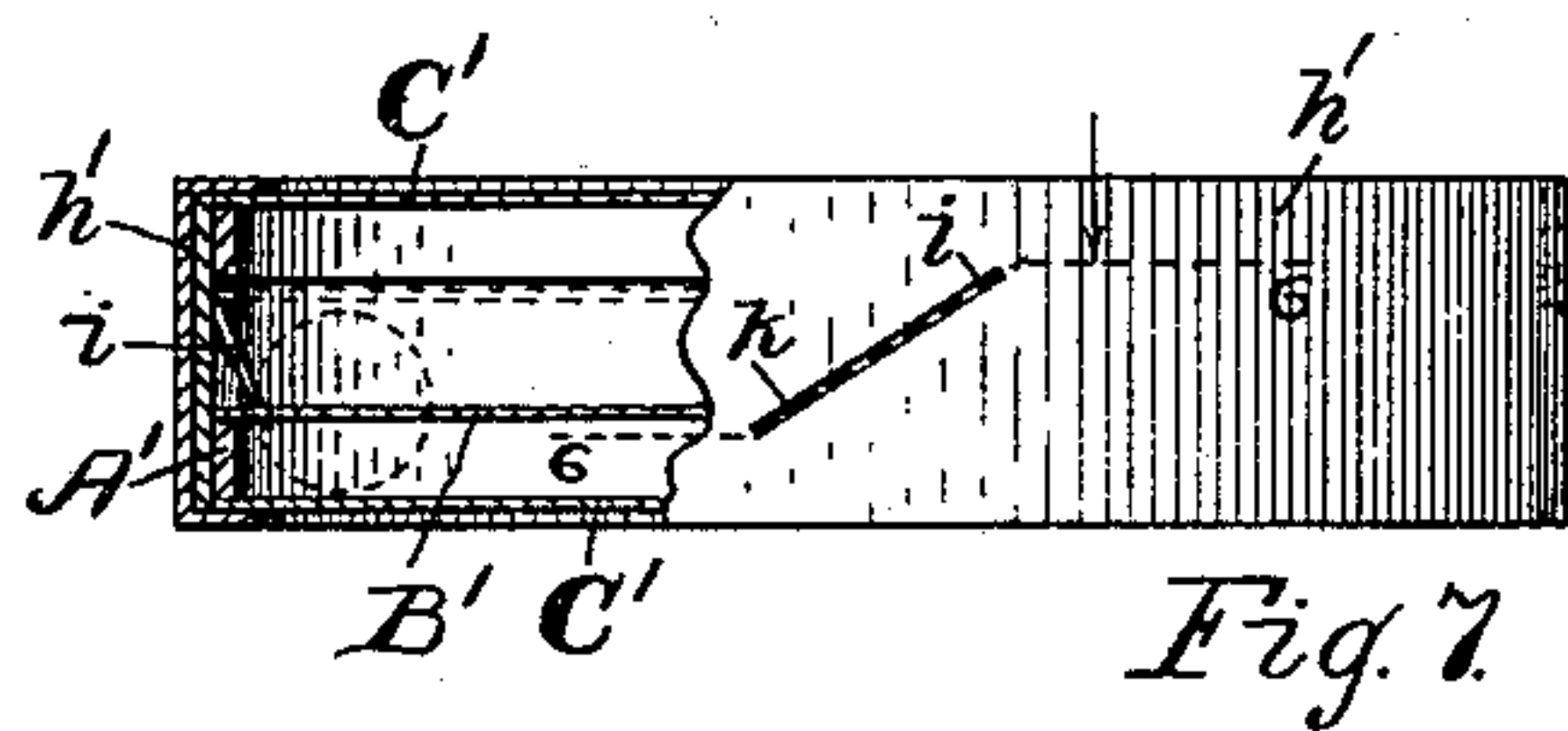
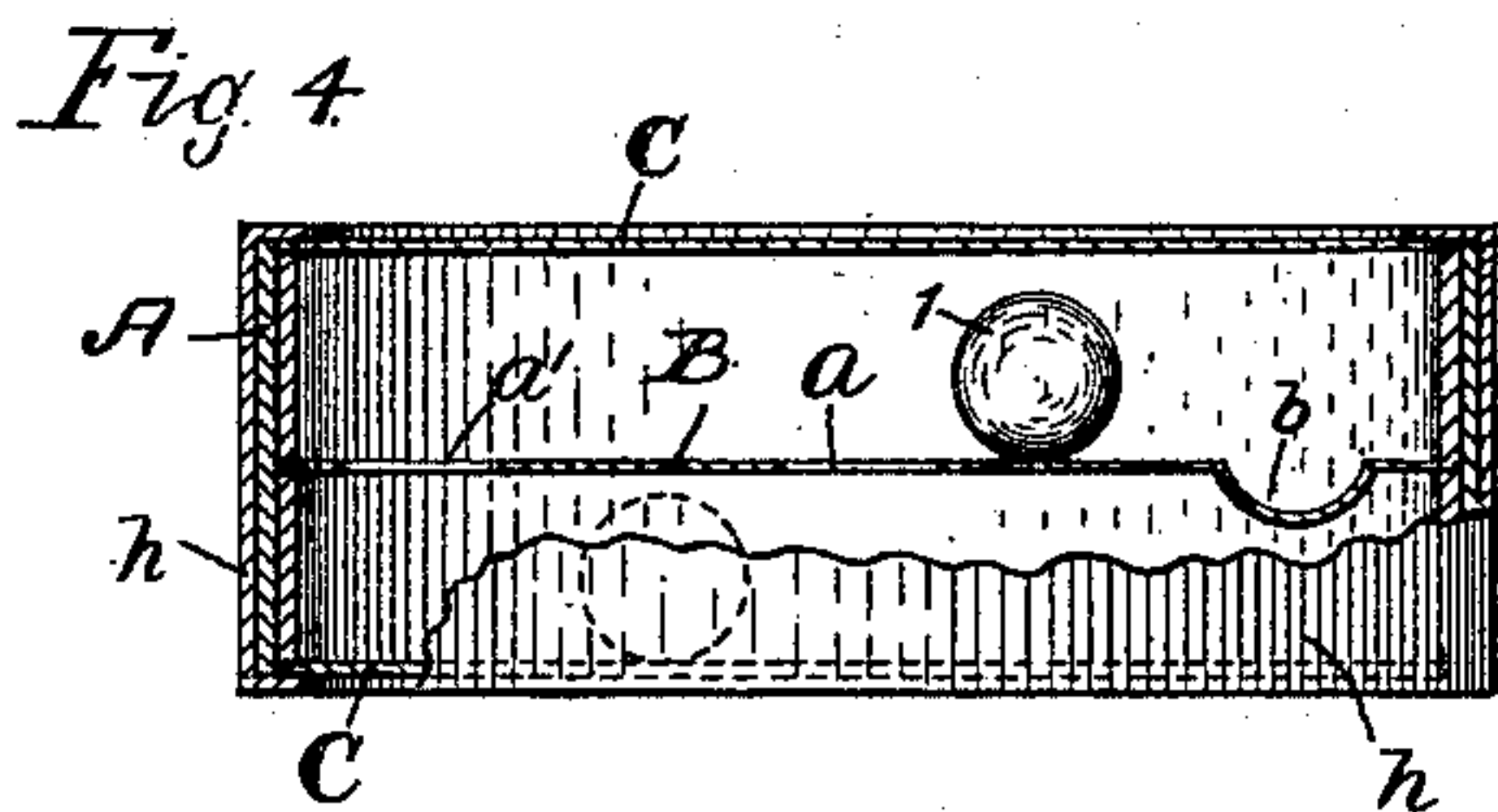
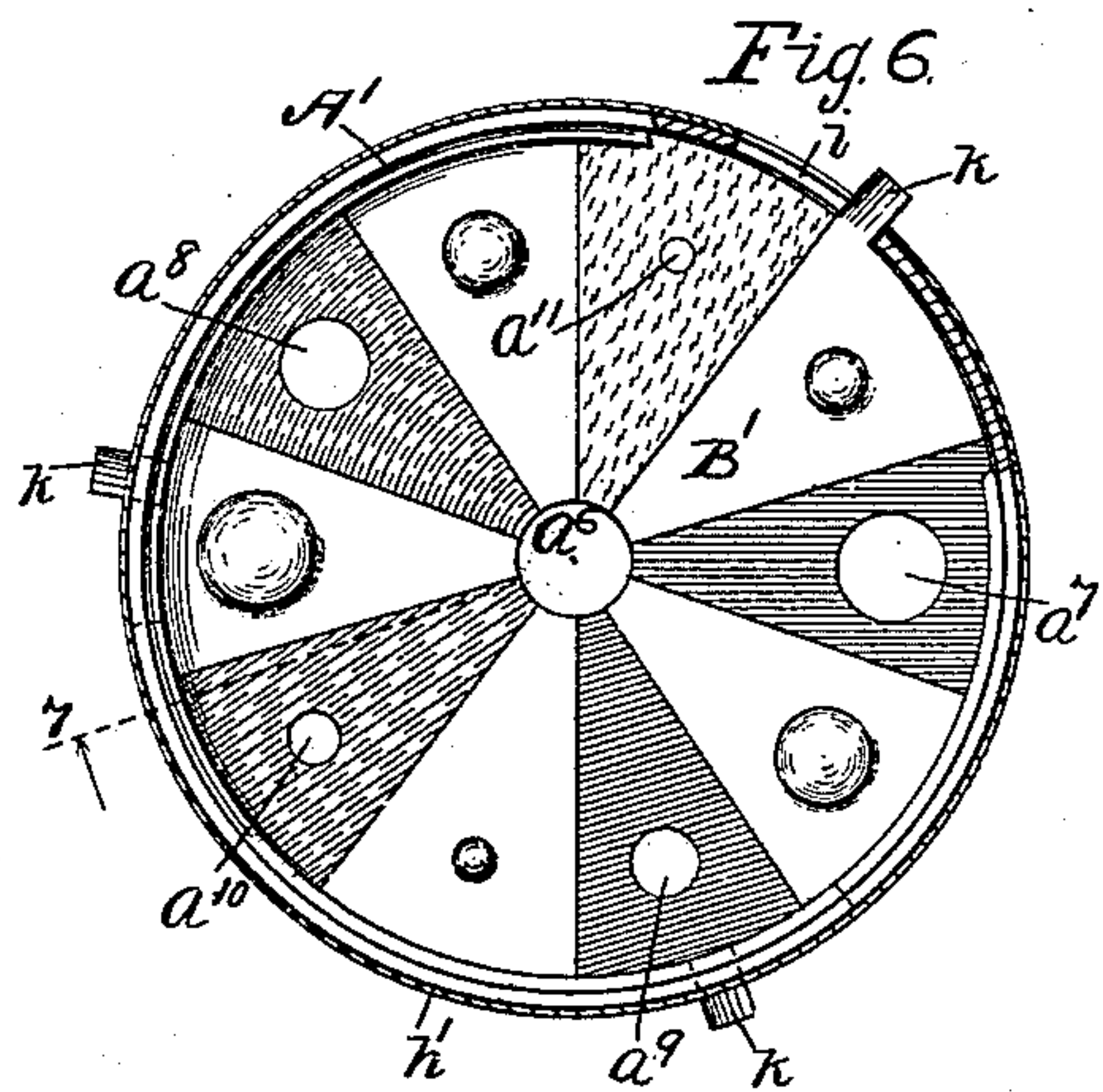
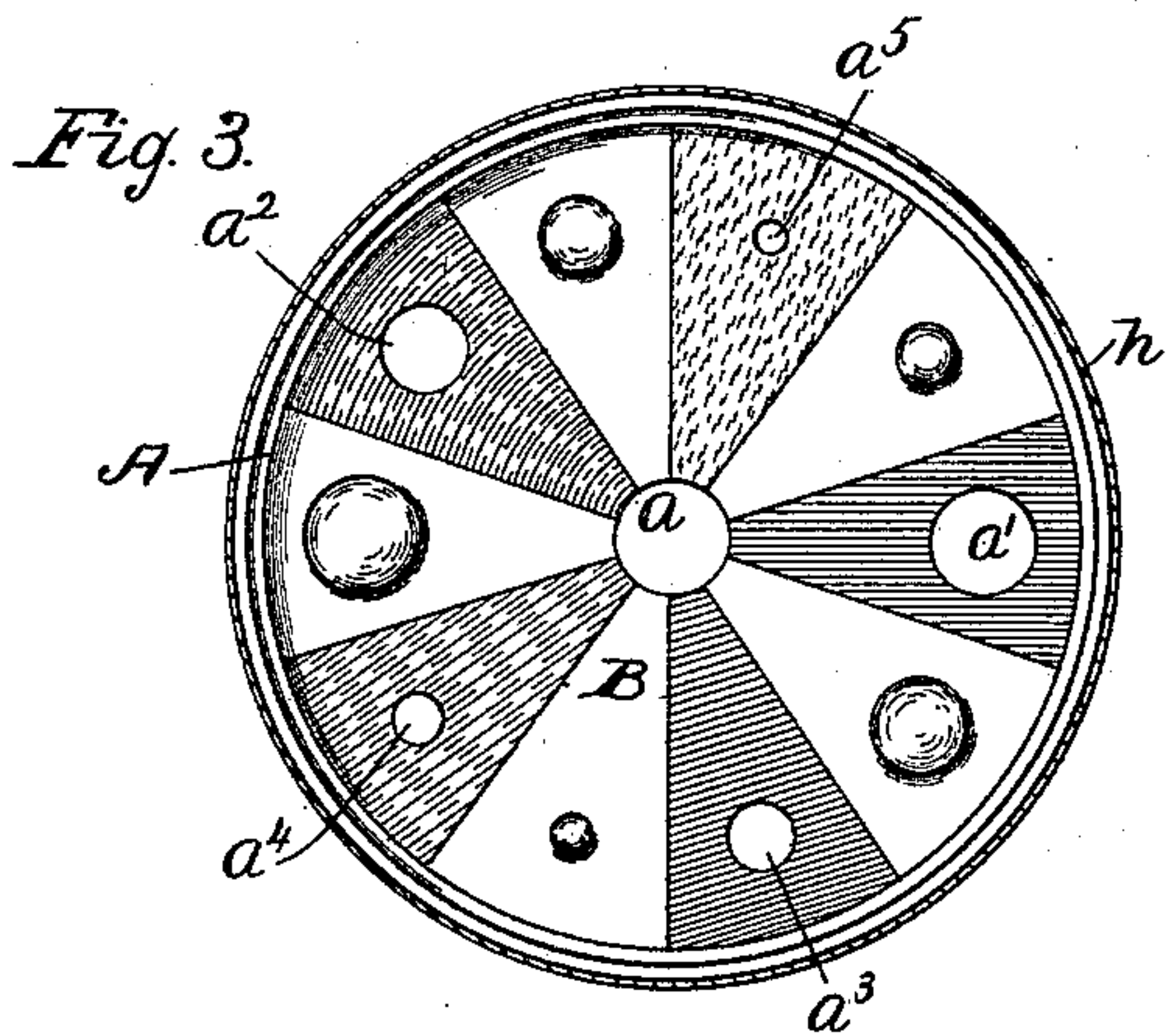
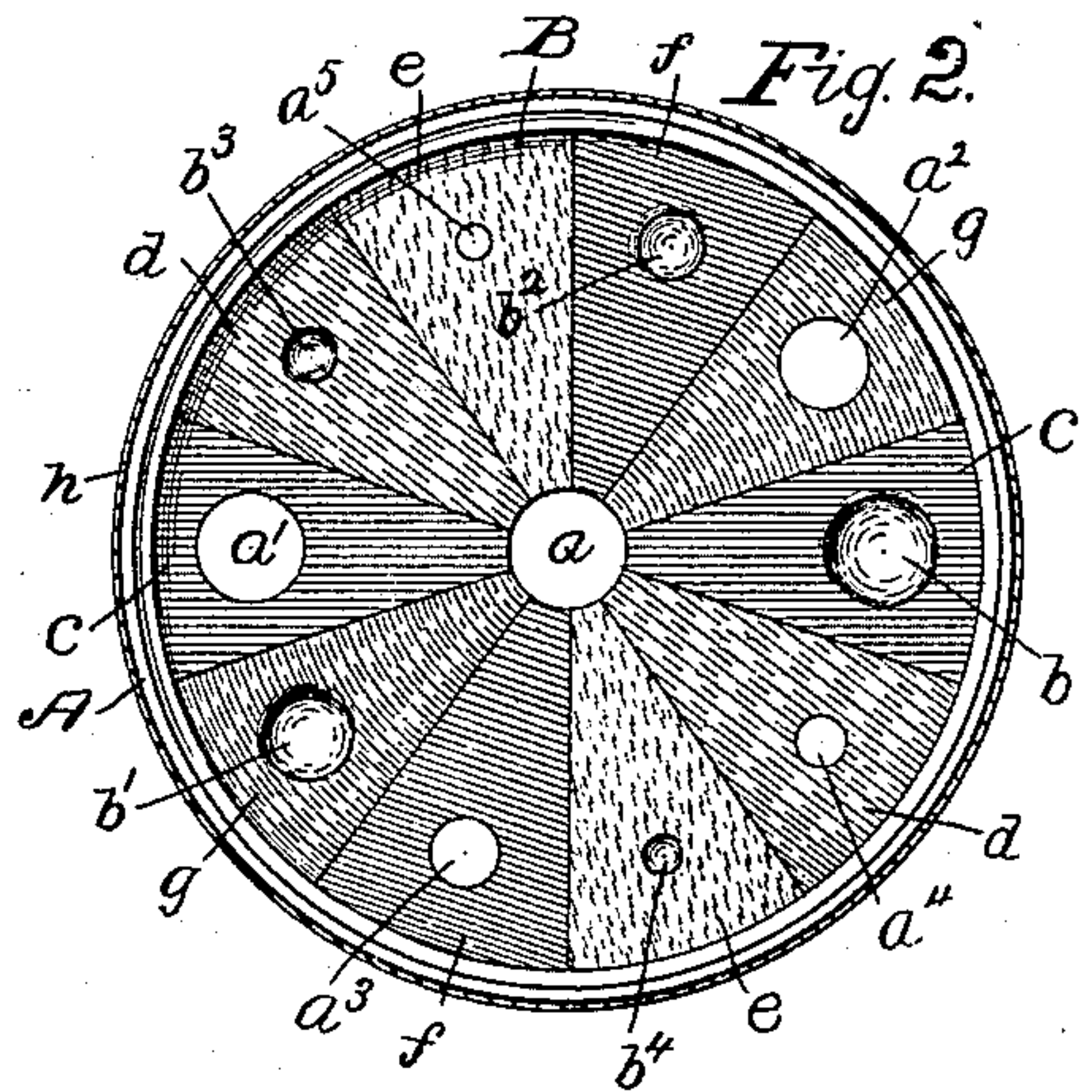
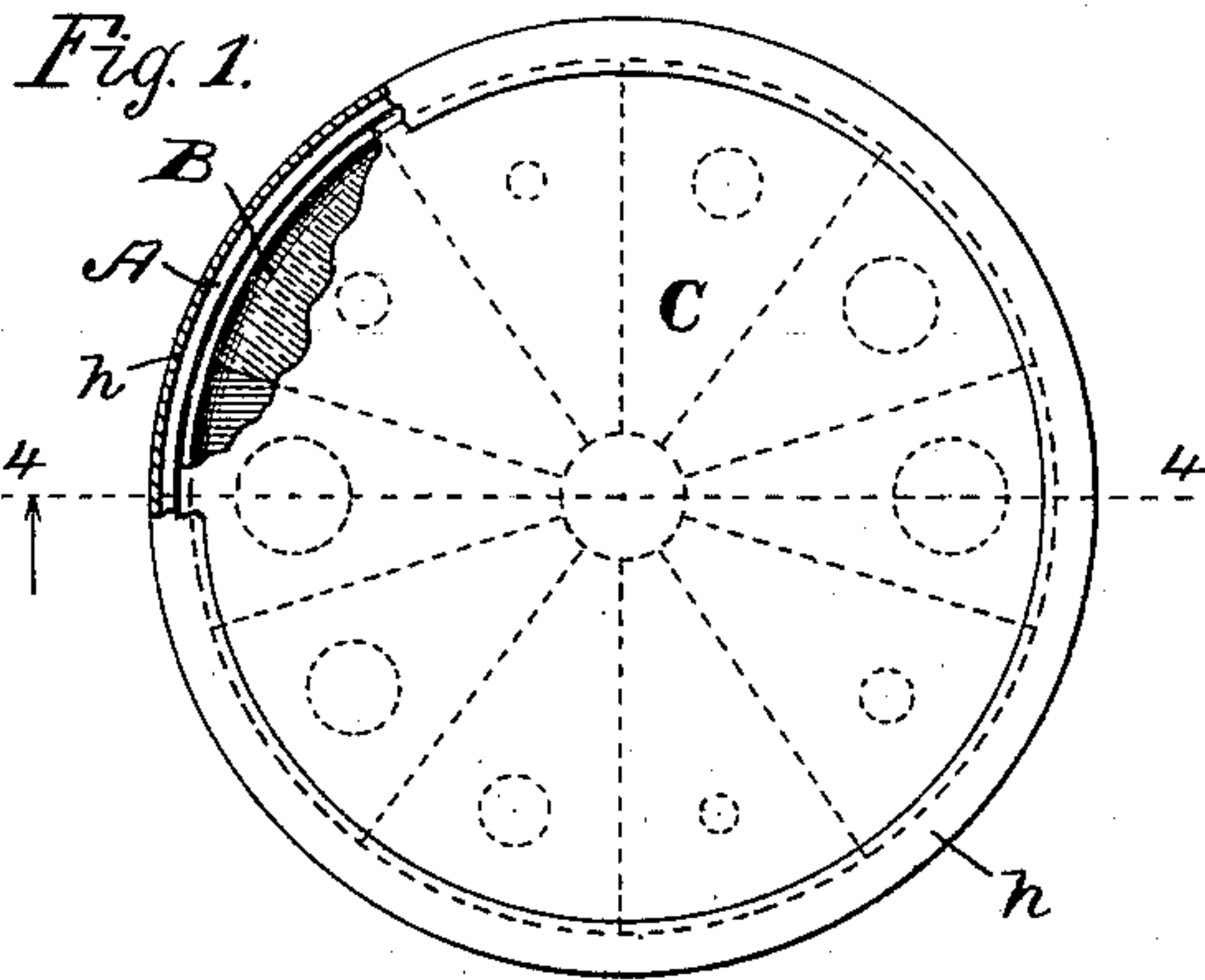
No. 624,158.

Patented May 2, 1899.

W. J. BARRETT.
PUZZLE.

(Application filed Feb. 6, 1899.)

(No Model.)



Attest:
M. L. Winston.
O. D. Harris.

Inventor:
W. J. Barrett,
By C. B. Whitmore, Atty.

UNITED STATES PATENT OFFICE.

WESLEY J. BARRETT, OF MARION, NEW YORK.

PUZZLE.

SPECIFICATION forming part of Letters Patent No. 624,158, dated May 2, 1899.

Application filed February 6, 1899. Serial No. 704,732. (No model.)

To all whom it may concern:

Be it known that I, WESLEY J. BARRETT, a citizen of the United States, residing at Marion, in the county of Wayne and State of New York, have invented a new and useful Improvement in Puzzles, which improvement is fully set forth in the following specification and shown in the accompanying drawings.

My invention is a game or puzzle in which balls are used with a perforated and indented plate, the device to be held in the hand while the game is being played or worked out. The device comprises a cylindrical body with a perforated and indented diaphragm or partition upon which are placed balls, the ends of the cylinder or body being closed by transparent heads, as of glass or mica, or may be of fine wire-netting or perforated plates.

The invention is hereinafter more fully described, and particularly pointed out in the claims.

Referring to the drawings, Figure 1 shows the exterior of the device with a portion of one head broken away. Fig. 2 shows one head removed to uncover the diaphragm. Fig. 3 shows the reverse side of the diaphragm, the head being omitted. Fig. 4 is mainly a transverse section on the dotted line 4 4 in Fig. 1. Fig. 5 shows the graded balls. Fig. 6 shows a slight modification in which the diaphragm is movable, a part of the cylinder being sectioned on the broken dotted lines 6 6 in Fig. 7 to show an opening therein. Fig. 7 is an edge view of the form shown in Fig. 6, parts being longitudinally sectioned on the radial dotted line 7 in Fig. 6. Fig. 8 shows a slight modification of the form of the diaphragm.

Referring to the parts shown, A is a cylindrical body, open at its ends, made of paste-board or sheet metal.

B is a diaphragm or partition transverse with the axis of the body A, dividing the space within the latter.

C C are heads for the body to inclose the space therein, said heads being transparent or perforated, so that the diaphragm and balls may be seen through them. These heads may be held to place by any convenient means, as a band of paper or thin leather *h* on the outside of the body and lapped over the edges of the two heads, as shown. The diaphragm, pref-

erably of sheet metal, is formed with a central circular opening *a*, and its two surfaces are divided into sectoral areas, as shown in Figs. 2 and 3, said areas being preferably equal and of an equal number, the sectors on the two sides of the diaphragm being opposite each other.

a' a' a' a' a' are a series of graded circular openings through the diaphragm, and *b b' b' b' b'* are a series of graded depressions corresponding in diameter, respectively, with the openings *a'* to *a'*. These series of openings and depressions are arranged in a circle concentric with the diaphragm and alternated, one being formed centrally in each sectoral area, as shown. Furthermore, the arrangement is such that the largest circle *a'* of the series is diametrically opposite the largest depression *b*, the next largest circle *a'* being opposite the second largest depression *b'*, and so on through the series, the smallest circle *a'* being opposite the smallest depression *b'*.

The sectoral areas on one side of the diaphragm are made of contrasting colors. (Represented in Fig. 2 by different kinds of lines.) For example, the areas *c c* are colored red, *d d* green, *e e* blue, *f f* yellow, and *g g* orange, the two diametrically opposite sectors in each case being of the same color. Thus specified it will appear that the largest opening in the circle and the largest indentation are in fields of the same color—red and so on—through the series, the smallest circle and the smallest indentation being in like fields of blue. On the reverse side (shown in Figs. 3, 6, and 8) the sectors of the diaphragm pierced by the openings are of the same color as on the obverse—that is to say, each opening of the series is in a field of like color on both sides of the diaphragm. The alternate sectors on the reverse side—those opposite the indentations—are all colored alike, as of a neutral tint. In connection with the diaphragm thus formed are employed a series of graded balls 1 to 5, inclusive, (shown in Fig. 5,) adapted to roll upon the diaphragm as the position of the device is changed as to horizontality. The balls are colored to correspond with the colors of the sectors—that is to say, ball 1 is colored red, ball 2 orange, 3 yellow, 4 green, and 5 blue.

The relative sizes of the balls and the graded openings in the diaphragm are such that the opening a' will catch the largest ball 1 only and let the other balls pass through. The opening a^2 will catch ball 2 and pass balls 3, 4, and 5. The opening a^3 will catch ball 3 and pass balls 4 and 5. The opening a^4 will catch ball 4 and pass ball 5, which latter will be caught by opening a^5 . The central opening a , largest of all, is for the purpose of passing all the balls, as the playing is designed to be done on both sides of the diaphragm, the device being reversible.

Holding the puzzle with the side of the diaphragm shown in Fig. 2 upward, the game is, first, to so manipulate the device by varying its position as to lodge each ball in its proper opening, being guided in the act by observing the colors of the balls and those of the sectoral fields, or, second, to lodge all of the balls in their respective depressions, the colors of the balls and the sectors matching. If in playing the first phase or part of the game a ball drops through an opening or becomes lodged in a depression, the combination is broken and the player needs to begin again. If, also, while playing the second part of the game a ball passes through the diaphragm or becomes lodged in a wrong depression from which it cannot be dislodged without also dislodging the balls that may have been previously properly lodged, the combination will be destroyed or the game broken up and the player must commence again. In using the reverse side of the diaphragm, Fig. 3, the game is to catch the balls in the proper openings; but there being no depressions in which the balls may be entrapped this play is easier than either of those on the obverse above described; and this I call the "easy" side of the puzzle, and it is intended for beginners. The protuberances on this face of the diaphragm, caused by forming the depressions on the other face or side, play no part in the game.

For the purpose of making the device thinner, and so occupy less space in packing and shipping and be lighter to handle, I sometimes make it as shown in Figs. 6 and 7. In this form the cylindrical body A' is practically of the same construction as in the other form, it being much shorter. The heads C' C' are the same and held to place by the same means—a band k' . In this construction the diaphragm B' is made movable longitudinally within the body, as indicated in Fig. 7. The body is formed with three inclined slits i , equally spaced about its periphery, and the diaphragm is formed with three projecting parts k , reaching out through the respective slits. By turning the diaphragm slightly upon its axis by pressing the parts k one way or the other the diaphragm may be made to assume either of the two positions shown by full and dotted lines in Fig. 7. In these movements of the diaphragm it passes across the middle plane of the body, its two positions

being equidistant from said plane. Aside from the projections k the diaphragm B' is wholly like the diaphragm B in the other form. Now if it be wished to play the game with the balls on the easy side (shown in Fig. 6) the diaphragm is first turned so as to leave the most space above it, as appears in Fig. 7; or should it be wished to play with the balls on the other or "hard" side the device is inverted and the diaphragm moved to the position shown by dotted lines in Fig. 7. In playing with the device in this form the larger balls would not, it is understood, pass wholly through the diaphragm on account of the space beneath being too narrow; but if a ball roll into an opening having a larger diameter than that of the ball it would drop sufficiently far to be held and so be out of the game until the device is inverted to again bring all the balls on the diaphragm and the game started anew. When in using this form of the device the diaphragm is shifted at any time, care is taken to see that the balls are not in the way of its progress. It is moved upward and the balls are allowed to drop through it as it is elevated.

In the modification shown in Fig. 8 the diaphragm is formed with small circular ridges l at the outsides of the openings, so the balls can reach the openings only from the inside.

What I claim as my invention is—

1. In a puzzle, a hollow cylindrical body with transparent heads, and a diaphragm between the heads, and balls to roll upon the diaphragm, the latter being movable longitudinally within the hollow body, substantially as and for the purpose specified.
2. In a puzzle, a hollow cylindrical body with transparent heads, and a diaphragm between the heads, and balls to roll upon the diaphragm, the latter having perforations and indentations arranged in a circle, substantially as and for the purpose specified.
3. A puzzle consisting of a circular hollow body having transparent inclosing heads, and a diaphragm, and balls to roll upon the diaphragm, the latter having perforations and indentations arranged in a circle concentric with the hollow body, the perforations and indentations being alternated, substantially as set forth.
4. A puzzle consisting of a circular hollow body having transparent inclosing heads, and a diaphragm, and balls to roll upon the diaphragm, a surface of the latter being divided into an equal number of sectoral areas each having a perforation or an indentation, the perforations and indentations being diametrically opposite each other, substantially as specified.
5. A puzzle consisting of a circular hollow body having transparent inclosing heads, and a perforated diaphragm, and balls of contrasting colors on the diaphragm, a surface of the latter being divided into an equal number of equal sectors of contrasting colors, each pair of sectors lying diametrically opposite

being of the same color, the colors of the sectors corresponding with the colors of the balls, substantially as shown and described.

5 6. A puzzle consisting of a circular hollow body having transparent inclosing heads, and a perforated diaphragm, and balls of contrasting colors on the diaphragm, the two surfaces of the latter being divided into corresponding sectors of contrasting colors, a sector on one face being opposite a similar sector on the other face, alternate sectors having perforations for the balls to pass through,

the perforated sectors on both faces being of the same color and corresponding with the color of one of the balls, substantially as is shown and set forth.

In witness whereof I have hereunto set my hand, this 2d day of February, 1899, in the presence of two subscribing witnesses.

WESLEY J. BARRETT.

Witnesses:

ENOS B. WHITMORE,
M. L. WINSTON.