

W. T. FOWDEN.

VALVE.

APPLICATION FILED APR. 22, 1909.

Patented Dec. 21, 1909.

2 SHEETS—SHEET 1.

944,026.

Fig. 3.

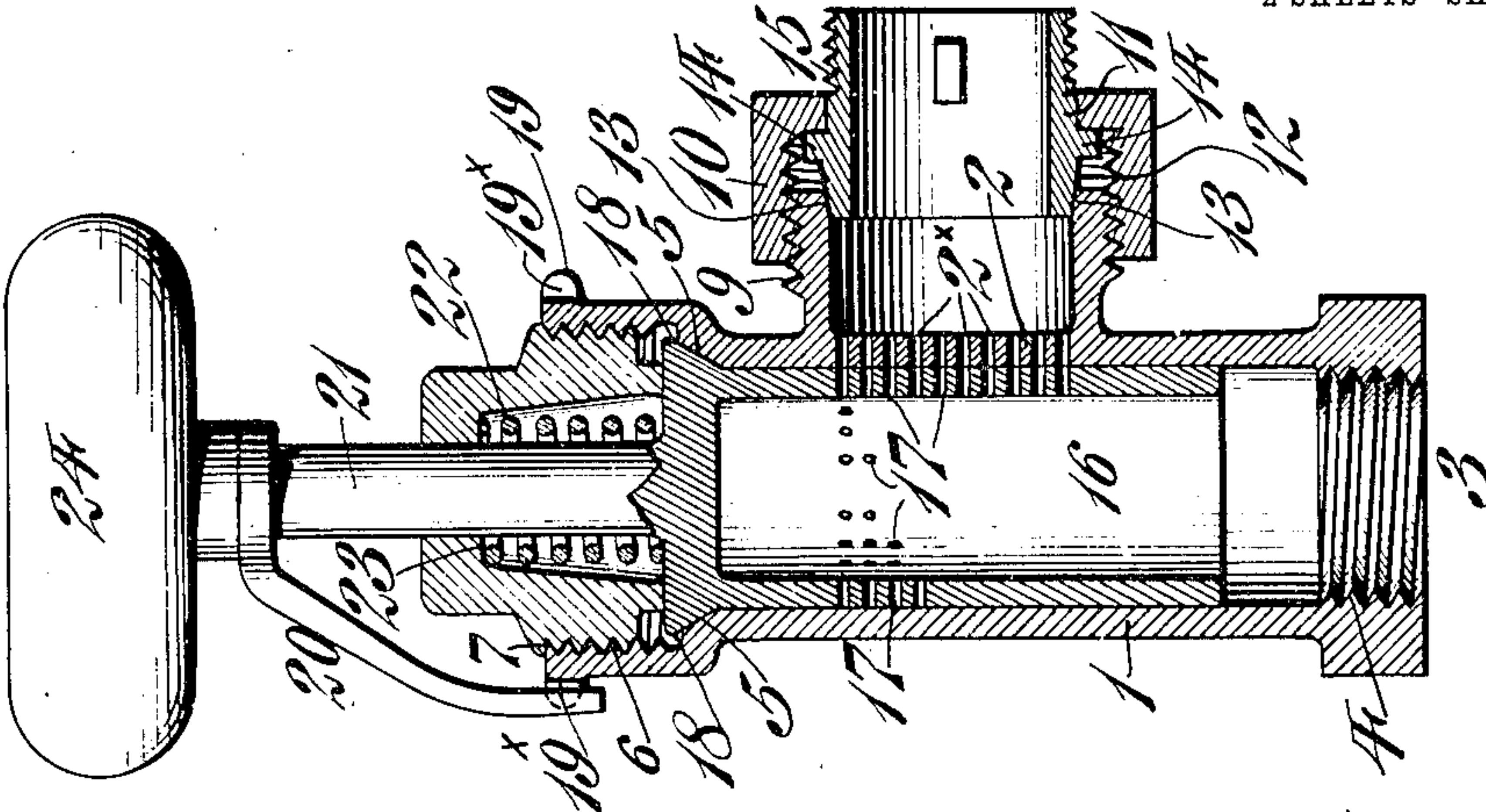


Fig. 2.

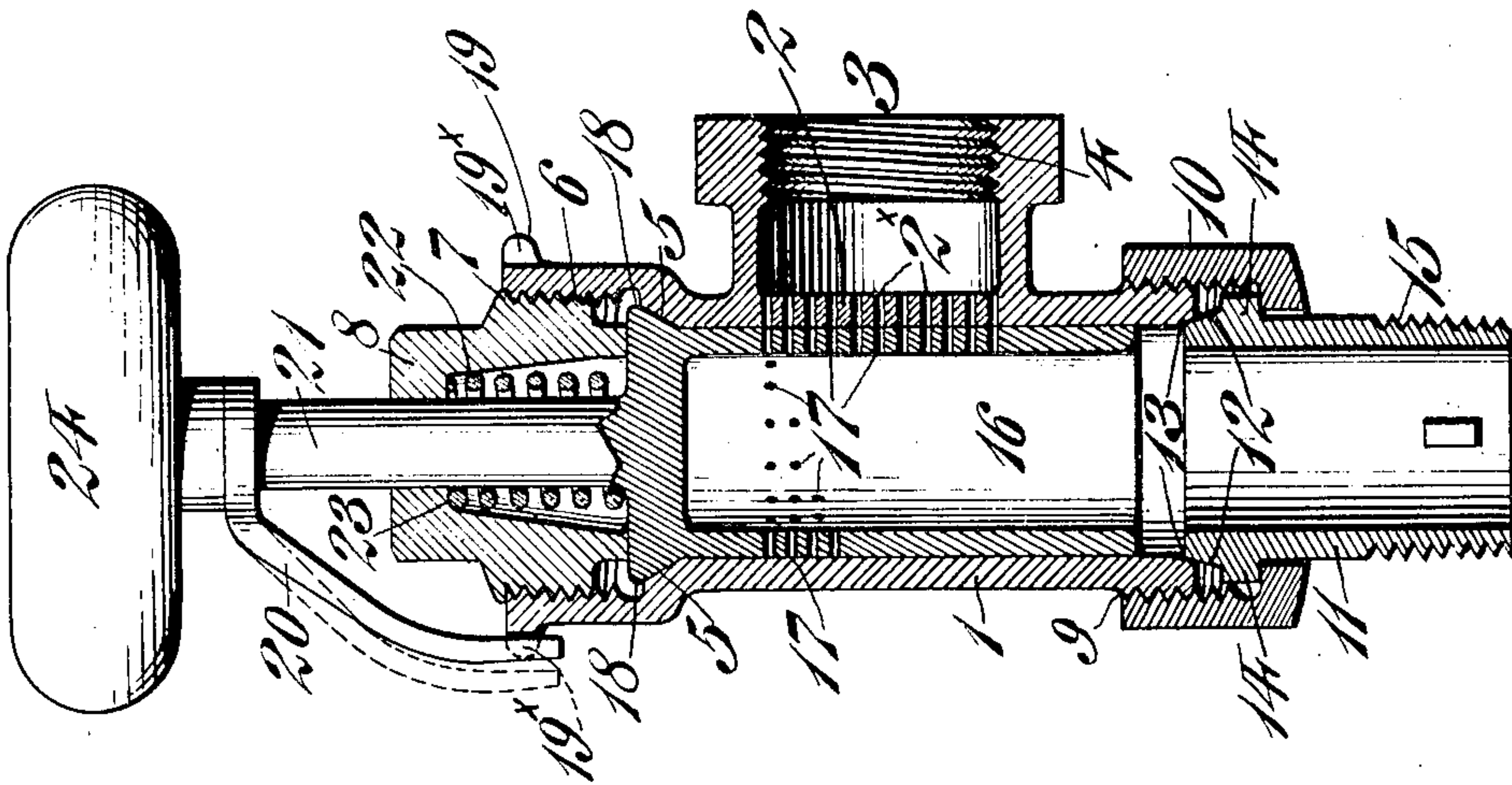
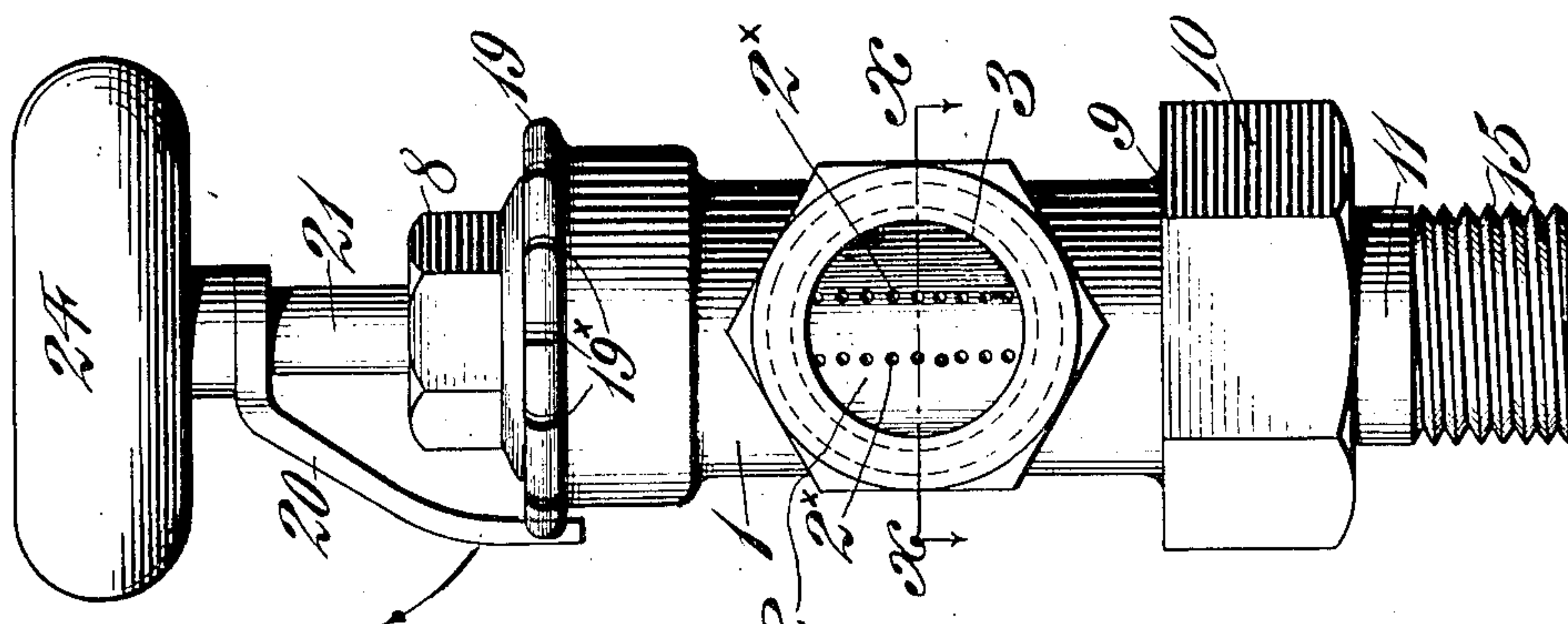


Fig. 1.



WITNESSES

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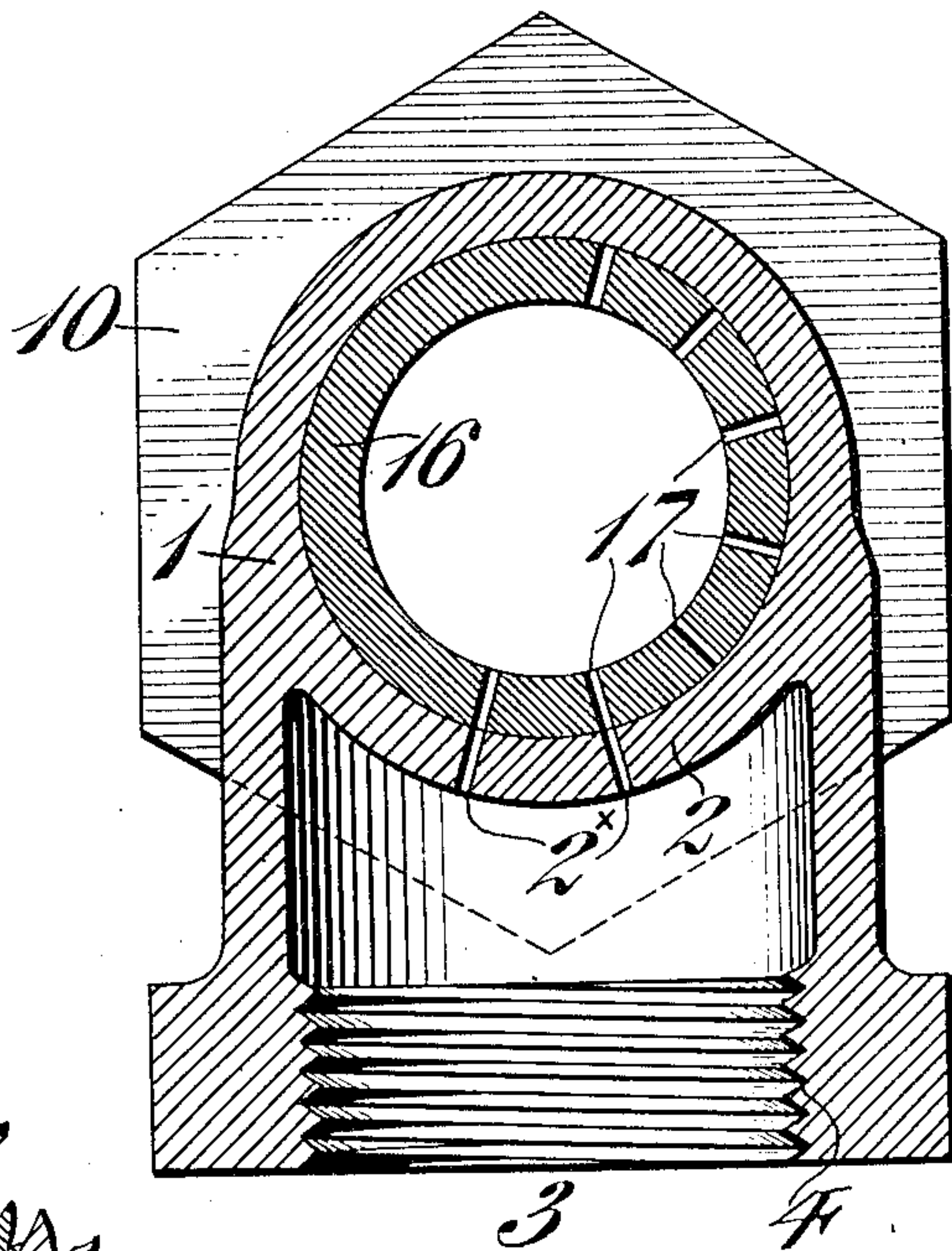


Fig. 4.



Fig. 8.

Fig. 7.

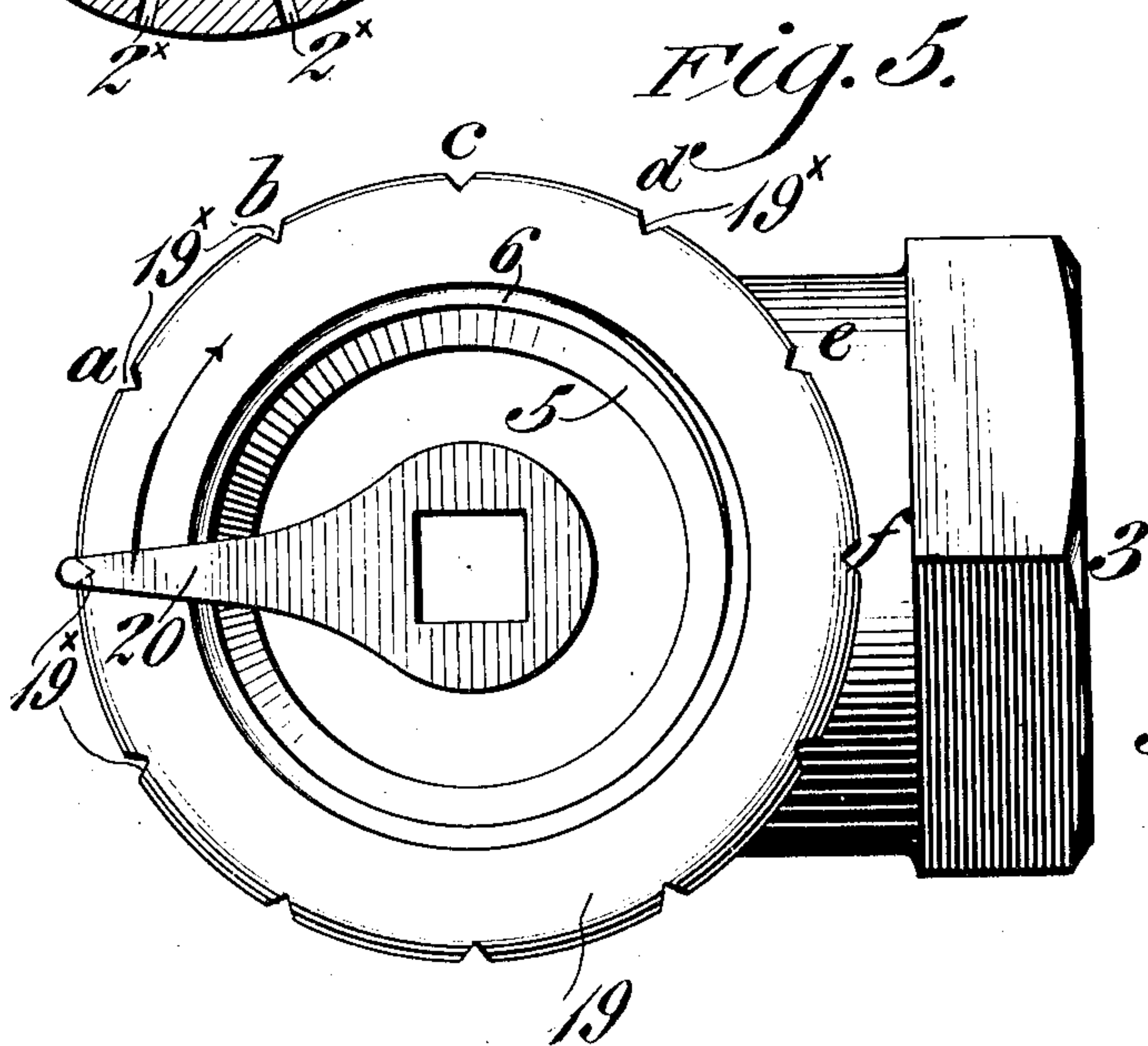
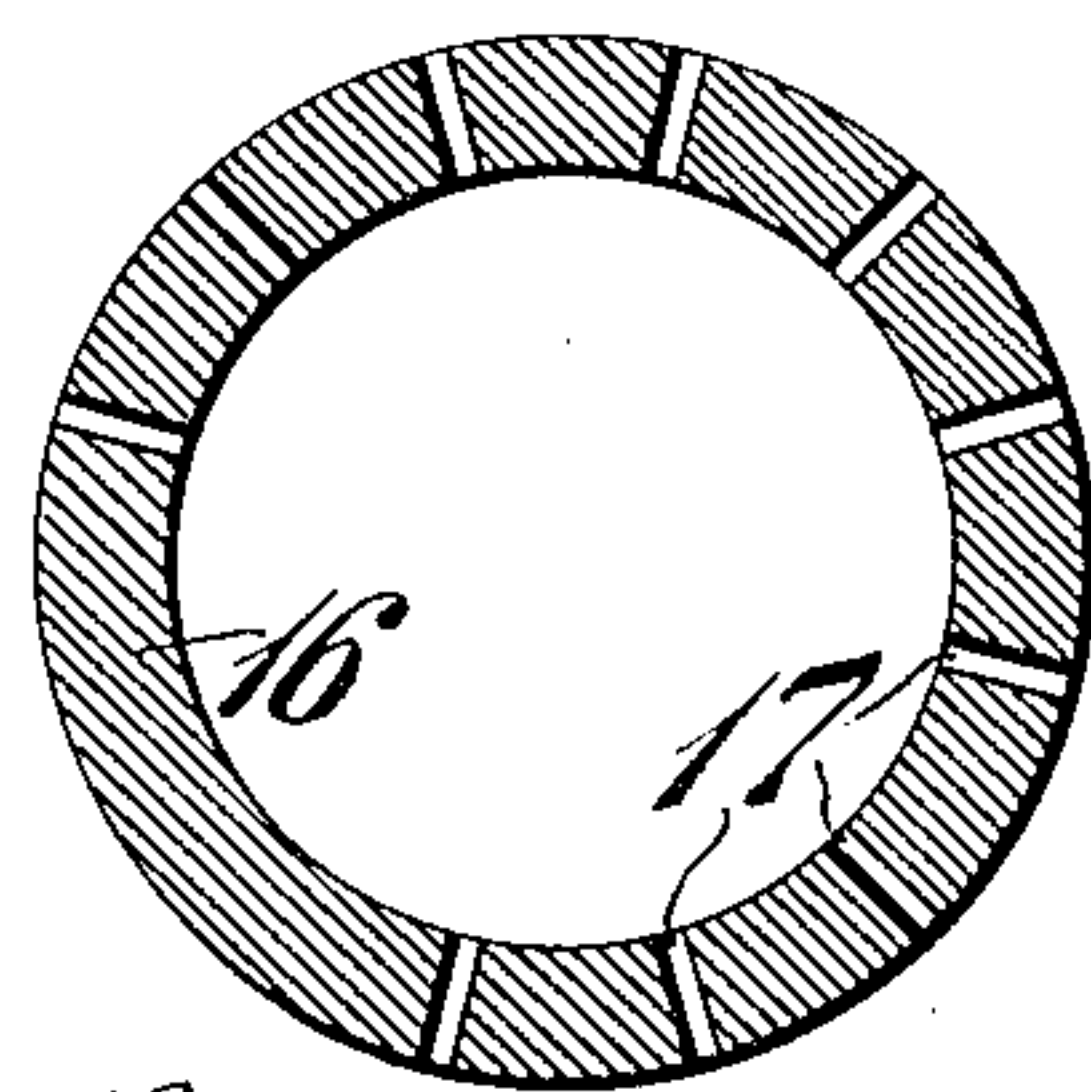


Fig. 5.

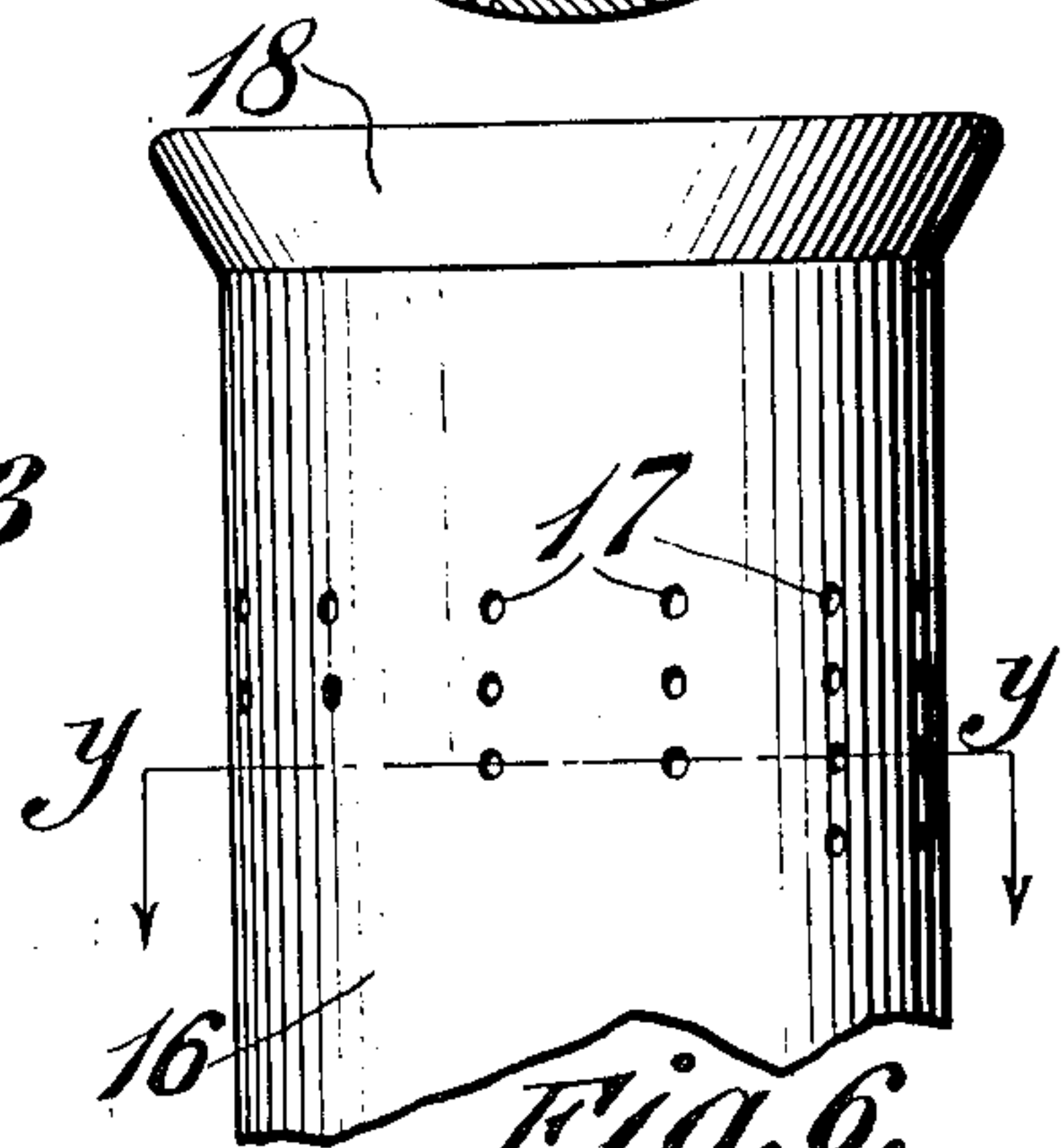


Fig. 6.

WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM T. FOWDEN, OF CHESTER, PENNSYLVANIA.

VALVE.

944,026.

Specification of Letters Patent. Patented Dec. 21, 1909.

Application filed April 22, 1909. Serial No. 491,481.

To all whom it may concern:

Be it known that I, WILLIAM T. FOWDEN, a citizen of the United States, residing at Chester, in the county of Delaware, State of Pennsylvania, have invented a new and useful Valve, of which the following is a specification.

My invention relates to packless vapor and other valves and consists of novel means for automatically taking up the wear on the valve plug, so as to produce at all times a perfectly tight joint between the plug and its casing at points where leakage is to be avoided.

It also consists of novel means for locking the valve plug in various positions whereby more or less vapor, steam or other heating medium may be introduced into the radiator columns, when my invention is applied thereto.

For the purpose of illustrating my invention I have shown in the accompanying drawings one form thereof which is at present preferred by me, since the same has been found in practice to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that my invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown and described.

Figure 1 represents a front elevation of a valve embodying my invention. Fig. 2 represents a vertical section of the valve seen in Fig. 1. Fig. 3 represents a vertical section of the valve in which the inlet and outlet openings are in different positions from the corresponding ones seen in Fig. 2. Fig. 4 represents a horizontal section on line $x-x$, Fig. 1 on an enlarged scale. Fig. 5 represents a plan of certain of the parts seen in Fig. 1. Fig. 6 represents in elevation, a portion of the rotating valve body. Fig. 7 represents a horizontal section on line $y-y$ in Fig. 6. Fig. 8 represents a horizontal section of a portion of the plug and casing in assembled position.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings:—1 designates the casing or shell of my novel valve, the same having preferably formed therein a partition 2 provided with perforations 2^x forming a communication between the interior of the said casing and an opening 3,

which may serve as an inlet or an outlet opening, as the case may be, the same being preferably provided with a screw thread 4 forming means for securing the valve to a pipe for steam, air or the like, in the usual manner.

The valve casing 1, in the present instance, is provided with a ground face 5 adapted to cooperate with a similar face of a part to be later described and adjacent which face 5 are screw threads 6 adapted to engage screw threads 7 in a bushing or cap 8 forming a closure for one end of the casing 1.

The casing 1 is preferably screw threaded at 9 to receive the screw threaded cap 10, which retains a member 11 firmly in position with respect to the casing 1. This member 11 is provided with a ground face 12, which engages a similar face 13 in the casing 1 to form a joint, it being noted that said member 11 is provided with a collar 14 which co-acts with the screw cap 10, whereby a tight joint is formed between said member 11 and casing 1.

The member 11 is preferably threaded at 15 to provide means for securing said member to a radiator or the like in the usual manner. Fitted within the casing 1 is a rotary valve body 16 preferably hollow and provided, in the present instance, with a multiple series of openings 17 which are adapted to aline with the perforations 2^x in the partition 2, as hereinafter described. The valve body 16 is provided with a ground face 18 which cooperates with the ground face 5 in the casing 1 and is normally maintained in contact therewith by means of a spring 22 or the like, which in the present instance fits within the bushing or cap 8 and encircles the stem 21, one end of which bears against the top of the valve 16, while its opposite end bears, as at 23, against the bushing 8, whereupon the tension of said spring upon the valve 16 causes the latter to fit tightly upon the casing 1.

19 designates a flange on the casing 1 provided with suitably spaced notches 19^x adapted to receive one end of a spring or finger 20 preferably secured to the stem 21. The stem 21 is provided with a hand wheel 24, whereby said stem 21 may be readily rotated.

The operation of the valve is as follows:— Assuming the valve as seen in Figs. 1 and 2 to be connected to a radiator and with opening 3, as the inlet, secured to a steam supply pipe in the usual manner, it is evident that

when a solid portion of the valve body 16 is presented to the perforations 2^x in the casing 1, as seen in Fig. 8, no steam can pass from the inlet 3 to the interior of the valve disk 16 and consequently is cut off from the radiator to which said valve is connected. When it is desired to admit steam into a radiator the hand wheel 24 is rotated sufficiently to cause the spring or finger 20 to move in the direction indicated by the arrow in Fig. 5, whereupon said finger leaves one notch 19^x in which it was held and enters another 19, corresponding to the changed position of the parts. The turning of the hand wheel 24 causes the stem 21 and consequently the valve 16 to turn in unison therewith.

When the finger 20 is in the position seen in Fig. 5 the valve is closed and no steam can enter the radiator with which it is connected. When the valve body 16 is turned in the direction indicated by the arrow in Fig. 8, the finger 20 moves in unison therewith so that when the finger 20 is turned from its normal position seen in Fig. 5 and brought to the point *a*, one perforation 17 in the valve body 16 is brought in alinement with a perforation 2^x in the casing 1 and sufficient steam is admitted to the radiator to heat one part therein. When the finger 20 is brought to the point *b* two perforations 17 are brought into alinement with the perforations 2^x and sufficient steam is admitted to the radiator to heat two parts therein. When the finger 20 is brought to the points *c*, *d*, etc. three, four, etc. perforations 17 are brought into alinement with the perforations 2^x and sufficient steam is admitted into the radiator to heat three, four, etc. columns therein so that when all the perforations 2^x in the casing 1 are in alinement with perforations 17 in the valve body 16, the valve is open to its full extent and all the columns in the radiator are heated, it being understood that when the finger 20 enters a notch 19 it locks the valve body 16 against rotation unless carried beyond said notch by the operator continuing to turn the hand wheel 24 until it reaches the desired position. In practice the perforations 2^x in the casing 1 are the same in numbers as the number of columns in a radiator.

It will be observed on referring to Fig. 3, that the construction of the valve seen therein is substantially the same as that seen in Fig. 2 with the exception that the inlet and outlet for the steam in one of said valves are transposed as regards their positions in the other valve.

It will now be apparent that I have devised a novel and useful construction which embodies the features of advantage enumerated as desirable in the statement of the invention and the above description and while I have in the present instance shown and described the preferred embodiment thereof which has been found in practice to give sat-

isfactory and reliable results, it is to be understood that the same is susceptible of modification in various particulars without departing from the spirit or scope of the invention or sacrificing any of its advantages.

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

1. In a valve, a casing having an inlet and an outlet, a partition in said inlet having a plurality of ports therein, a valve mounted within said casing and having a plurality of ports adapted to co-act with the ports in said partition, said valve having a ground joint connection with said casing, a cap secured to said casing and adapted to adjustably engage said valve, an actuating handle for said valve, and means for locking said valve in adjusted position.

2. In a valve, a casing having an inlet and an outlet, said inlet being provided with a plurality of ports therethrough, a cup-shaped valve mounted within said casing and having ports in the side thereof adapted to co-act with said inlet ports, a portion of said valve having a ground joint connection with the casing, a valve stem for said valve, a closure through which said stem extends, adjustably carried by the casing and engaging said valve, and a spring intermediate said closure and said valve.

3. In a valve, a casing having an inlet and an outlet, said inlet being provided with a plurality of ports therethrough, a cup-shaped valve mounted within said casing and having ports in the side thereof adapted to co-act with said inlet ports, a portion of said valve having a ground joint connection with the casing, a valve stem for said valve, a closure through which said stem extends, adjustably carried by the casing and engaging said valve, a spring intermediate said closure and said valve, an arm carried by said stem, and means on said casing co-acting with said arm to indicate the position of the valve.

4. In a valve, a casing having an inlet and an outlet, a partition in said inlet having vertically arranged ports therein, a cup-shaped valve sleeve rotatably mounted in said casing and having a series of ports therein adapted to co-act with said partition ports, the upper portion of said valve sleeve having seats co-acting with the casing, a closure having threaded engagement with the casing adapted to engage the upper portion of said valve sleeve, a valve stem for the valve passing through said closure, and a spring surrounding said stem and located intermediate said closure and valve.

5. In a valve, a casing having an inlet and an outlet, a partition in said inlet having a plurality of ports therein, a cup-shaped valve sleeve rotatably mounted in said casing and having a series of rows of ports

adapted to co-act with the partition ports, the upper portion of said valve sleeve having seats co-acting with the casing, a closure having threaded engagement with the casing
5 adapted to engage the upper portion of said valve sleeve, a valve stem for the valve passing through said closure, and a spring surrounding said stem and located intermediate said closure and valve.

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Witnesses:

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