

(No Model.)

2 Sheets—Sheet 1.

L. M. LYON.
PUZZLE.

No. 448,974.

Patented Mar. 24, 1891.

Fig. 1.

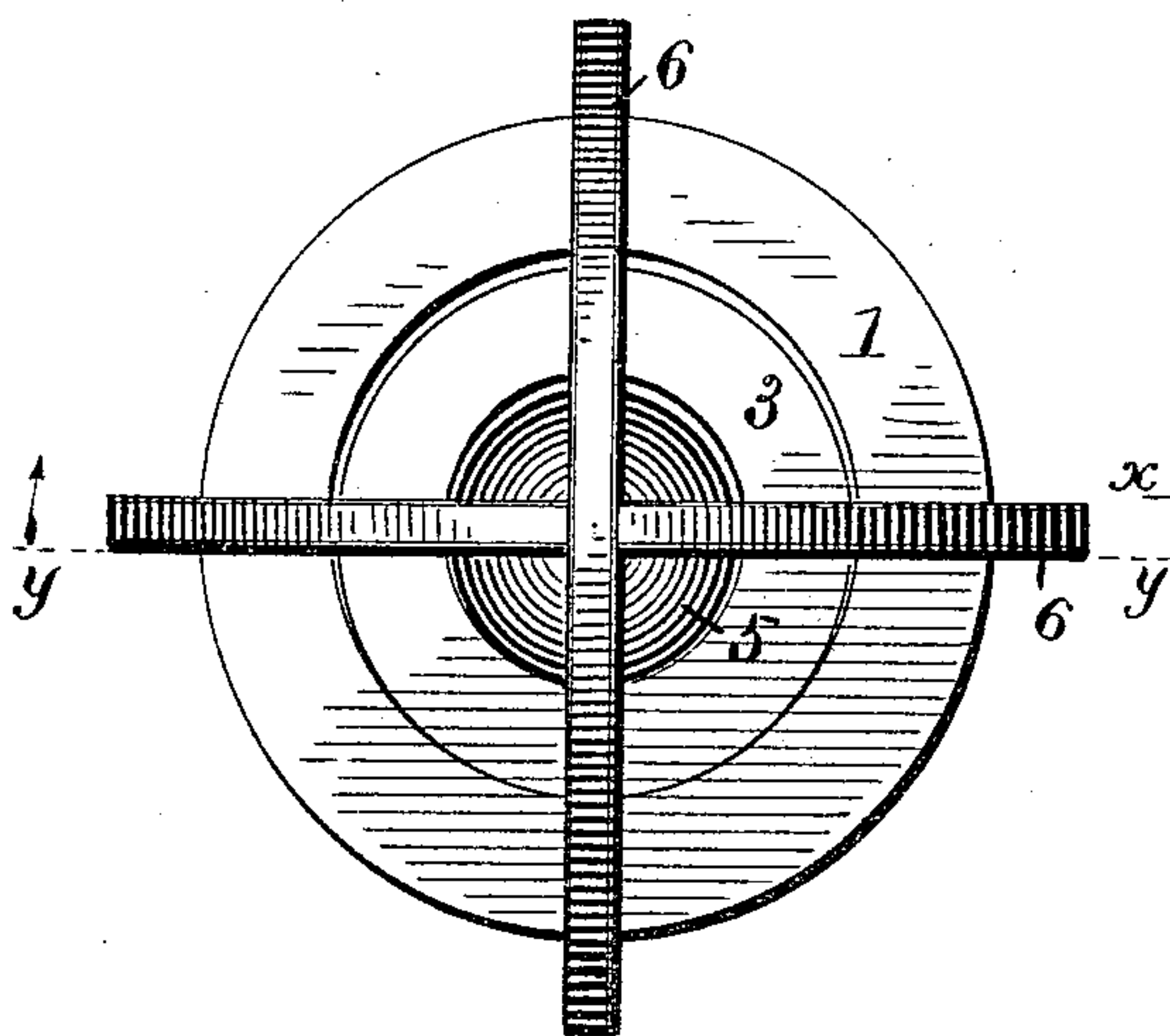


Fig. 2.

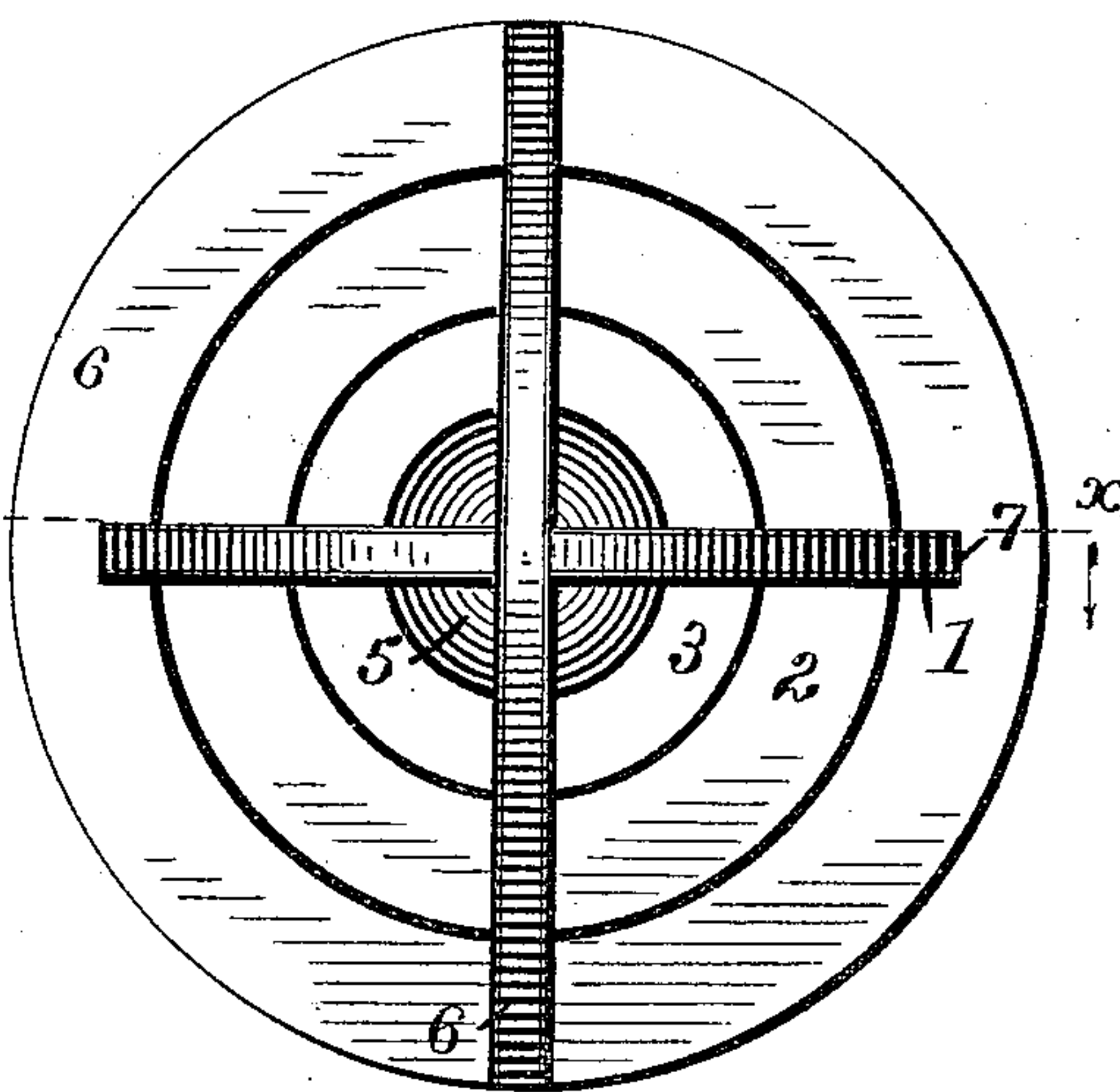


Fig. 3.

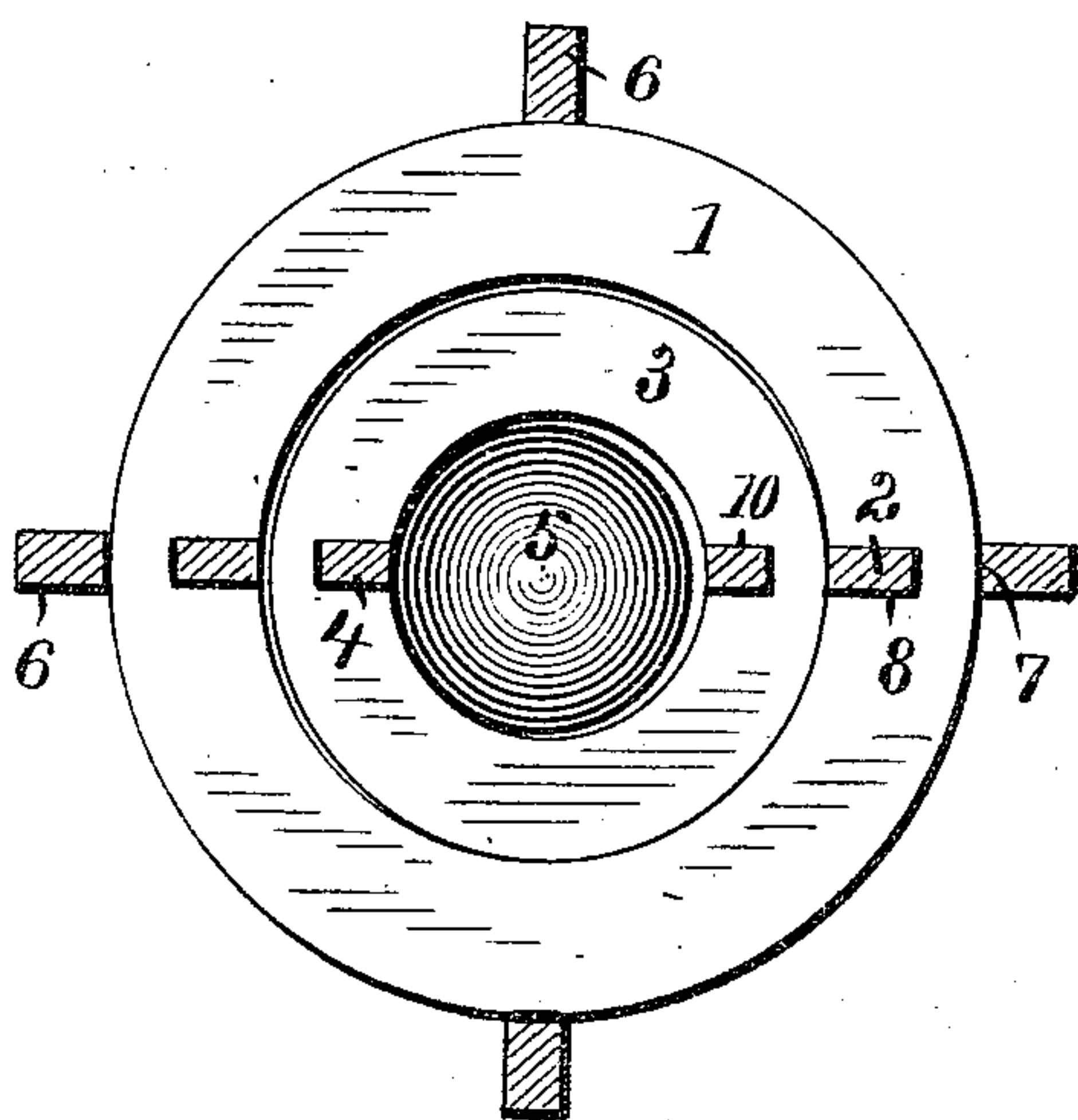
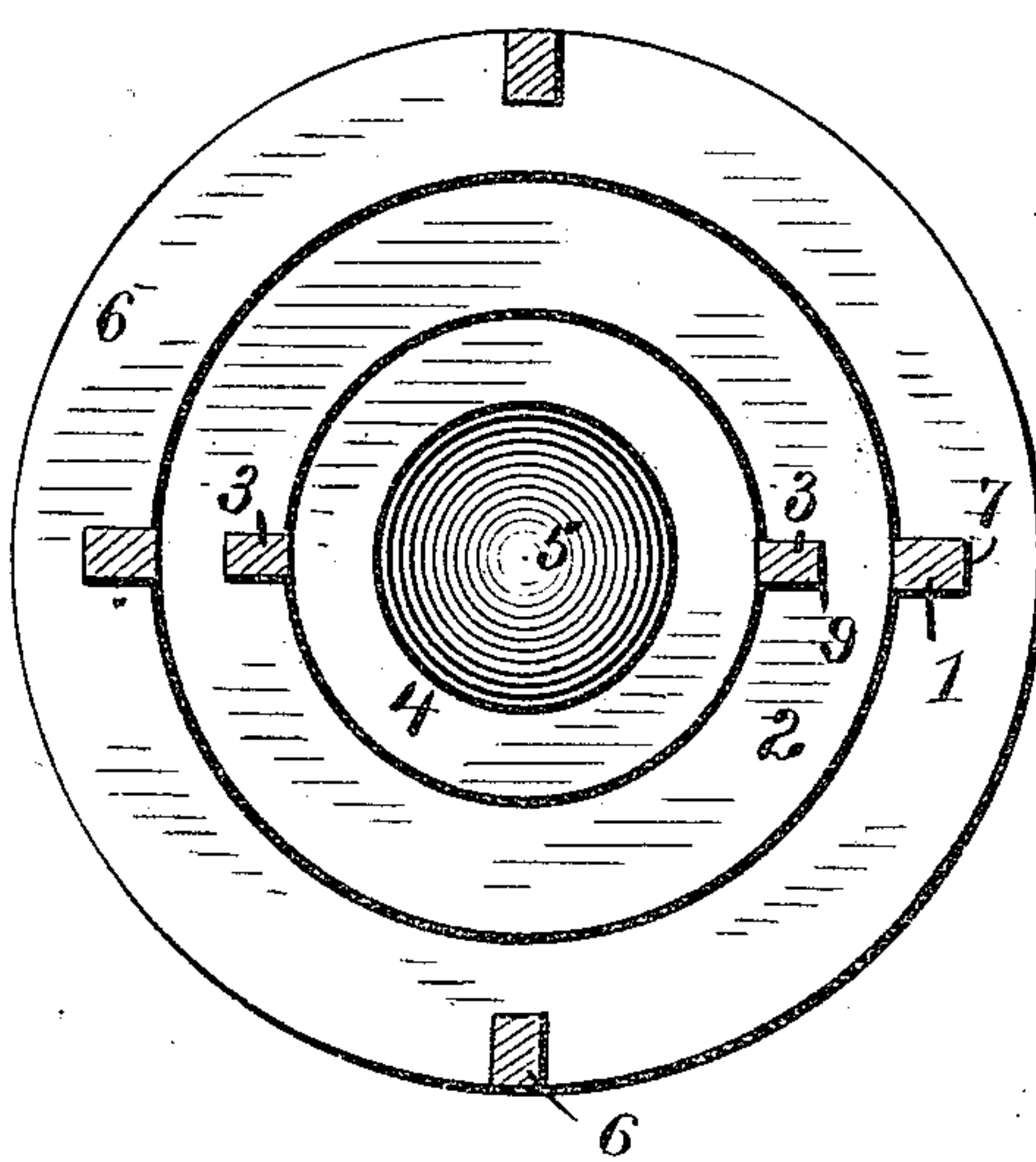


Fig. 4.



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Fig. 5.

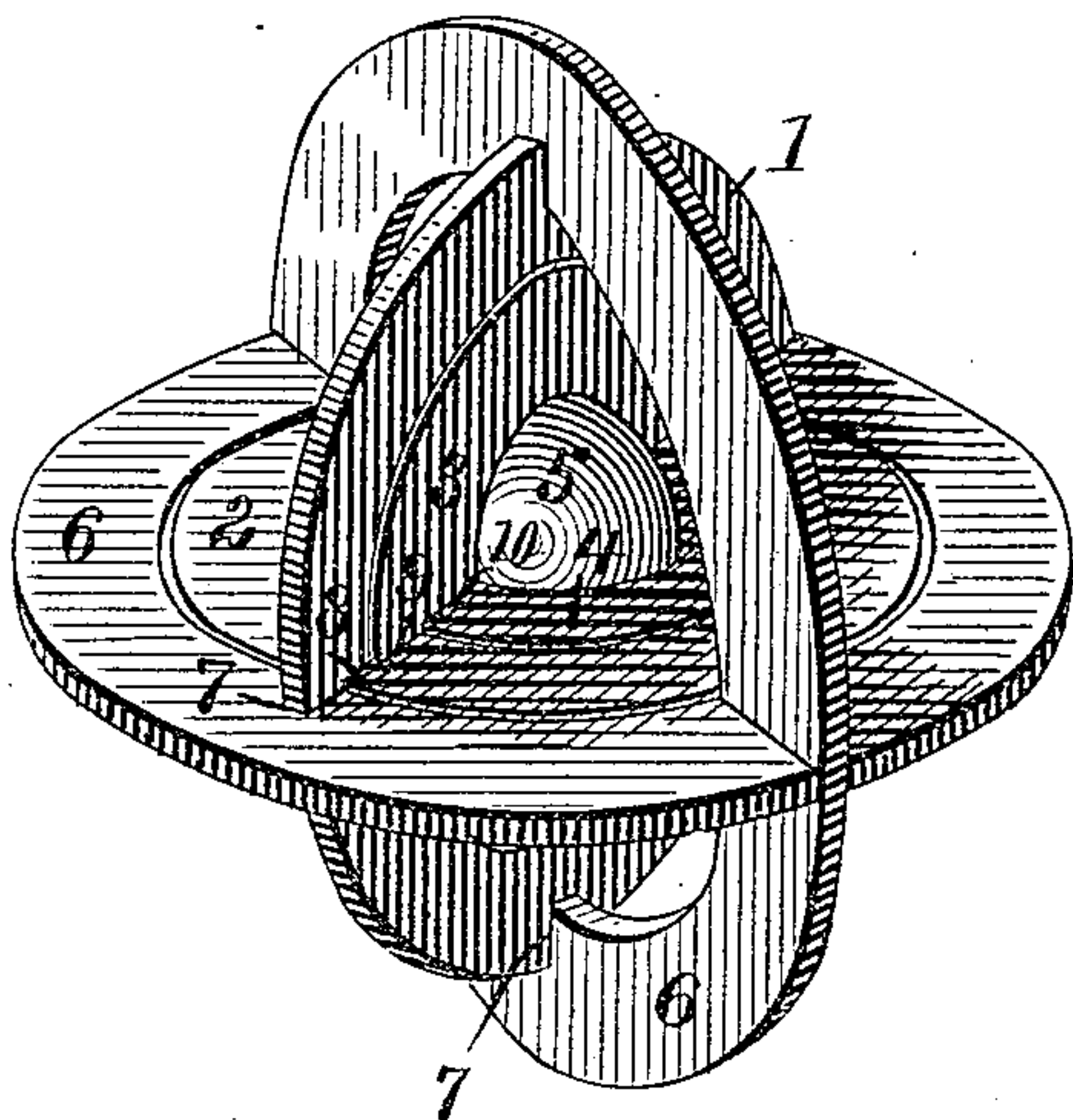


Fig. 6.

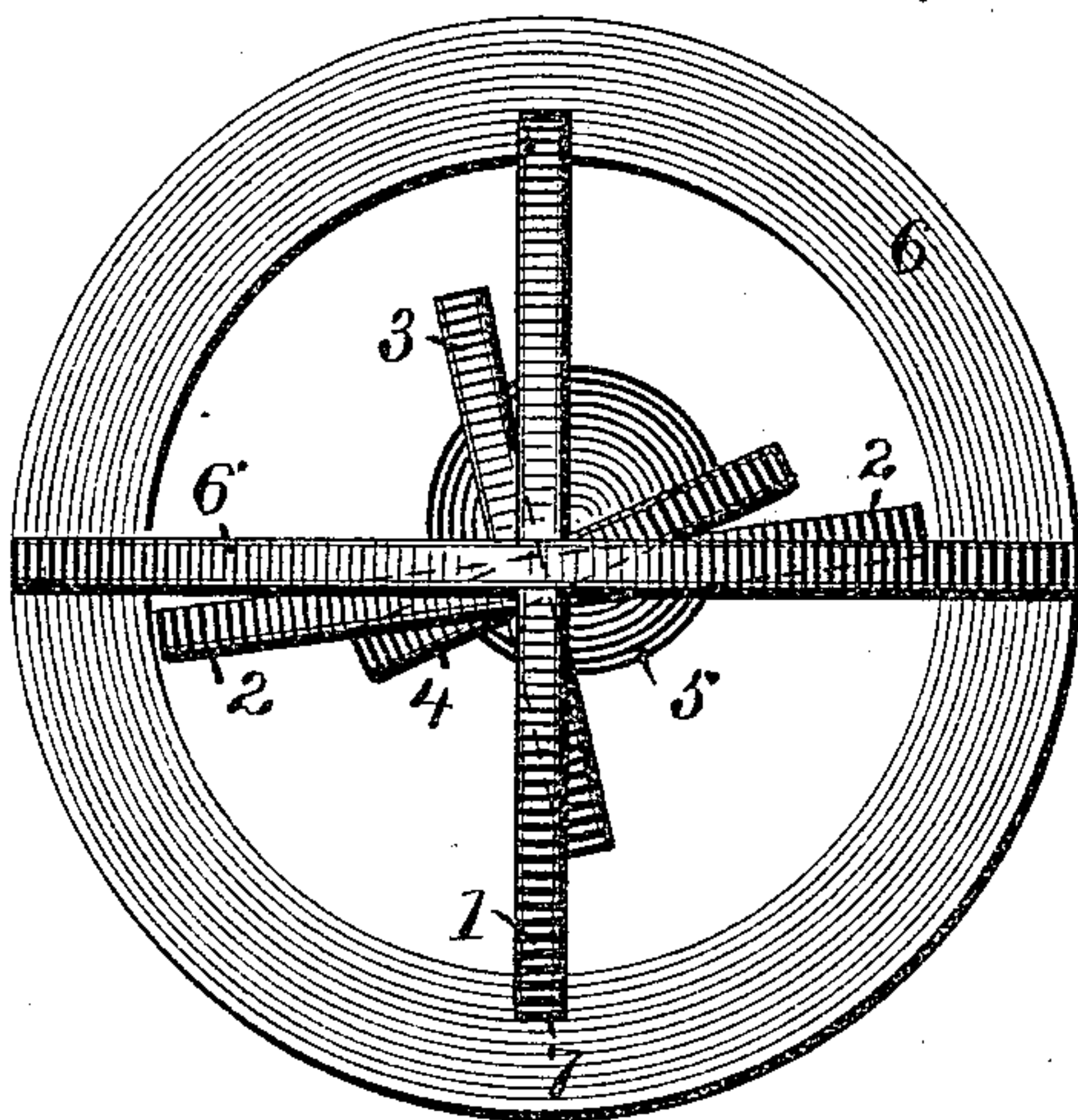
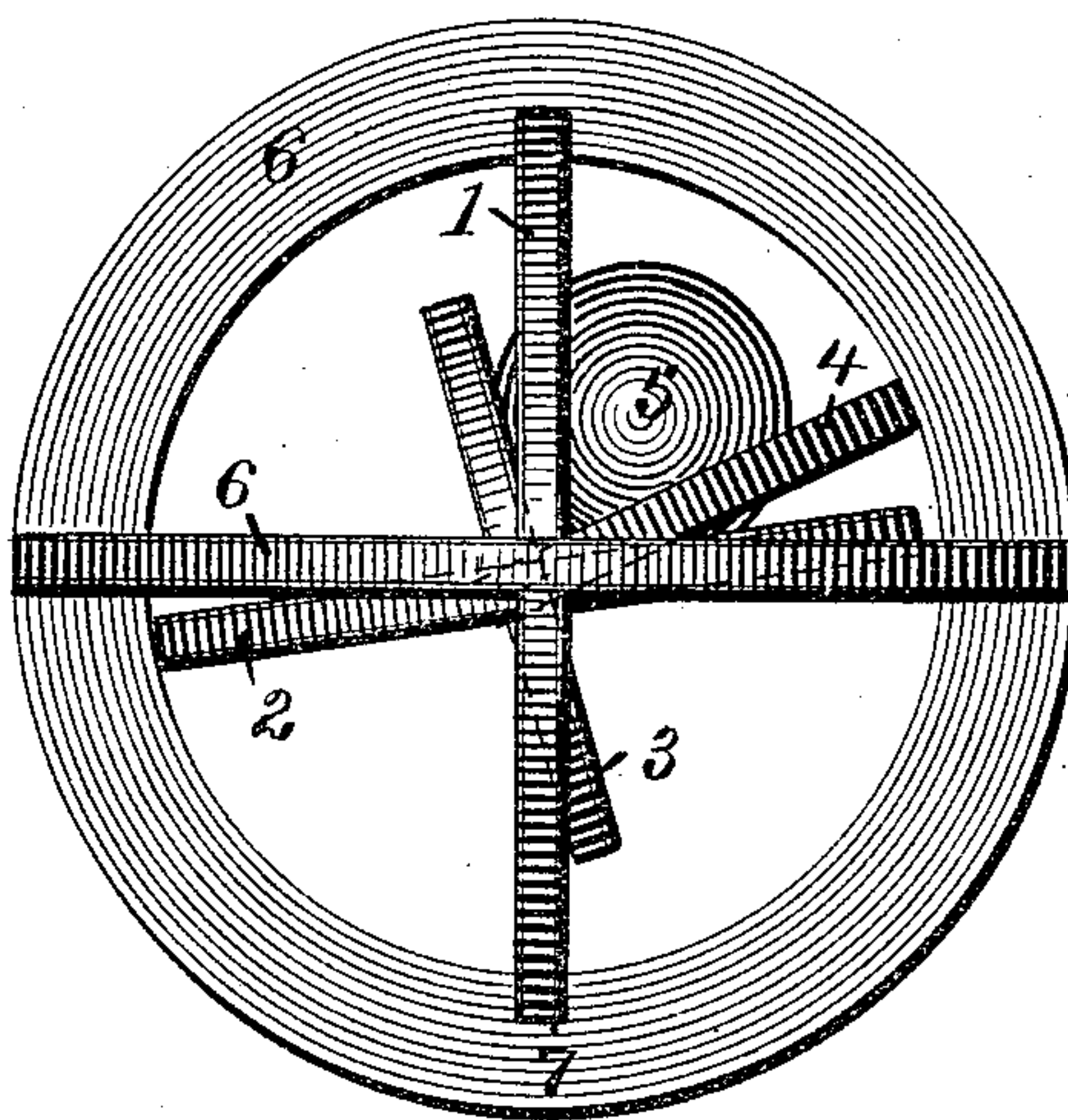


Fig. 7.



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UNITED STATES PATENT OFFICE.

LEONARD M. LYON, OF BETHEL, CONNECTICUT.

PUZZLE.

SPECIFICATION forming part of Letters Patent No. 448,974, dated March 24, 1891.

Application filed January 16, 1891. Serial No. 377,998. (No model.)

To all whom it may concern:

Be it known that I, LEONARD M. LYON, a citizen of the United States, residing at Bethel, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Puzzles; and I 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.

My invention has for its object to produce an ornamental, interesting, and inexpensive puzzle, the special purpose being to provide an article of this class that will interest and entertain both adults and children, that cannot be solved or worked out until the proper position in which to place the rings has been learned, although it may be quickly solved by a person understanding it, which shall be attractive as an ornament, and which, most important of all, can be produced at such a slight cost as to enable it to be retailed at a low price while still allowing to manufacturers and dealers a good margin of profit.

With these ends in view I have devised the simple and novel puzzle of which the following description, in connection with the accompanying drawings, is a specification, numerals being used to designate the several parts.

For the sake of clearness of description, I will assume that the parts have a certain fixed position, although it will of course be understood that in practice the parts may be held in any position to suit the convenience of the operator.

Starting out upon the theory referred to, however, Figure 1 is a plan view; Fig. 2, a front elevation corresponding therewith; Fig. 3, a section on the line $x x$ in Fig. 2, looking down; Fig. 4, a section on the line $y y$ in Fig. 1, looking up; Fig. 5, a perspective, and Figs. 6 and 7 are side elevations illustrating different positions of the rings in solving the puzzle.

The puzzle consists of five or more parts, in the present instance six—to wit, a holder, denoted by 6; first, second, third, and fourth rings, counting from the largest ring inward, denoted by the numerals 1, 2, 3, and 4, and a ball 5, lying within the third and fourth rings. The holder may be of any preferred shape externally, but is preferably made as shown

in the drawings—that is, to consist of two rings, each having like internal diameters, said rings being mortised or otherwise rigidly secured together, as is clearly shown in Fig. 5. Upon the inner sides of the holder are four recesses 7, which receive the outer ring 1 and hold it firmly against all but rotary movement, said ring, however, being left loose enough, so that it will turn readily in the recesses. In the inner periphery of ring 1 are recesses 8, which receive ring 2, said ring being free to rotate in the recesses in ring 1, its plane of rotation being at right angles to the plane of rotation of ring 1, said ring, however, and all the other rings being carried by the rotation of ring 1. Upon the inner periphery of ring 2 are recesses 9, which receive ring 3, said ring being free to rotate in the recesses in ring 2, and its plane of rotation being at right angles to the plane of rotation of ring 2. Upon the inner periphery of ring 3 are recesses 10, which receive ring 4, said ring being free to rotate in the recesses in ring 3, and its plane of rotation being at right angles to the plane of rotation of ring 3. In practice I preferably make the inner diameter of ring 4 the same, or approximately the same, as the diameter of ring 3, the outer diameter of ring 3 being of course sufficiently greater than the diameter of ring 4 to permit recesses 10 to be made therein and leave ample strength of material. The rings may be made of metal, wood, hard rubber, vulcanized fiber, or any suitable material. The ball is of just suitable diameter to lie loosely within rings 3 and 4, these rings, as already stated, lying at right angles to each other, so that the ball is normally held in position by said rings, as is clearly shown in Fig. 5.

The solution of the puzzle is to remove the ball from the rings. Holding the puzzle as in Figs. 6 and 7, ring 1 being in the vertical plane, ring 2 is tilted slightly from the horizontal plane, as clearly shown, each of the rings being loose enough in their recesses to permit them to be tilted to the slight degree shown. If it is desired to remove the ball toward the right, the right side of ring 2 is placed highest, as in the drawings. If it were desired to remove the ball toward the left, the left side would be placed highest. Ring 3 is then tilted slightly from the vertical plane,

as shown, the top of said ring being tilted toward the left if it is desired to remove the ball toward the right. After tilting ring 3 it is raised upward as much as the recesses will permit, after which ring 4 is tilted to the position shown, and slight pressure being applied to the lower edge of the ring it may be readily moved from the position shown in Fig. 6 to the position shown in Fig. 7, the ball and ring 4 passing out together. If rings 1, 2, and 3 become displaced relatively to the holder from the position shown in Figs. 6 and 7, it will be necessary to replace them in substantially that position before the ball and ring 4 can be returned to their normal position—that is, when the ball is inclosed and held in position by rings 3 and 4, lying at right angles to each other, as clearly shown in Fig. 5.

It will of course be understood that so far as the principle of my invention is concerned the external configuration of the holder and the number of rings used is not essential. The principle would be precisely the same if either three, five, or more rings were used in connection with a holder instead of four, as shown in the drawings.

Having thus described my invention, I claim—

1. A puzzle consisting of a holder comprising two portions lying at right angles to each other, said parts having circular openings and recesses in their inner peripheries, a ring held in position by said recesses and turning freely therein and being itself provided with recesses in its inner periphery, a ring engaging said recesses and turning freely therein and provided on its inner periphery with other recesses, another ring engaging the recesses in

said second ring, the central openings in said second and third rings being of the same diameter, and a ball removably held in position between said second and third rings, substantially as described. 40

2. A puzzle consisting of a suitable holder, a ring adapted to turn within said holder and having recesses on its inner periphery opposite to each other, another ring engaging said recesses and adapted to be rotated in a plane at right angles to the first ring, said second ring having itself recesses upon its inner periphery, and a third ring engaging the recesses on the inner periphery of the second ring and being free to be rotated in a plane at right angles thereto, the inner diameter of the second and third rings being substantially the same, and a ball normally held in position by the second and third rings, but which is adapted to be removed therefrom by tilting said rings slightly in the recesses by which they are held. 50 55 60

3. A puzzle consisting of a suitable holder and a series of rings, each ring being held in position by the ring outside of it and capable of rotation in a plane at right angles to said outer ring, the two smaller rings having substantially the same inner diameter, and a ball held normally in position within the series of rings by said two smaller rings, but being adapted to be removed therefrom by tilting the rings slightly, substantially as described. 65 70

In testimony whereof I affix my signature in presence of two witnesses.

LEONARD M. LYON.

Witnesses:

HENRY W. DURANT,
WM. H. SMITH.