

J. H. McDANIEL.

VALVE.

APPLICATION FILED MAR. 2, 1908.

932,887.

Patented Aug. 31, 1909.

2 SHEETS—SHEET 1.

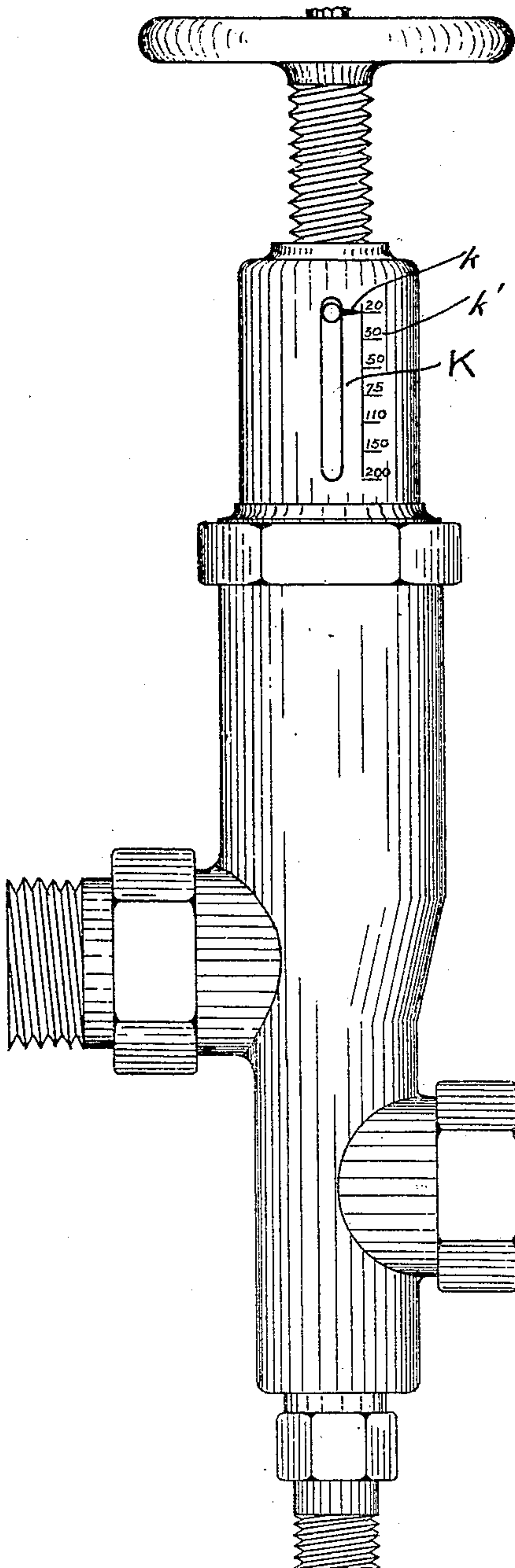


FIG. 1.

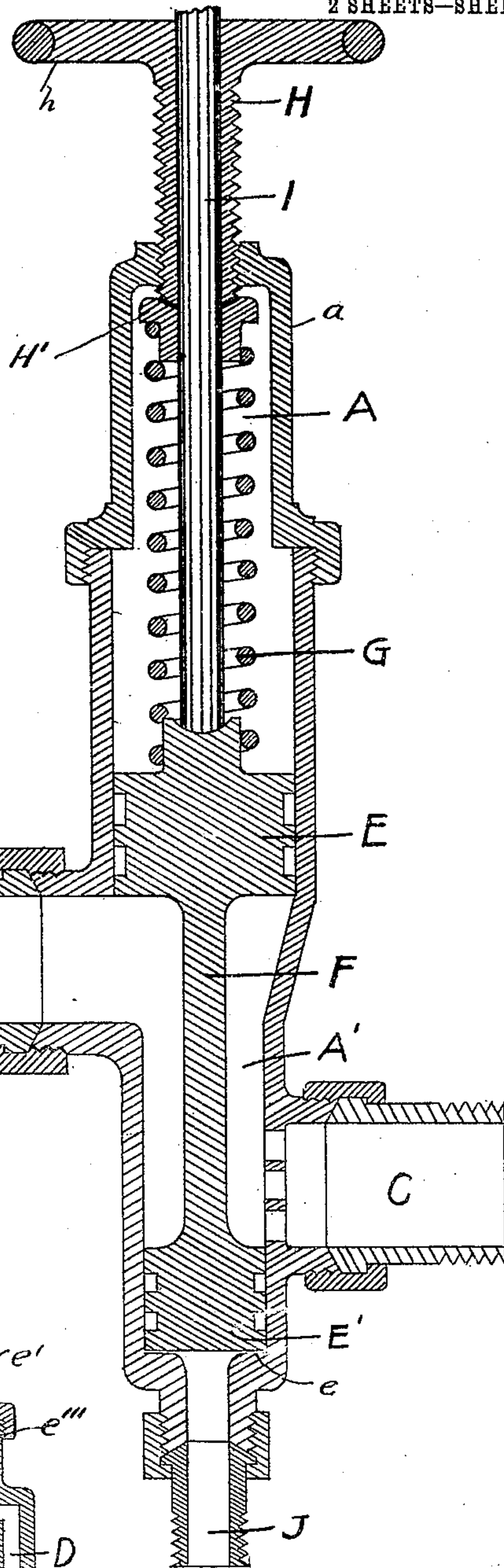


FIG. 2.

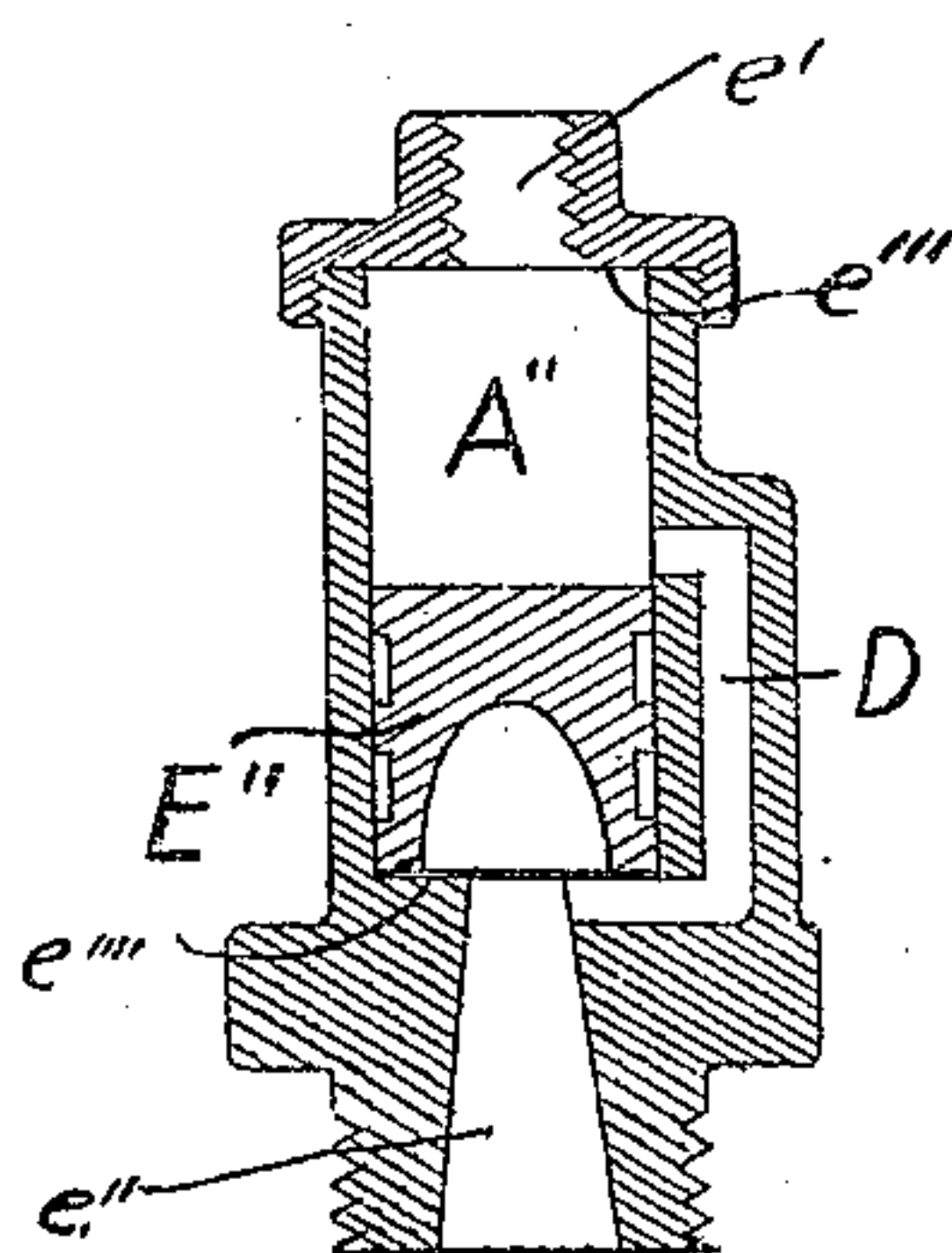


FIG. 3.

WITNESSES

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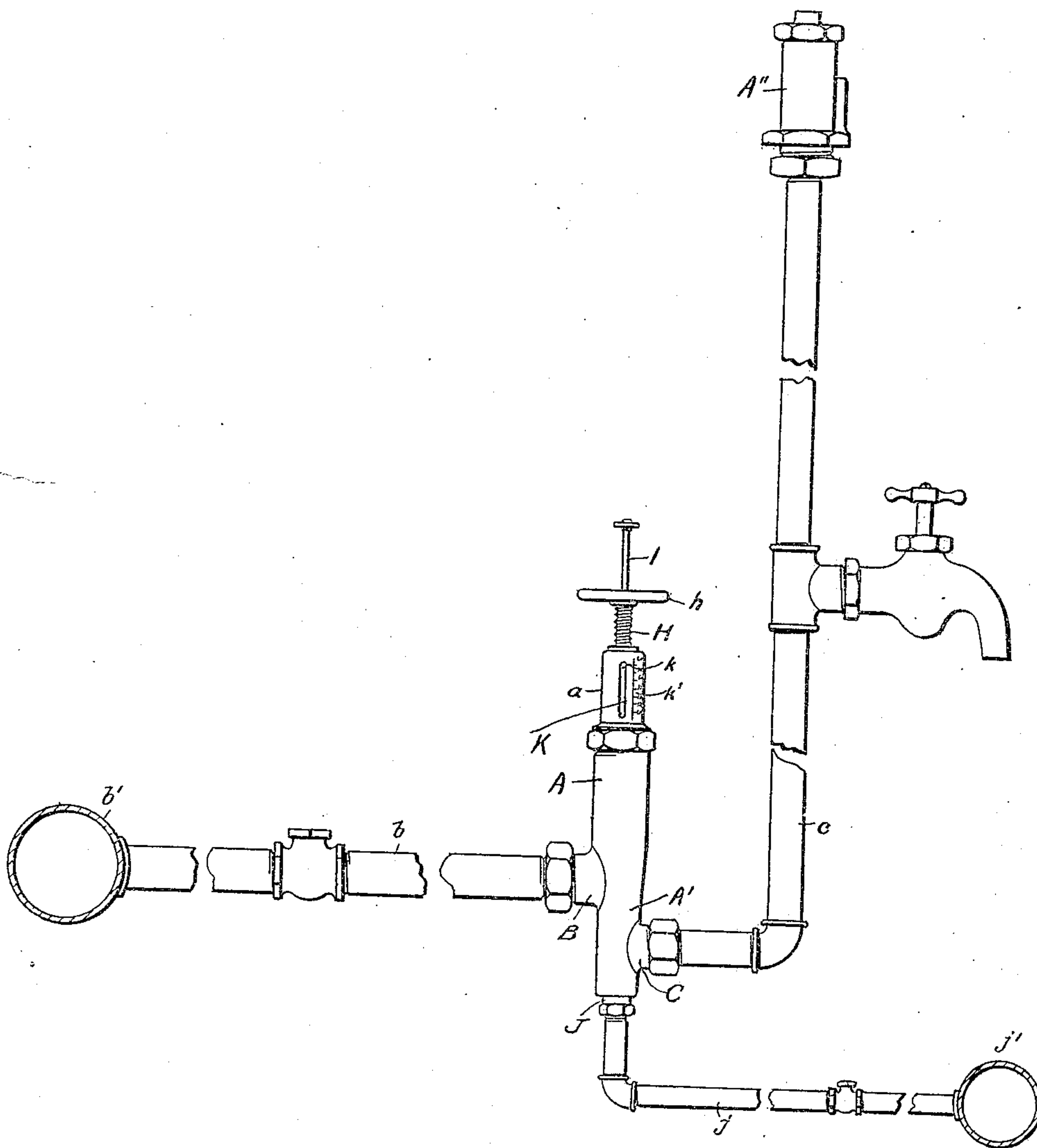


FIG. 4.

John Hyman M Daniel
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2 Witnesses

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UNITED STATES PATENT OFFICE.

JOHN H. McDANIEL, OF ATLANTA, GEORGIA.

VALVE.

932,887.

Specification of Letters Patent. Patented Aug. 31, 1909.

Application filed March 2, 1908. Serial No. 418,766.

To all whom it may concern:

Be it known that I, JOHN H. McDANIEL, a citizen of the United States, residing at Atlanta, in the county of Fulton and State of Georgia, have invented certain new and useful Improvements in Valves, of which the following is a specification.

This invention relates to a system by which water-mains may be cut off and the pipes drained, by means of an increased pressure in the source of supply.

The invention consists in an improved valve for use in such a system, as hereinafter described and claimed.

In the accompanying drawing, Figure 1 is an elevation of the pressure cut-off valve and Fig. 2 is a vertical section thereof. Fig. 3 is a vertical section of the air-vent. Fig. 4 shows the foregoing parts in position on the mains.

Referring specifically to the drawing the pressure cut-off valve comprises a cylinder having two different diameters as indicated at A and A', the former being the greater, and containing a piston E. In the portion A' of the cylinder is a piston E' which is connected to the piston E by a stem F so that both pistons will move together. The cylinder is also provided with an inlet B and an outlet C, as well as a drain-passage J, the outlet and the drain-passage being controlled by the piston E'. The portion A of the cylinder is closed by a cap a through which is threaded a screw H provided outside the cap with a hand-wheel h, and bearing inside the cap on an abutment H' mounted on a rod I which passes through a longitudinal bore in the screw and is adapted to operate at its inner end on the top of the piston E. Around the rod between the abutment H' and the top of the piston E is coiled a spring G for normally holding the piston E' to its seat which is formed by a shoulder e in the part A' of the cylinder below the outlet C and above the drain-passage J. When the piston E' is thus seated, communication is established between the inlet and the outlet, and the drain-passage is closed as shown in Fig. 2.

The tension of the spring G may be regulated by means of the screw H, the amount of compression being indicated by a pointer k on a scale k' on the outside of the cap a. The pointer can be carried by the abutment H', and it projects through a slot K in the

cap a. The scale is located adjacent one side of the slot.

The inlet B communicates by a pipe b with the water-main b', and the outlet C communicates with the service-pipe c to the building. The drain-passage J communicates by a pipe j with the sewer j'.

The parts operate as follows: When it is desired to shut off the water in the pipe c, the pressure in the main is increased sufficiently to force the piston E upwardly against the pressure of the spring G until the piston E' closes the outlet C and opens the drain-passage J thereto. The water then drains from the service-pipe c through the drain-passage, and through the pipe j to the sewer. Upon reducing the pressure in the main, the spring G returns the pistons E and E' to their normal position, whereby communication is again established between the inlet B and the outlet C, and the drain-passage J is closed, the parts then again being in the position shown in Fig. 2. If it is desired to get water to the service-pipe c during the shut-off, the valve E' can be moved manually to open the outlet C to the inlet B, by pressing down on the piston E by means of the rod I. Upon releasing said rod, the increased pressure in the main again lifts the pistons and closes the outlet C as before.

From the foregoing description it will be seen that the pressure cut-off valve works perfectly by the action of the increased or diminished pressure of the water in the main, and as the parts are simple and few, there is nothing to get out of order, and the operation of the valve will therefore be reliable at all times.

The air-vent shown in Fig. 3 is connected to the end of the pipe c in order that air may be admitted to said pipe when the drain-passage is open, and thus prevent the formation of a vacuum. The air-vent comprises a cylindrical casing A² in which works a sliding-valve E². The cylinder has an inlet e' at one end open to the atmosphere, and at the other end it has an outlet e² to which the pipe c connects. In the cylinder are also valve-seats e³ and e⁴. In the wall of the cylinder is a by-pass D, communicating at one end with the bore of the cylinder between the valve-seats e³ and e⁴, and at the other end with the outlet e².

The air-vent operates as follows: When

the pipe c to which it is connected is full of water, the valve E^2 will be forced against the seat e^3 , thereby closing the inlet e' . When the water in the pipe is flowing out through the drain-passage J as heretofore described, the valve E^2 drops down to the seat e^4 . With the valve in this position, that end of the by-pass D which communicates with the bore of the cylinder is uncovered, and the air then flows from the inlet through the by-pass and out of the outlet e^2 into the pipe c . The vent is entirely automatic in its action, and effectually serves the purpose for which it is intended.

15 I claim:

A valve comprising a cylinder having different diameters and provided with an inlet, an outlet and a drain passage, pistons in the respective bores of the cylinder, one of said pistons closing the drain passage when

the inlet and outlet are in connection, and adapted to close the outlet to the inlet and establish communication between the former and the drain passage, the other piston being exposed to the pressure of the inlet, a cap on the cylinder and having a threaded opening, a screw working in said opening and having an axial bore, a stem mounted in said bore and engaging the last-mentioned piston, an abutment on the stem against which the inner end of the screw bears, and a spring coiled around the stem and engageable at its ends with the abutment and the last mentioned piston.

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

JOHN H. McDANIEL.

Witnesses:

F. A. PITTMAN,
J. N. PORTER.