No. 645,722. Patented Mar. 20, 1900.

W. M. HOLMES.

PRESSURE RELIEF VALVE.

(Application filed Oct. 10, 1899.)

(No Model.)

FIG. 1.

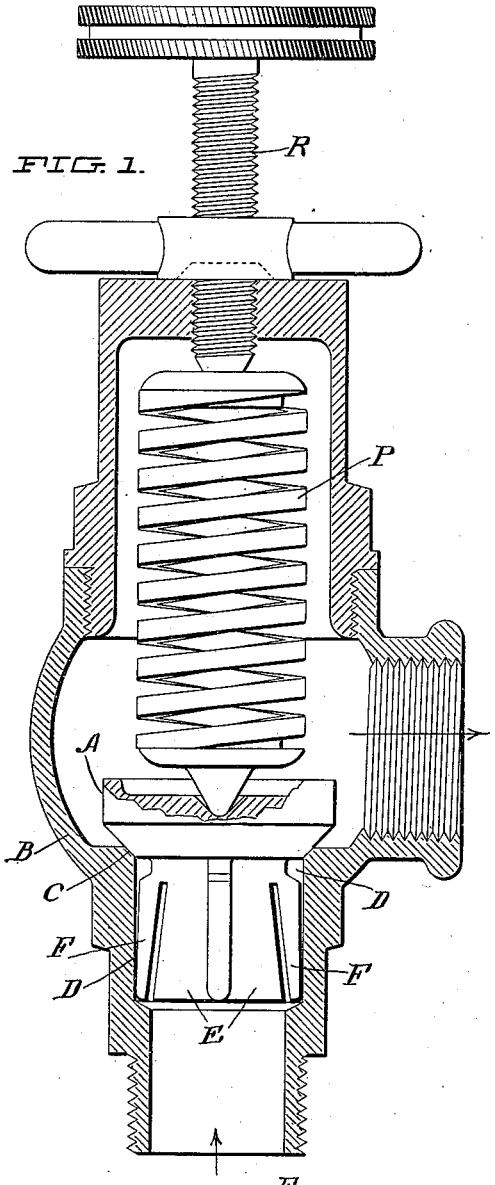
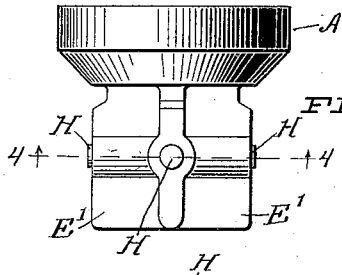


FIG. 3.



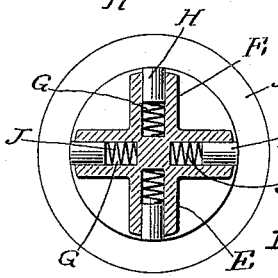


FIG. 4.

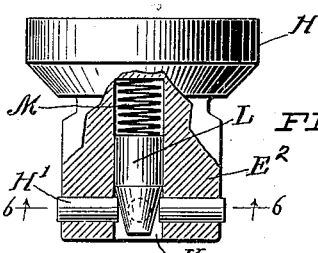


FIG. 5.

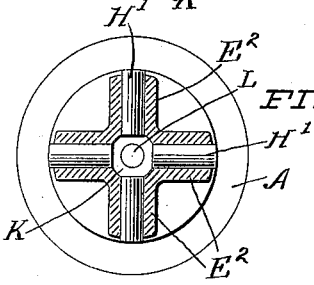
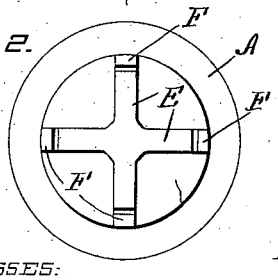


FIG. 6.

FIG. 2.



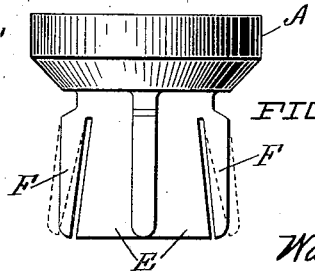


FIG. 7.

WITNESSES:

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UNITED STATES PATENT OFFICE.

WATSON M. HOLMES, OF HOOSIC FALLS, NEW YORK, ASSIGNOR TO THE PLANTERS COMPRESS COMPANY, OF BOSTON, MASSACHUSETTS.

PRESSURE-RELIEF VALVE.

SPECIFICATION forming part of Letters Patent No. 645,722, dated March 20, 1900.

Application filed October 10, 1899. Serial No. 733,201. (No model.)

To all whom it may concern:

Be it known that I, WATSON M. HOLMES, a citizen of the United States, residing at Hoosic Falls, in the county of Rensselaer and State of New York, have invented a new and useful Improvement in Pressure-Relief Valves, of which the following is a specification.

This invention relates to pressure-relief valves.

The object of the invention is to provide a construction of valve whereby it is guided and held in the movements thereof so as to prevent noise and wear in the operation thereof.

The invention consists, substantially, in the construction, combination, location, and arrangement of parts, all as will be more fully hereinafter set forth, as shown in the accompanying drawings, and finally pointed out in the appended claims.

Referring to the accompanying drawings and to the various views and reference-signs appearing thereon, Figure 1 is a section through a pressure-relief-valve casing, showing a valve embodying the principles of my invention. Fig. 2 is a bottom plan view of the form of valve shown in Fig. 1. Fig. 3 is a view in side elevation of a modified form of valve embodying the invention. Fig. 4 is a view in transverse section on the line 4 4 of Fig. 3 looking in the direction of the arrows. Fig. 5 is a view, partly in side elevation and partly in section, of another form of valve embodying the principles of the invention. Fig. 6 is a transverse section on the line 6 6 of Fig. 5 looking in the direction of the arrows. Fig. 7 is a view in side elevation of the form of valve shown in Figs. 1 and 2, the contact-rings being shown in dotted lines in displaced position.

Heretofore in the construction of pressure-relief valves it has been the custom to cast or otherwise form with the valve solid integral wings adapted to be received within a suitable recess or chamber formed in the casing adjacent to the valve-seat. It has been the usual custom to form the wings of the valve of such dimensions that when the valve is seated a clearance is left between the outer edges of the wings and the inner surface or wall of the chamber or recess in the casing, in which the wings are received. In other words, when the valve is seated the wings are received loosely in the adjacent chamber or recess in the casing. As a result of this construction when the valve is raised from its seat the wings have no positive bearing against the walls of the recess or casing which form a guideway for the valve, thus causing the valve to rattle and to make an objectionable clicking noise by reason of the wings of the valve striking from one side to the other of the chamber or recess forming the guideway therefor. It is the special purpose of the present invention to avoid this objection and to provide a construction wherein the valve is positively guided in its movements and wherein a yielding contact is provided between the wings and the adjacent surface of the inner wall of the recess or chamber formed in the casing to receive the wings. These desirable objects may be secured in many specifically-different ways.

Referring to Figs. 1, 2, and 7, reference-sign A designates a pressure-relief valve, and B the casing therefor, in which is formed the seat C for the valve A and also the chamber or recess D, in which the wings E of the valve are received. These parts may be of the usual or any well-known construction and arrangement. In order to prevent the objectionable rattle of the valve during its operation—that is, while being seated or unseated—I provide a yielding contact between the inner wall of the chamber D and the wings by providing the wings with yielding portions or fingers F in the form of spring-wings, which contact with the inner wall of the chamber D, thereby providing a positive but yielding engagement between the wings of the valve and the walls of such chamber, and hence also guiding the valve in its movements and preventing undue wear and rattle.

In Figs. 3 and 4 is shown a modified arrangement of yielding contact between the wings E′, adapted to contact with the inner wall of the chamber or recess in the valve-casing. In this form of my invention I provide sockets or seats G in the wings, in which are mounted plugs H, said plugs being forced outwardly by means of springs J, thus providing for the desired yielding contact between the wings of the valve and the inner wall of the chamber

or recess in which the valve is received. Another construction embodying the same principles is shown in Figs. 5 and 6, wherein the wings E^2 are provided with sockets in which are received loose plugs H′, said plugs radiating from a central opening or chamber K, formed in the valve and adapted to receive a block L, having a conical point, which engages the inner ends of the plugs H′. A spring M, bearing upon the end of block L, operates to force said block yieldingly in a direction to project the plugs H′ outwardly into contact with the inner wall of the chamber or recess which receives the wings of the valve.

It will be obvious that the principles of my invention may be embodied in many other specifically-different constructions, the essential feature being a yielding contact between the wings of the valve and the inner wall or surface of the recess or chamber in which said wings operate.

In Fig. 1 is shown one form of practical application of the invention, wherein the valve A is held seated by means of a spring P, the valve being unseated by pressure entering underneath it and against the action of spring P, a suitable screw R serving to adjust the tension of spring P, and hence the point at which the valve will unseat. It is obvious, however, that a valve constructed in accordance with my invention may be practically applied in many specifically-different ways.

Having now set forth the object and nature of my invention and various forms of construction embodying the principles thereof, what I claim as new and useful and of my own invention, and desire to secure by Letters Patent of the United States, is—

1. A pressure-relief valve having wings or flanges, a casing for said valve, said wings or flanges arranged to bear yieldingly against the inner surface of said casing, as and for the purpose set forth.

2. A pressure-relief valve having wings or flanges, a casing for receiving said flanges or wings, and spring-actuated contacts between said wings or flanges and the inner wall of said casing, as and for the purpose set forth.

3. A pressure-relief valve having wings, and spring-flanges formed on said wings and adapted to yieldingly contact with the inner wall of the casing in which said valve is mounted, as and for the purpose set forth.

In witness whereof I have hereunto set my hand, this 4th day of October, 1899, in the presence of the subscribing witnesses.

WATSON M. HOLMES.

Witnesses:

DANIEL W. HOWLAND,

WM. M. RHEEM.