

No. 693,513.

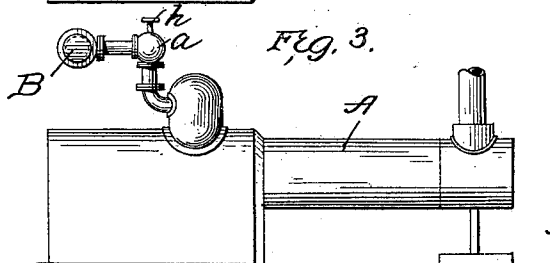
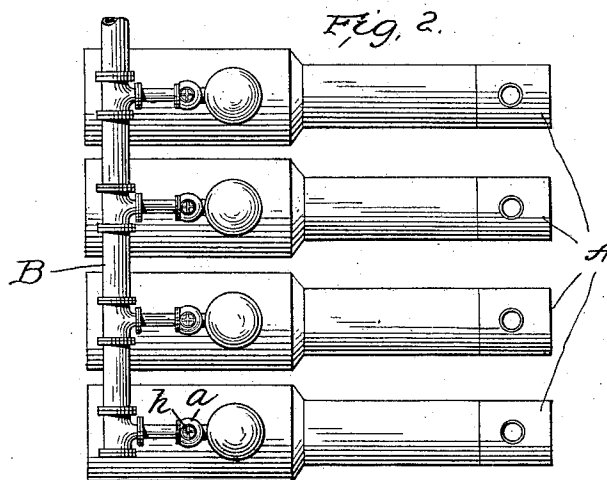
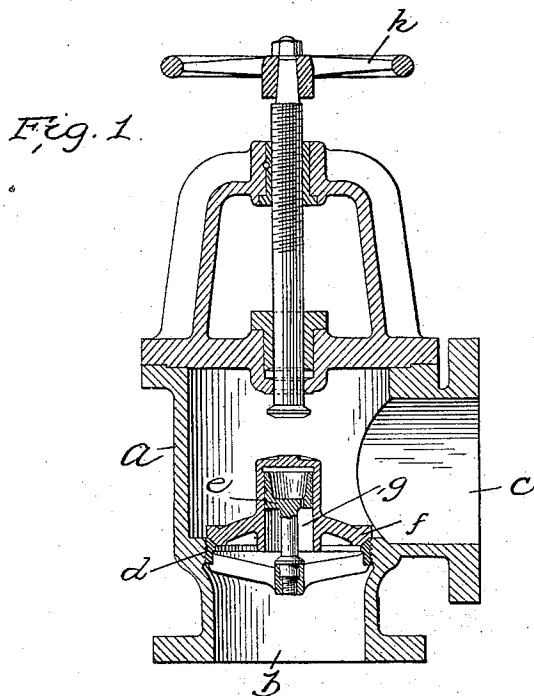
Patented Feb. 18, 1902.

C. GULLAND.

SAFETY VALVE FOR STEAM BOILERS.

(Application filed June 10, 1901.)

(No Model.)



Attest:
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UNITED STATES PATENT OFFICE.

CHARLES GULLAND, OF PITTSBURG, PENNSYLVANIA.

SAFETY-VALVE FOR STEAM-BOILERS.

SPECIFICATION forming part of Letters Patent No. 693,513, dated February 18, 1902.

Application filed June 10, 1901. Serial No. 63,960. (No model.)

To all whom it may concern:

Be it known that I, CHARLES GULLAND, a citizen of the United States, residing at Pittsburg, Allegheny county, Pennsylvania, have invented certain new and useful Improvements in Safety-Valves for Steam-Boilers, of which the following is a specification.

My invention relates to a safety device to prevent back pressure of steam in a range of boilers when one of the series becomes disabled for any reason. At present there is nothing to prevent the pressure from the live boilers passing out through the defective boiler to the possible injury of the workman in charge. I have aimed to overcome this by a simple form of non-return valve, which is maintained in open position so long as the pressure continues, but falls on cessation of pressure, and the arrangement is such that it cannot be opened until the pressure is restored.

In the drawings, Figure 1 shows a view of the valve in its casing, while Fig. 2 is a diagram of a series of boilers, showing the application of the invention; and Fig. 3 is a side elevation of one boiler and its connections.

In Fig. 2 a range of four boilers is shown at A, connecting with a common steam-pipe B, which carries the pressure to the engine or other point of use. In case one of the boilers should become disabled, such as by a leak or the bursting of a boiler-tube, the pressure from the pipe B would naturally pass out through the disabled boiler. To prevent this, I place in the connection between the boilers and the steam-pipe the valve shown in Fig. 1. The casing *a* has a steam-inlet *b* and an outlet *c*. I provide a seat *d* for the valve, which also supports centrally a stationary hollow abutment or piston *e*. The valve *f* has a lower flanged part adapted to close the passage in the pipe, and this part is in contact, when the valve is closed, with the seat *d*. The valve *f* is also provided with a cylindrical hollow central portion *g*, which

is adapted to fit over and be guided by the central piston or abutment. The valve is adapted to be kept open by the pressure, and as soon as the pressure ceases from any cause the valve immediately drops and prevents any back pressure from entering the boiler, effectually closing the entrance to the boiler and preventing any danger from escaping steam. In order to close the valve in case this be required by positive action against the pressure of the steam, I have provided a handle or stem *h*, which is in line with the valve, though not connected with it, and is only useful in closing the valve against the pressure. The cup shape of the abutment or stationary piston serves as a cushion and makes the closing of the valve noiseless.

It will be understood that I do not limit myself in the application of this valve to a steam-boiler, as it will be found useful in many other situations.

What I claim is—

1. A non-return valve comprising a seat, a valve having a lower flange exposed to the steam-pressure and a stationary abutment or piston forming a support and guide for said valve substantially as described.

2. A non-return valve comprising a valve-seat, a stationary piston centrally supported upon a solid stem and a valve having a cylindrical central chamber fitting the piston, with a lower flanged part exposed to the steam-pressure, substantially as described.

3. A non-return valve, comprising a valve-seat, a central stationary piston having an upturned hollow or recessed end forming a cushion and a valve having a central cylindrical portion fitting over the piston, substantially as described.

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

CHARLES GULLAND.

Witnesses:

JAMES SMITH,
MARK MCDANIEL.