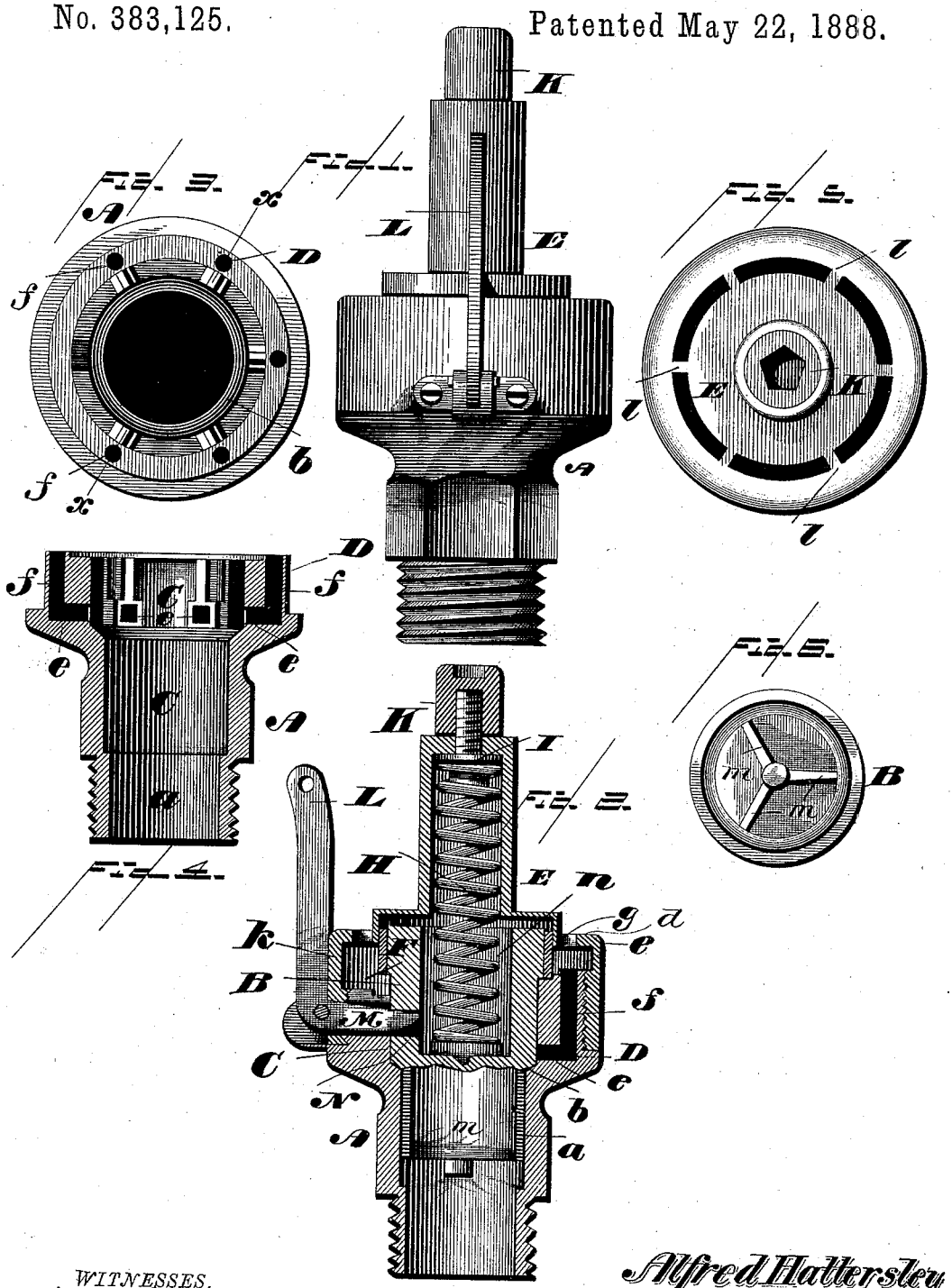
(No Model.)

A. HATTERSLEY.

POP SAFETY VALVE.

No. 383,125. Patented May 22, 1888.



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ALFRED HATTERSLEY, OF FORT WAYNE, INDIANA.

POP SAFETY-VALVE.

SPECIFICATION forming part of Letters Patent No. 383,125, dated May 22, 1888.

Application filed November 5, 1887. Serial No. 254,347. (No model.)

To all whom it may concern:

Be it known that I, ALFRED HATTERSLEY, a citizen of the United States, residing at Fort Wayne, in the county of Allen and State of Indiana, have invented certain new and useful Improvements in Pop Safety-Valves; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in pop safety-valves; and it has for its object the employment of exhaust-ports in the increased area of the valve-case above the ground seat or joint, whereby the pressure of steam is decreased in the increased area after it has reached the pressure at which the valve has been set.

A further object of the invention is to prevent a cushion of the steam in the increased area after the valve has been lifted and is reseating; and a further object is to provide guides the full length of the valve, so as to insure the valve coming to a true seat.

The several objects are attained by the means shown and illustrated in the accompanying drawings, in which—

Figure 1 is a view of a valve-casing and spring-casing embodying my improvements. Fig. 2 is a vertical central sectional view of the same, showing the valve closed or seated. Fig. 3 is a plan view of the valve-casing with the valve removed. Fig. 4 is a vertical sectional view of the same, taken on the line *x x* of Fig. 3. Fig. 5 is a plan view of the whole device, and Fig. 6 is an inverted plan view of the valve removed.

Referring by letter to the said drawings, A indicates the base-section of the valve-casing, which is provided at its lower end with the usual threaded portion, whereby the same may be attached to a steam-boiler or the like. Within this base and above the coupling portion is a truly-planed annular portion, *a*, having at its upper edge a ground seat, *b*, for the valve B. Above this seat is a chamber, C, of increased diameter, which has its upper end terminating in an annular flange, *d*, having apertures, as will be presently explained. Within this chamber C are radial ports D, which have an angular course leading outwardly from the ground seat *b*, as at *e*, and thence upwardly, as at *f*, where they communicate with the apertures *g* in the annular flange *d*.

The spring case E has its base enlarged, as at *k*, and is internally threaded to form a cap for the valve-case, and the roof of this enlarged portion is provided with slots *l*, which communicate with the exhaust ports of the valve-chamber with the open air. Thus it will be seen that when the valve has been opened, as will be presently described, the escaping steam will pass into the chamber C, and thence through the annular ports to the slotted apertures in the top of the valve-chamber. Within the circular area of these slotted apertures and concentric to the spring-case is a chambered portion, F, which is designed to receive the collared upper portion of the valve, as more fully shown in Fig. 2 of the drawings, thereby preventing the exhaust-steam from entering the spring-case.

The inner vertical walls of the annular ports, or the walls against which the valve bears, are truly planed and reduce the diameter of the chamber C, so as to form guides for the valve. The valve G is provided with radial wings *m*, there being three shown, and these wings snugly engage the inner walls of the valve-chamber below its ground seat. It will thus be seen that the valve is guided its entire length, so as to insure a proper seating of the valve, and that the said valve is designed to control the ports in the said chamber.

The valve is cupped, as shown at *n*, to receive the lower end of a pressure-spring, H, which is designed to normally keep the valve seated and the steam from escaping. This spring has a disk secured to its lower end, and is arranged vertically within the casing, with its upper end bearing against the screw-cap I, which has its threaded stem passing out through a screw-tapped aperture in the top of the said casing. Thus it will be seen that the force of the spring upon the valve may be increased or decreased by simply turning the threaded stem up and down in its threaded bearing, and this stem is provided with a guard, K, which is internally threaded and may be turned on the said stem, as shown.

As it is sometimes desirable to test the valve to see that its ports are in proper working condition, I have provided a trip-lever, L, which

may be manipulated to lift or raise the spring in its bearing upon the valve, so as to allow the latter to rise from its seat by the action of the steam. This lever L is of angular form and journaled at the angle, with its short branch M passing a vertically-elongated slot, N, in the spring-case, a similar slot in the valve-case, and into an aperture in the valve, whereby the same may be lifted from its seat, and when the lever has been released the spring will immediately seat it again.

It will be observed that when the valve is raised from its seat its body portion is surrounded by the steam on its way to the outlets through the top of the cap. The valve is thus practically balanced and will not vibrate, and steam is not only allowed to pass off, as above stated, but it is also allowed to pass through the angular ports surrounding said valve, and thence freely escape through the said common outlets.

Having thus fully described my invention, what I claim as new is—

1. A pop safety-valve consisting of a base-section, A, provided with a cylindrical internal portion, *a*, a beveled valve-seat, *b*, at the upper portion thereof, a chamber, C, above the seat *b*, a series of angular steam-ports leading from said chamber, a winged and chambered valve having an enlarged upper end, an adjustable holding-down spring for this valve, the said valve controlling the ports, and a case for this spring provided with steam-outlet apertures, and an enlarged chambered portion, F, said case being applied to the base-section A, substantially as specified.

2. The combination of the screw-threaded base portion A, provided with an annular bore, *a*, adapted to receive the radial wings of a valve, B, an annular seat, *b*, for the beveled portion of this valve, angular steam-ports leading from a chamber, C, and formed in said base portion, a perforated spring-case, E, having an enlarged base forming a chamber, F, adapted to receive the collared portion of valve B, and an adjustable holding-down spring for this valve, the said valve controlling the ports, all substantially as described.

3. The combination, with the base-section A and the spring section E, constructed as described, of the valve B, provided with an upper collared portion, a lower radially-flanged portion and the intermediate beveled seat and cylindrical portion to control the ports, and an adjustable spring, H, all substantially as and for the purposes described.

In testimony whereof I affix my signature in presence of two witnesses.

ALFRED HATTERSLEY.

Witnesses:

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