

No. 633,463.

Patented Sept. 19, 1899.

J. F. MARKS.

VALVE.

(Application filed June 28, 1899.)

(No Model.)

Fig. 1.

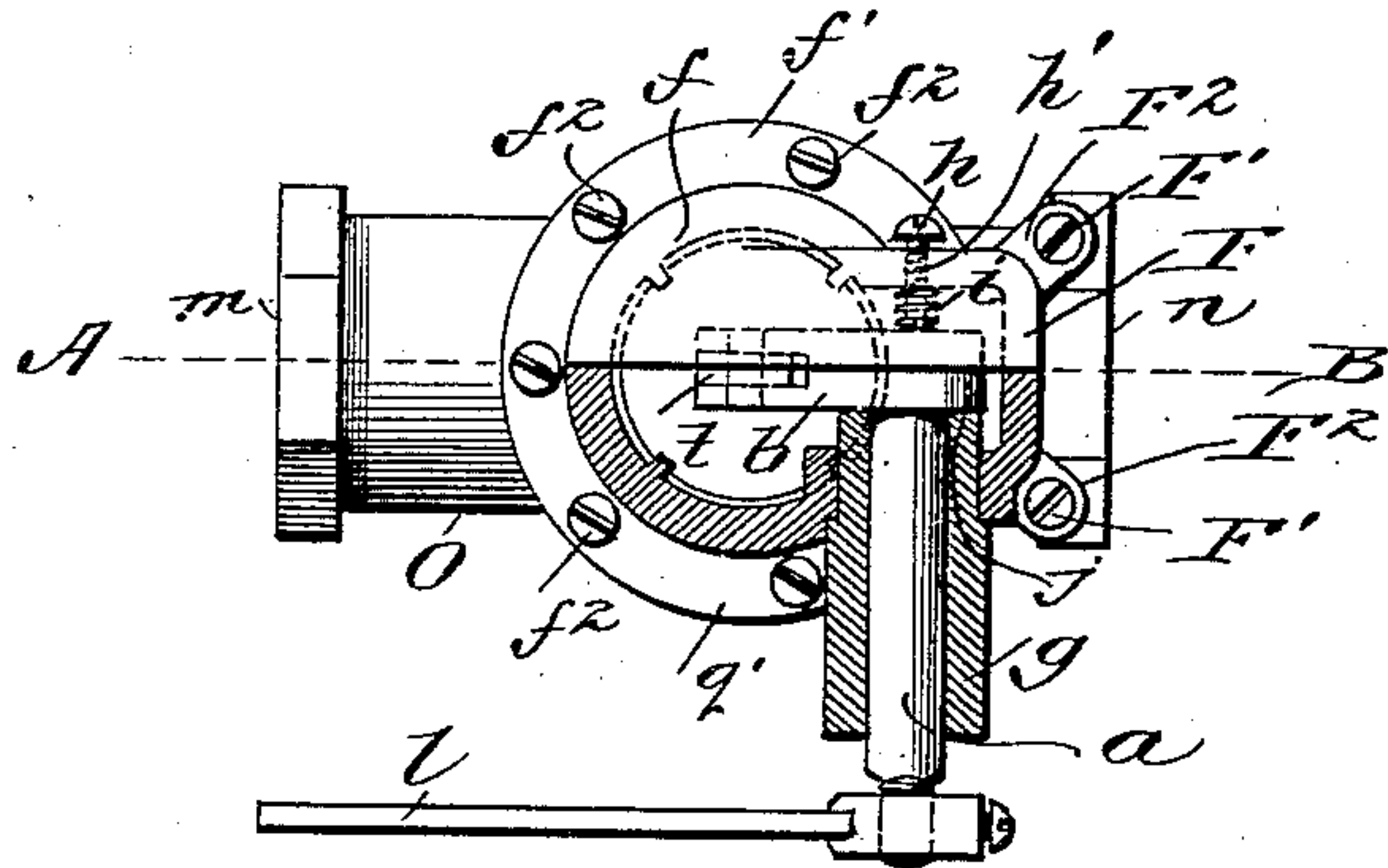


Fig. 3.

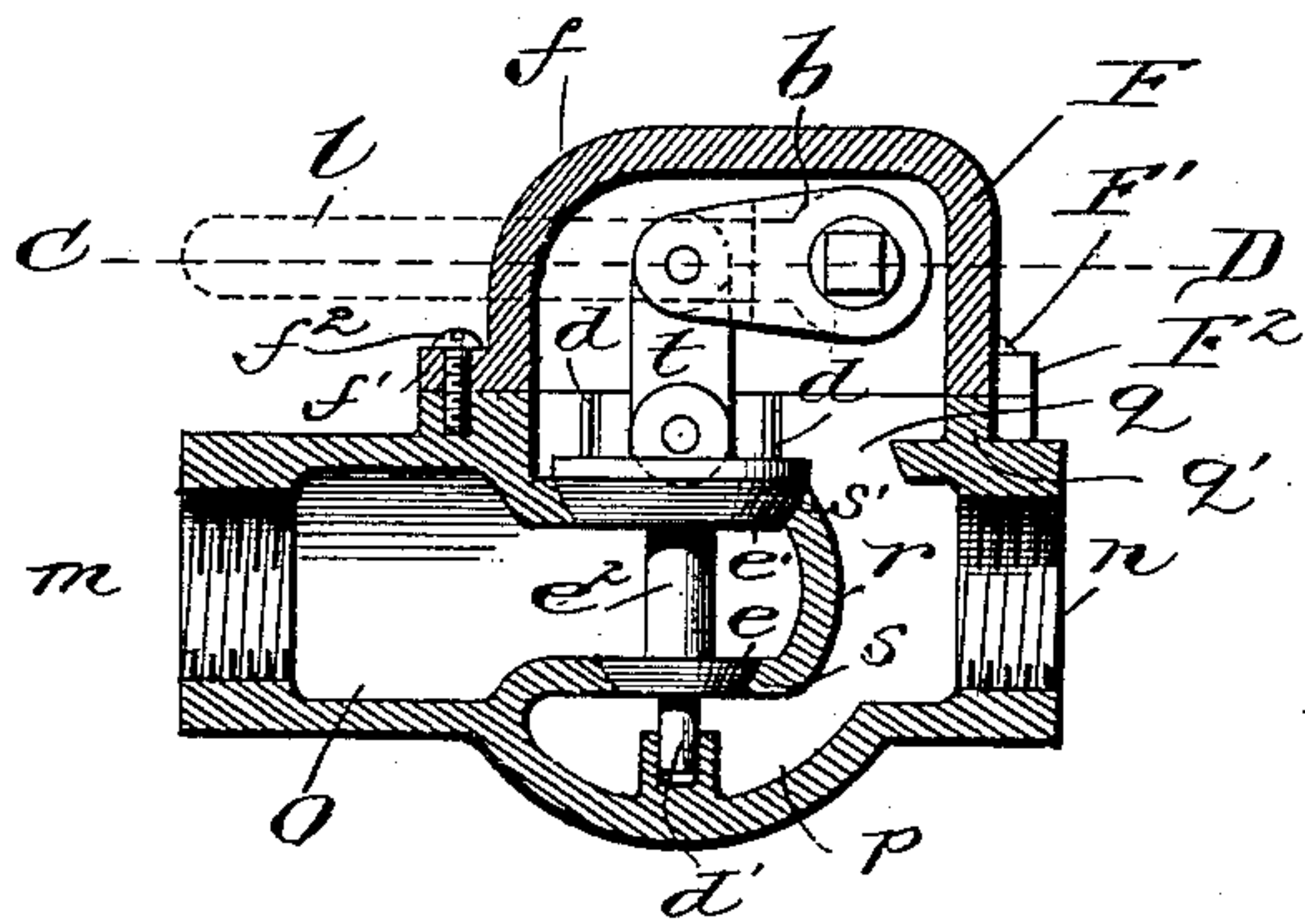
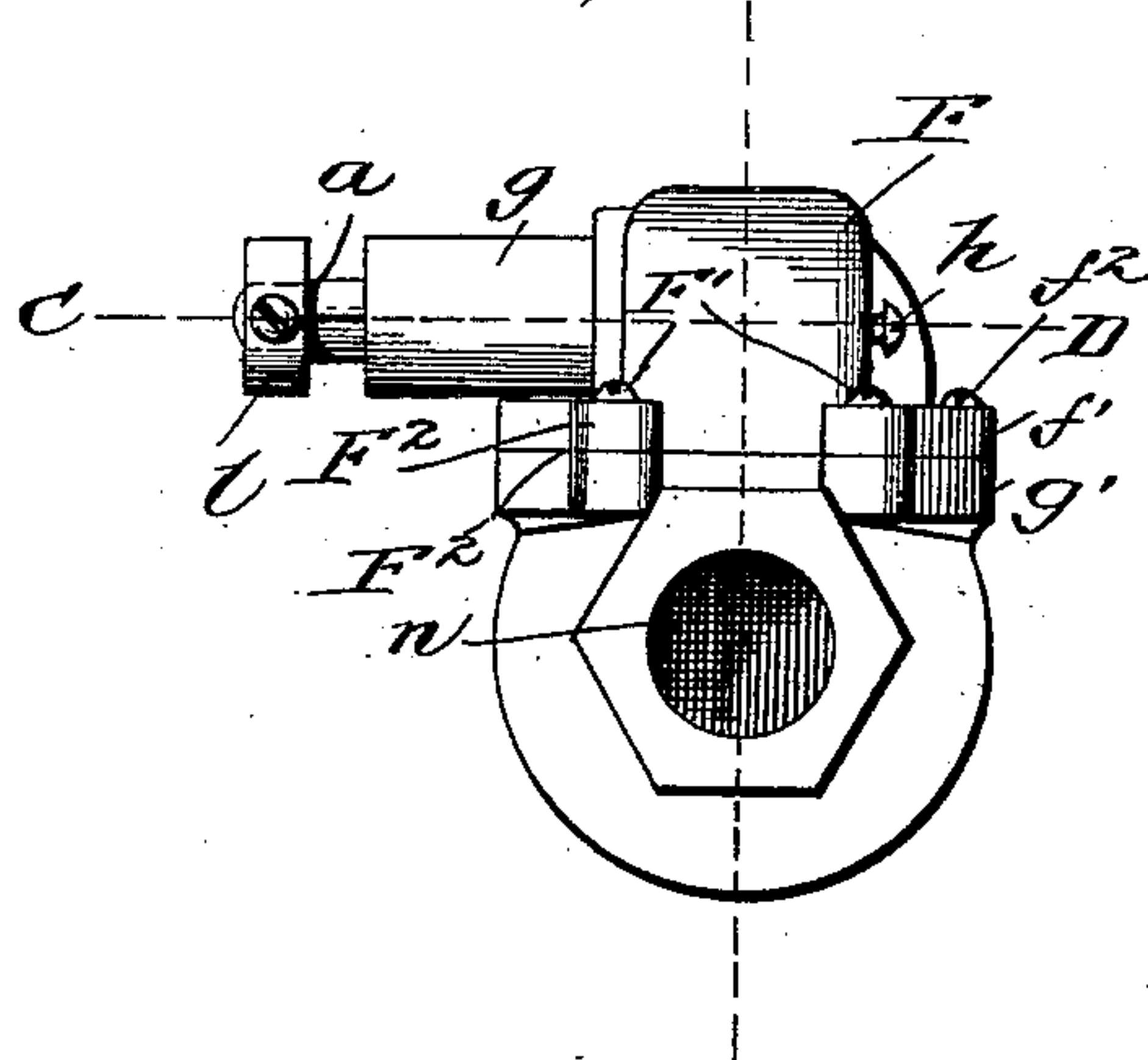


Fig. 2.



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JAMES F. MARKS, OF MATTOON, ILLINOIS.

VALVE.

SPECIFICATION forming part of Letters Patent No. 633,463, dated September 19, 1899.

Application filed June 28, 1899. Serial No. 722,135. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. MARKS, a citizen of the United States, residing at Mattoon, in the county of Coles and State of Illinois, have invented certain new and useful Improvements in Valves; 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 ap-
10 pertains to make and use the same.

My invention consists in an improvement in valves for use with water under high pressure, and has for its object the production of a valve nearly frictionless, almost balanced,
15 and water-tight at the stem.

In the accompanying drawings, Figure 1 represents a view, part in plan and part in horizontal section, on line CD of Figs. 2 and 3. Fig. 2 represents an end view at the out-
20 let end of the valve, and Fig. 3 represents a vertical section on line A B of Fig. 1.

In the drawings like characters indicate like parts.

O indicates the cylindrical valve-casing, which has an inlet *m* at one end and an out-
25 let *n* at the other. This casing is enlarged at the middle by a circular depression *p* at the bottom, bulging out and downwardly, and a circular opening *q* directly above said depression, covered by a hollow cap *f*, which is provided with a peripheral flange *f'*, through
30 which screws *f*² pass into the raised rim *q'* of said opening *q* to fasten down said cap tightly. This cap *f* is provided with a hollow rectangular projection F at the side toward the out-
35 let *n*, said projection being fastened by screws F¹ and lugs F² to the end of casing O. The end of the valve-box, formed by the said depression *p* and cap *f*, which is nearest to the
40 inlet *m* is closed by an arched bridge *r*, integral with said casing and projecting laterally into the said valve-box. This bridge is flattened at the top and bottom and provided with circular perforations therein, which act
45 as valve-seats *s* and *s'*. These valve-seats have spherical side walls slanting downward and inward, and the upper valve-seat *s'* is somewhat larger in diameter than the lower one. In these valve-seats *s* and *s'* valve-
50 disks *e* and *e'*, respectively, corresponding in shape and size, rest normally and are connected together by a rigid bar *e*², so as virtu-

ally to form one valve. The motion of this double valve is guided by means of vertical guide-ridges *d* for the upper disk *e'*, formed
55 on the inner side of the aforesaid raised rim *q'* of opening *q*, and a pin *d'*, projecting downwardly from the under side of the disk *e* and sliding vertically in a tubular projection *p'*, rising from the bottom of the depression *p* in
60 the valve-casing.

Passing through one side of the hollow projection F of the cap *f* is a tubular sleeve *g*, in which fits a stem *a*, one end of a lever *l* being attached at right angles to the outer end
65 of said stem. To the inner end is fastened perpendicularly a crank *b*, which projects into the valve-box and is pivoted to one end of a link *t*, which is pivotally fastened at its other end to the top of the upper valve-disk
70 *e'*. This sleeve *g* projects slightly into the hollow projection F and forms a tight ground-joint *j* with the side of the crank *b*. The tightness of this joint is insured by an adjusting-screw *h*, which projects through a screw-
75 threaded hole *h'* in the opposite wall of the projection F in line with the stem *a* to hold the crank *b* against the sleeve *g*. A coiled spring *i*, which surrounds said screw between the crank *b* and the side wall of the hollow
80 projection F, preserves the tightness of the said ground-joint. In operation the screw *h* should be loosened, allowing the coiled spring *i* to maintain the ground-joint *j*.

The operation of my invention is as follows: Water under pressure enters the inlet
85 *m* and by its pressure against the upper disk *e'* of the valve, which pressure is slightly greater than against the lower disk *e* on account of the difference in area of the two
90 disks, causes the valve to rise, thereby opening the valve at the top and bottom and permitting a full flow of water from the inlet *m* to the outlet *n*. The valve is closed by the lever *l*, which turns the stem *a*, and by means
95 of the crank *b* and link *t* depresses the valve till it rests securely in its seats.

By means of the two disks *e* and *e'* I obtain a nearly-balanced valve, requiring little
100 force to close, and by means of the adjusting-screw *h*, spring *i*, and ground-joint *j* the valve is rendered always water-tight and a stuffing-box and its friction dispensed with.

This valve may be regulated by an auto-

matic mechanism attached to the lever / or by other means.

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

1. In combination with a tubular valve-casing open at both ends, a valve-box located at the middle of said casing and formed by an enlargement of the same, an arched bridge closing the inlet to said box and projecting laterally into the said box, valve-seats in the upper and lower sides of said bridge, a valve composed of two rigidly-connected disks resting in said seats when the valve is closed, one of said disks and its corresponding seat being of greater diameter than the other, guides for said valve in said valve-box, and means for operating said valve, substantially as set forth.
2. In combination with a tubular valve-casing, a valve in said casing moving perpendicularly thereto, said casing having an opening in its top above said valve, a hollow cap covering said opening and having a hollow rectangular projection at one side, a tubular sleeve passing through a side wall of said projection, a cylindrical stem passing through

said sleeve, a lever attached to the outer end of said stem, a crank attached to the inner end of the same, and a link pivotally connecting said crank and valve, substantially as set forth.

3. In combination with a valve-casing, a valve in said casing, a hollow projection above said valve, a tubular sleeve passing through one side of said projection, a cylindrical stem passing through said sleeve, a lever attached to the outer end of said stem, a crank attached to the inner end of the same, a link pivotally connecting said crank and said valve, said crank forming a ground-joint with the inner end of said sleeve, an adjusting-screw passing through the opposite wall of said hollow projection of the casing, and a coiled spring surrounding said screw between the said wall and said crank, substantially as and for the purpose set forth.

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

JAMES F. MARKS.

Witnesses:

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HORACE W. TOLLE.