





# UNITED STATES PATENT OFFICE.

JOHN PORTEOUS, OF CINCINNATI, OHIO.

## POP SAFETY-VALVE.

No. 848,202.

Specification of Letters Patent.

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*To all whom it may concern:*

Be it known that I, JOHN PORTEOUS, a citizen of the United States of America, and a resident of Cincinnati, county of Hamilton, State of Ohio, have invented certain new and useful Improvements in Pop Safety-Valves, of which the following is a specification.

My invention relates to that class of pop safety-valves which are provided with a disk for regulating the openings in the valve-body as an auxiliary means of varying the pressure at which the valve will be raised from its seat.

The object of my invention is a means for adjusting the position of the valve in relation to the disk from the exterior of the housing.

Referring to the drawings, Figure 1 is a central sectional view of a pop safety-valve embodying my invention. Fig. 2 is an elevation thereof. Fig. 3 is a sectional view of the same, taken upon line *vv* of Fig. 1.

Referring to the parts, the housing consists of a hollow cylinder A, having an enlarged cylindrical chamber *a*, which is interiorly screw-threaded at its upper end to receive the cylindrical housing *a'*, which is to surround the valve-stem. Housing *a'* is interiorly screw-threaded at its upper end *a<sup>2</sup>* and exteriorly reduced in diameter. The lower flange *a<sup>3</sup>* of housing *a'* has openings *a<sup>4</sup>* in it, which put the valve-chamber *a* in communication with the atmosphere.

The valve consists of a disk B, having a downwardly-projecting central hollow cone *b*, wings *B'* for guiding it toward its seat, an upwardly-projecting and interiorly and exteriorly screw-threaded annular collar *b'*, and annular groove *b<sup>2</sup>* in its under surface. In the groove *b<sup>2</sup>* a series of perforations *b<sup>3</sup>* extend to the upper face of the disk. The external threads of the collar *b'* are engaged by the threads of a regulating-disk C, whose under face is concave to fit over the disk B and whose periphery has cut in it a series of gear-teeth *c*. The cone *b'* receives the lower cone-shaped end *d* of the valve-stem D, above the end of which is an annular collar against which a nut *d'* bears, whose external screw-threads engage the internal screw-threads of collar *b'* to hold the valve-disk upon the

valve-stem. Valve-stem D has a shoulder *d<sup>2</sup>*, between which and the tension-cap *e* a coiled spring E is held. The tension-cap is externally screw-threaded to engage the screw-threads upon the interior of the upper end of the housing *a'*, the position of the tension-cap being regulated by nuts *e'*, which engages the external screw-threads of said cap and likewise hold the annular bracket F upon the upper reduced end of the housing *a'*. Bracket F carries a lever *f*, which engages a slot in the upper end of the valve-stem D. The upper end of the stem is housed by a cap G, whose walls are slotted to permit the entrance of the lever into the valve-stem. Chamber *a* has upon its side a journal-box *a<sup>6</sup>*, in which is journaled a worm H, whose teeth mesh with the teeth *c* upon the exterior of the disk C. The outer end *h* of the worm is made square to receive a wrench for turning the worm and disk C.

For the main regulation of the pressure at which the valve will rise from its seat the spring E is provided, and to adjust the tension of this spring it is necessary to remove the lever *f* from its bracket and then to remove the cap G, when access may be had to the regulating-cap *e* to vary the tension of the spring E. After the tension of the spring E has been set the pressure at which the valve will rise from its seat may be auxiliary regulated by changing the relative position of the disk C to the valve B. This may be done by actuating the worm H, which will open the ports *b<sup>3</sup>* to a greater or less degree.

I have found by experience that by means of operating this worm H a variation of several pounds may be made in the pressure at which the valve will rise from its seat.

What I claim is—

1. In a safety-valve, the combination of a valve-housing, a valve-seat within the housing, a valve consisting of a disk with an annular groove in its face and perforations leading into the groove, a regulating-disk seating against the valve-disk to vary the size of the perforations, an actuating-arm journaled in the casing and engaging the regulating-disk and extending from the interior to the exterior of the housing for regulating the rela-

tive position of the regulating-disk and a spring for holding the valve to its seat.

2. In a safety-valve of the character described a housing, a valve-disk with perforations therein, a regulating-disk with external teeth and a worm journaled in the housing and engaging the teeth on the regulating-

disk for varying its position relatively to the valve-disk.

JOHN PORTEOUS.

Witnesses:

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