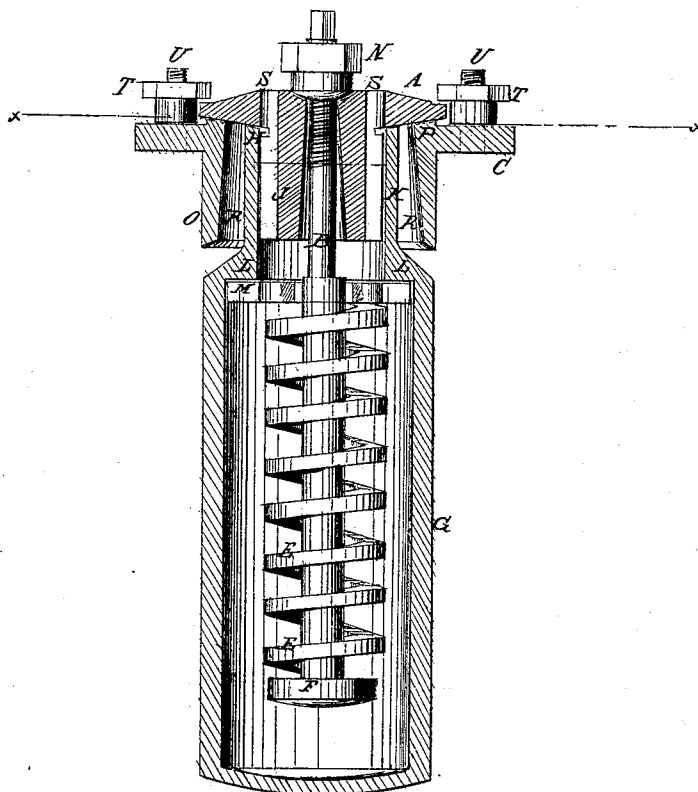


J. ARMSTRONG.  
SAFETY VALVE.

No. 109,996.

Patented Dec. 13, 1870.

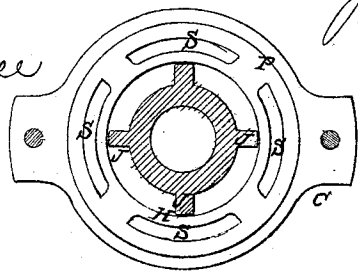
Fig. 1.



Witnesses:

*C. W. Nida*  
*J. B. Hadlee*

Fig. 2.



Inventor:

*J. Armstrong*  
*Wm. L. ...*

Attorneys.

# United States Patent Office.

JASPER ARMSTRONG, OF BROOKFIELD, MISSOURI.

Letters Patent No. 109,996, dated December 13, 1870.

## IMPROVEMENT IN SAFETY-VALVES.

The Schedule referred to in these Letters Patent and making part of the same.

### To all whom it may concern :

Be it known that I, JASPER ARMSTRONG, of Brookfield, in the county of Linn and State of Missouri, have invented a new and useful Improvement in Safety-Valve; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

This invention relates to a new and useful improvement in safety-valves for locomotives and other steam-boilers, for adding security to such boilers by guarding against an over-pressure of steam; and

It consists in the arrangement and construction of a puppet-valve, with the parts connected therewith, as hereinafter more fully described.

In the accompanying drawing—

Figure 1 represents a vertical longitudinal section of the valve with its case and the parts connected therewith.

Figure 2 is a sectional top view, taken on the line  $x$   $x$  of fig. 1.

Similar letters of reference indicate corresponding parts.

A is the valve, which works upon the stem B.

C is a flange which surrounds the valve-seat.

E is a spiral spring.

F is a collar on the lower end of the valve-stem, upon which the spring rests.

G is a pocket or cylindrical casing which contains the spring, the upper end of which, H, is a portion of the valve-seat.

J represents the wings of the valve, which fit into the neck K of the casing.

L is a shoulder at the lower end of the neck K, and M is a yoke on the top of the spring which bears against the shoulder L and receives the upward pressure of the spring.

The orifice for the valve-stem, through the valve, is tapering, so as to prevent binding.

The top portion of the valve-stem is provided with a screw-thread.

N is a screw-nut on the valve-stem, the lower side

of which is globular in form and fits a globular cavity in the top of the valve, so that the nut and the valve form a ball-and-socket joint. This allows the rod to oscillate without affecting the position of the valve on its seat.

The flange C surrounds a short cylinder, O, the upper end of which forms a portion of the valve-seat, as seen at P in the drawing. The flange C is attached to the shell of the boiler, the casing and cylinder O being within the boiler and subject to the pressure of the steam.

Between the neck K of the casing and the cylinder O there is an annular space, R, through which the steam in the boiler has access to the face of the valve.

S represents orifices through the top of the valve, for the escape of steam when the pressure within the boiler raises the valve.

It will be seen that the pressure of the steam is exerted on the valve in opposition to the force and strength of the spring, and that the spring is compressed to any required degree of tension by means of the nut N.

T T are flanged nuts on the screws U U, the flanges of which lap over onto the valve to limit the upward movement of the valve, and as a safeguard in case of accidents.

The advantages of this mode of attaching and operating the valve and the pinion for preventing the unseating of the valve, by means of a ball-and-socket connection, are many, and must be obvious to all who are acquainted with the subject.

Having thus described my invention,

I claim as new and desire to secure by Letters Patent—

The valve A, spring E, stem B, yoke M, casing G, cylinder O, and regulating-nut N, arranged and operating substantially as and for the purposes described.

JASPER ARMSTRONG.

Witnesses:

W. D. HICKS,

D. A. ROBINSON.