

D. F. MORGAN.
VALVE.
APPLICATION FILED FEB. 5, 1908.

928,874.

Patented July 20, 1909.
2 SHEETS—SHEET 1.

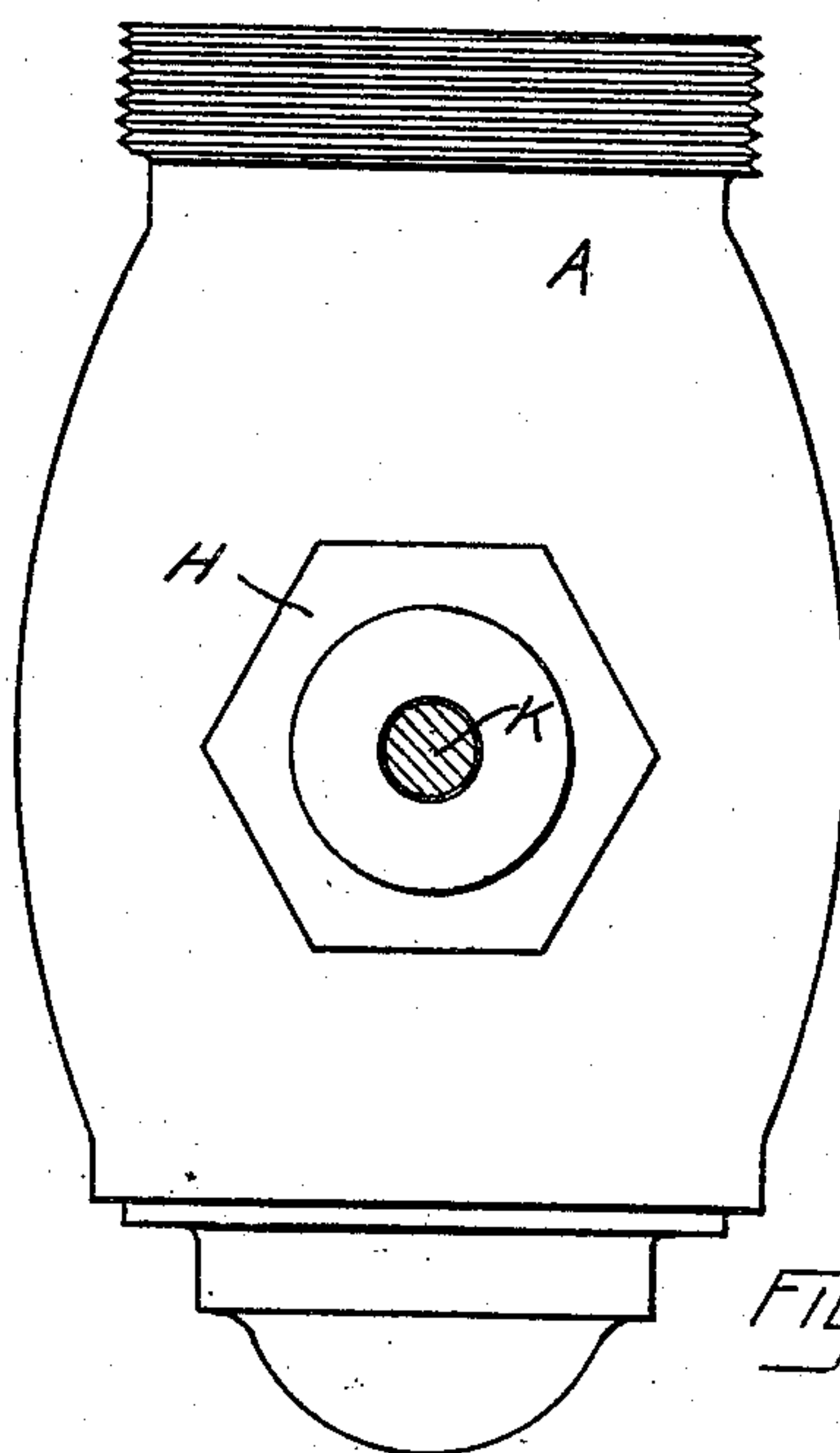


FIG. 1.

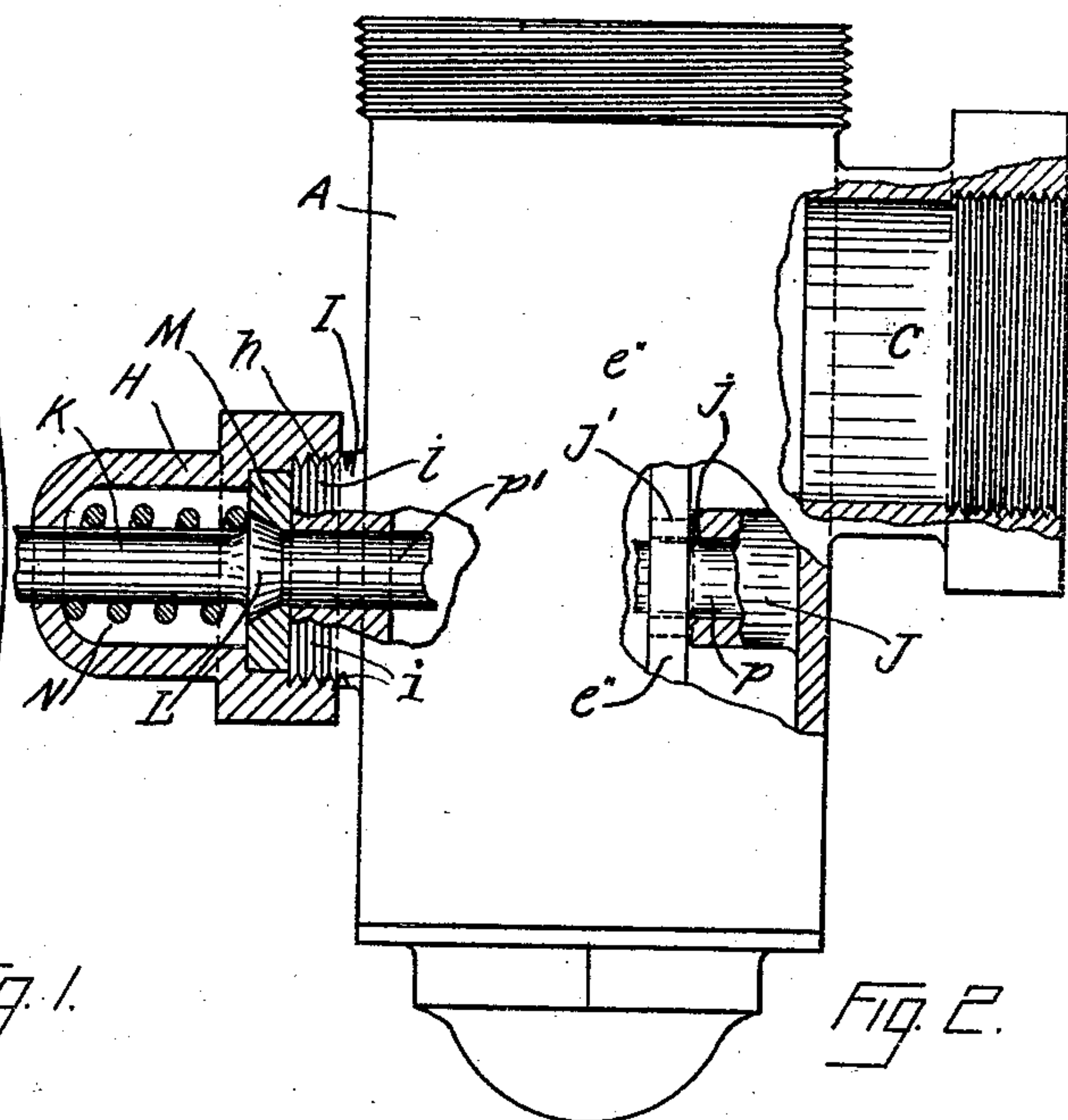


FIG. 2.

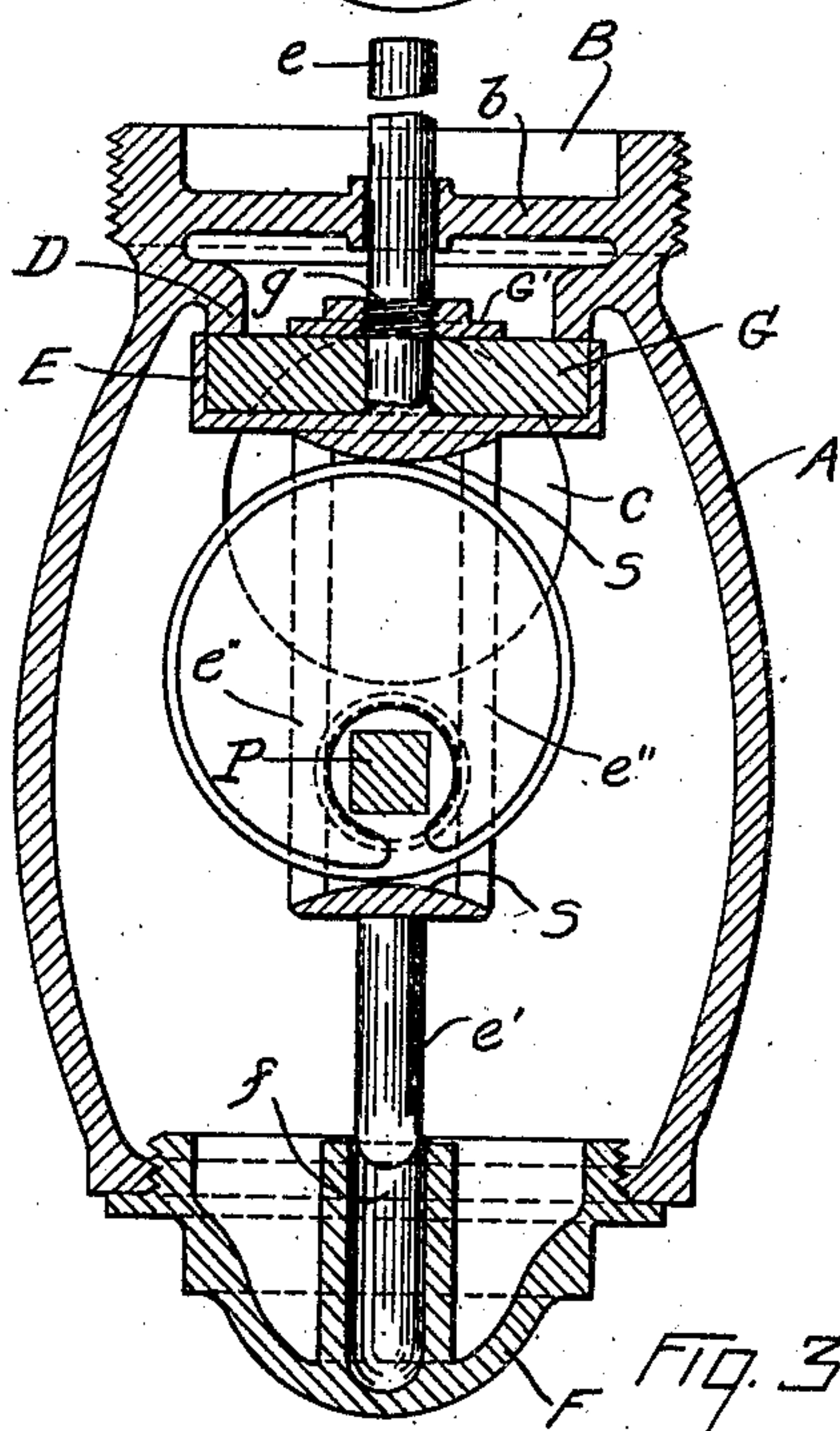


FIG. 3.

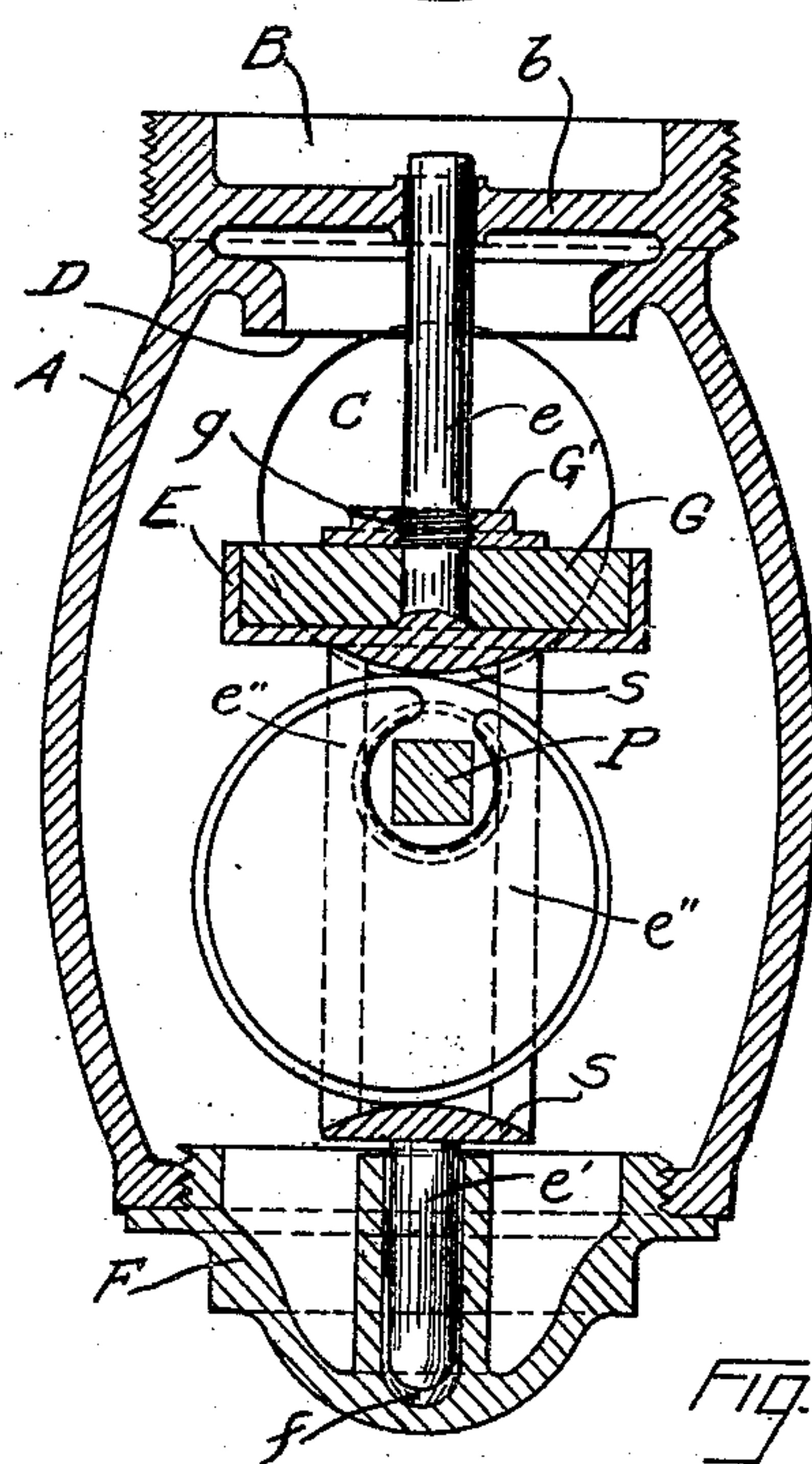


FIG. 4.

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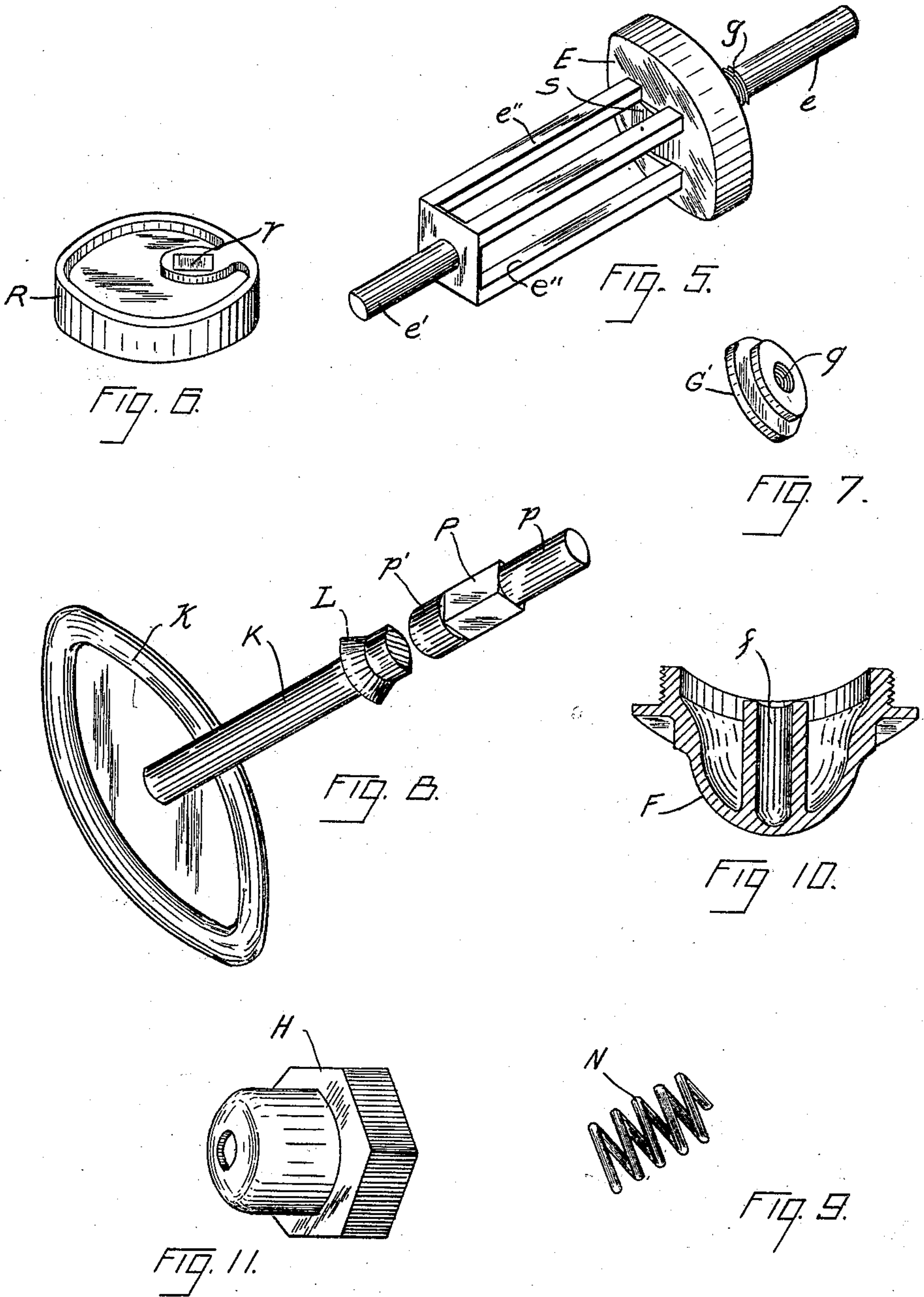
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WITNESSES:

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UNITED STATES PATENT OFFICE.

DOCTOR FRANKLIN MORGAN, OF CHICAGO, ILLINOIS.

VALVE.

No. 928,874.

Specification of Letters Patent.

Patented July 20, 1909.

Application filed February 5, 1908. Serial No. 414,384.

To all whom it may concern:

Be it known that I, DOCTOR FRANKLIN MORGAN, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Valves, of which the following, when taken in connection with the drawings accompanying and forming a part hereof, is a full and complete description, sufficient to enable those skilled in the art to which it pertains to understand, make, and use the same.

This invention relates to what are known as packless valves, used particularly in steam heating system for controlling the supply of steam to the radiators and other parts of the system.

The object of the invention is to obtain a quick opening packless valve suitable for use in a steam heating system where the pressure of the steam is above or below atmospheric pressure, or at times above and at times below atmospheric pressure. And a further object of my invention is to obtain a valve which will be simple in construction, durable and not liable to get out of order.

A further object of my invention is to obtain a valve suitable for use in steam heating systems which will consist of few parts, not requiring a great deal of machine work, and easily assembled.

I have illustrated a construction embodying this invention in the drawings referred to in which—

Figure 1 is a top plan view of the device, with the operating spindle in horizontal section. Fig. 2 is a side elevation, (at an angle of ninety degrees from the view in Fig. 1), with a portion of the casing broken away to expose some of the working parts of the device to view. Fig. 3 is a horizontal sectional view with the valve of the device closed. Fig. 4 is a horizontal sectional view with the valve of the device open. Fig. 5 is a perspective of the movable valve and stem of the device. Fig. 6 is a perspective of the eccentric of the device. Fig. 7 is a perspective of a nut provided with screw threads fitting over corresponding screw threads on the stem of the valve of the device. Fig. 8 is a perspective of the stem and hand wheel of the device. Fig. 9 is a perspective of a spring of the device. Fig. 10 is a perspective of a sectional section of a cap which also serves as a guide to one end of the valve stem

of the device. And Fig. 11 is a perspective of the bonnet of the device.

A reference letter applied to a given part is used to indicate such part throughout the several figures of the drawings wherever the same appears.

A is the casing of the device.

B and C, are respectively apertures in casing A.

D is a valve seat to aperture B.

E is a valve arranged to coact with seat D.

b is a spider across aperture B, and such spider is provided with an aperture concentric with the valve seat D, and the stem *e* of valve E moves in such aperture longitudinally. The valve E is also provided with the stem *e'* which is arranged to move longitudinally in recess *f* in cap F, when the several parts of the valve are assembled. Spider *b* and cap F thus form guides insuring longitudinal movement of the valve E and its stems. Stem *e'* is connected to the valve E by the four posts *e''*. Stems *e*, *e'*, and posts *e''* may all be integral with the valve E.

G is the ordinary Jenkins valve packing, and is secured in place on the valve stem *e* to come in direct contact with valve seat D, by means of screw threaded nut G' which fits over corresponding screw threads *g* on stem *e*.

H is the bonnet of the device, and is provided with internal screw threads *h* fitting over corresponding screw threads *i* on boss I.

J is a boss in casing A placed opposite to the boss I.

j is a recess in boss J.

K is the hand stem of the device, and *k* is a hand wheel on stem K.

L is an enlarged part of stem K arranged to constitute a disk to force disk M on to the face of the boss I. This face of boss I is preferably machined.

N is a spring on stem K. Spring N is placed on stem K in bonnet H so that one end thereof abuts against the inner wall of the bonnet and the other end against the enlarged part L of the stem, to hold the disk M to close contact with the face of boss I.

The hand stem K is provided with the squared portion P, and with the cylindrical parts *p*, *p'*. Cylindrical part *p* of the stem K fits in the recess *j* of boss J, to turn therein, and the part *p'* fits in the hole in boss I to turn therein.

The inner end *j'* of the boss J is machined to fit between the two of posts *e''* which are

adjacent thereto, and the part p' of stem K adjacent to the squared part P comes between the two of such posts adjacent thereto.

R is an eccentric, provided with squared hole r therein; and such squared hole fits over the squared portion P of stem K. Turning of the stem turns the eccentric. The eccentric R is placed between the posts e'' , as illustrated in Figs. 3 and 4 of the drawings, and arranged so that as such stem K and eccentric R are turned the periphery of the eccentric comes in contact with faces S, S, between the posts e'' of the stem of the valve E. Turning of hand stem K and consequent turning of the eccentric R moves the valve E from and on to its seat, to open and close the valve.

The cam R and stem of valve E are so arranged that the length of travel of the valve stem is not sufficient to permit a complete turn of the eccentric. Provision is thus made to take up wear on the surface of the cam and on the faces S, S, between the posts e'' with which the periphery of such cam comes in contact in the operation of the device; and also means are afforded to force the valve E well on to its seat.

It will be observed that the valve casing is not a right and left casing; but is a universal casing.

In assembling the device the eccentric R is placed between the posts e'' ; spring N is put on the stem K and such stem is inserted in the bonnet H. Disk M is placed on the stem K, such stem is inserted in the casing with the squared part P thereof through the square hole in the eccentric R, and the bonnet screwed firmly to place.

When assembled as described, (with the Jenkins valve compound G secured in place on valve E,) less than a half turn of the stem K will open or close the valve.

It will be observed that when this device is placed on a steam radiator, with the hand stem K in a vertical plane, in the ordinary way of attaching a valve to control the steam supply to a radiator, that the face of the valve seat D is in a vertical plane, and the valve E moves horizontally on to and from such seat. Also, that the movement of such valve is in the direction of the flowing steam, when the valve is closed, so that the pressure of the steam is against the back of the valve to close it on to its seat. Further, that the aperture C is in relative position to the valve seat D so that any foreign substance from the radiator which is brought into contact with such seat will drop therefrom into the riser, (through aperture C).

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

1. The combination of a valve casing provided with a chamber and with apertures thereinto, one of the apertures being pro-

vided with a valve seat, a valve within the chamber arranged to co-act with the valve seat, and concentric stems, one in front of the valve, and one in back, the back of the valve being provided with posts spaced apart and united at their outer ends to the concentric stem which is back of the valve, guides for the stems, an operating stem, guides for the operating stem, and a cam removably and loosely mounted on the operating stem between the right and left hand series of posts and held in longitudinal position on the stem by the posts, such cam arranged to turn with the operating stem to actuate the valve stems longitudinally and move the valve when the operating stem is turned.

2. The combination of a valve casing provided with a chamber and with apertures thereinto, one of the apertures being provided with a valve seat, a valve within the chamber arranged to co-act with the valve seat, and concentric stems, one in the front of the valve, said valve being provided with posts spaced apart and united at their outer ends to one of the concentric stems, guides for the stems, the guide for the stem in front of the valve comprising a spider and the guide for the stem in back of the posts comprising a removable cap on the casing, an operating stem, guides for the operating stem, a cam removably and loosely mounted on the operating stem, to turn therewith, such cam arranged between the posts to be held in position longitudinally on the operating stem by such posts and to actuate the valve stems longitudinally when such stem is turned.

3. The combination of a casing provided with a chamber and with apertures respectively forming an inlet and an outlet thereto, a valve seat to the outlet, a valve arranged to co-act with the valve seat, posts on the back of the valve, concentric stems placed respectively in front of the valve and in back of the posts, guides for such valve stems, such guides arranged to permit longitudinal movement of the stems, an operating stem provided with not less than one straight side on a portion thereof and with cylindrical portions adjacent to the straight sided portion, such stem arranged to pass between posts on the valve, bearings in which the operating stem may turn, a cam provided with a hole arranged to fit over the operating stem to be turned thereby, and such cam arranged between posts on the valve to be held in a determined position longitudinally on the operating stem and to actuate such valve when the operating stem and cam are turned.

4. The combination of a casing provided with a chamber and with apertures respectively forming an inlet and an outlet to the chamber, a valve seat to the outlet, a valve arranged to co-act with the valve seat, posts

on the back of the valve, concentric stems placed respectively in front of the valve and in back of the posts, guides for such valve stems, such guides arranged to permit longitudinal movement of the stem, an operating stem arranged to pass between posts on the valve, bearings in which the operating stem may turn, a bonnet mounted on one of the bearings outside of the casing, an enlarged part to the operating stem, a disk and a spring, such spring arranged to force the disk into contact with the face of the bearing, a cam removably and loosely mounted on the operating stem to turn therewith and such cam arranged between posts on the valve to actuate such valve when the operating stem and cam are turned.

5. The combination of a valve casing provided with apertures respectively arranged in planes which are at right angles to each other, one of such apertures being provided with a valve seat, a valve arranged to co-act with the valve seat, a plurality of valve stems to such valve, said valve being provided with posts spaced apart and united at their outer ends to one of the stems, guides to the valve stems, an operating stem and a cam removably and loosely mounted on the operating stem and arranged to actuate and control the position of the valve and valve stem.

DOCTOR FRANKLIN MORGAN.

In the presence of—

EDWD. J. BROWN,
CORA A. ADAMS.