

No. 689,512:

Patented Dec. 24, 1901.

C. C. PALMER.
SAFETY VALVE.

(Application filed Jan. 19, 1901.)

(No Model.)

Fig. 1.

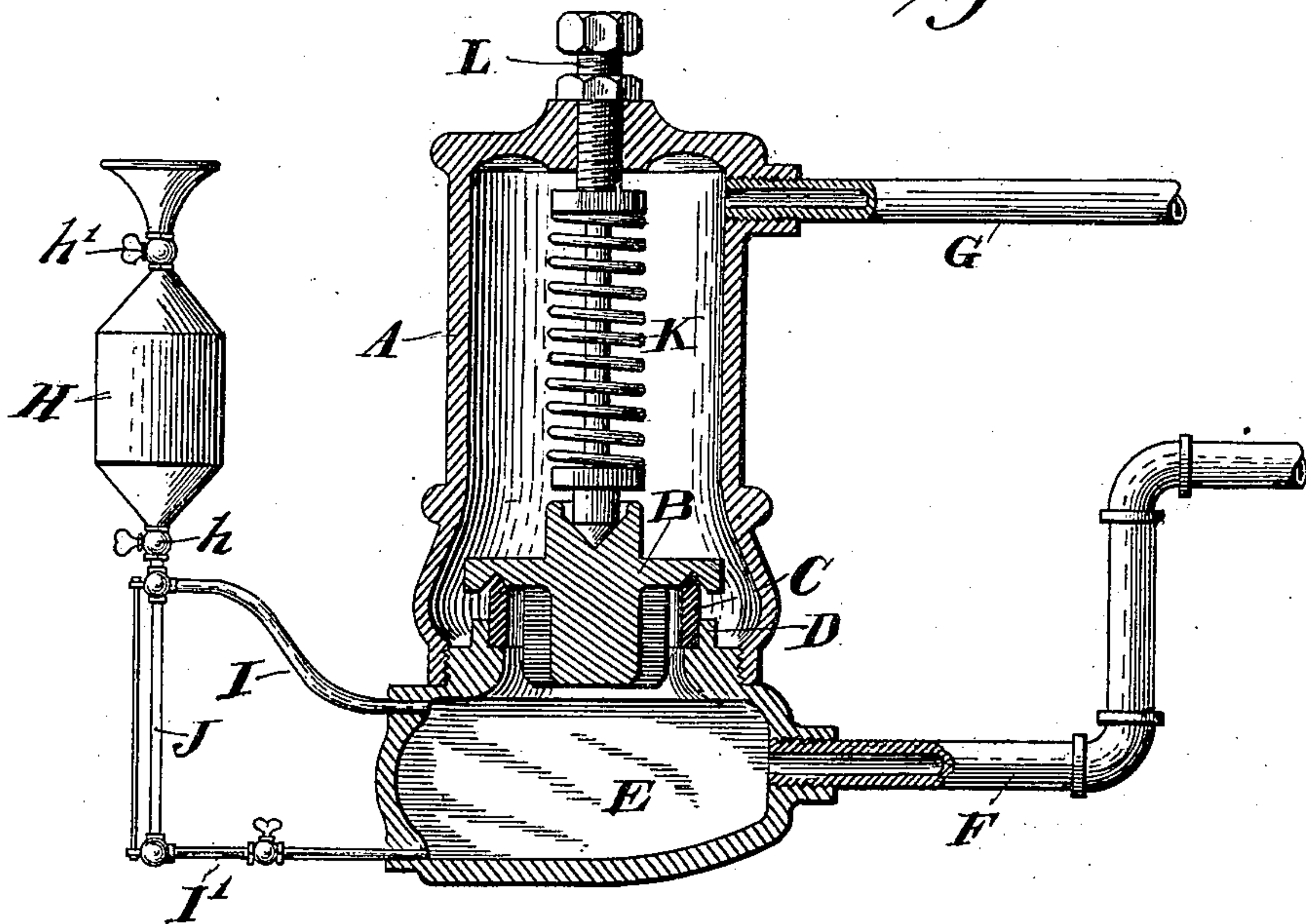
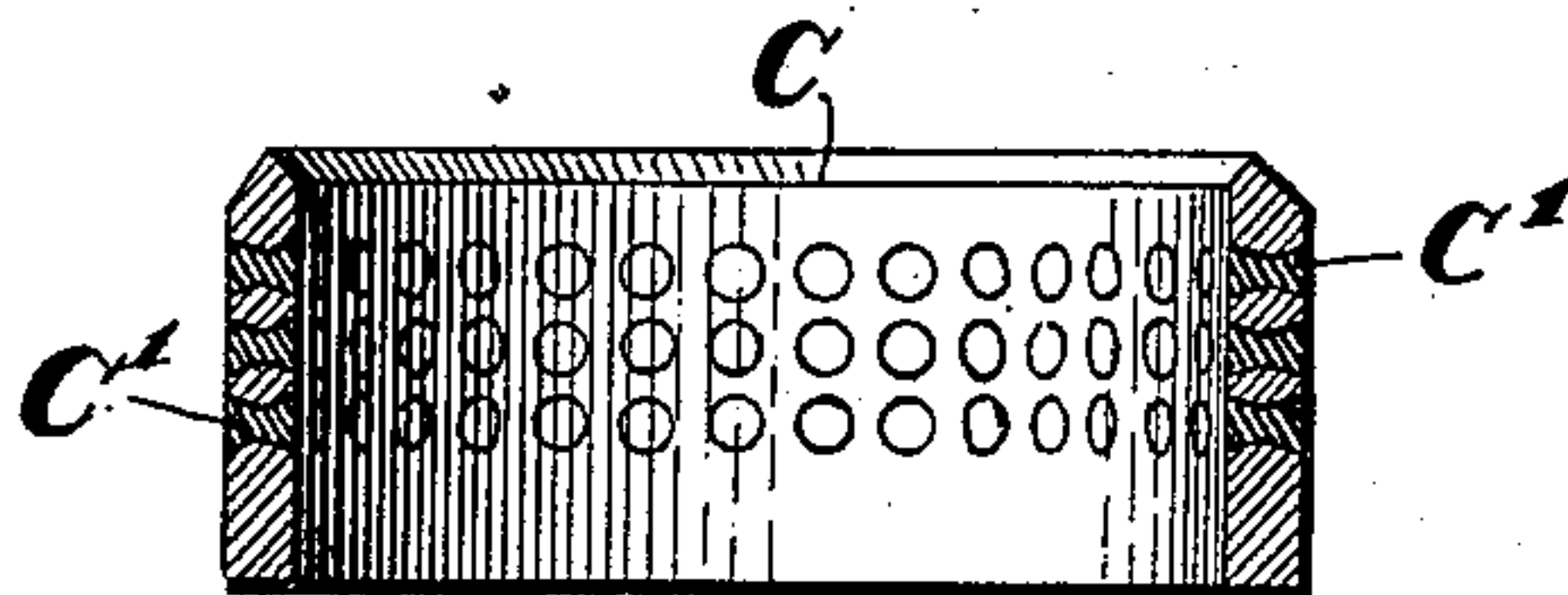


Fig. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

CASSIUS CLAY PALMER, OF NEW YORK, N. Y., ASSIGNOR TO THE RAILWAY ELECTRIC REFRIGERATING COMPANY, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

SAFETY-VALVE.

SPECIFICATION forming part of Letters Patent No. 689,512, dated December 24, 1901.

Application filed January 19, 1901. Serial No. 43,890. (No model.)

To all whom it may concern:

Be it known that I, CASSIUS CLAY PALMER, a citizen of the United States, and a resident of New York city, borough of Manhattan, in the county of New York and State of New York, have invented a new and Improved Safety-Valve, of which the following is a full, clear, and exact description.

My invention relates to an improvement in safety-valves whereby the escape of the pressure behind the valve may be controlled by temperature as well as by pressure.

My invention comprises novel features, which will be hereinafter described, and particularly pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in both the figures.

Figure 1 is a sectional elevation of my valve, and Fig. 2 is a sectional elevation of one form of ring used for the valve-seat.

It often happens that it is desirable to have a safety-valve which may be operated by an increase of pressure to blow off or release the surplus pressure and which may also secure the same result by an increase in temperature above a fixed point. This latter feature—that is, the control of the pressure by the temperature of the valve—is especially desirable in connection with refrigerating apparatus.

The valve, as herein shown, comprises a case A, which surrounds the upper end of the valve and receives the escaping gas or fluid, as the case may be. To this case is connected a pipe G, through which the fluid escapes to any convenient point. This case surrounds the spring K and the valve proper, B. The spring K is controlled in its pressure by an adjustable bolt L, which screws through the upper head of the case A. The valve B seats upon a ring C, which in my improved form of valve is either composed of some material which has a low fusing-point or is composed of material having openings therein filled with plugs of low fusible metal. The construction indicated in Fig. 1 is that in which the entire ring is composed of low fusible metal. The modification of this ring shown

in Fig. 2 is one in which the body of the ring is composed of any ordinary metal and has a series of holes filled with plugs C' of low fusible metal.

The chamber E beneath the valve is connected by means of the pipe F with the apparatus in which it is desired to control the pressure by the safety-valve. Where my device is intended to be used in connection with refrigerators, I prefer that the chamber E and a portion of the pipe F be filled with glycerin or other liquid which will act to form a more perfect seal for the valve. Of course when the valve is opened by an excess of pressure or temperature the glycerin will be blown out; but it may be readily replaced again. I have shown a means for filling this chamber with glycerin, consisting of the two pipes I and I', connected, respectively, in the top and bottom thereof and having their ends connected with a glass gage J, by means of which the level of the fluid may be observed, and also with a filling-chamber H, which is provided with valves *h* and *h'* at the top and bottom thereof. This device is similar to the device ordinarily used for filling oil-cups on engine-pipes.

If the pressure in the apparatus to which the safety-valve is attached becomes greater than the pressure for which the spring K is set, the valve will be raised. In this case it acts as an ordinary safety-valve. If, however, the temperature rises above the fusing-point of the ring C or the plugs in said ring, the low fusible metal therein will become fused and escape of the pressure will be possible in that way. This device is thus made an additional safeguard for such apparatus in case of fire, in which case the increase in temperature will cause a very rapid increase of pressure in the apparatus. This increase in pressure should of itself cause the opening of the valve; but it often happens by reason of the action of the chemicals used in refrigerating processes that the valve becomes rusted to its seat and will not act as intended and the pressure rises to a dangerous point. The fire would, however, raise the temperature to such a point as to fuse the seat or the plugs therein. When the ring C blows out by rea-

son of an increase in temperature, the area of the opening through which the fluid may escape is greatly increased, thus increasing the capacity of the safety-valve to carry away this
5 pressure.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination of a pressure valve and
10 case having a passage connecting the pressure and escape sides of said valve, a low fusible

member normally closing said passage, and a liquid seal on the pressure side of the valve.

2. A pressure-valve having a seat composed of material having a low fusing temperature, 15 and a liquid seal on the pressure side of the valve.

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Witnesses:

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