

No. 749,518.

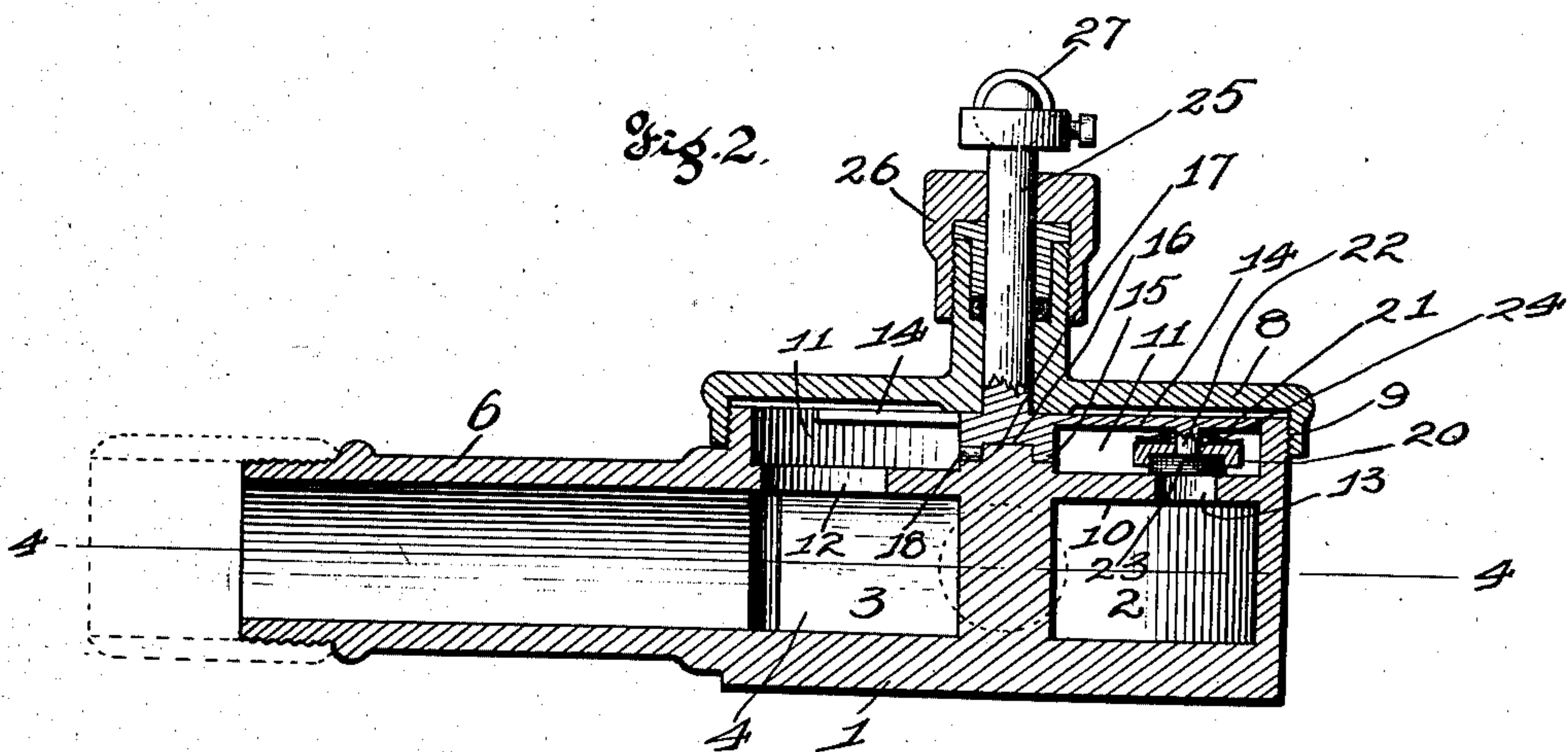
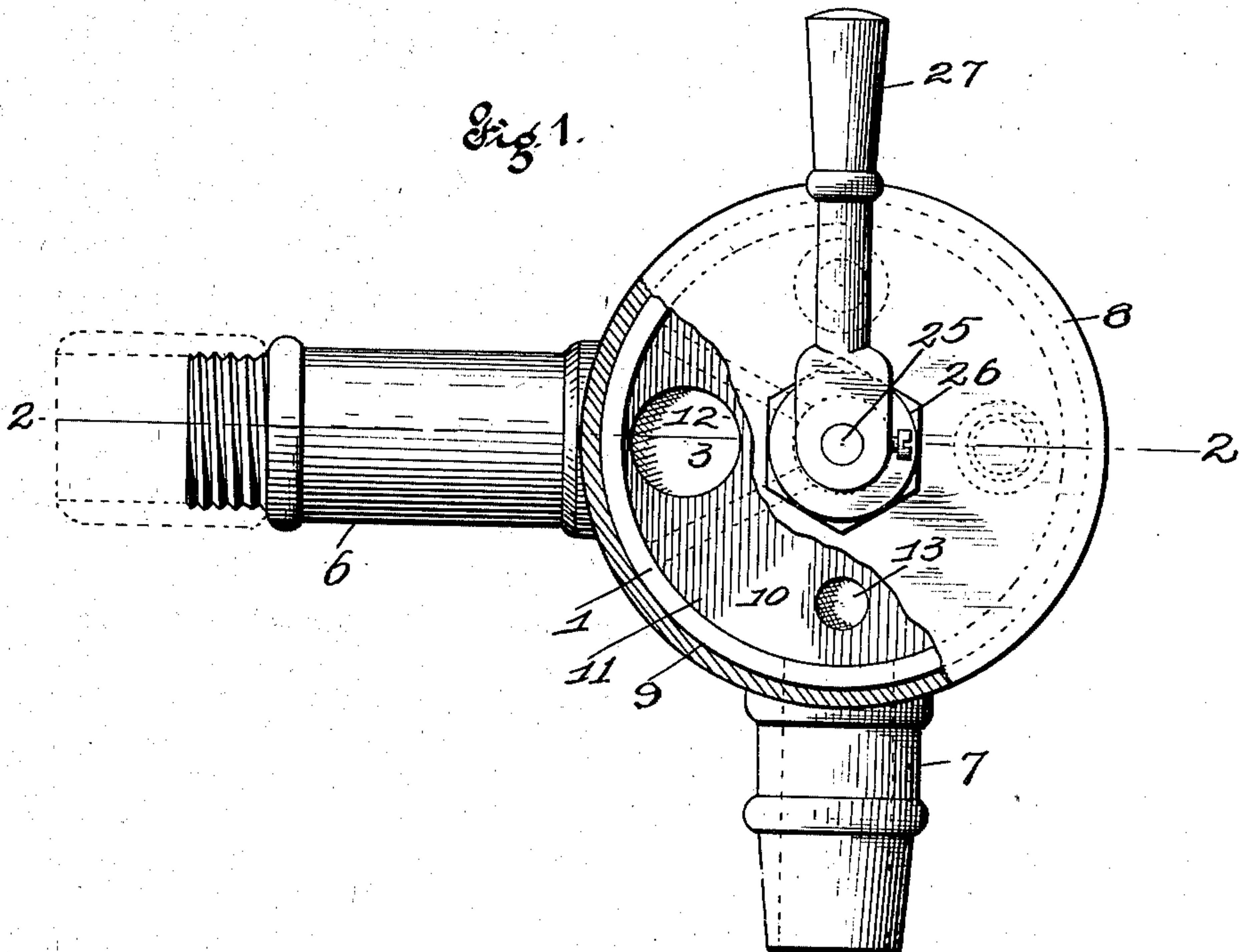
PATENTED JAN. 12, 1904.

R. BAUMANN.
DISK VALVE.

APPLICATION FILED NOV. 2, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses
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Fig. 3

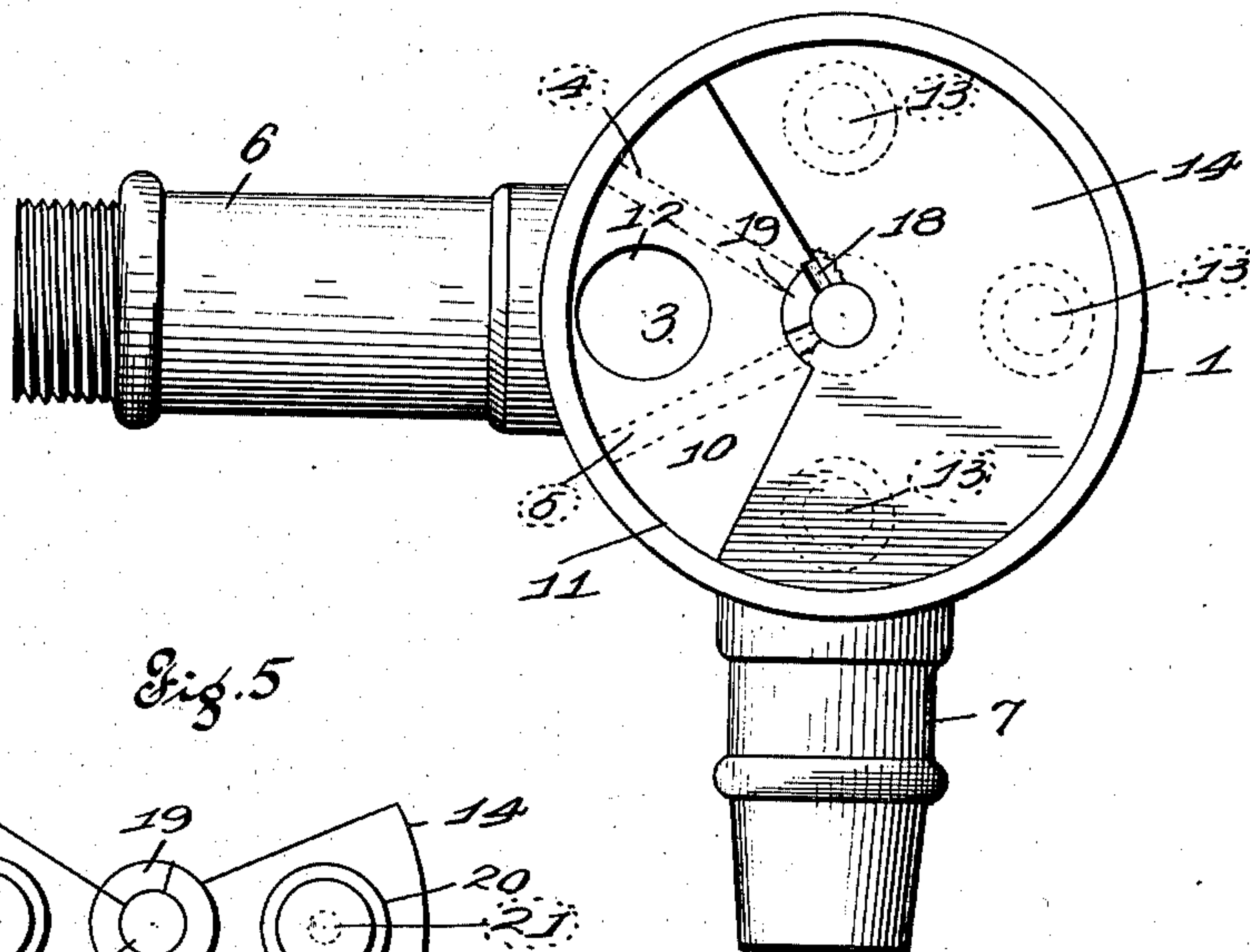


Fig. 5

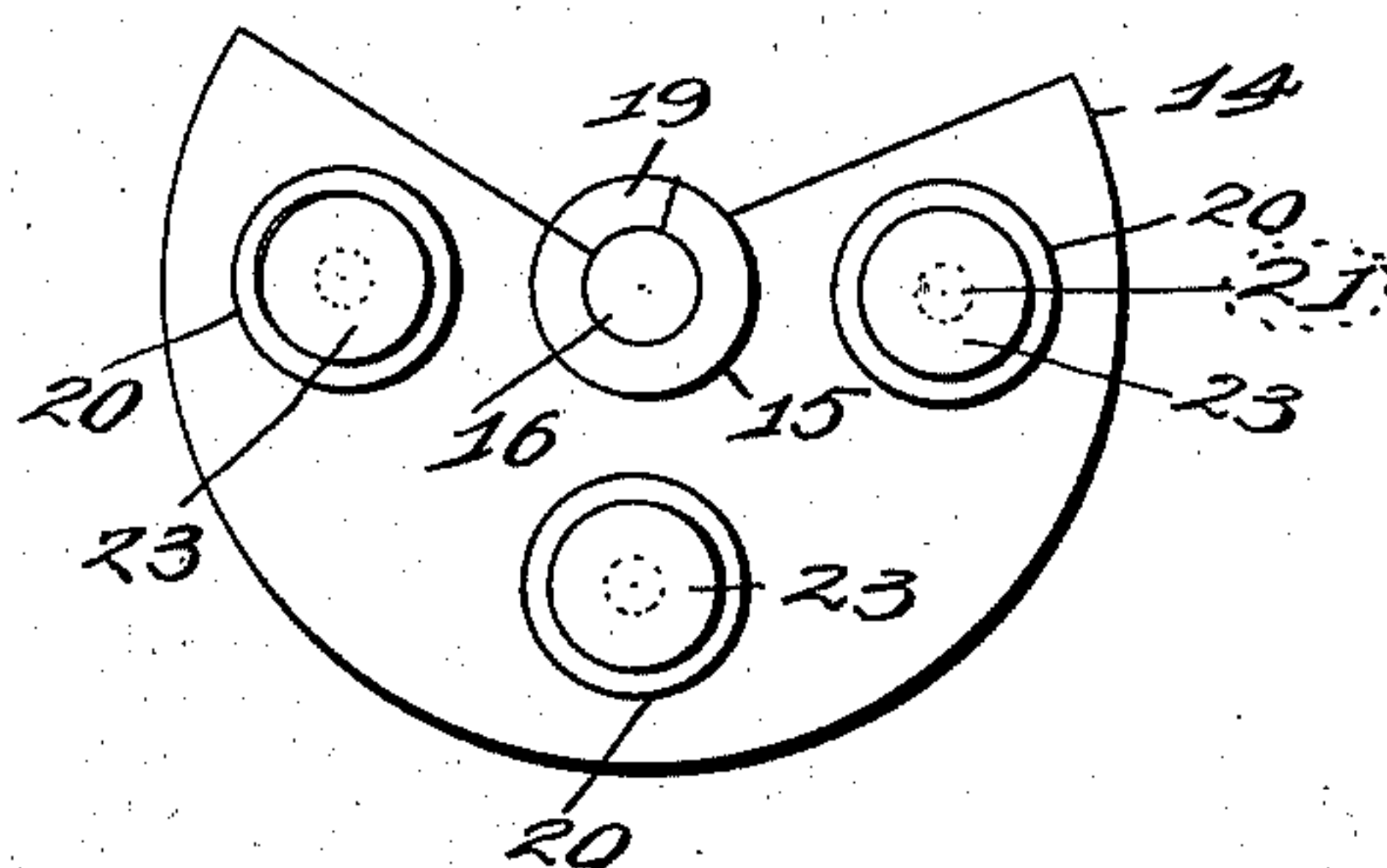
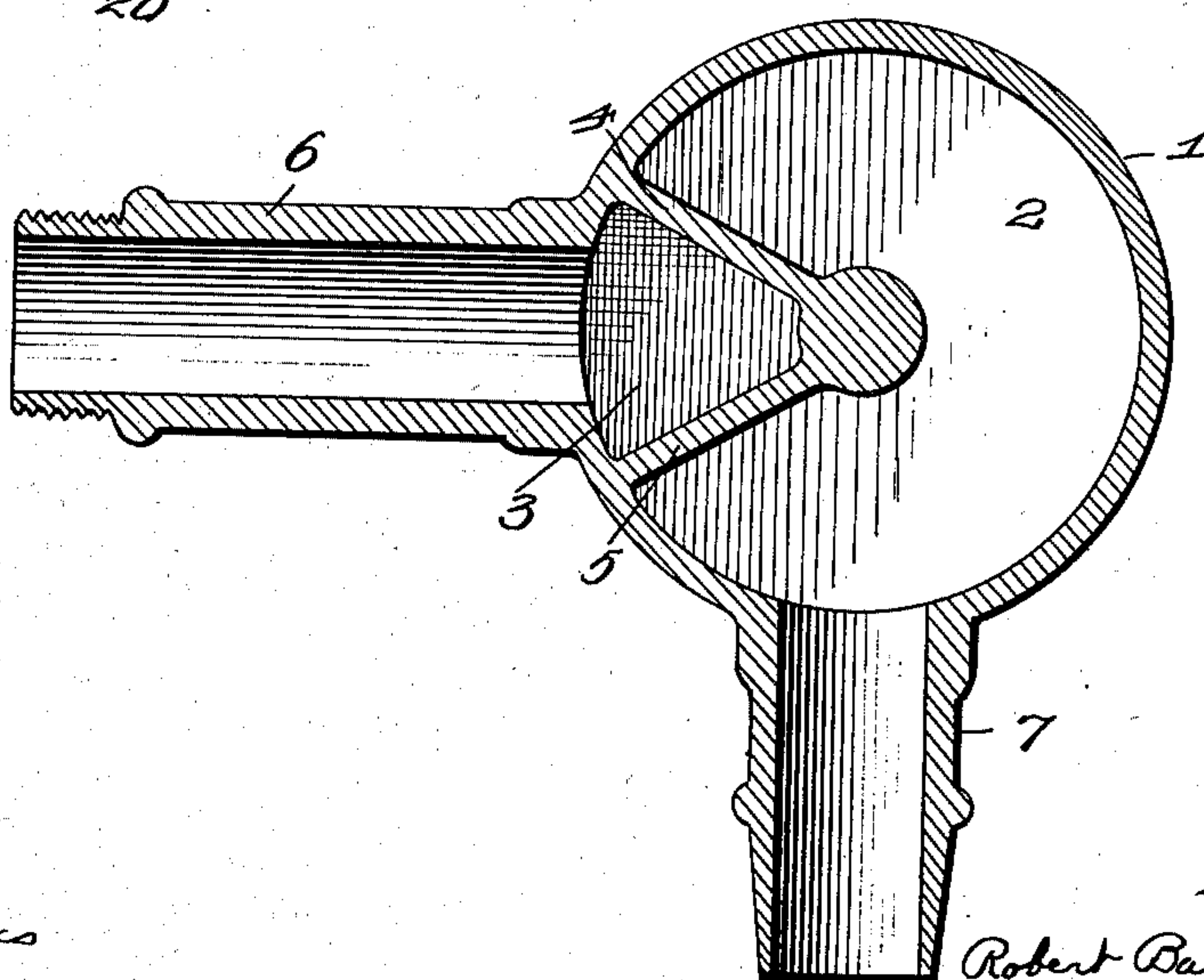


Fig. 4



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UNITED STATES PATENT OFFICE.

ROBERT BAUMANN, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF TO
THEODORE H. WURMB, OF ST. LOUIS, MISSOURI.

DISK VALVE.

SPECIFICATION forming part of Letters Patent No. 749,518, dated January 12, 1904.

Application filed November 2, 1903. Serial No. 179,606. (No model.)

To all whom it may concern:

Be it known that I, ROBERT BAUMANN, a citizen of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Disk Valves, of which the following is a specification containing a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to disk valves; and it consists of the novel construction hereinafter described and claimed.

The object of my invention is to provide an improved valve of the class known as "disk valves," and which shall combine the following features: first, a valve in which the disk shall need to be moved through an extremely small space from "full-open" to "closed" and which shall require a minimum power to move the disk; second, a disk valve adapted by reason of its principle and construction for different combinations—such as one-way, two-way, three-way, &c.—and capable of controlling the passage of liquids, compressed air, or steam at either high or low pressure; third, a disk valve which shall reduce to a minimum the possibility of leakage by the accidental location of slight particles between the valve and its seat; fourth, a disk valve which is simple in construction and operation and in which all parts are readily accessible.

In the drawings, Figure 1 is a plan or face view of a disk valve embodying my invention, parts being broken away and other parts shown in section. Fig. 2 is a vertical section on the line 2 2 of Fig. 1. Fig. 3 is a plan or face view of the valve with the cover removed. Fig. 4 is a section on the line 4 4 of Fig. 2. Fig. 5 is a face view of the disk.

The device as shown in the present instance consists of a cylindrical casing 1, containing two or more chambers 2 and 3, which are separated by the partitions 4 and 5. An inlet connection 6 communicates with the chamber 3, and an outlet connection 7 communicates with the chamber 2. The size and number of chambers and the corresponding number of inlets and outlets may of course be varied to suit the different requirements of

service. No matter how many of such parts may be used the movable parts will always embody the same principle of construction.

The casing 1 is closed upon its lower face; but its opposite face is provided with a detachable cover 8, which is connected to the casing by means of the screw-threads 9. The space between said cover and the fixed face of the casing is divided by a partition 10, which extends over both the inlet-chamber 3 and the outlet-chamber 2. Formed in the said partition 10 and connecting the inlet-chamber with what I term the "valve-chamber" 11 above it is an aperture 12, and formed in said partition 10 and connecting the valve-chamber 11 to the said outlet-chamber 2 are a series of small apertures 13. These apertures 13 are of suitable size and shape for the service required of them and are preferably circular, as shown. Mounted to rock or rotate within said valve-chamber 11 is a segmental disk 14, which has upon its under surface a central hub 15, which has a socket 16 in its lower end and which fits over a projection or journal 17, formed centrally upon the upper surface of the partition 10. The rocking movement of said disk upon said journal is limited in the two-way-valve construction by means of a pin 18, which projects laterally from the said journal. The vertical wall of said socket 16 is cut away in segmental form, as shown at 19, so that the segmental walls of said socket will come in contact with said pin 18, and thereby limit the movement of said disk in closing and opening the apertures 13. However, this stop may be constructed in any common manner, as it is of no material consequence.

I have shown my improved disk valve in its simplest form adapted to be used as a faucet and operated by hand.

The upper face of the partition 10 is ground to form a seat for the various small valves which slide thereon and which will be presently described.

The aperture 12 remains open at all times, and thereby causes the valve-chamber at all times to be filled and under pressure when the device is in use.

Cylindrical metallic cups 20 are provided

with a central aperture 21 and are pivotally mounted upon pins 22, projecting downwardly from the under surface of the disk 14, and washers 23, forming valves, are mounted in the cups 20 and bear upon the ground valve-seats of the said partition 10. Said cups are free to rotate upon said pins 22 and also to move vertically thereon, so that they will adhere to their seats at all times. There is a space between said cups and said disk 14, thereby permitting the fluid or liquid to pass through said space and preventing said disk from being forced downwardly upon said cups.

In some instances I may make use of small springs 24 to press apart said cups and disk and also to press said cups and the valves carried thereby into contact with their seats at all times.

For compressed air, cold and hot water, and low-pressure steam I may use vulcanite rubber washers or valves 23, as they are inexpensive and easily replaced when worn out.

For high-pressure steam I use steel valves in place of the vulcanite valves 23.

Motion is imparted to the disk 14 by means of a central stem 25, which passes upwardly and outwardly through a stuffing-box 26 upon the cover 8, and said stem is provided with a suitable handle 27 or other controlling means.

It is evident that the range of movement of the handle 27 will be very limited, owing to the small diameter of the outlet-aperture 13, and such movement may be decreased by still further reducing the size of said apertures, and this may be readily done without any substantial interference with the passage of fluid through said apertures by increasing the number of the latter so that their combined sectional area will correspond with that of the inlet-aperture 12.

In operation a slight movement of the handle 27 will move the disk 14 and the valves carried thereby, and said valves will slide upon their valve-seats and may also freely revolve upon the pins 22. Such construction is very efficient, as the valves practically grind themselves to a perfect seat at all times.

The pressure of fluid in the valve-chamber forces the valves firmly against their seats.

I do not limit myself to the exact construction of means for moving the valves herein shown and described nor to the exact details of construction of the other parts of my device, as it is clear that the same may be changed by skilled workmen without departing from the scope of my invention.

What I claim is—

1. The improved disk valve, comprising a casing having inlet and outlet chambers separated by partitions, inlet and outlet apertures formed in one of said partitions, a disk mounted adjacent one of said partitions and provided with means by which same may be rocked or rotated, and a series of small valves loosely connected to said disk and controlling the passage of fluid through said apertures, substantially as described.

2. The improved disk valve, comprising a casing having inlet and outlet chambers separated by partitions, inlet and outlet apertures formed in one of said partitions, a segmental disk having pins upon its inner face mounted adjacent one of said partitions and provided with means by which same may be rocked or rotated, and a series of small valves loosely connected to said disk and controlling the passage of fluid through said apertures, substantially as described.

3. The improved disk valve, comprising a casing having inlet and outlet chambers separated by partitions, inlet and outlet apertures formed in one of said partitions, a segmental disk having pins upon its inner face mounted adjacent one of said partitions and provided with means by which same may be rocked or rotated, a series of small valves loosely connected to said disk and controlling the passage of fluid through said apertures, a series of cups loosely mounted upon said pins, and valves or washers mounted in said cups, substantially as described.

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

ROBERT BAUMANN.

Witnesses:

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M. G. IRION.