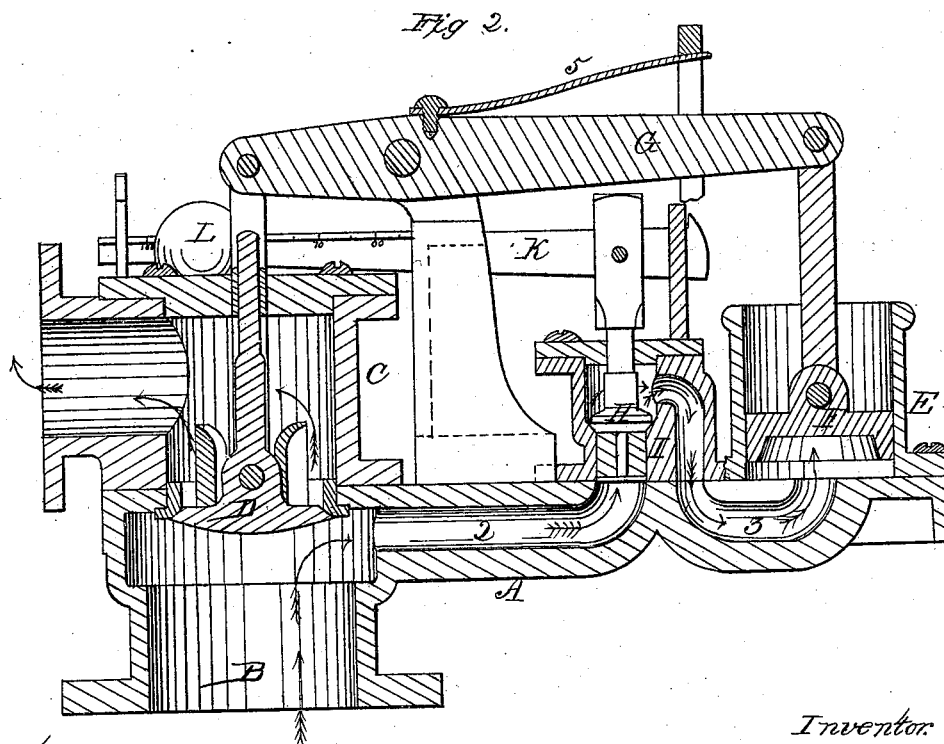
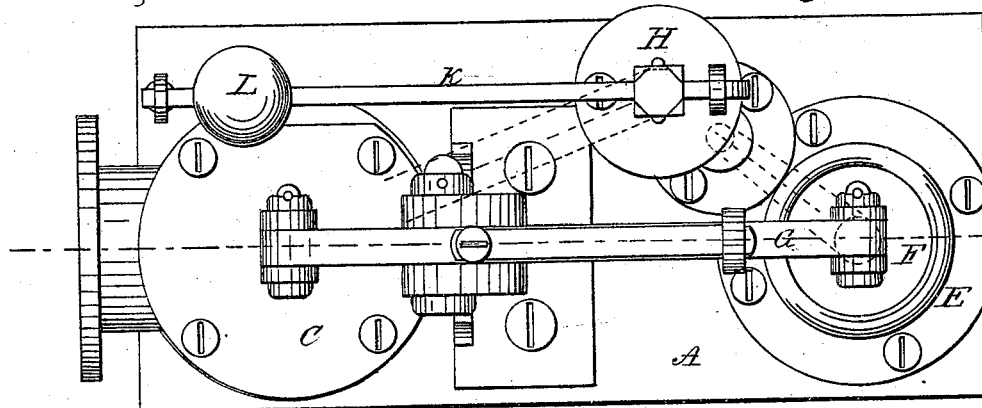


A. Low,
Steam Safety Valve.
N^o 55,127. Fig 1 Patented May 29, 1866.



Witnesses.
Henry C Carr
Francis S Low

Inventor.
Addison Low

UNITED STATES PATENT OFFICE.

ADDISON LOW, OF ALBANY, NEW YORK.

IMPROVEMENT IN SAFETY-VALVES.

Specification forming part of Letters Patent No. 55,127, dated May 29, 1866.

To all whom it may concern:

Be it known that I, ADDISON LOW, of the city of Albany, in the county of Albany and State of New York, have invented a certain new and useful Improvement in Safety-Valves for Steam-Boilers; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, in which—

Figure 1 is a plan view, and Fig. 2 a vertical sectional view taken through the center of the width of the apparatus.

The object of my invention is to produce a safety-valve that will be operated with a large area of the valve with a limited amount of weight or pressure applied to the valve in the proportions of the valve and the weight or pressure applied to control its movement and operation; and my invention consists in combining with the safety-valve a "measuring-valve," by which the action of the safety-valve is controlled and governed.

As is well known to engineers, the ordinary safety-valve of proper area to relieve the boiler to which it is attached from an overpressure requires a large amount of weight or pressure upon the valve in the proportion of the area of the valve to the pressure of the steam to be carried upon the boiler, this weight or pressure, in the case of a large valve, amounting to a sum so large as to stick the valve to its seat sufficiently to require a considerable increased pressure of steam to raise it.

My invention is intended to produce the same effect—viz., the opening of the safety-valve—by a greatly decreased amount of weight as proportioned to the size of the safety-valve, so that this objection is entirely overcome.

As shown in the drawings hereunto attached, A is a metal base, fitted with a nozzle, B, to be attached either directly to the top part of the boiler or to a branch pipe on the steam-drum or steam-chimney of the same. In this base is cast or formed suitable steam-channels or passage-ways, as hereinafter mentioned. Upon the upper face of the base-plate A, directly over the nozzle B, is attached and placed the safety-valve seat C containing the safety-valve D. This valve opens downward—that is, against the pressure of steam—and is so constructed that when it is opened or removed

from its seat the whole area of the seat of the valve, minus the space occupied by the lugs or steadiments thereof, is opened for the passage of the escaping steam. At the opposite end of the base-plate is placed the cylinder E, having within it the piston F, properly connected through the lever G with the safety-valve D. At an intermediate point between the safety-valve D and the cylinder E is placed the measuring-valve H in its seat I.

A steam-channel, 2, is formed in the base-plate to allow the steam to pass through the nozzle B to the measuring-valve H, and a similar channel, (partly in the valve-seat I and partly in the base-plate A,) 3, to allow the steam passing from the measuring-valve to enter the cylinder E beneath the piston F.

The piston F is made of or near the area of the safety-valve D, and the lever G has its fulcrum so placed as to produce a power of about three of the piston to one of the valve, in order to insure the opening of the valve.

The measuring-valve H is retained in its seat by the lever K, having the weight L upon it, the weight being adjusted to proper position upon the lever to produce the required degree of pressure upon the valve.

In case the apparatus should be required to be so attached and placed as to be beyond the control of the engineer or party having charge of the boiler, the whole of its working parts are to be inclosed within an inclosed case, sealed up, if necessary, so that the adjustment of the valve cannot be changed by him.

In its operation the measuring-valve H is weighted to the required pressure for the boiler to bear with safety, or for the pressure that may be deemed necessary as a maximum. Until that pressure is exceeded the safety-valve D remains closed to its seat. When that occurs the steam passing through the channel 2 to the measuring-valve H raises that valve, allows the steam to pass through the channel 3 to act upon the piston F, causing the safety-valve D to be depressed and opened and to remain so until the pressure of steam in the boiler is reduced to the measured point at which the measuring-valve H is set, when the latter-named valve is restored to its seat, and by the absence of pressure beneath the piston F, together with the vacuum created in the cylinder E by the condensation of its contained

steam, (aided, if found necessary, by the spring 5,) the safety-valve D is returned to place and shuts off the escape of steam.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the measuring-valve H with the piston F, for the purpose herein set forth.

2. The combination of the piston F with the safety-valve D and the measuring-valve H, as and for the purpose described.

3. The combination of the piston F, lever G, and safety-valve D, as and for the purpose named.

4. The combination of the measuring-valve H with the piston F, lever G, and safety-valve D, as and for the purpose set forth.

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Witnesses:

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