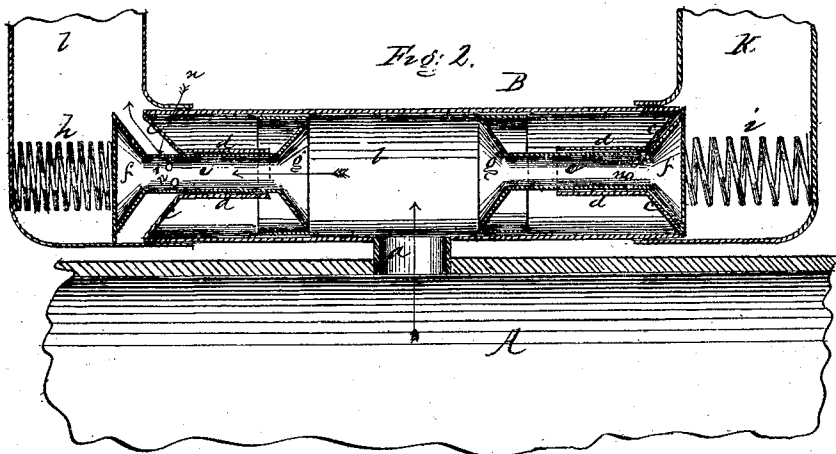
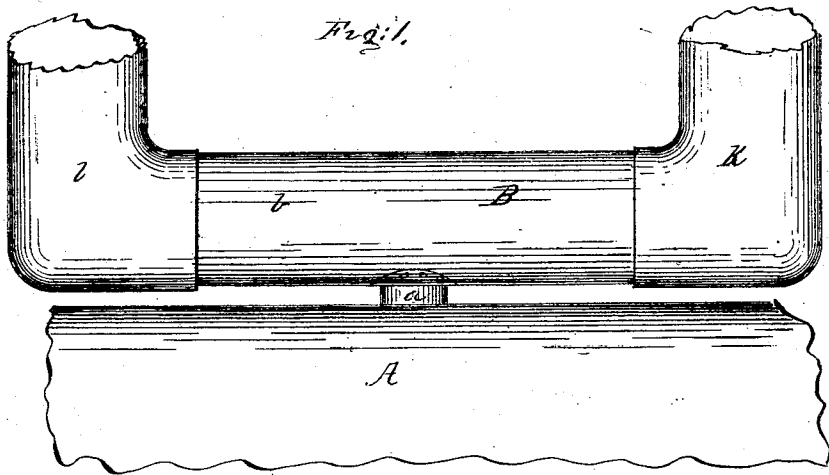


T. HARANG.

Duplex Safety-Valves.

No. 135,220.

Patented Jan. 28, 1873.



Witnesses:
Franklin Parritt.
Richard Coruet.

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UNITED STATES PATENT OFFICE.

THÉOPHILE HARANG, OF BANANA GROVE PLANTATION, PARISH OF LA FOURCHE, LOUISIANA.

IMPROVEMENT IN DUPLEX SAFETY-VALVES.

Specification forming part of Letters Patent No. 135,220, dated January 23, 1873.

To all whom it may concern:

Be it known that I, THÉOPHILE HARANG, of Banana Grove Plantation, parish La Fourche, State of Louisiana, have invented certain Improvements in Safety-Valves, of which the following is a specification:

The object of my invention is to construct and provide for a safety-valve which will let off the steam with safety to the boilers when the pressure should rise higher than desirable.

Long experience in using steam-boilers has convinced me that the cause of the majority of explosions is that the safety-valve is suddenly lifted, exposing a large opening or vent for the steam to escape, by which the water in the boiler is also lifted, and thus temporarily closes the steam-exit through the valve-hole, causing a rupture or explosion. In accordance with this theory my improved safety-valve is so constructed that gradually, as the pressure increases, more and more steam is allowed to escape from the boiler, and, vice versa, gradually less and less as the pressure decreases in the boiler.

In order to describe my invention more fully I refer to the accompanying drawing forming a part of this specification.

Figure I is a side view of my improved safety-valve attached to the top of a steam-boiler. Fig. II is a longitudinal vertical section of the same.

To the top of a steam-boiler, A, is connected, by the pipe *a*, the safety-valve B. The valve B is constructed of a pipe or cylinder, *b*, into both ends of which the valve-seats *c c* are secured. To the center of the valve-seat *c* is fastened a pipe, *d*, which serves as a guide for the hollow rod or pipe *e*, to one end of which

the valve *f* is attached, and to the other end the piston *g*. *h* and *i* are springs of different strength, *h* being of a strength to resist the daily working-pressure in the boiler, *i* somewhat stronger.

The steam generated in the boiler A flows, through the pipe *a*, into the interior of the safety-valve B, pressing against the pistons *g g*, which are held in their places until the pressure in the boiler exceeds, first, the resisting power of the spring *h*; and, second, in case of still higher and suddenly-increasing pressure, the resisting power of the spring *i*. By the motion of the pistons *g g* by the over-pressure in the boiler the valves *f f* are also moved from their seats *c c*, presenting an opening through which the steam escapes from the holes *n n* in the pipes or hollow rods *e e*, which are so placed that more or less steam will escape in proportion to the pipe *e* being pushed further out.

k and *l* are elbows attached to the ends of the cylinder *b* and connected to the pipes, for the purpose of conducting the escaping steam out of the boiler-room.

I use one or more of such safety-valves. I prefer two, as here represented, or four, forming a cross.

Having thus fully described my invention, I desire to claim—

The safety-valve B, constructed and arranged to operate substantially as described, and for the purpose hereinbefore set forth.

THÉOPHILE HARANG.

Witnesses:

P. FORTUNÉ FAZENDE,
ADAM BARRIOS.