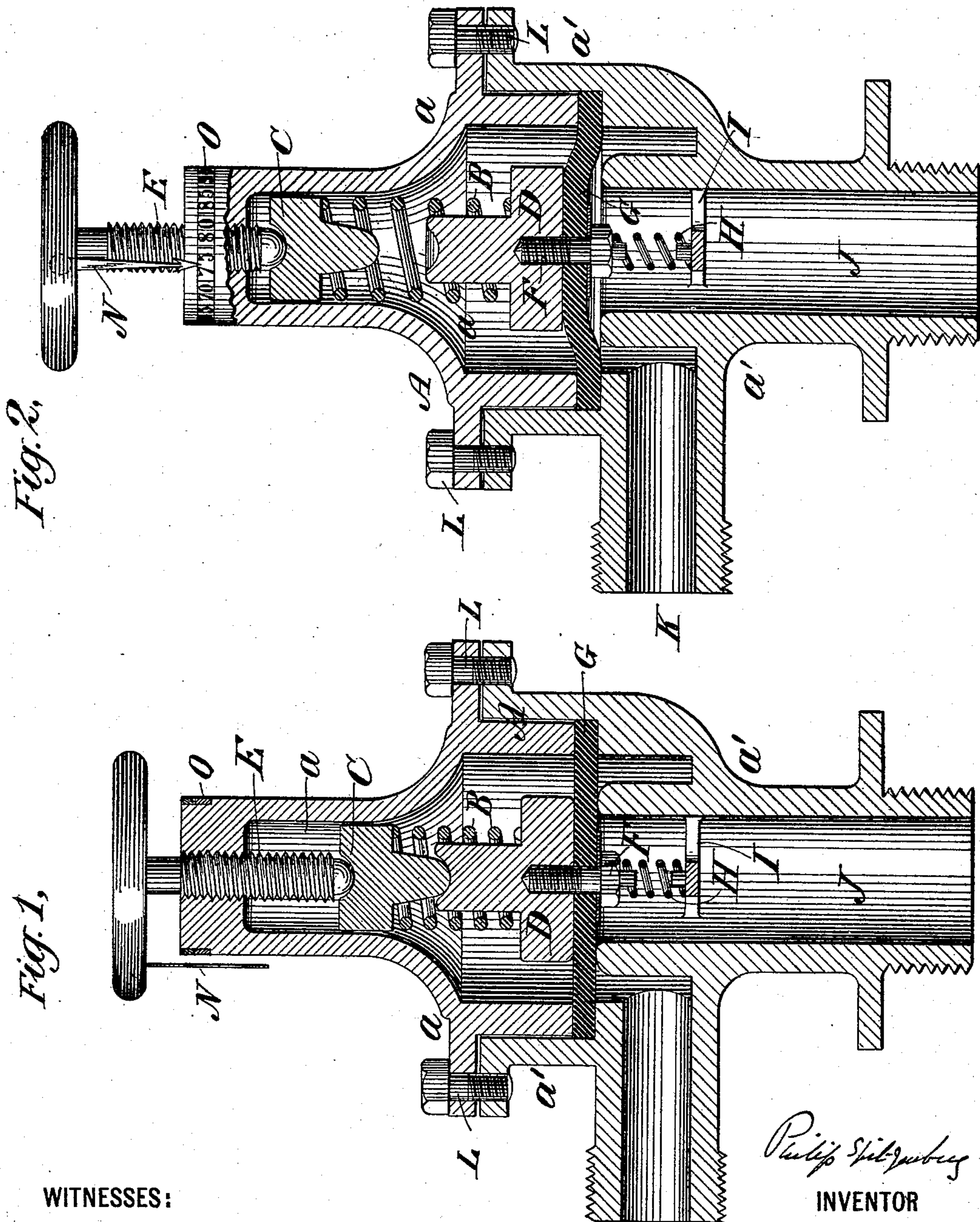


(No Model.)

P. SPITZENBERG.
VALVE.

No. 572,580.

Patented Dec. 8, 1896.



WITNESSES:

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UNITED STATES PATENT OFFICE.

PHILIP SPITZENBERG, OF BROOKLYN, NEW YORK.

VALVE.

SPECIFICATION forming part of Letters Patent No. 572,580, dated December 8, 1896.

Application filed March 30, 1896. Serial No. 585,328. (No model.)

To all whom it may concern:

Be it known that I, PHILIP SPITZENBERG, a citizen of the United States, and a resident of Brooklyn, in the county of Kings, in the State of New York, have invented new and useful Improvements in Valves, of which the following is a specification.

My invention relates to valves, and is especially applicable to the class of valves which are used for controlling the supply or escape of fluids or liquids under pressure.

My improved valve is primarily adapted for use in connection with the cylinder of a continuous soda-water apparatus as a blow-off valve for the gas and carbonated water in such cylinder; but it can be employed generally for regulating the supply or escape of gases, steam, water, or other fluids or liquids.

A special feature in my improved valve is that it can be used either as a safety or blow-off valve or as a shut-off valve.

The nature of my invention and the mode in which it is operated are fully set forth in the following specification and the drawings annexed, in which—

Figure 1 is a sectional view of my improved valve, showing the same in use as a shut-off valve. Fig. 2 is a like view showing the same in use as a safety or blow-off valve and the diaphragm raised by the pressure of gas escaping through the valve.

In the above figures, A is a valve-chamber composed of two sections—viz., *a*, the upper section; *a'*, the lower section.

B is a spiral spring connecting two sections of the valve-stem—viz., C, the upper section of the valve-stem; D, the lower section of the valve-stem.

E is a set-screw provided with a circular head or handle working in the upper part of section *a* and operating the valve-stem C.

F is a screw passing through the diaphragm G and securing same to D.

G is a diaphragm of elastic material secured by screw F to the lower part of the valve-stem D.

H is a spiral relief-spring engaging with a projection on the head of the screw F and supported by a spider I.

J is the inlet-pipe leading to the valve-chamber K in the exit-pipe therefrom.

L L are screws connecting *a* and *a'*.

N is a pointer attached to the head of the set-screw E, and so placed that as such screw is turned for the purpose of raising or depressing the valve-stem C the end of such pointer will come opposite to different marks or figures on a graduated scale or index placed on the valve-chamber section *a*.

O is a detachable metal band or collar placed around the upper end of section *a* and graduated with suitable marks or figures, so as to form a scale or index for the purpose of ascertaining and regulating the pressure at which it is intended that the diaphragm G should be lifted. In some cases I attach the pointer N to the upper part of the section *a* and graduate the rim or circumference of the handle or head of the screw E by marks or figures thereon, or I attach thereto the band O, graduated as before described.

The mode in which my invention is operated is as follows: When used as a shut-off valve, as shown in Fig. 1, the stem C is depressed by turning the screw E until the lower end of the stem C, which I make, preferentially, in rounded form, as shown, engages with a depression or socket formed in the upper end of the stem D and forces it solidly down on the diaphragm G, thereby forming a rigidly-closed valve. To insure certain seating of this diaphragm, I form the lower part of the stem D of width exceeding the diameter of the inlet-pipe F, thereby securing the perfect closing of the orifice of such inlet-pipe by the pressure of the diaphragm G on the circumference of such inlet-pipe. When used as a safety or blow-off valve, as shown in Fig. 2, the valve-stem C is depressed by turning the screw E until a sufficient force is exerted by the compression of the spiral spring B on the stem D and diaphragm G to equalize any desired pressure that may be exerted by the gas or other fluid entering through the pipe J. The necessary depression for this purpose is readily ascertained and gaged by the index N M, by means of which the valve can be readily set to open at any required pressure. When such pressure is reached, the pressure of the entering fluid raises the elastic diaphragm G, as shown in the drawings, and escapes through the exit-pipe K. For the purpose of obviating the possibility of the valve sticking and fail-

ing to act in consequence of the diaphragm G adhering to its seat, as sometimes happens with valves when there is not sufficient countervailing pressure exerted by the entering fluid, I place underneath the head of the screw F and engage therewith a light coil-spring H, supported on a spider I and so arranged as to exert a slight upward pressure on the screw F and, in consequence, on the diaphragm G. By this device I find that the action of the valve is assisted and accelerated and all possibility of sticking in its seat is avoided, and the valve can thereby be operated with an extremely light pressure of entering fluid.

In the above description and drawings I have shown a diaphragm which, preferentially, is constructed of rubber or other similar light elastic material, such being most suitable when the valve is used for gas or water, whether carbonated or plain, or other liquids. When my improved valve is used as a steam-valve or for liquids at a high temperature, I construct the diaphragm of thin elastic steel or other suitable metal carefully trued and formed to fit the valve-seat. With a diaphragm so constructed my improved valve can be used either as a steam safety-valve, for which purpose it is found to be extremely sensitive and accurate, or as a steam shut-off valve.

Having thus described the nature of my invention and the mode in which it is operated, what I claim, and desire to secure by Letters Patent, is—

1. In a valve, the combination of a sectional valve-stem composed of an upper and lower section, with a flexible diaphragm attached to and operated by the lower valve-stem sec-

tion, such lower valve-stem section being so arranged as to be operated by a spring connecting it with the upper valve-stem section, when the valve is used as a relief or blow-off valve, and by the direct impact of the upper valve-stem section, when the valve is used as a shut-off valve, all substantially as shown and described and for the purposes specified.

2. In a valve, the combination of the valve-chamber A, composed of two sections, *a* and *a'* connected by screws L, L, the valve-stem sections C and D, the set-screw E and spring F operating the valve-stem sections C and D, the diaphragm G attached to the valve-stem section D and held circumferentially between the valve-chamber sections *a* and *a'*, and the relief-spring H placed underneath the diaphragm G and arranged to exert an upward pressure against such diaphragm.

3. In a valve, the combination of the sectional valve-chamber A, the valve-stem sections C and D, the spring B connecting such sections, the diaphragm G held circumferentially between the sections *a* and *a'* of the chamber A and affixed to and operated by the valve-stem section D, the relief-spring H, placed under the diaphragm G, and a gage for regulating the pressure, consisting of the pointer N and graduated scale or index O, all substantially as described and for the purposes specified.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 6th day of March, 1896.

PHILIP SPITZENBERG.

Witnesses:

FRANK WAGNER,
ROBT. P. KEELY.