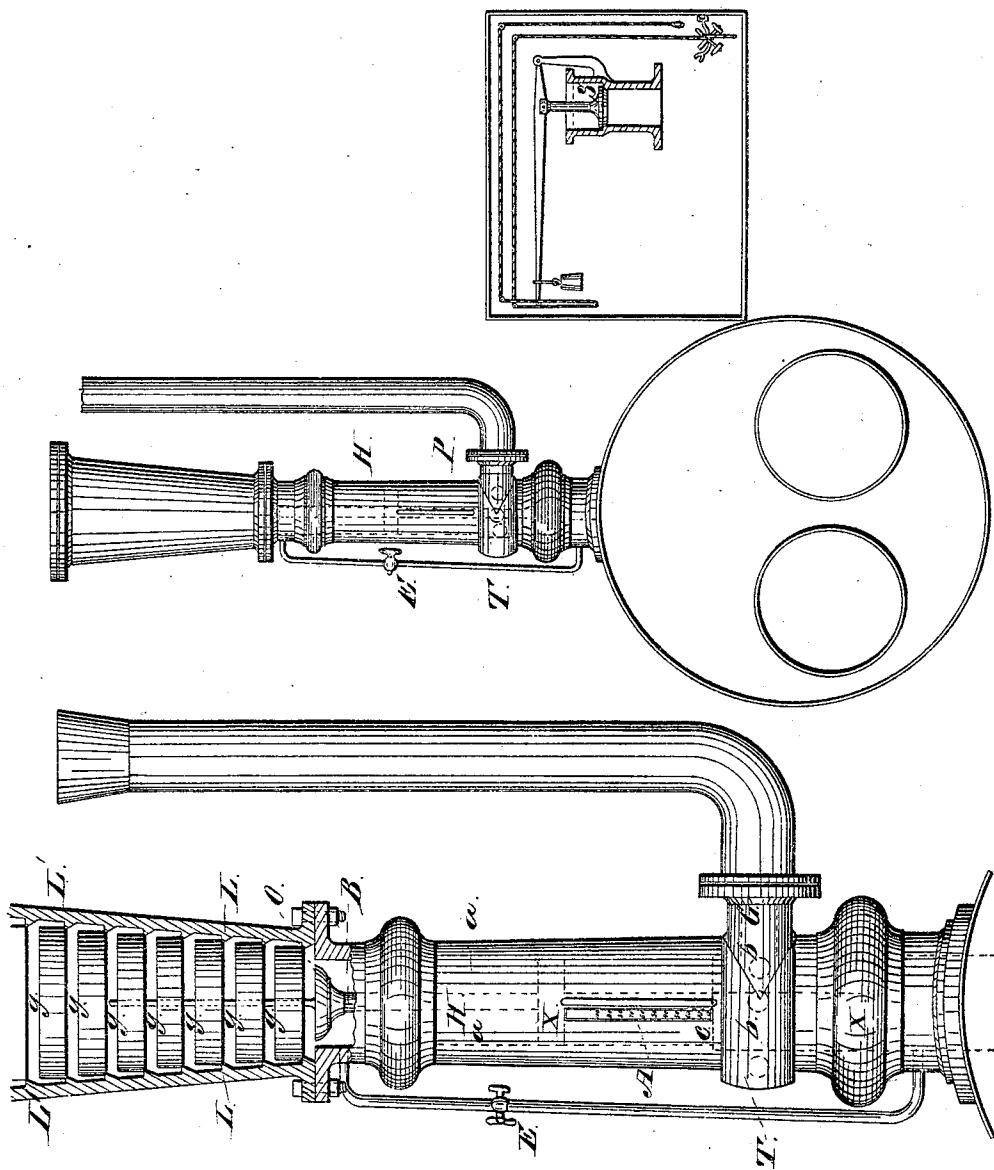


A. Guthrie,
Steam Safety Valve.
N^o 9,321. Patented Oct. 12, 1852.



UNITED STATES PATENT OFFICE.

ALFRED GUTHRIE, OF CHICAGO, ILLINOIS.

SAFETY-VALVE.

Specification of Letters Patent No. 9,321, dated October 12, 1852.

To all whom it may concern:

Be it known that I, ALFRED GUTHRIE, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Safety-Valves; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

10 The safety valve to which my improvement is applicable is constructed of an open cylinder H, which is bolted on the boiler, communicating therewith by a suitable opening for the passage of steam; in H slide
15 (steam tight) two pistons X X of different diameters the upper one about one sixth less in diameter than the lower see dotted line *a a, a a*; both pistons are secured on a rod B, which extends above the cylinder, entering a flaring case L' L' and passing
20 through perforated weights *g, g*, resting on shelves L on the inside of said case; on the rod B is a collar O, which when raised with the rod by steam under the lower piston,
25 lifts the first weight, then the second and so on successively, from the shelves L as the steam increases; when it exceeds a designated pressure, the lower piston passes above openings *b b* in the cylinder and escapes
30 into the hollow swell T and passes into discharge pipes P; after such excess is discharged, the weights are deposited by the descent of the piston and rod, on the shelves; the flaring form of the case L' readily admitting of their rise and fall without interference with each other; through a slot A

and index *c* secured on B passes over a graduated scale, giving evidence of the pressure.

The nature of my invention consists in the introduction of a stop cock in the pipe E 40 said pipe forming a communication between the upper side of the upper piston and under side of the lower piston forming the before described valve. By the closing of said stop cock the pressure of steam on the upper 45 piston is removed, and the lower one raised above the openings *b b* in the swell T and steam be readily discharged without the necessity of having access to or removal of the weights *g g*; when the stop cock in E is 50 open, and the communication free between the pistons, the action of steam on the upper piston serves as a substitute for part of the weights *g, g*.

In large safety valves especially where 55 great pressure is desired, and consequently number of weights required, the convenience and advantage of substituting the pressure of steam from the boiler on the upper piston, to partially resist the action on the under 60 side of the lower one will be apparent.

What I claim as my invention and which I wish to secure by Letters Patent is—

The introduction of the cock in the connecting pipe E by which the resistance to 65 the pressure is taken off and at which the steam will be allowed to escape.

ALFRED GUTHRIE.

Witnesses:

GEORGE E. TINGLEY,
JNO. R. JONES.