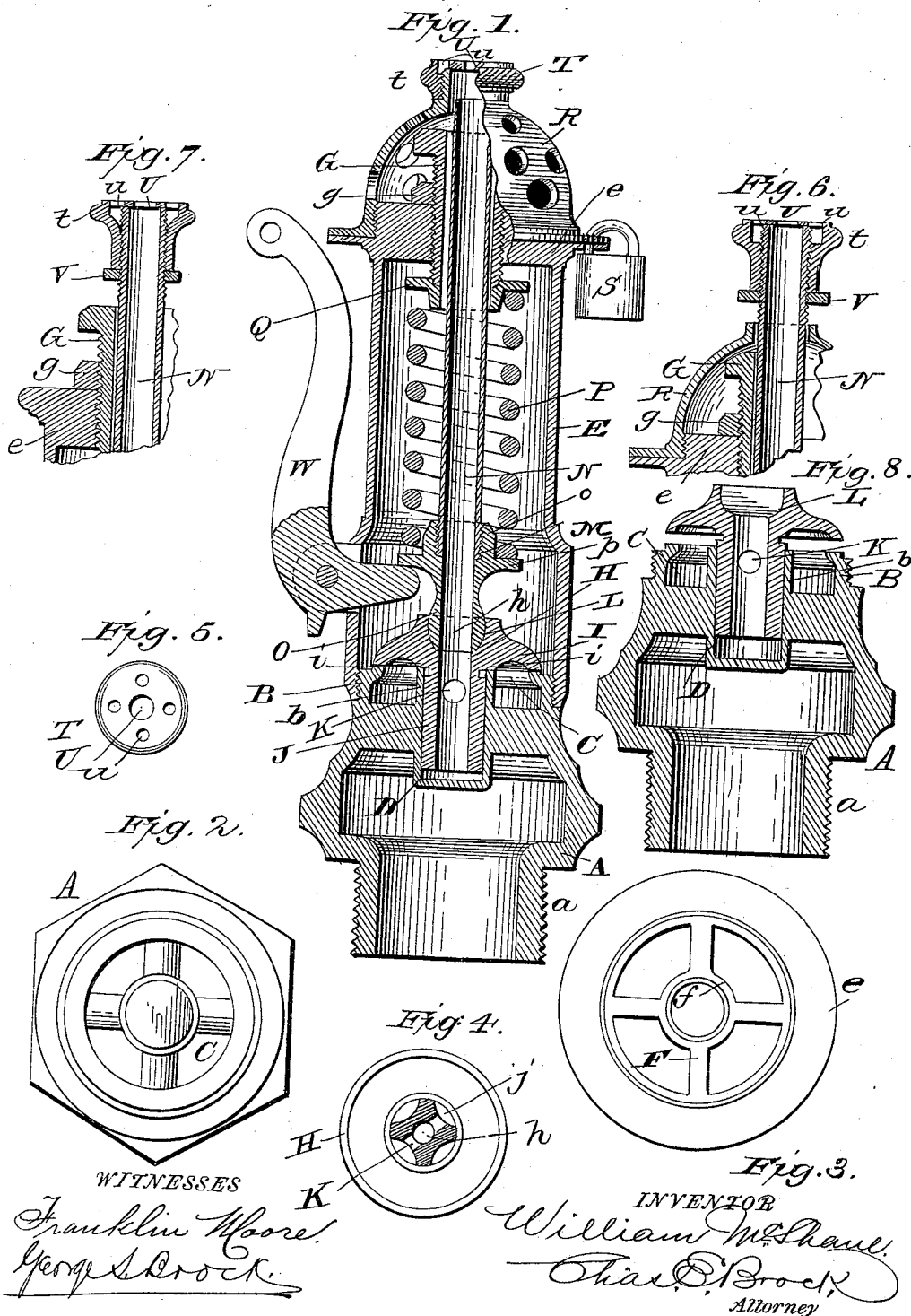


(No Model.)

W. McSHANE.
SAFETY VALVE.

No. 448,065.

Patented Mar. 10, 1891.



UNITED STATES PATENT OFFICE.

WILLIAM McSHANE, OF ST. JOHN, NEW BRUNSWICK, CANADA, ASSIGNOR TO
THOMAS McAVITY, JOHN A. McAVITY, AND GEORGE McAVITY, ALL OF
SAME PLACE.

SAFETY-VALVE.

SPECIFICATION forming part of Letters Patent No. 448,065, dated March 10, 1891.

Application filed July 26, 1890. Serial No. 360,069. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM McSHANE, residing at St. John, county of St. John, Province of New Brunswick, and Dominion of
5 Canada, have invented a new and Improved Safety-Valve, of which the following is a specification.

This invention is an improved safety-valve seeking to provide a simple construction of
10 valve which will be certain in its operation and which can be conveniently adjusted to blow off at any desired pressure; and the invention consists in certain novel constructions and combinations of parts, as will be
15 hereinafter described, and pointed out in the claims.

In the drawings, Figure 1 is a longitudinal section of my improved valve. Fig. 2 is an
20 end view of the bottom piece or base. Fig. 3 is a view of the top of the case. Fig. 4 is a bottom view, part in section, of the valve proper; and Fig. 5 is a detail view of the regulating-disk. Figs. 6 and 7 show somewhat
25 different constructions, all of which will be described; and Fig. 8 is a detail view of bottom of case and valve arranged therein.

The bottom piece or base part A is adapted at its lower end, at *a*, for connection with the boiler and is provided at its upper end with
30 the valve-seat, formed with outer and inner rings B *b*, connected by spider C, up through which spider the steam escapes when the valve, presently described, is opened. Within
35 the inner ring *b* and extended down therefrom I form the socket D for the lower extension of the valve-stem, as will be hereinafter described.

The casing E is threaded at its lower end on the base A, and is provided at its opposite
40 end with the top piece *e*, having the spider F, supporting the central internally-threaded ring or collar *f*, in which is threaded the bearing tube or bolt G, which serves to adjust the tension of the valve-spring.

The valve proper H is provided with portions I *i* to bear upon the outer and inner
45 rings B *b* of the seat, and is formed on its under side with the depending stem or extension which fits and moves longitudinally in
50 the socket D. This extension J is tubular,

has its lower end open, and its base communicating at its upper end with the central
opening *h* in the valve. I form this extension J with side grooves *j*, down which the
steam may pass to the lower end of said stem 55 when the valve is opened, and also with lateral openings or ports K for the passage of the steam into the said stem. Centrally in its upper side the valve proper H has a socket or concavity L, in which fits the lower
60 end of the tubular stem M. This stem M is preferably formed in two sections N O, the upper section N being threaded into the upper side of the lower section O and having its upper end extended through the bolt 65
G. The lower section O is formed at its lower end to fit in the socket *h* in the upper side of the valve H, and is provided at its upper side with a tubular nipple
70 *o* threaded internally to receive the section N and formed externally to fit in the lower end of the valve-spring P. The section O also has a flange *p*, which serves as a bearing for the lower end of the spring P. This
75 spring encircles the stem M and bears at its upper end against a bearing-ring Q, which is pressed upon by the lower end of the adjusting-bolt G, which obviously may be set to give the spring P any desired tension on the valve.
80 The jam-nut *g* on the bolt G serves to lock it in any desired adjustment. By the described construction it will be seen that the spring serves to hold the valve seated under ordinary pressure; but under any unusual pressure the valve will be lifted, compressing the
85 spring, and the steam will escape up the hollow stem. On the case E, over the upper end of the bolt G and valve-stem M, is placed the hood or cap R, which is perforated, as shown, and is threaded on the top part *e*, and may
90 have its base-flange perforated to receive the shackle of a padlock S when a lock-up valve is desired.

The perforated disk or cap T has a central hole U smaller than the mouth of stem M and
95 outer holes *u*, and is supported above and concentric with the stem M. This disk serves to regulate the escape of steam from stem M, and is supported so it may be set up or down—
up to expose the full area of the outlet of the 100

stem or down to contract such opening. It will be understood that in its lowest position the disk will be abutted by the upper end of the stem M when the valve is opened, but that when raised the regulating-disk will be above the end of the valve-stem, even when the latter is in its uppermost position.

In the construction shown in Fig. 1 the disk T is supported on a nut *t*, screwed on the top of the cap-piece R.

In Fig. 6 the valve-stem is shown extended above the cap-piece, and is threaded to receive the nut *t*, a jam-nut V being provided to secure the nut *t* in its desired positions.

In Fig. 7 is shown a construction similar to that shown in Fig. 6, except that in such Fig. 7 the cap is omitted.

In operation it will be understood that when the valve-stem abuts the regulating-plate it closes the openings *u*, leaving only the opening U for the exit of steam, and as such opening is smaller than the mouth of the valve-stem the discharge of the steam is consequently retarded.

By means of the lever W the valve can be opened at will when so desired.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A safety-valve, substantially as described, having its valve proper provided with a tubular stem hollow from end to end for the passage of the steam into the atmosphere, substantially as set forth.

2. In a safety-valve, the combination, with the valve having a hollow tubular stem open at its end, of a regulating-disk supported and adjustable toward and from the open end of said stem, substantially as set forth.

3. The combination of the valve having the tubular stem open at its end, the disk supported concentrically above said open end of the valve, the nut supporting said disk, and a support to which said nut is screwed, whereby the disk may be adjusted up or down, substantially as and for the purposes set forth.

4. The combination of the base A, having the valve-seat and provided with the central

socket D, and the valve proper fitted to said seat and having a hollow tubular stem and a lower extension, the latter being arranged to operate in the socket D, all substantially as and for the purposes set forth.

5. The combination, with the base having the valve-seat, of the valve having a lower extension and provided with a tubular stem formed in sections N and O united, substantially as set forth.

6. The combination of the base having the valve-seat and provided with the socket D, the valve proper provided with a depending extension J, fitting in the said socket and having in its upper side a socket or concavity *h*, and the tubular valve-stem formed at its lower end to fit in said socket *h*, substantially as set forth.

7. The combination of the casing, the cap thereon, the valve having its tubular stem extended into said cap, the regulating-disk, and the nut supporting said disk and threaded on the cap, all substantially as set forth.

8. The combination of the valve having the tubular stem, the regulating-disk having an opening U in alignment with said stem and opening *u*, and adjustable supports for the said regulating-disk, all substantially as set forth.

9. The improvement in safety-valves, substantially as herein described and shown, consisting of the base A, having the valve-seat and the central socket D, the valve proper fitting the valve-seat and having a socket *h*, and a lower tubular extension J, fitting in the socket D and provided with external grooves and lateral ports K, the tubular stem M, having sections N, and a section O, formed at its lower end to fit in the socket *h*, and provided with a flange *p*, the bearing-ring Q, and adjusting-bolt G, and the spring on the stem M, arranged to bear between the flange *p* and the ring Q, all substantially as and for the purposes set forth.

WILLIAM MCSHANE.

Witnesses:

DONALDSON HUNT,
AMON A. WILSON.