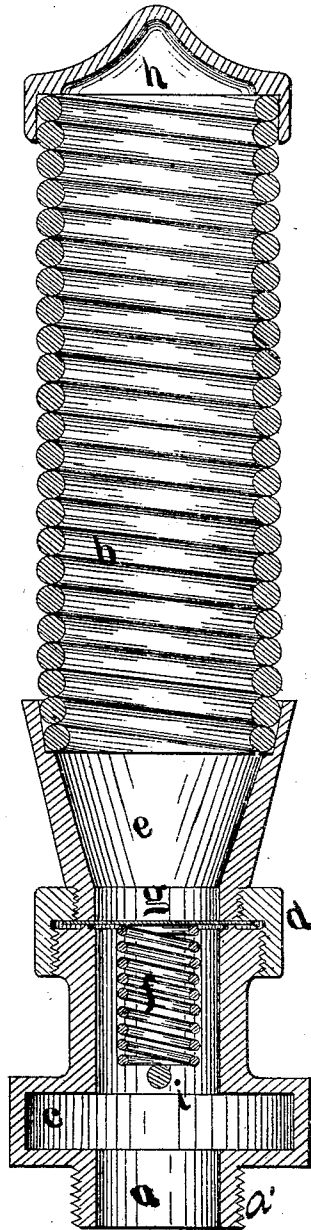


T. SHAW.

DEVICE FOR ABSORBING THE NOISE OF ESCAPING HIGH-PRESSURE
STEAM OR GAS.

No. 181,288.

Patented Aug. 22, 1876.



Witness,

Wm. Garwood
Wm. H. Bray

Thomas Shaw.

UNITED STATES PATENT OFFICE.

THOMAS SHAW, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN DEVICES FOR ABSORBING THE NOISE OF ESCAPING HIGH-PRESSURE STEAM OR GAS.

Specification forming part of Letters Patent No. **181,288**, dated August 22, 1876; application filed July 11, 1876.

To all whom it may concern:

Be it known that I, THOMAS SHAW, of the city and county of Philadelphia, Pennsylvania, have invented a new and Improved Method of Absorbing the Noise of Escaping High-Pressure Steam or Gas; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

My invention consists in the employment of woven fabrics covering the outlets of escaping steam from safety-valves, blow-offs, &c., and in the application of a spring, or other elastic medium, to prevent any vibrations of the woven fabric, and in the application of a close-coiled spiral, all for the purpose as hereinafter described.

The object of the invention is to absorb the noisome vibrations of escaping high-pressure steam or gases.

In order to enable others to use and practice my invention I will proceed to describe its construction and operation.

On reference to the accompanying drawings, which form part of the specification, the sketch represents a vertical section through the center of the appliance, of which *a* is a cylinder, provided with an ordinary screw-thread at its lower end to enable attachment to common steam-pipe, and is provided with an annular chamber, *e*, and has a screw-thread at its upper end, on which is screwed cap *d*, intervening which is a piece of canvas or woven fabric, *g*, upon which presses spring *f*, which spring is supported on pin *i*. Any elastic or semi-elastic material can be substituted in place of the metallic spring *f*. *e* is an expanding socket, screwed into cap *d*, and is soldered to spiral coil *b*, which coil is closed at its upper end by cap *h*. The device is screwed upon an ordinary steam-pipe at screw *a'*, and the escaping steam is permitted to blow into the annular space *e*, which is simply an expanding chamber, and can be made of various configuration. Some of the heavy vibrations are absorbed on the walls of the annular chamber, and it is important that the walls of the same be sufficiently thick to pre-

vent the transmission of vibrations to the outer air.

Various materials can be employed, but common cast-iron is the most suitable, on account of cheapness and strength.

The steam continues in its course to canvas or woven fabric *g*, where it meets a partial obstruction, and can only escape through the numerous small interstices that intervene between the many threads, and upon which a large portion of the noisome vibrations are absorbed. It is important that there be a preponderance of pressure on one side of the canvas, or vibrations will be transmitted by vibrating the canvas, as in a drum-head. On this account spring *f* is provided, which presses with elastic force upon the canvas, tending to destroy any drum-head vibrations. Any other elastic medium, similarly applied, would have a like effect.

The escaping steam from canvas *g* will be nearly or quite free from noisome vibrations, but any remaining vibrations are absorbed upon the walls of spirals *b*, between the coils of which the steam freely escapes, being only compressed with a force equaling elasticity of spring. The cap *h* acts as a piston, upon which any compressed steam exerts its force to open the coils of the spiral for its escape, acting as its own safety-valve, opening the coils wide in proportion to the amount of escaping steam.

It will be observed that all the coils will open equally distant, and that a coil secured at both ends is unfavorable to the transmission of sound, as is made evident by striking the same, the object being to secure a wall or partition that will not transmit noisome vibrations; therefore this spiral wall might be substituted by numerous rings of metal, or other material, arranged to divide their intervening space in a uniform manner.

The spiral *b* and the canvas *g* have, both separate and alone, great noise-absorbing qualities when high-pressure steam is passed through the same, as described, and can, in many instances, be used separate from each other. When the device is inserted in a smoke-stack the canvas cannot be used on account of external

heat destroying the same. The important requisite in the use of canvas *g* is that the steam shall be required to pass through the same, and that if the sheet has any magnitude that it be pressed upon by some elastic or semi-elastic material, to prevent such vibrations from being transmitted as would vibrate the entire sheet of canvas. Whenever sufficient pressure is maintained in blowing steam through the canvas there is no need of spring *f*, or other elastic medium, as the steam under pressure furnishes the elastic medium.

It will be evident that this device can be variously modified or fashioned without any alteration in the result. I therefore do not wish to confine myself to the exact form given.

What I claim, and desire to secure by Letters Patent, is—

1. The combination of steam-chamber *c*, with cylinder *a* and canvas *g*, for the purpose set forth.

2. The woven fabric *g*, with or without spring *f*, in combination with a steam or gas escaping cylinder, *a*, substantially as and for the purpose set forth.

3. The combination of spring or other elastic medium *f*, with woven fabric *g*, for the purposes described.

4. The spiral coil *b*, with or without the woven fabric *g*, substantially as and for the purpose set forth.

THOMAS SHAW.

Witnesses:

WM. F. BREY,
WM. GARWOOD.