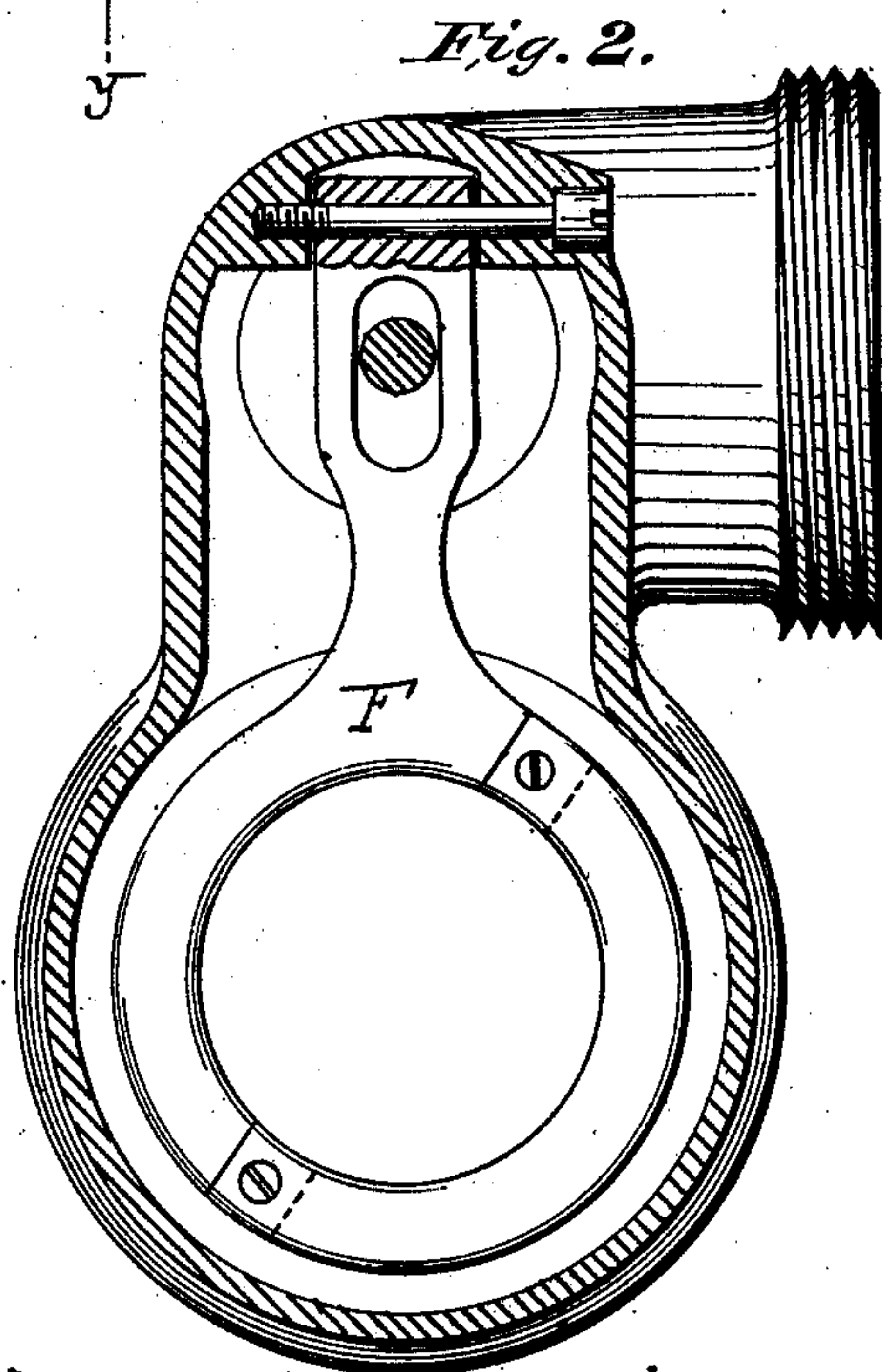
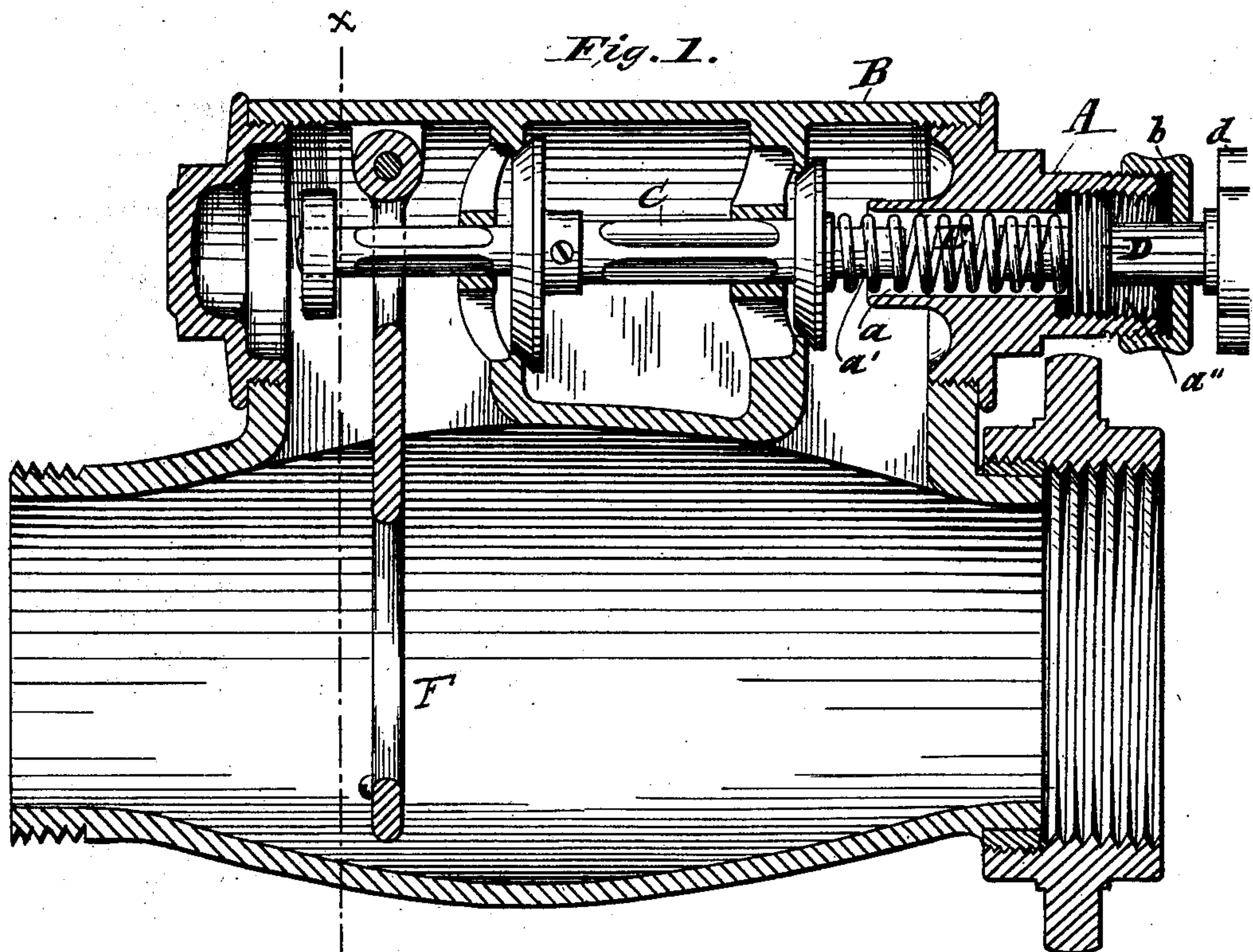


J. E. PRUNTY.
Steam Fire-Engines.

No. 214,004.

Patented April 8, 1879.



Witnesses:

H. A. Daniels.

G. B. Towles.

By

Inventor.
John E. Prunty,
G. H. W. J. Horne,
Attorneys.

UNITED STATES PATENT OFFICE.

JOHN E. PRUNTY, OF WAVERLY, MARYLAND.

IMPROVEMENT IN STEAM FIRE-ENGINES.

Specification forming part of Letters Patent No. **214,004**, dated April 8, 1879; application filed February 1, 1879; patented in England, October 26, 1874.

To all whom it may concern:

Be it known that I, JOHN E. PRUNTY, of Waverly, in the county of Baltimore and State of Maryland, have invented certain Improvements in Steam Fire-Engines, of which the following is a specification, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The invention relates more particularly to an automatic relief-valve for steam fire-engines, and is an improvement upon the inventions described in my Letters Patent Nos. 122,059 and 126,330, to which reference is made for the better understanding hereof. The present invention is patented in England under date October 26, 1874, and No. 3,699.

The object of the present invention is to enable the engineer to apply a variable pressure to the puppet-valves when they are to be seated on the starting of the engine, whereby the air in the suction-chamber may be driven up into the air-vessel to which the relief-valve is attached, and the necessary vacuum in the suction-chamber obtained. The advantage possessed by a spring over a screw for this purpose is, that the pressure exerted upon the valves by the spring will at all times permit a slight movement of the valves when a reverse current of the water takes place, affording a relief thereto and preventing the bursting of the hose. Should the screw shown in Letters Patent No. 122,058 be left in contact with the valves, no motion thereof on the reverse current taking place could occur, and damage to the hose would ensue. The spring herein shown is also arranged so that it can be withdrawn entirely from contact with the valves.

In the accompanying drawings, Figure 1 is a longitudinal section of a relief-valve substantially as shown and described in my aforesaid Patents Nos. 122,059 and 126,330, and embracing also the improvements constituting the present invention. Fig. 2 is a section of the valve in line *x y* of Fig. 1.

Similar letters of reference indicate similar parts in both views.

Instead of the set-screw and its cap described in Patent No. 122,059, the following devices are used: The cap A is screwed into its end of the valve-chamber B, and is bored out at *a* to receive the stem *a'* of the double puppet-

valves C, and also provided with a larger bore, *a''*, at its outer end, which bore is internally threaded, as shown. Over this end is screwed the cap *b*. A screw-stem, D, is applied to the cap A, the screw portion thereof working in the threaded bore *a''*. The inner end of the stem D receives an end of the spiral spring E, the other end thereof resting on the stem *a'* of the double puppet-valves C. The outer end of the screw-stem D is provided with a wheel or handle, *d*. Sufficient space is left behind the screw portion of the stem D to allow the valve to be released entirely from contact with the valves.

The operation of the valve to which my present invention is applied is as follows: Water entering the induction-port will fill the auxiliary chamber and close the balanced valves by the momentum of the current as it flows through the main chamber. The swinging device indicated by F, and in my Letters Patent No. 126,330 designated a "concentric ring," is provided with an opening about the same size as the ports of the main chamber, unobstructed by the said ring. So long as the current flows under pressure, the ring, by resting against the nut on the valve-stem, will cause the double puppet-valves to be held to their seats. Should an obstruction be placed on the line of the hose, the reverse action of the water will cause the balanced valves to open instantly, thereby relieving the undue pressure in the hose, as all water flowing through the valves by overpressure will be discharged through the waste-pipe.

When water is to be supplied to the steam fire-engine it becomes necessary to first hold the double puppet-valves to their seats, else the air in the suction-chamber could not be driven out into the air-vessel, and the vacuum in the said chamber procured, to permit the raising of the water to the engine by atmospheric pressure. Unless the valves are seated at this time there will be a circulation of air through the chambers of the valve, which must be avoided.

The set-screw shown in Patent No. 122,059 serves for this purpose under ordinary circumstances; but it sometimes becomes necessary to exert a variable pressure on the valves, and also at other times to relieve them from

all pressure. With the view of meeting these emergencies, the spiral spring E is used, which places a yielding pressure on the valves.

I am aware that puppet-valves have had springs applied to them for various purposes, and I do not claim their general application thereto; but,

Having described my invention, I claim as new and wish to secure by Letters Patent of the United States—

In a relief-valve for steam fire-engines having the swinging device or ring F placed in its main chamber, as shown, the combination of balanced double puppet-valves and an adjust-

able spiral spring applied to said valves, substantially as shown, whereby when water is to be supplied to the engine the double puppet-valves may be held by said spring to their seats by a yielding pressure, and a vacuum obtained in the suction-chamber, for the purpose specified.

In testimony whereof I have hereunto subscribed my name this 13th day of January, A. D. 1879.

JOHN E. PRUNTY.

Witnesses:

H. J. ENNIS,

E. H. BEADFORD.