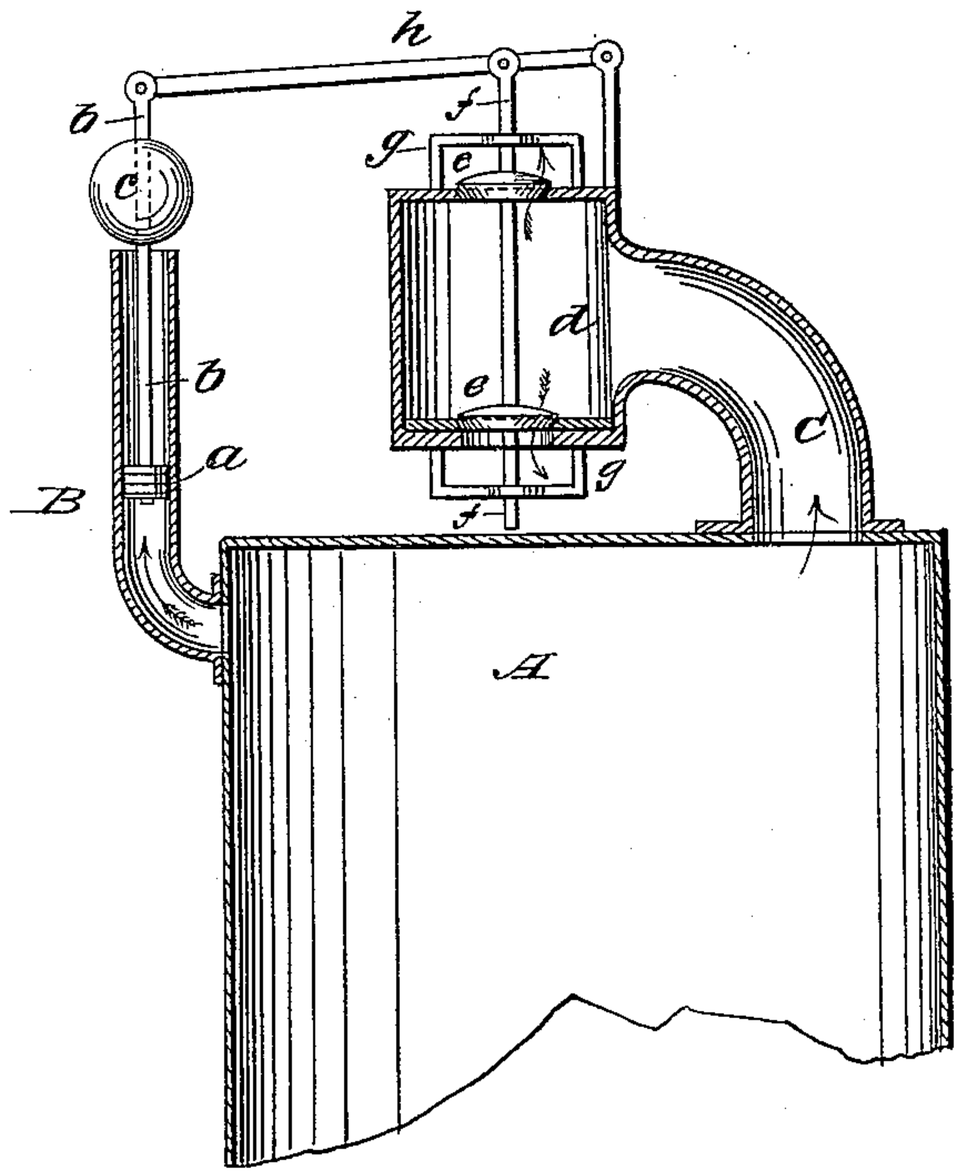
(No Model.)

J. W. YOUNG.

SAFETY VALVE.

No. 246,855. Patented Sept. 6, 1881.



WITNESSES:

Frances M. Astle.

C. Sedgwick

INVENTOR:

J. W. Young

BY Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

JAMES W. YOUNG, OF LOUISVILLE, KENTUCKY.

SAFETY-VALVE.

SPECIFICATION forming part of Letters Patent No. 246,855, dated September 6, 1881.

Application filed April 21, 1881. (No model.)

To all whom it may concern:

Be it known that I, JAMES W. YOUNG, of Louisville, in the county of Jefferson and State of Kentucky, have invented new Improvements in Safety-Valves, of which the following is a full, clear, and exact description.

The objects of my invention are to obviate the difficulties connected with safety-valves of usual form, in respect to limited area of valve-opening, failure to open when the maximum pressure is reached, and closing of the valve before the pressure is sufficiently reduced.

My invention consists in a steam-cylinder and weighted piston combined with a valve or valves hung on a lever, whereby the steam, acting directly upon the piston, opens the valves by moving the lever, as hereinafter described and claimed.

The drawing is a vertical section of the apparatus as applied to a boiler.

A is the dome of the boiler.

B is a tube rising from and opening into the dome, so as to take steam directly therefrom.

a is a piston contained in the tube B upon a rod, *b*, which extends above the upper end of the tube, where the rod is fitted with a weight, *c*, that rests normally on the tube or nearly so. The tube B thus forms a steam-cylinder having its piston exposed to the steam-pressure directly, and by preference the area of the piston will be half an inch, so that less weight in proportion is required to overcome the pressure.

C is a tube or chamber opening into the dome, and having its outer end formed as a valve-case, *d*, which has an upper and lower valve-opening.

e e are disk-valves upon a stem, *f*, and seated in the openings of the case *d*, so as to be simultaneously opened and closed by movement of the stem.

g g are guides for the valve-stem.

h is a lever hung upon case *d*, to which lever the stem *f* of valves *e* and rod *b* of piston *a* are both pinned. The area of valves *e* should be the same. The area of the piston *a* may be as desired.

It will be seen that the pressure balances the valves *e* and stem *f*, so that they are thereby rendered very sensitive. So soon as the pressure on the piston *a* is sufficient to overcome the weight the lever *h* is raised and valves *e* thereby opened. A double opening for relief of pressure is thereby made, and if the pressure continues to rise the piston will be further moved until the valves are opened to the greatest extent possible. The pressure on the piston being continuous, this opening will be maintained until the pressure is reduced sufficiently for the weight to force the piston down. This safety-valve removes the objections to ordinary relief-valves, and, in addition, a quick and positive opening to any extent desired is obtained.

The openings can be made as free and ample as required, and the valves, being balanced, are very sensitive and extra weight is not required.

A spring may be used on the piston in place of the weight.

I am aware that a weighted lever connected with a valve and piston is not new, or a rod provided with two valves and connected at its lower end with a weighted lever; but

What I claim is—

The combination, with the boiler A, having pipes B C and valve-case *d*, of the rod *b*, carrying piston *a* and weight *c*, the lever *h*, and the rod *f*, carrying the valves *e e*, working in seats of case *d*, as shown and described.

JAMES WILLIAMS YOUNG.

Witnesses:

JOHN J. DONOVAN,

WILLIAM E. EAMES.