Oct. 2, 1928. 1,685,866

F. E. RAYMOND

SAFETY AND RELIEF VALVE

Filed Sept. 25. 1922

Fig. 1.

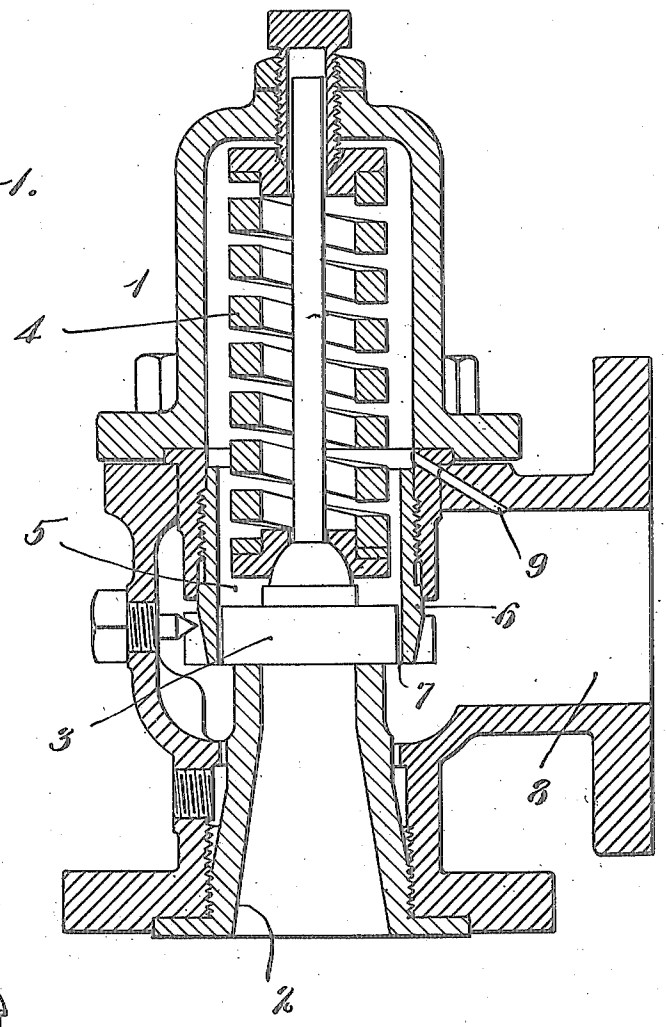
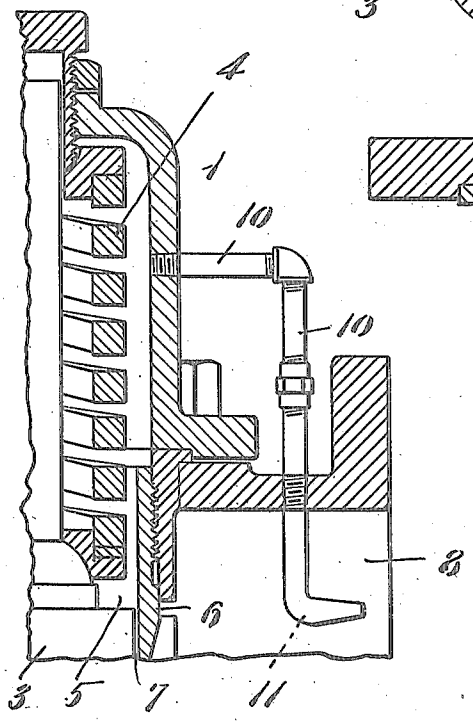


Fig. 2



Inventor:
Fairfield E. Raymond
by Ralph W. Foster Abbey.

Patented Oct. 2, 1928. 1,685,866

UNITED STATES PATENT OFFICE.

FAIRFIELD E. RAYMOND, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO CROSBY STEAM GAGE & VALVE COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

SAFETY AND RELIEF VALVE.

Application filed September 25, 1922. Serial No. 590,290.

This invention relates to that type of safety or relief valve in which the disc is so disposed that, when it lifts, the fluid under pressure escapes past the disc into a chamber, usually a spring chamber, of which the disc forms the movable floor, or of which it is a movable part, and there accumulates and exerts a serious back pressure on the disc, thereby reducing the lift of the disc and the discharge from the fluid reservoir; and the object of the invention is to prevent such accumulation of the fluid and to avoid the injurious effect caused thereby.

The invention is illustrated by the accompanying drawings, in which: Figure 1 is a vertical, central section of a safety valve with the disc in elevation, and Fig. 2 is a similar fragmentary section showing a modification of the invention.

The case 1 contains the throat tube 2, whereon is seated the disc 3, which is surmounted by the spring 4 operatively disposed in the spring chamber 5; the lower portion of said spring chamber is furnished interiorly with the adjustable sleeve 6 which is in threaded engagement therewith, the lower portion of which sleeve encircles the disc leaving a slight clearance 7 between the sleeve and the disc, so as not to interfere with the free action of the disc.

In operation, as heretofore constructed, when the valve is attached to a fluid reservoir, the fluid fills the throat tube and, when the disc lifts under a predetermined pressure, while the bulk of the fluid escapes below the disc through the outlet, a considerable quantity of fluid escapes past the disc into the spring chamber and there accumulates, thereby causing back pressure on the disc and seriously interfering with its normal and proper action. This back pressure occurs in a large number of cases where the spring chamber surmounting the disc, or other chamber similarly disposed, has no outlet for the fluid escaping into it past the disc, when the disc rises.

To obviate this trouble, I provide means for the escape of the fluid from the spring chamber into the discharge outlet 8 for the fluid.

As illustrated in Figure 1, this object is accomplished by providing the passage 9 through the wall separating the spring chamber from the discharge outlet, said passage preferably leading into the discharge outlet at an angle (as shown) adapted to secure the benefit of the eductive action of the main body of the fluid rushing through the outlet.

A modificaion is shown in Fig. 2, comprising a pipe 10 extending outwardly from the spring chamber and then downwardly into the discharge outlet.

The maximum eductive action of the fluid rushing through the discharge outlet may be secured by extending the passage 9 or pipe 10 into the outlet 8 preferably in the form of a nozzle 11 (Fig. 2), which nozzle may however be omitted, if desired.

I claim—

A safety valve comprising a throat tube terminating in an opening, a spring operated valve disc normally closing the opening, a chamber above the valve disc enclosing the spring, an outlet chamber through which fluid vapor escapes upon opening of the valve disc, and connections between the spring chamber and outlet chamber designed to permit the escape of fluid vapor from the spring chamber and reduce the pressure in the spring chamber by virtue of the eductive effect of vapor flowing through the outlet chamber.

FAIRFIELD E. RAYMOND.