

No. 714,143.

Patented Nov. 25, 1902.

S. CARLSON.
PRESSURE REDUCING VALVE.

(Application filed Apr. 8, 1902.)

(No Model.)

Fig. 1.

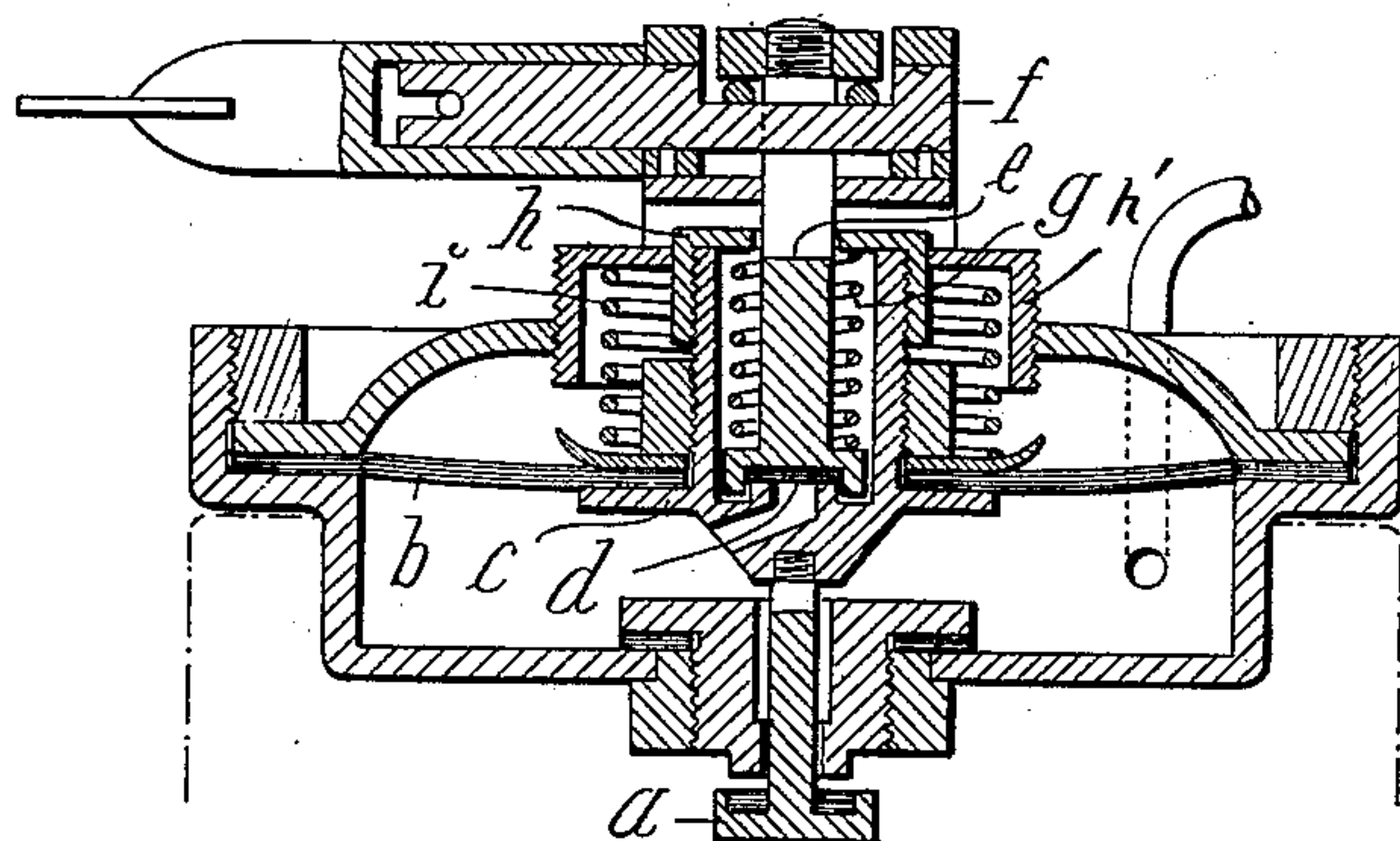
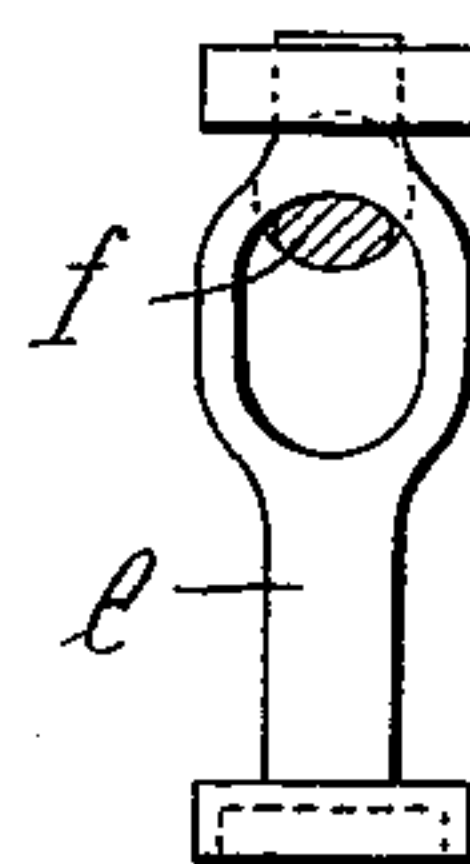


Fig. 2.



WITNESSES:

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PRESSURE-REDUCING VALVE.

SPECIFICATION forming part of Letters Patent No. 714,143, dated November 25, 1902.

Application filed April 8, 1902. Serial No. 101,945. (No model.)

To all whom it may concern:

Be it known that I, SVEN CARLSON, doctor of philosophy, of 93 Valhallavägen, Stockholm, in the Kingdom of Sweden, do hereby declare the nature of my invention for Improvements in Pressure-Reducing Valves, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement.

My invention relates to pressure-reducing valves for gases, and especially to pressure-reducing valves, used in connection with such heating or illuminating apparatuses, in which a heating or illuminating fluid (for instance, petroleum) is forced to the burner by means of a gas (for instance, air) under pressure.

The invention has for its object to permit the escape of the gas into the open air, when its pressure becomes too large or when it is desired to extinguish illuminating or heating apparatus by letting off the pressure. The device thus forms a combined pressure-reducing and safety valve.

In the accompanying drawings the said valve is illustrated in a vertical longitudinal section in Figure 1. Fig. 2 is a detail view of the eccentric in section and the valve-spindle.

a is the pressure-reducing valve, which is situated in the holder for the compressed gas (said holder being shown partly with dotted lines) and connected to a flexible diaphragm *b* by means of a sleeve *c*, fixed in the center of the diaphragm. Said sleeve is provided with a bottom with one or more openings and forms on its upper side a seat for a safety-valve *d* on a valve-spindle *e*, which projects through an opening in a cap *h*, screwed on the upper end of the sleeve. The valve *d* is pressed against its seat by means of a spiral spring *g*, coiled around the spindle *e*, and with its ends bearing against the cap and a flange on the lower end of the spindle. The screw-cap *h* fits loosely in another cap *h'*, which is screwed into the cover of the casing for the apparatus and forms a support for the one end of a spiral spring *i*, surrounding the sleeve, and with its other end pressing upon the diaphragm *b*, pressing it down. The upper end of the valve-spindle embraces an eccentric *f*, which is mounted in supports on the screw-cap, screwed in the cover, or on

said cover itself. Said eccentric may be turned by means of a key or in some other manner. It may preferably consist of a shaft with a depression or cut away in a part of its surface, said part of the shaft passing through a longitudinal slot in the valve-spindle in such a manner that the part of the shaft forms a crank, which in its highest position at the turning the shaft with the key (which may be formed of a hollow piece with a handle, as in Fig. 1) raises the spindle *e*. In the normal position when the crank has its lowest position, Figs. 1 and 2, the spindle, on account of its slot, may be freely raised by the gas-pressure under the diaphragm.

The diaphragm and the sleeve *c* normally are pressed down by the action of the spring *i*, and the valve *a* thus is depressed and held open. The valve *d* at the same time is depressed against its seat by the action of the spring *g*, and the compressed gas from the holder through the opening shown below the diaphragm escapes to the holder for the petroleum, forcing it to the burner or the burners; but if the pressure of the gas below the diaphragm becomes too high the diaphragm *b*, the sleeve *c*, the reducing-valve *a*, and the safety-valve *d*, with its spindle *e*, are raised until the valve *a* meets its seat and becomes closed. At this moment only the spindle *e* can be raised farther under the pressure of the gas acting upon the valve *d* through the opening or openings in the bottom of the sleeve *c*. When the spindle *e* (with its valve) is thus raised, the said opening or openings are uncovered, and the gas escapes through them, the sleeve *c*, and the opening in the screw-cap *h*, surrounding the valve-spindle, whereby the pressure under the diaphragm becomes reduced.

If it is desired to let off the gas into the open air instantaneously—for instance, when the heating or illuminating apparatus shall be extinguished—the eccentric *f* is turned. At the beginning of that turning motion the spindle *e* is raised, and by the combined action of the spring *g* and the screw-cap *h* the spring *i* is compressed and the diaphragm *b* is lifted until the valve *a* becomes closed. At the further motion of the eccentric *f* only the spindle *e*, with the valve *d*, thus can continue the upward motion, whereby the safety-

valve is opened and the gas under the diaphragm is permitted to escape at once. The pressure upon the heating or illuminating fluid thus ceases and the flame at the burner
5 extinguishes.

I claim as my invention—

An improved pressure-reducing and safety valve, consisting of a flexible diaphragm *b*, a sleeve *c*, fixed in said diaphragm, a reducing-
10 valve *a* in the holder for compressed gas connected to said sleeve, a valve *d* situated in the said sleeve and normally pressed against a bottom in the sleeve, a stationary part,

which limits the upward movement of the sleeve at the raising of the diaphragm under
15 a pressure, increased above the normal one, and an eccentric *f* acting upon the outer end of the spindle *e* of the valve *d* in the sleeve, and in such a manner that said valve may
20 be raised by turning the eccentric.

In witness whereof I have hereunto set my hand in presence of two witnesses.

SVEN CARLSON.

Witnesses:

H. TCLANDER,

T. RISBERG.