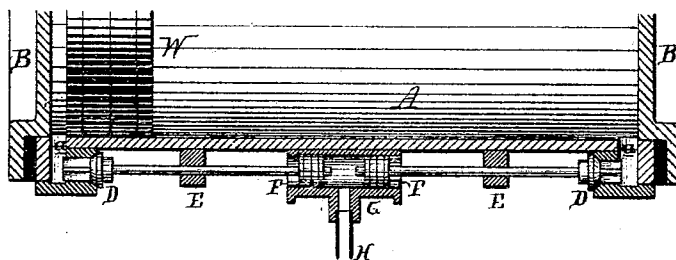


HENRY W. ADAMS.

Improvement in Safety Valves for Steam Engines.

No. 123,436.

Patented Feb. 6, 1872.



WITNESSES.

Jos. B. Harding.
John Parker

Inventor

Henry W. Adams
by his Atty.
Stevenson and Son

UNITED STATES PATENT OFFICE.

HENRY W. ADAMS, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN SAFETY-VALVES FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. 123,436, dated February 6, 1872.

Specification describing an Improvement in Steam-Loaded Safety-Valves for the Cylinders of Steam-Engines, invented by HENRY W. ADAMS, of Philadelphia, Pennsylvania.

Steam-Loaded Safety-Valves for Cylinders of Steam-Engines.

My invention consists of safety-valves applied to the cylinder of a steam-engine, and loaded by the pressure of steam in a supplementary steam-cylinder, all substantially as described hereafter, so as to prevent the accidents which occur to cylinders through undue pressure in the same.

The figure in the accompanying drawing represents a sectional view of part of the cylinder of a horizontal steam-engine with my improved safety-valves.

Serious accidents frequently occur through the accumulation of water in the cylinders of steam-engines, this water being attributable to the priming of the boiler or to the condensation of steam in the cylinders. Occasionally the heads of cylinders are broken, owing to the water being driven against them by the piston. I obviate such accidents by the invention which I will now proceed to describe.

A represents, in section, the lower portion of the cylinder of a horizontal steam-engine; B and B', portions of the opposite heads; and W, part of the piston. Near each end of the cylinder is a vertical passage, *a*, communicating with a horizontal passage, at the entrance of which a valve, D, has its seat, each valve being attached to a rod, E, and each rod being provided with a piston, F, adapted to a small cylinder, G, with the interior of which a steam-pipe, H, communicates at a point between the two pistons, the steam for the small cylinder being derived from the source whence the large cylinder is supplied. The diameter of the small cylinder is slightly in excess of that of

each valve, so that a constant pressure shall be exerted on the said valves exceeding any ordinary safe pressure against the inside of the same.

Whenever water accumulates to a dangerous extent at either end of the large cylinder, it will open one of the valves and be discharged, immediately after which the valve will be closed by the pressure of steam in the small cylinder. The steam-loaded valves will also relieve the cylinder from the undue pressure caused within the same by the sudden reversing of the engines, as in locomotives.

One of the main advantages of my invention is that the valves are always properly loaded, no matter what may be the pressure of steam in the boiler, which is not the case when springs or weighted levers are employed to load the valves.

Although I have illustrated and described my invention as applied to the cylinder of a horizontal engine, it may be adopted with advantage in connection with vertical or inclined cylinders.

I do not desire to restrict myself to any specific construction of valves; but

I claim as my invention—

Safety-valves applied to the cylinder of a steam-engine, and constantly loaded by the pressure of steam in a supplementary steam-cylinder, which communicates with a steam-supply pipe, and to which are fitted pistons attached to said valves, all substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY W. ADAMS.

Witnesses:

WM. A. STEEL,
HARRY SMITH.