

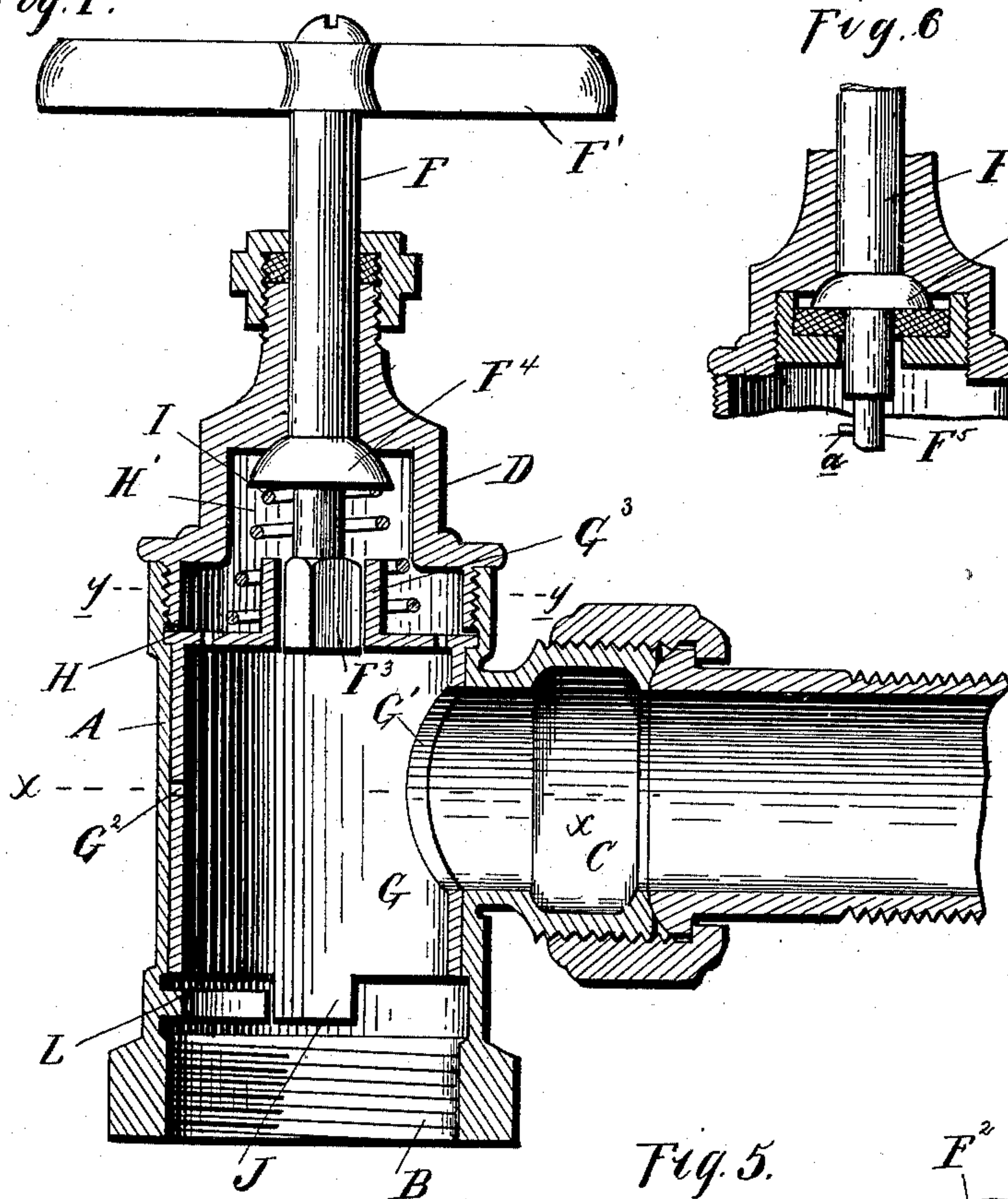
(No Model.)

A. WEBER.  
VALVE.

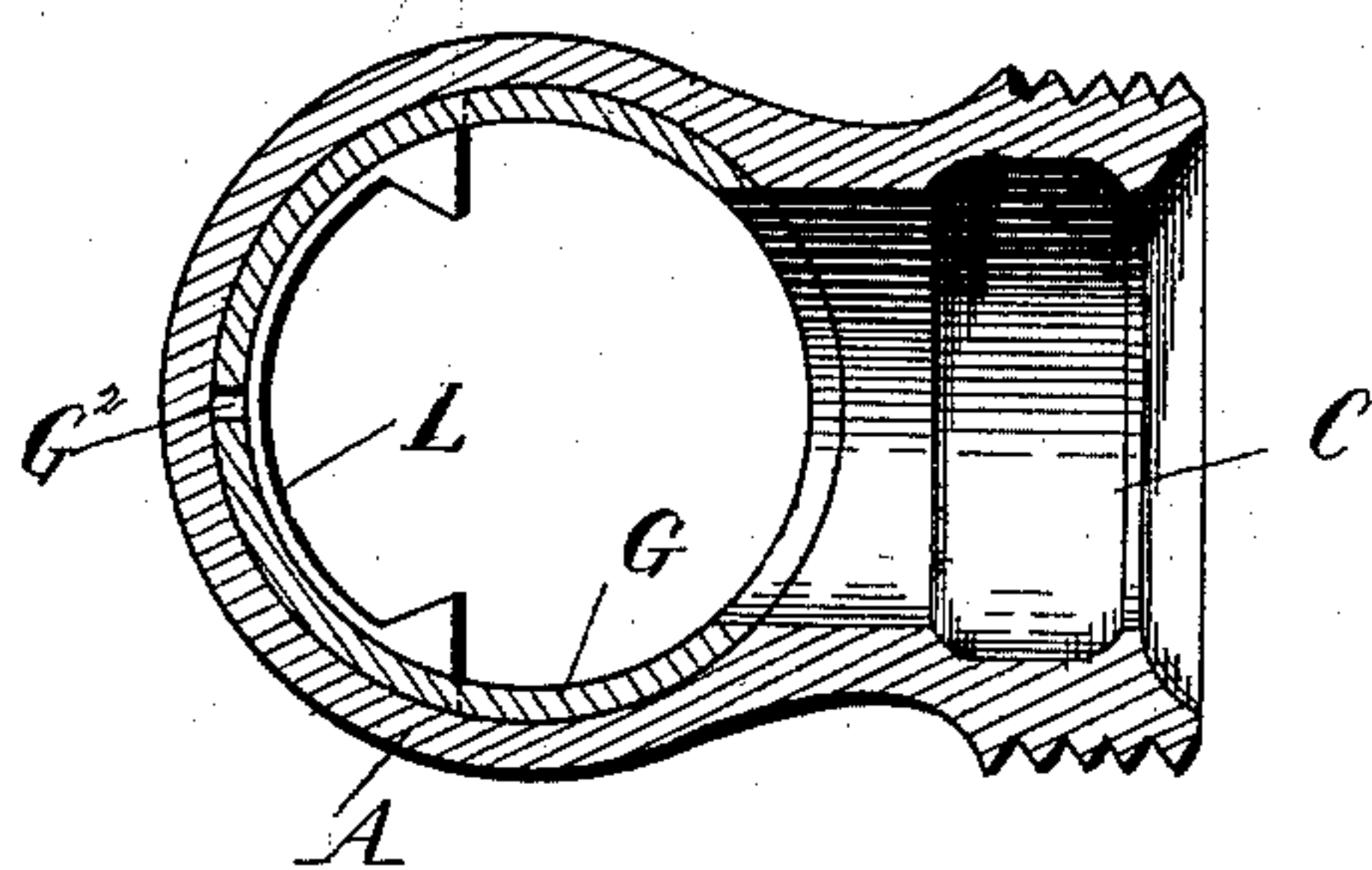
No. 477,720.

Patented June 28, 1892.

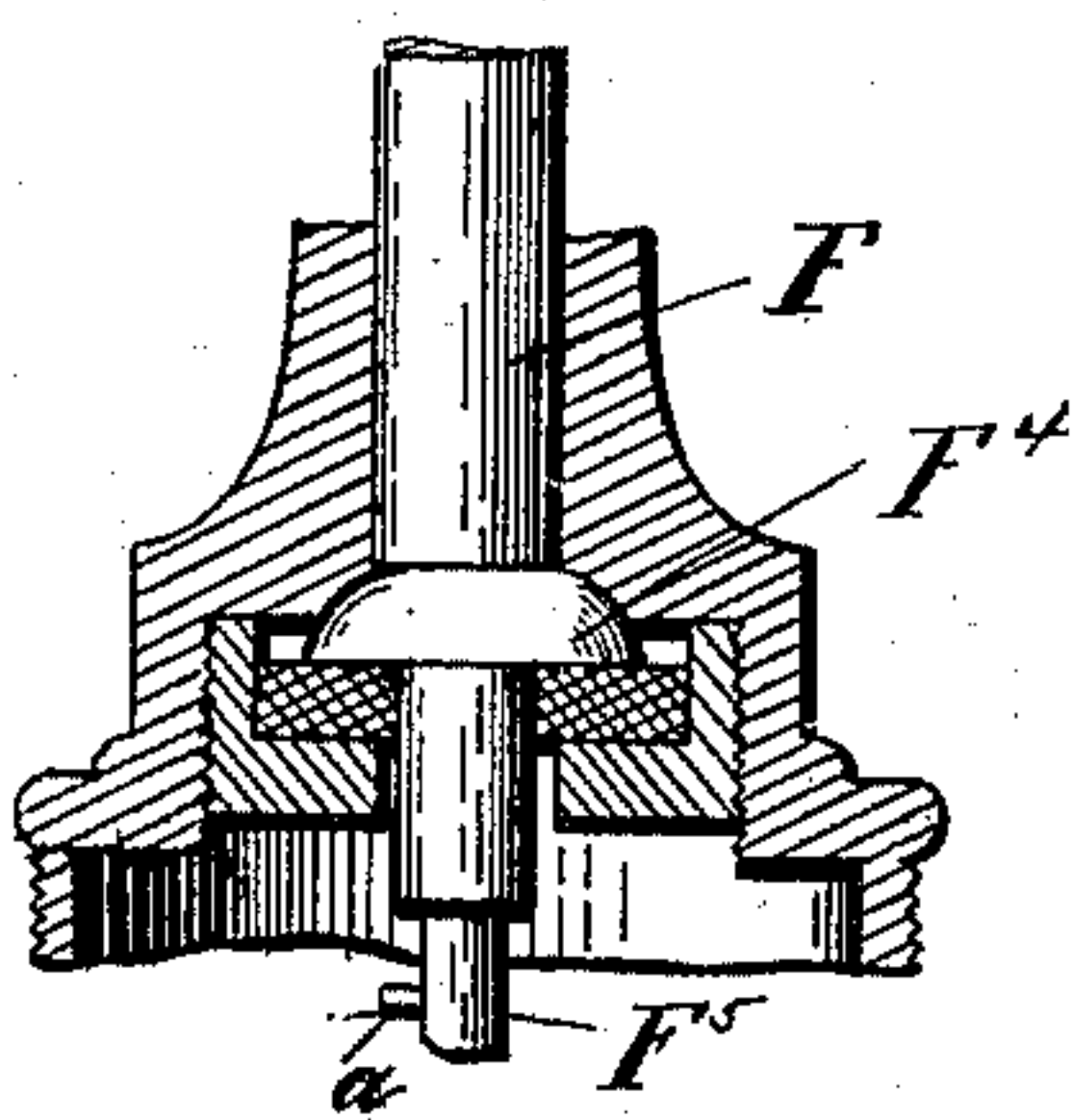
*Fig. 1.*



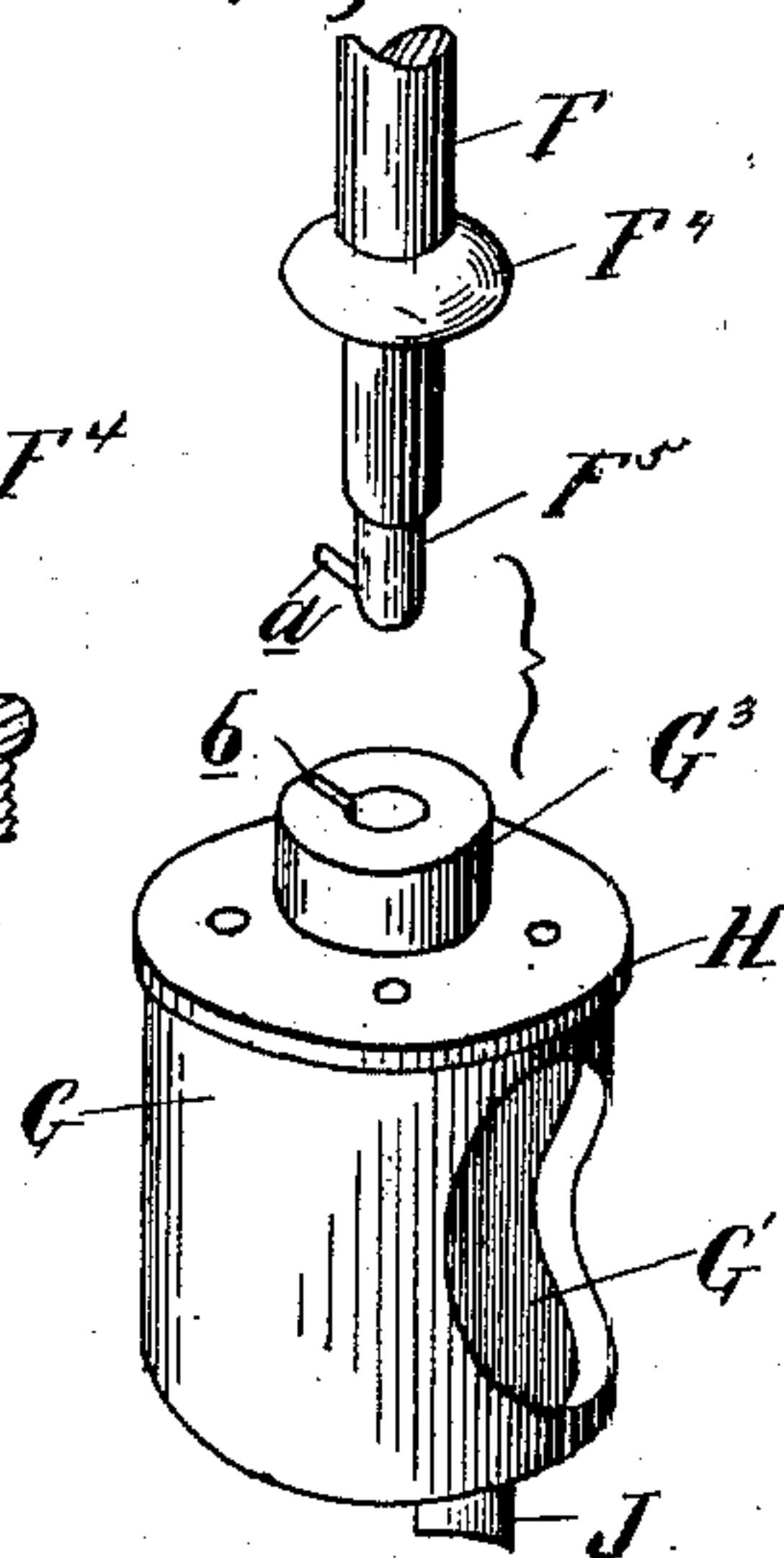
*Fig. 2.*



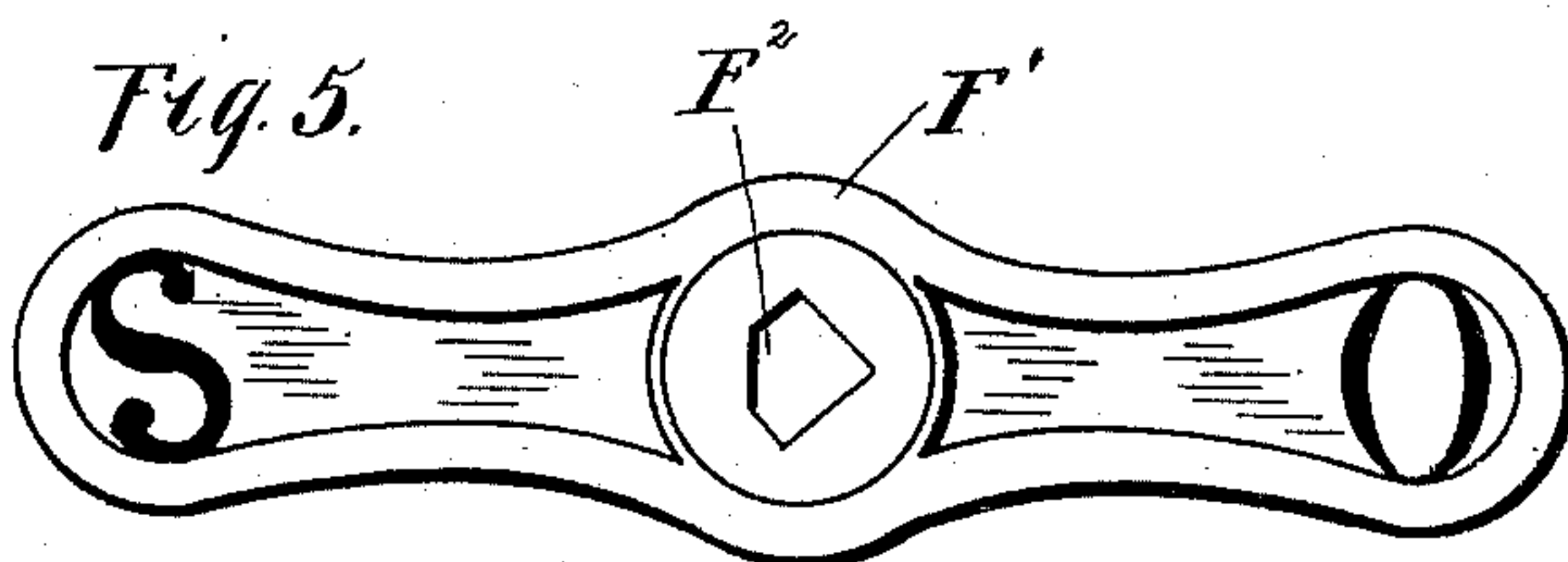
*Fig. 6*



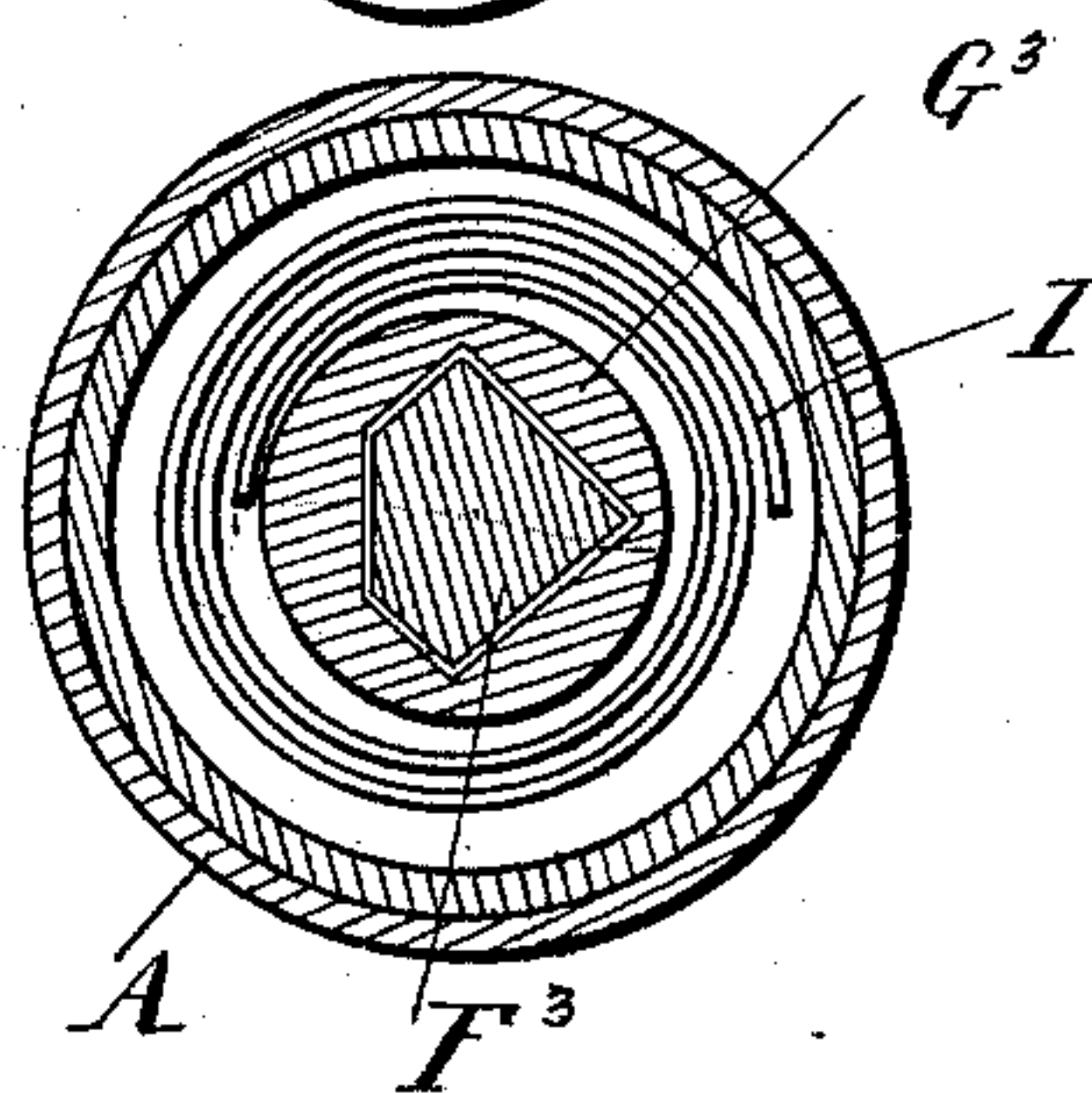
*Fig. 4.*



*Fig. 5.*



*Fug. 3*



*Inventor*

*Adolph Weber*

By *Thos Sprague & Co*  
Attys

*Witnesses*

W. M. Halbert



# UNITED STATES PATENT OFFICE.

ADOLPH WEBER, OF DETROIT, MICHIGAN, ASSIGNOR OF ONE-HALF TO  
THOS. S. CHRISTIA AND BENJAMIN NOBLE, OF SAME PLACE.

## VALVE.

SPECIFICATION forming part of Letters Patent No. 477,720, dated June 28, 1892.

Application filed November 28, 1890. Serial No. 372,940. (No model.)

*To all whom it may concern:*

Be it known that I, ADOLPH WEBER, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Valves, of which the following is a specification, reference being had therein to the accompanying drawings.

The object of my invention is to so construct the valve that it is especially adapted for the purpose of the so-called "radiator-valves;" and to this end my invention consists in the construction, arrangement, and combination of certain parts of the valve, all as more fully hereinafter described, and specifically pointed out in the claims.

In the drawings, Figure 1 is a central section through the valve and valve-ports. Fig. 2 is a horizontal section on line X X, Fig. 1. Fig. 3 is a horizontal section on line y y, Fig. 1. Fig. 4 is a detached perspective view of the hollow valve-plug and of the valve-stem, shown in a slightly-modified form. Fig. 5 is a plan view of the handle and its connection with the stem. Fig. 6 is a section similar to Fig. 1 but showing the construction used in Fig. 4.

A is a cylindrical valve-casing having the usual inlet and outlet ports B and C arranged at right angles, as in the construction of angle-valves, said inlet and outlet being provided with suitable couplings or screw-threads for connecting it to the piping of the radiator.

D is a cap screw-threaded into one end of the casing and provided with the usual stuffing-box connection, through which the valve-stem F passes into the valve-chamber. This valve-stem is provided with the handle F', carrying at opposite ends suitable figures or indication-marks—such as the letters "S" and "O"—to correspond with the opening and closing of the valve, as indicated by the direction the fluid enters the radiator. This handle is formed centrally with an irregular-shaped socket, to which the upper end of the valve-stem F is adapted to be engaged only in one fixed position, so that no mistake can be made in mounting the parts as regards the indication of the open and closed positions of the valve by its valve-stem. The lower end F<sup>3</sup> of this valve-stem is also formed irregularly

and loosely engaged into a corresponding socket in the top of the hollow valve-plug, being for the same purpose of fixing the relative engagement between the valve-plug and valve-stem. The valve-stem is also provided with a spherical ring F<sup>4</sup>, which is adapted to fit against the corresponding seat and formed in the inside of the cap of the valve.

The valve-plug G is of hollow cylindrical shape and fits within the cylindrical portion of the casing and is supported within said casing by an annular shoulder H around the top of the valve-plug, which shoulder is seated on a corresponding annular offset formed within the valve-casing. The valve-plug corresponds through its open lower end with the inlet-opening and through a circular port G' with an outlet-opening, and diametrically opposite said outlet-port the valve is provided with a small aperture G<sup>2</sup> in case the valve is designed to be used as a hot-water radiator.

The top of the valve, which is provided with a suitable neck G<sup>3</sup>, in which the socket for the valve described is formed, is perforated to permit communication of the fluid from the interior of the valve and chamber H', formed within the cap, and this chamber is of suitable size to admit of the free play of the helical spring I, interposed between the top of the valve and the under side of the spherical ring F<sup>4</sup>, whereby the tension of this spring is adapted to seat the valve and the ring F<sup>4</sup> against their respective seats.

The lower end of the valve is provided with a depending lug J, which, in connection with the segmental stop L, is adapted to limit the movement of the valve to half a turn, permitting the valve to be opened and closed, respectively, by this degree of movement. The stop L extends around the inside of the valve-casing below the valve-plug, to not only form the abutments at its extremities, against which the depending lug J may strike when the valve is turned, but also to preclude any other engagement of the valve-plug into the valve-casing but the true one. The operation of the valve will be readily understood from the drawings. By turning the handle to have the letter "O" correspond with the outlet the valve is opened. By a half-turn, which brings the letter "S" to correspond with the outlet, the



valve is closed. In this closed position the aperture  $G^2$  communicates into the outlet and thereby permits a limited circulation in case the valve is used for a hot-water-circulating system. For steam I omit this aperture, and then it will be seen that the interior pressure of the valve will directly seat the valve against the interior of the casing and on the side of the outlet.

10 The peculiar advantages of my valve are:  
First. That it is self-packing (open or closed) by the pressure of the fluid as well as by the tension of the spring and is also self-grinding. The stuffing-box offers an additional safety-guard to prevent leakage, which in radiator-valves has to be specially guarded against to prevent damage to carpets, ceilings, &c.

15 Second. It will be seen that the valve turns very easily from open to closed, so that a child may readily turn it. This is owing to the cylindrical shape of the valve and valve-casing and to the balancing of the valve, as the pressure of the fluid has only slightly more force on top of the valve than on the under side. Furthermore, it will be seen that the frequent wedging of the packing around the valve-stem, as in other valves, need not occur in my valve, as no tight packing is needed to prevent leakage on account of the secondary importance of the packing. Besides, the valve-stem is turned but half from open to close.

20 Third. It will be observed that no especial familiarity is required with my construction to mount or dismount it, and any person with moderate mechanical skill can readily mount and dismount it without any liability of securing the parts in wrong relation to each other. This is not only a help to unskilled but even to skilled persons in manufacturing or repairing. As shown in the drawings, the outlet C is provided with a suitable coupling-sleeve to couple it to the radiator. For other purposes, however, the valve may be constructed with any suitable means for coupling.

25 Fourth. There is an unobstructed flow

through the valve the full size of the inlet and outlet.

In Figs. 4 and 6 I show a modification in which is substituted the extension  $F^5$ , for the irregular end  $F^3$  of the valve-stem F, said extension being adapted to engage in a corresponding aperture in the neck  $G^3$ , and having a pin  $a$  engaging in the slot  $b$ , by which the two parts are kept in fixed relation to each other when engaged.  $D'$  is a cap, and  $D^2$  is an elastic ring or gasket adapted to hold the spherical ring  $F^4$  to its seat. This construction is much simpler and better than the one above described, as it is evident that where the end of the valve-stem is the irregular shape it is more difficult to center perfectly, and thus there is always more or less danger of binding of the parts.

What I claim as my invention is—

1. In a valve, the combination, with the casing, having an inlet and outlet opening at right angles to each other, and a movable cap, of a cylindrical hollow plug formed with a cap having a series of perforations therein and edges extending beyond the walls of the plug, a ledge on which said edges rest, a valve-stem loosely engaging with the cap of the plug, and a spiral spring interposed between the caps of the plug and casing, substantially as described.

2. In a valve, the combination, with the casing, having an inlet and outlet opening at right angles to each other, of a lateral ledge L on the interior of the casing extending partly around the same and formed at its ends into suitable abutments extending inwardly, a cylindrical plug within the casing, having an open bottom and a side port and a depending lug J on the lower end of the plug extending down below the plane of the stop on the casing, substantially as described.

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

ADOLPH WEBER.

Witnesses:

M. B. O'DOHERTY,  
P. M. HULBURT.