

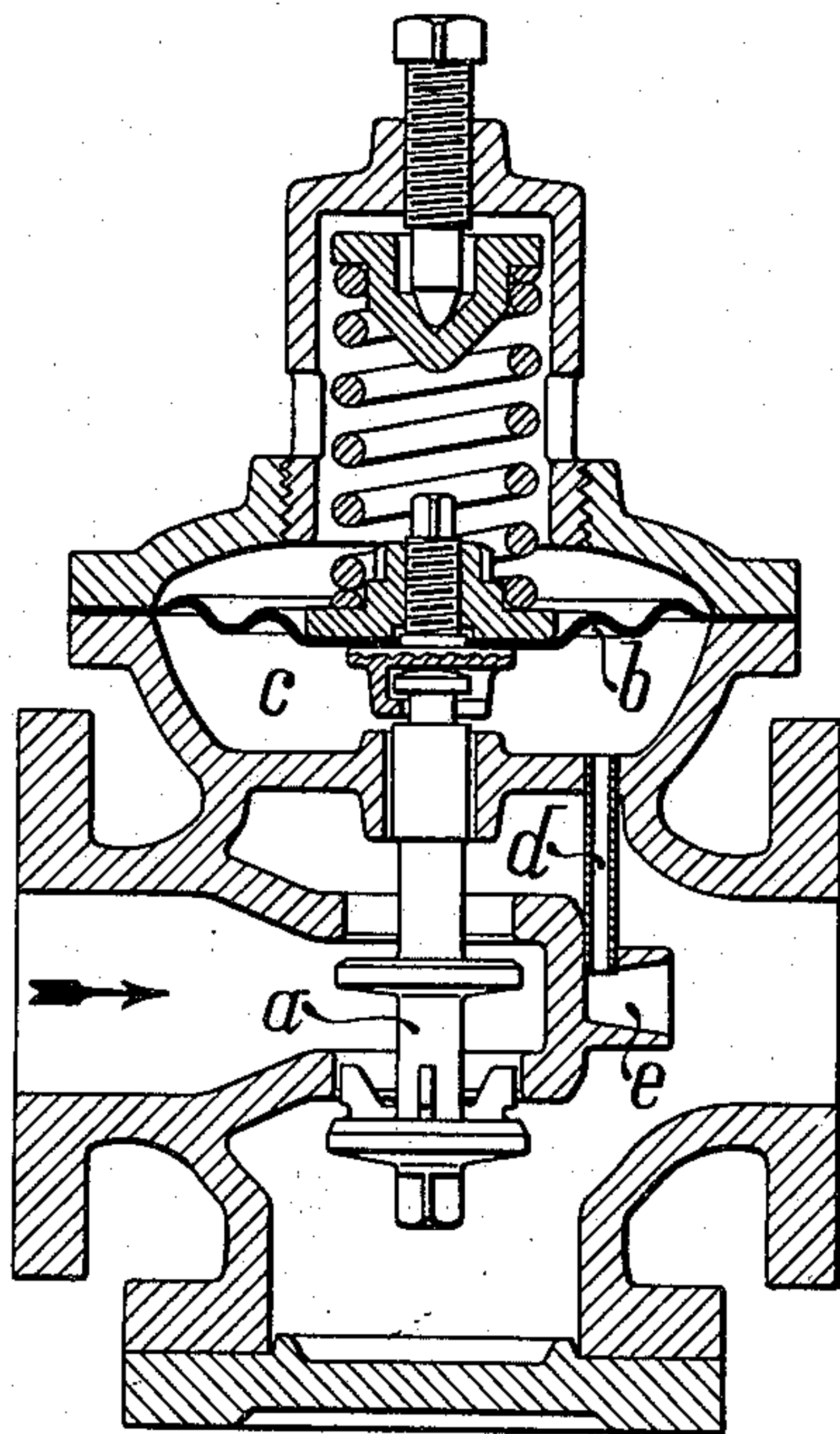
No. 847,944.

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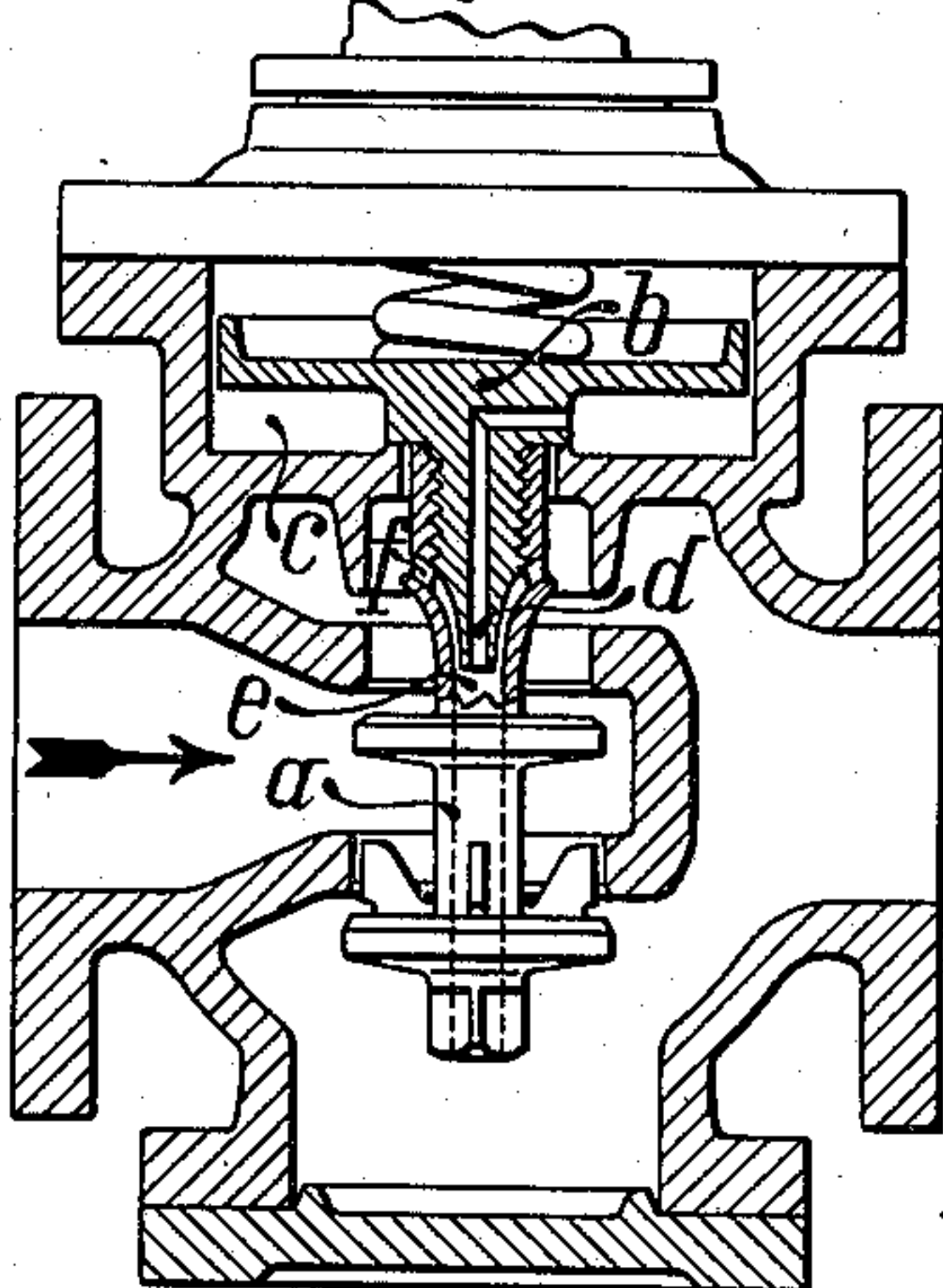
**J. HÜBNER & I. MAYER.**  
**PRESSURE REDUCING VALVE.**  
APPLICATION FILED FEB. 19, 1906.

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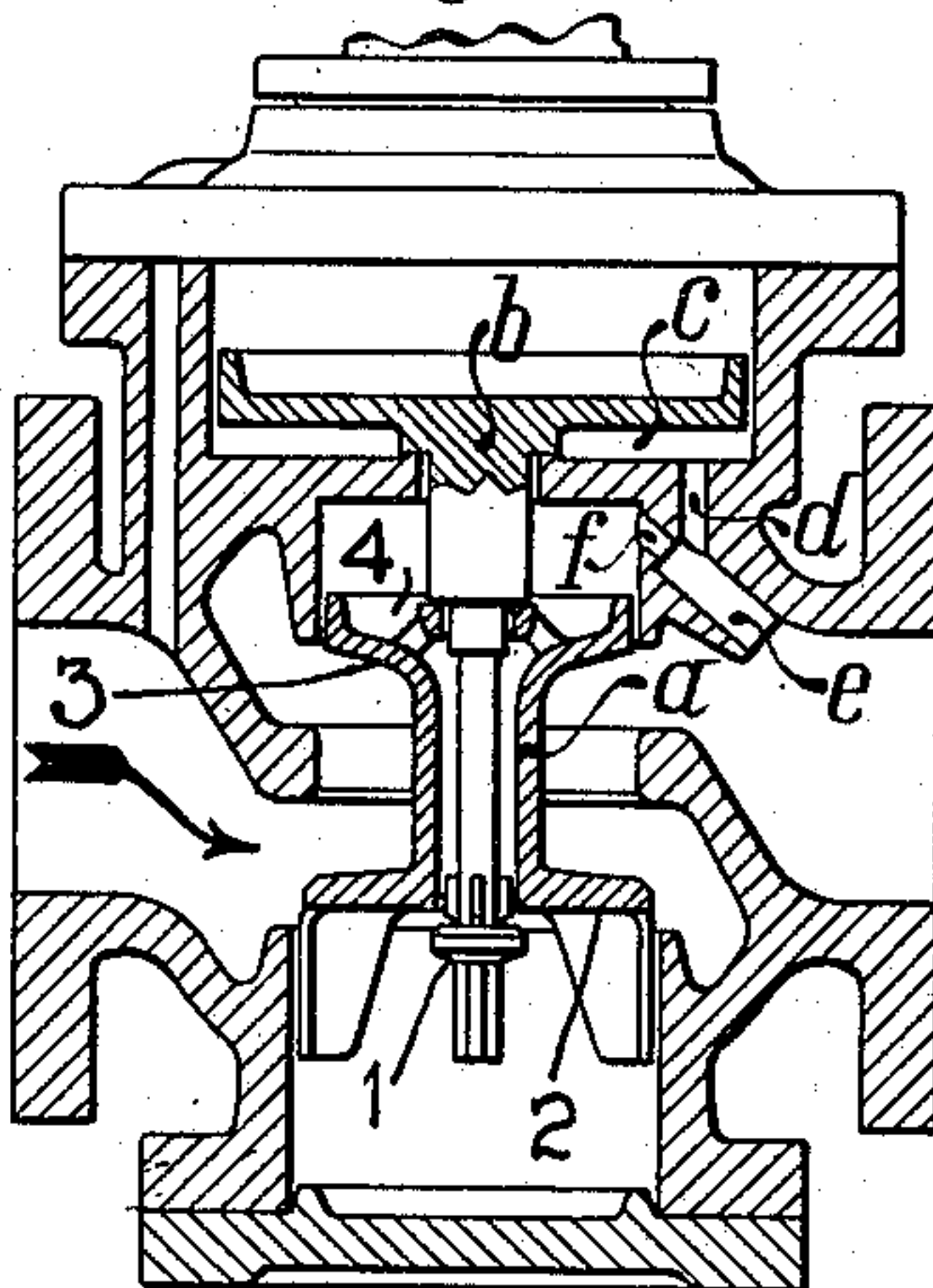
*Fig.1*



*Fig. 2*



*Fig. 3*



Witnesses.  
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# UNITED STATES PATENT OFFICE.

JOSEF HÜBNER AND ISIDOR MAYER, OF VIENNA, AUSTRIA-HUNGARY.

## PRESSURE-REDUCING VALVE.

No. 847,944.

Specification of Letters Patent.

Patented March 19, 1907.

Application filed February 19, 1906. Serial No. 301,917.

*To all whom it may concern:*

Be it known that we, JOSEF HÜBNER and ISIDOR MAYER, both subjects of the Emperor of Austria-Hungary, and residing at Muth-  
5 jasse 64, (Waatbahnhof-Heilijenstaat,) Vienna, Austria-Hungary, have invented certain new and useful Improvements in Pressure-Reducing Valves; and we do hereby declare the following to be a full, clear, and exact  
10 description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Pressure-reducing valves with throttling devices actuated by means of adjustably  
15 weighted or loaded diaphragms or pistons have the disadvantage that the adjusted low-pressure is not maintained constant during working, as with these valves the pressure falls as the consumption of steam increases.  
20 The cause of this deficiency is, on the one hand, that the load alters or slackens when the valves are opened and, on the other hand, that an expansion of the diaphragm occurs which increases with the stroke of the valve  
25 and must be overcome by the loading. Moreover, the high-pressure steam flowing into the low-pressure chamber causes an increase of pressure which becomes greater with increased consumption and extends to below  
30 the diaphragm or piston. Hereby also the diaphragms or pistons are prevented from opening the throttling devices connected with them to an extent corresponding to the consumption. The present invention obvi-  
35 ates this defect in pressure-reducing valves and enables them in all cases, even to the largest consumption of steam, to open a passage to the inflowing pressure medium necessary for maintaining the adjusted low pres-  
40 sure.

The device consists, substantially, of a suction-nozzle arranged in the low-pressure chamber of the valve and on which a suctional action is exercised by the high-pres-  
45 sure steam flowing into the low-pressure chamber or the low-pressure steam flowing away, this suctional effect extending through a connecting-passage to the under surface of the diaphragm or piston and in consequence  
50 of the powerful suctional action on these parts, which corresponds to the consumption, assists or replaces the loading thereof.

In the accompanying drawing three pressure-reducing valves of different and known  
55 kinds which are furnished with the suction-

nozzle arranged according to this invention are shown in sectional elevation.

Figure 1 represents a pressure-reducing valve the throttling device of which is in the form of a double-seated valve and is connect-  
60 ed with a spring-loaded diaphragm *b*. The space *c* below the diaphragm is connected, by means of a passage *d*, with the suction-nozzle *e*, arranged in the low-pressure chamber. The action of this device will be seen at once  
65 from the drawing.

By the arrangement of the suction-nozzle *e* a suctional action is produced which increases with increasing consumption and is caused by the low-pressure steam flowing past. This  
70 action extends through the connection *d* to the space *c*. Hereby a reduction of pressure is produced in that space, so that the diaphragm, which is now partially relieved, can fall with the valve attached to it without  
75 hindrance and open the requisite passage.

In Fig. 2 a piston *b* instead of the diaphragm is connected with the double-seated throttle-valve. In this form of the inven-  
80 tion the connection *d* is placed in a spindle of the valve *a*, which for this purpose is formed with a boring which likewise contains the suction-nozzle *e*, that opens into the low-pressure chamber. The suction-nozzle is so  
85 constructed that partially-exhausted high-pressure steam conveyed into the suction-nozzle at *e* comes into action.

In Fig. 3 the piston is connected with an auxiliary valve 1, and this valve with a single, seat principal valve 2, which can be relieved  
90 by pressure beneath 3, and the action of which is known. The single-seated valve-cone carries a piston 4, above which during the taking of steam through the opened aux-  
95 iliary valve 1 the high-pressure steam enters and relieves the principal valve. From this space a portion of the steam flows through the suction-nozzle to the low-pressure chamber and produces the necessary reduction of pressure in the chamber *c*. The pistons of  
100 these valves can be loaded either by springs, throttled steam, or in any other known manner. Beneath the piston or diaphragm the high-pressure steam flowing in always causes a certain increase of pressure which prevents  
105 the opening of the valve and leads to the falling of the adjusted low pressure.

By the suctional action of the device which corresponds to the consumption at any time not only is the objectionable high pressure in  
110



the chamber *c* avoided, but, if necessary, the diminishing loading also supplemented:

What we claim, and desire to secure by Letters Patent, is—

- 5 1. A pressure-reducing valve having a loaded throttling element provided with a fluid-pressure-actuated element, a suction-chamber in which said fluid-pressure-actuated element operates, a high-pressure chamber,  
10 a low-pressure chamber communicating therewith, and a suction-duct leading from the suction-chamber to the low-pressure chamber, for the purpose set forth.
- 15 2. A pressure-reducing valve having a loaded throttling element provided with a fluid-pressure-actuated element, a suction-

chamber in which said fluid-pressure-actuated element operates, a high-pressure chamber, a low-pressure chamber communicating therewith, a suction-duct leading from the suction-chamber and a suction-nozzle forming the discharge end of said duct and discharging into the low-pressure chamber, for the purpose set forth. 20

In testimony whereof we have affixed our signatures in presence of two witnesses. 25

JOSEF HÜBNER.  
ISIDOR MAYER.

Witnesses:

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