

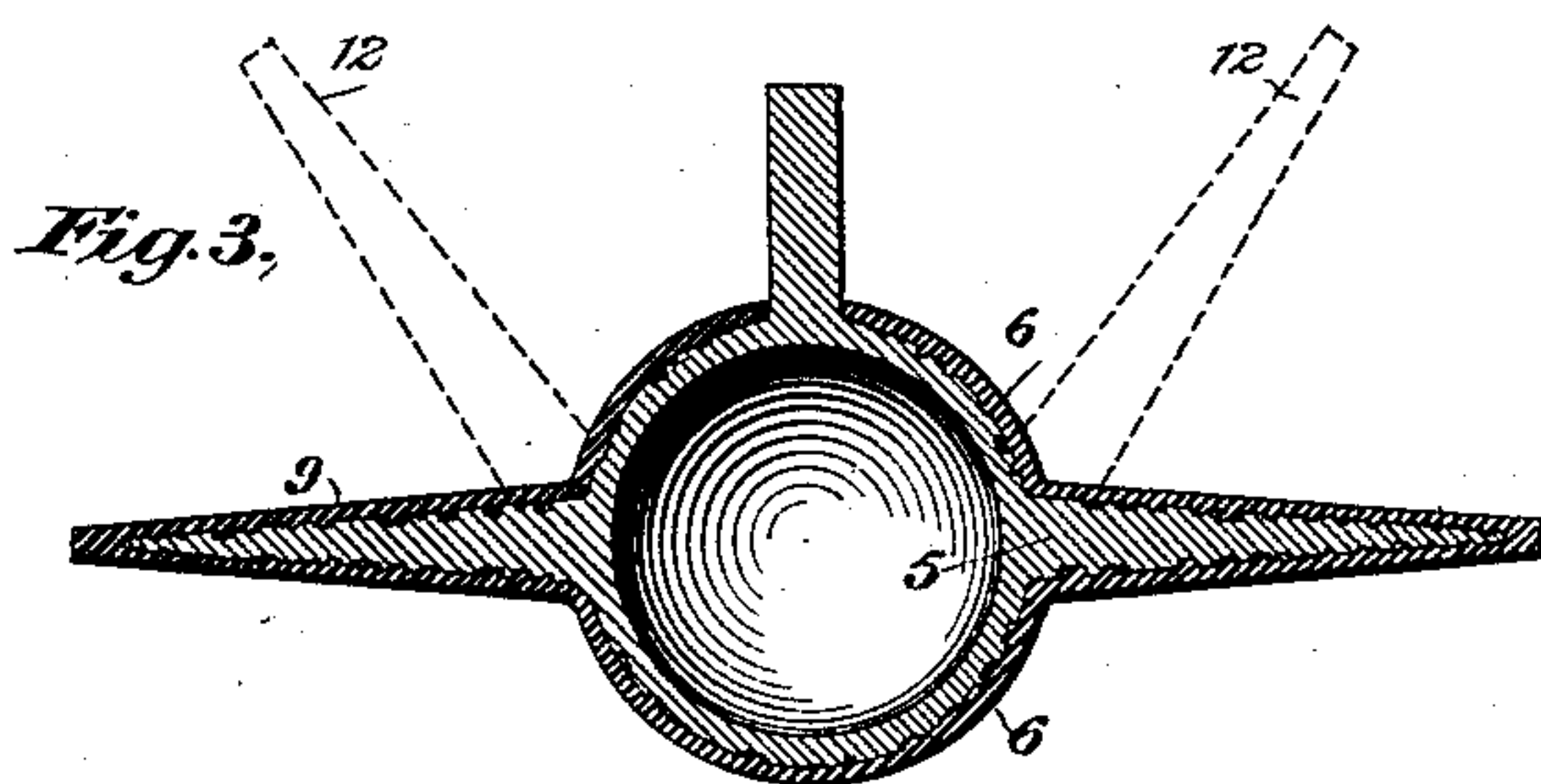
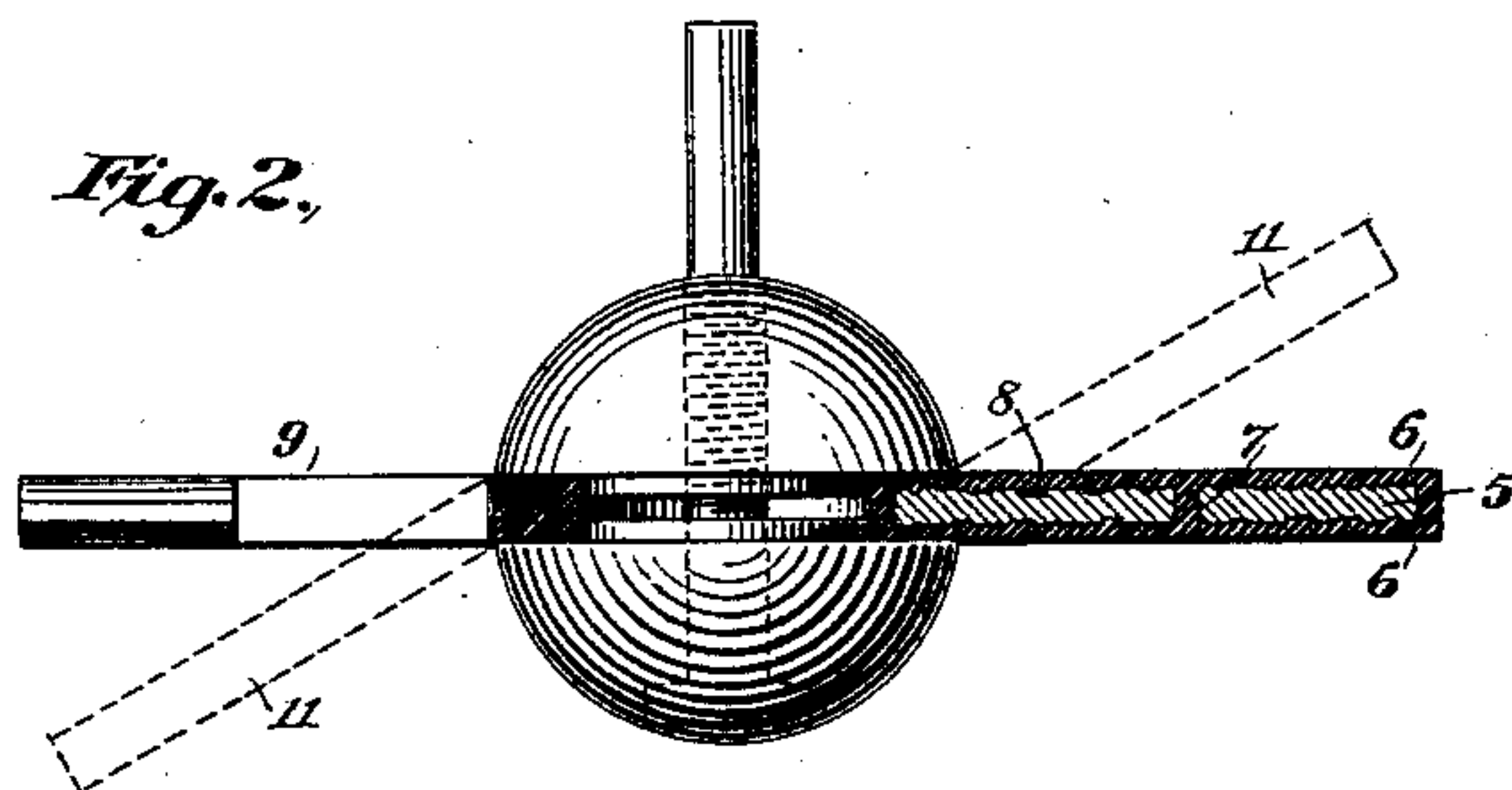
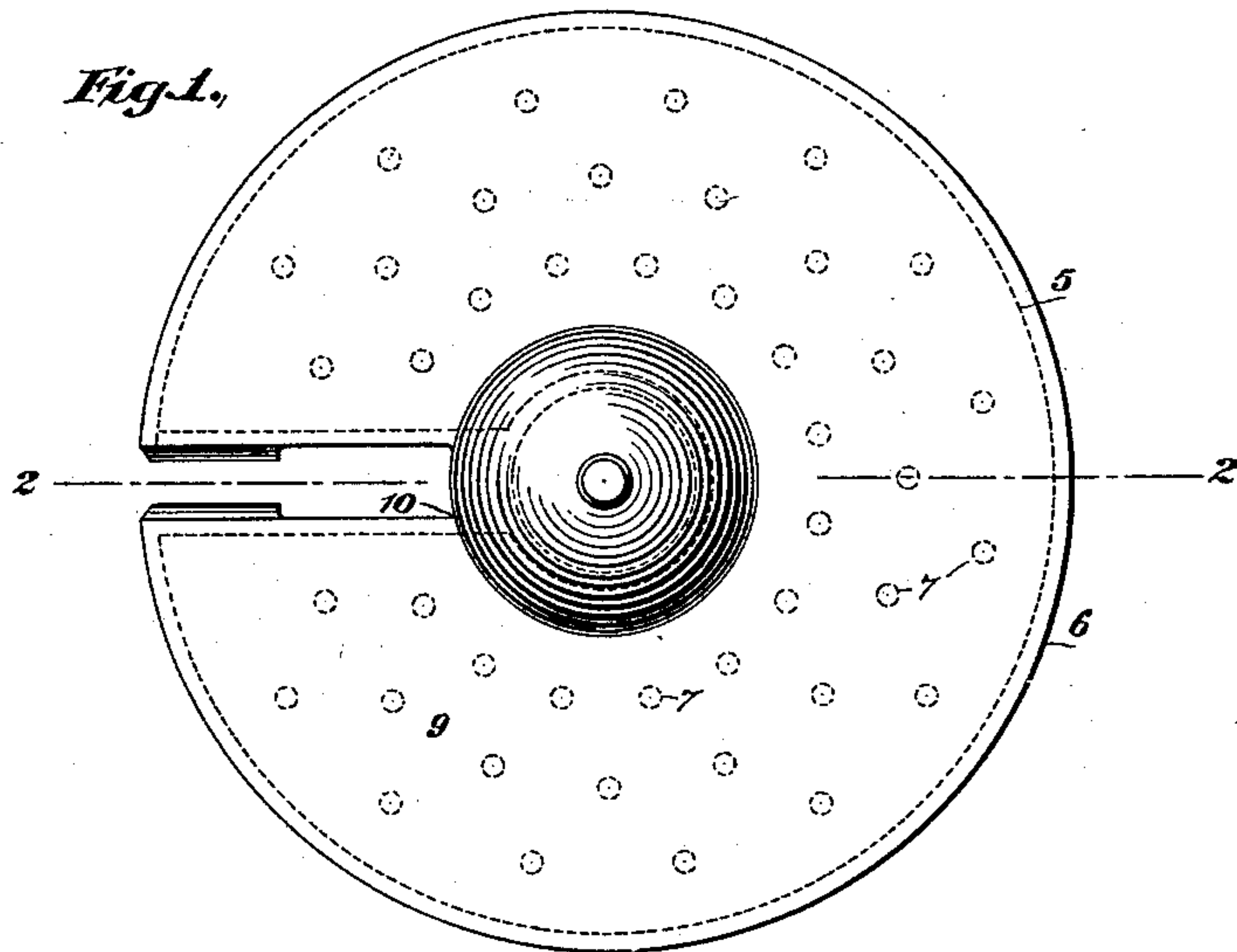
(No Model.)

J. THOMSON.

HARD RUBBER DISK FOR OSCILLATING DISK ACTIONS.

No. 452,488.

Patented May 19, 1891.



Witnesses

Geo. W. Bruck

Edward Thorpe.

Inventor:

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# UNITED STATES PATENT OFFICE.

JOHN THOMSON, OF BROOKLYN, ASSIGNOR TO THE THOMSON METER COMPANY, OF NEW YORK, N. Y.

## HARD-RUBBER DISK FOR OSCILLATING-DISK ACTIONS.

SPECIFICATION forming part of Letters Patent No. 452,488, dated May 19, 1891.

Application filed January 3, 1891. Serial No. 376,663. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN THOMSON, a citizen of the United States, residing at Brooklyn, Kings county, New York, have invented certain new and useful Improvements in Construction of Hard-Rubber Disks for Use in Oscillating-Disk Actions, of which the following is a specification.

This invention relates to oscillating-disk actions; and it consists in an improved construction of hard-rubber disks particularly adapted to water-meters and pumps, as set forth hereinafter, and illustrated in the drawings, in which—

Figure 1 is a plan view, and Figs. 2 and 3 transverse central sectional views, of different forms of disks embodying my improvement, which consists of interposing a plate or plates 5 of metal, as steel, iron, aluminum, or bronze alloys, or webs or mats of interwoven wire between sheets of rubber 6, then preferably vulcanizing the rubber, thereby encompassing and imprisoning the plate.

To insure the adhesion of the rubber that all may become as one mass, the plate is perforated, as 7, and its surface roughened, preferably "undercut" 8, as by a knurling-tool. It will also be observed that the plate is of lesser diameter than the rubber. In this wise the plastic rubber during the vulcanizing process will surround the plate, flow into its cavities, and pass through the perforations, thus uniting the rubber sheets to each other and to the plate, as if by means of rivets.

Fig. 2 particularly represents a disk with parallel surfaces, the ball being attached separately in hemispheres, while Fig. 3 shows a disk of tapering form in which both the ball and disk are made solid in one part.

It is well known that hard rubber has a peculiarly high efficiency as a wearing material, particularly where used in water acting against bronze composition, as in the instance of pumps and meters, while on the other hand its brittleness and frequent lack of uniformity in vulcanizing are serious objections to its use when subjected to heavy strain or shock,

such as "water-hammer." The advantage, then, of this combination is additional strength of structure without increasing the bulk or decreasing the efficiency of wearing-surface; but the particular feature of this method of strengthening in disk-actions may be pointed out briefly as follows: It has been found in practice, as it might be demonstrated theoretically, that the discharge portion of the disk, as, say, the quadrant 9, is most liable to yield under heavy duty, and that the weakest point is at the bottom of the slot—the juncture 10 of the disk and ball. In other words, the ball may be regarded as a fulcrum and the disk as a lever of universal radii projecting therefrom. It is evident, therefore, that the interposed plate exactly meets the objections pointed out.

The dotted outlines 11 12 indicate that the interposed plate is equally applicable whether the "disk" be such strictly defined or a cup or cone, the oscillating action being, in fact, the same and subject to the now common designation herein employed, "oscillating-disk action."

Without limiting myself to the precise construction and arrangement of parts, I claim—

1. A disk for oscillating-disk actions, composed of hard rubber and an interposed plate or web of metal.

2. A disk for oscillating-disk actions, composed of hard rubber and an interposed metal plate, the plate being of lesser diameter than the rubber.

3. A disk for oscillating-disk actions, composed of hard rubber and an interposed metal plate, the plate being perforated for the purpose of uniting the sheets of rubber to each other and to the plate.

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

JOHN THOMSON.

Witnesses:

FRANK LAMBERT,  
EDWD. K. ANDERTON.