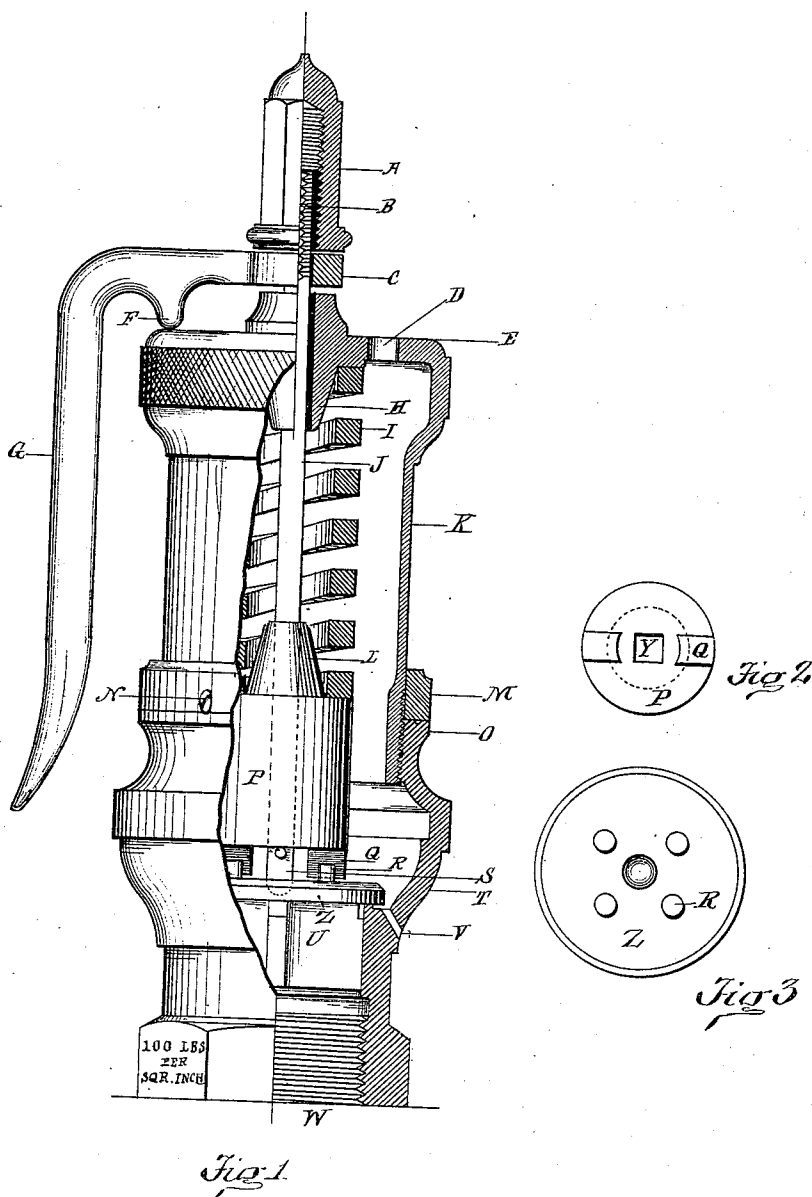


(No Model.)

R. C. BLAKE.
Safety Valve.

No. 240,369.

Patented April 19, 1881.



WITNESSES:
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RICHARD C. BLAKE, OF HAMILTON, OHIO.

SAFETY-VALVE.

SPECIFICATION forming part of Letters Patent No. 240,369, dated April 19, 1881.

Application filed November 5, 1880. (No model.)

To all whom it may concern:

Be it known that I, RICHARD C. BLAKE, of Hamilton, Butler county, Ohio, have invented certain new and useful Improvements in Safety-Valves, of which the following is a specification.

This invention relates to that class of safety-valves which are adjusted during construction to lift at a certain pressure, the lifting-point being unalterable after the valve is completed, so far as such alteration relates to increasing the load on the valve. Thus a valve made to lift at one hundred pounds per square inch may have its load decreased by the user, but it may not be increased.

My invention has reference to the easy manufacture of this class of safety-valves, to devices for allowing the valve to be turned on its seat, and to details of general construction, whereby simplicity, cheapness, and efficiency are secured.

In the accompanying drawings, Figure 1 is a side elevation, part section, of the entire device; Fig. 2, a bottom view of the lower spindle-washer, and Fig. 3 a plan of the valve.

The valve is loaded by a spiral spring, the abutment to which is formed in the roof of the upper case, K, which case screws into the base or lower case, T, against solid shoulders O and M. By screwing the case upward the abutment is raised, the load reduced, and the lifting-point reduced; but as the case cannot be screwed down, it follows that the load on the valve cannot be increased by screwing the parts together. The intention is that the case should never be unscrewed except for repairs, and that the valve always remains as one adapted to lift at one hundred pounds.

In the manufacture of these valves the parts are put together and a testing pressure applied. The shoulders are to be so arranged as to close when the abutment of the spring is properly adjusted. It will be obvious that the adjustment of these shoulders would ordinarily be made by manipulation in the lathe, and that such process, alternating with the testing process, would be tedious and expensive. I avoid the lathe manipulation by forming the shoulder M on a loose piece, which can be fixed to the case when the position of the case has been determined upon by test. The upper

case screws into the base or lower case, and the ring M may screw upon the same thread, or it may be without thread. When the position of the upper case in the base is found by test, the ring M is placed against the case-shoulder and rigidly and permanently fastened to the upper case by a screw, as at N, or by pins which are finished off so as to be invisible, or by brazing, or by any other suitable means.

Obviously the screw may be on the base, and the case may be the internal feature. In fact, many forms of screw-adjustment for the abutment might be devised with a shoulder loose during the process of construction, and integral with the male-screw element when the structure is complete.

The spring I has its upper bearing against the roof of the case, and the lower end, instead of bearing directly upon the valve U, bears upon a washer, P, which is fixed upon the stem J, whose lower end, S, is seated in a conical cavity in the top of the valve. The stem J projects through the roof of the case, and is provided with a nut, A. The lever G, with a toe-fulcrum at F, terminates in a boss, C, fitting loosely upon the stem and engaging under the nut. The lever is used for relieving the valve from pressure occasionally, so as to test its condition. The arrangement of the encircling loosely-fitting boss C, in combination with the toe F, permits a simple construction, free from pivots and drilled holes. The stem is square, the thread for the nut A being cut on the corners only, and the hole in the boss C is also square.

The spindle is so attached to the valve that both must revolve together, and it follows that the lever G may be used not only for allowing the valve to lift, but also to revolve it on its seat, so as to cause even wear. The spindle may be attached to the valve in any suitable manner, so as to prevent rotation; but I prefer the plan shown, in which the washer P has lugs Q, which engage between studs R cast upon the top of the valve. The washer P is simply slipped onto the square stem J and caused to rest on a pin put through the stem. This plan of construction permits the work to be put together without much finishing.

It is obvious that the stem J might be at-

tached directly to the valve, so that when the stem is lifted by the lever the valve would be lifted also. In such case the washer P would not be needed. In practice it is found easier
5 and cheaper to attach a washer to the stem than to attach the valve to it.

The roof of the case is provided with a pendent boss, H, which fits within and serves to center the spring. It is coned to permit easy
10 entry. The washer P is provided with a similar boss. The hole through the roof of the case is made large enough to permit the square stem to turn freely.

I claim as my invention—

15 1. In a safety-valve, the combination, with a valve and spring, of a screw-threaded upper case adapted to form an abutment for said spring and to screw into the base or lower case, and a shoulder-ring secured to said upper
20 case, substantially as and for the purpose specified.

2. In a safety-valve, the combination, with a valve and seat, a spring, a case adapted to form an abutment having a flat surface above it,
25 and a stem engaging with said valve and having a nut at its upper end, of a lever having a boss adapted to encircle said stem and engage under said nut, and a fulcrum-toe adapted to bear on said flat upper surface, substantially
30 as and for the purpose set forth.

3. In a safety-valve, the combination, with a valve and seat, a spring, a case adapted to form an abutment for said spring, and a lever,
35 of a stem adapted to bear upon said valve, and having a nut at its top and a transverse bottom pin, and a spring-supporting washer adapted to fit said stem and be supported by said pin, substantially as and for the purpose
40 specified.

4. In a safety-valve, the combination, with a valve and seat, a spring, and an abutment for
said spring, of a lever adapted to relieve the valve of its load and to have a rotary motion

around the axis of said valve, and a means for transmitting the rotary motion of said lever
45 to said valve, substantially as and for the purpose set forth.

5. In a safety-valve, the combination, with a valve and seat, a spring, a case adapted to form an abutment for said spring and have a
50 flat upper surface, and a lever having a fulcrum-toe adapted to rest on said surface, of a stem connected with said spring and having a top shoulder and square part adapted to engage with and be operated by said lever, sub-
55 stantially as and for the purpose set forth.

6. In a safety-valve, the combination, with a valve-seat, a valve having clutch-lugs upon its upper surface, a spring, a case adapted to form
60 an abutment for said spring, and a lever, of a stem having a nut at its top and clutch-lugs at its bottom, substantially as and for the purpose specified.

7. In a safety-valve, the combination, with a valve-seat, a spring, a case adapted to form an
65 abutment for said spring, a lever, and a valve having clutch-pins upon its upper surface, of a stem having a square portion, and a nut at its top and a transverse pin at its bottom, and a washer having clutch-lugs and adapted to fit
70 over the stem and rest upon said pin, substantially as and for the purpose specified.

8. In a safety-valve, the combination, with a valve-seat, a spring, a case adapted to form an
75 abutment for said spring and having a flat upper surface, and a lever having a fulcrum-toe, of a valve having clutch-pins upon its upper surface, a washer having clutch-lugs upon its lower surface, and a square stem having a
80 top nut and adapted to engage with the lever, the valve, and the said washer, substantially as and for the purpose specified.

RICHARD C. BLAKE.

Witnesses:

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