E. Hamilton,

Steam Safety Valve.

No. 56,409. Patented July 17, 1866.

Fig. 4.

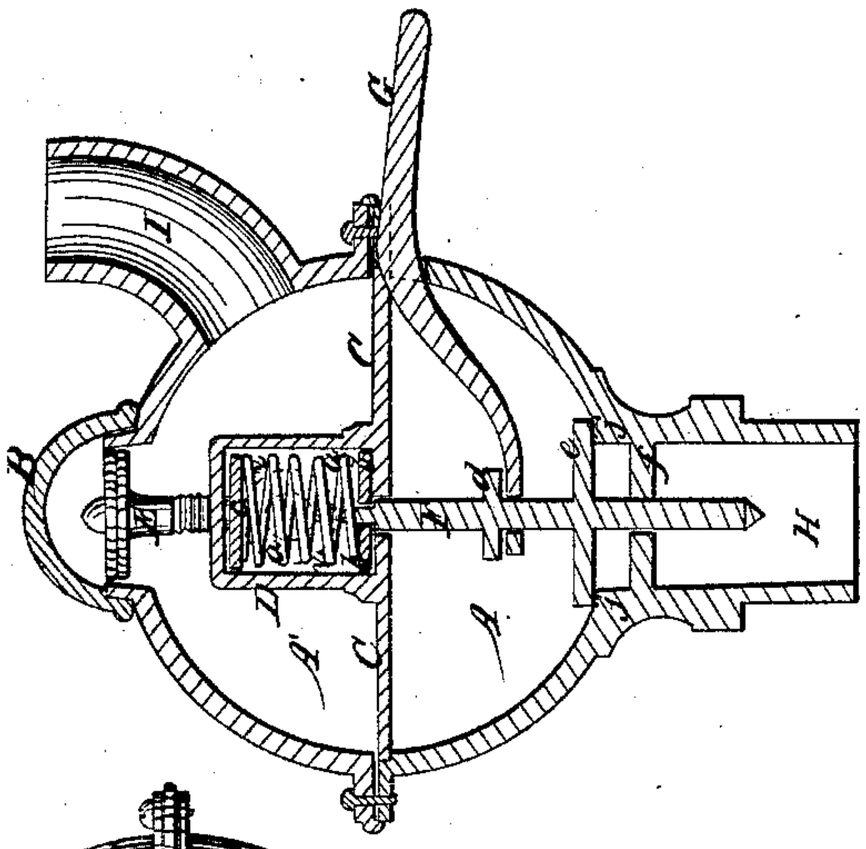


Fig. 3.

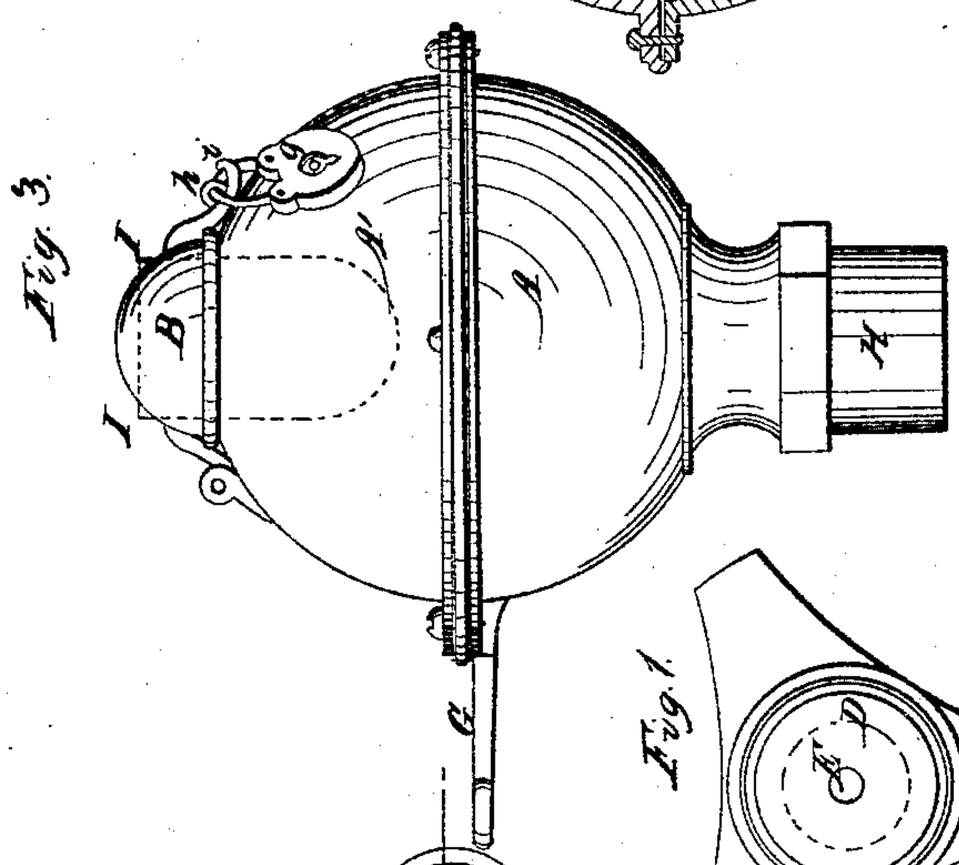


Fig. 1.

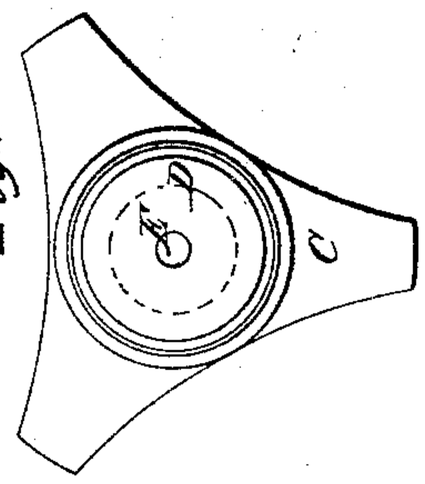
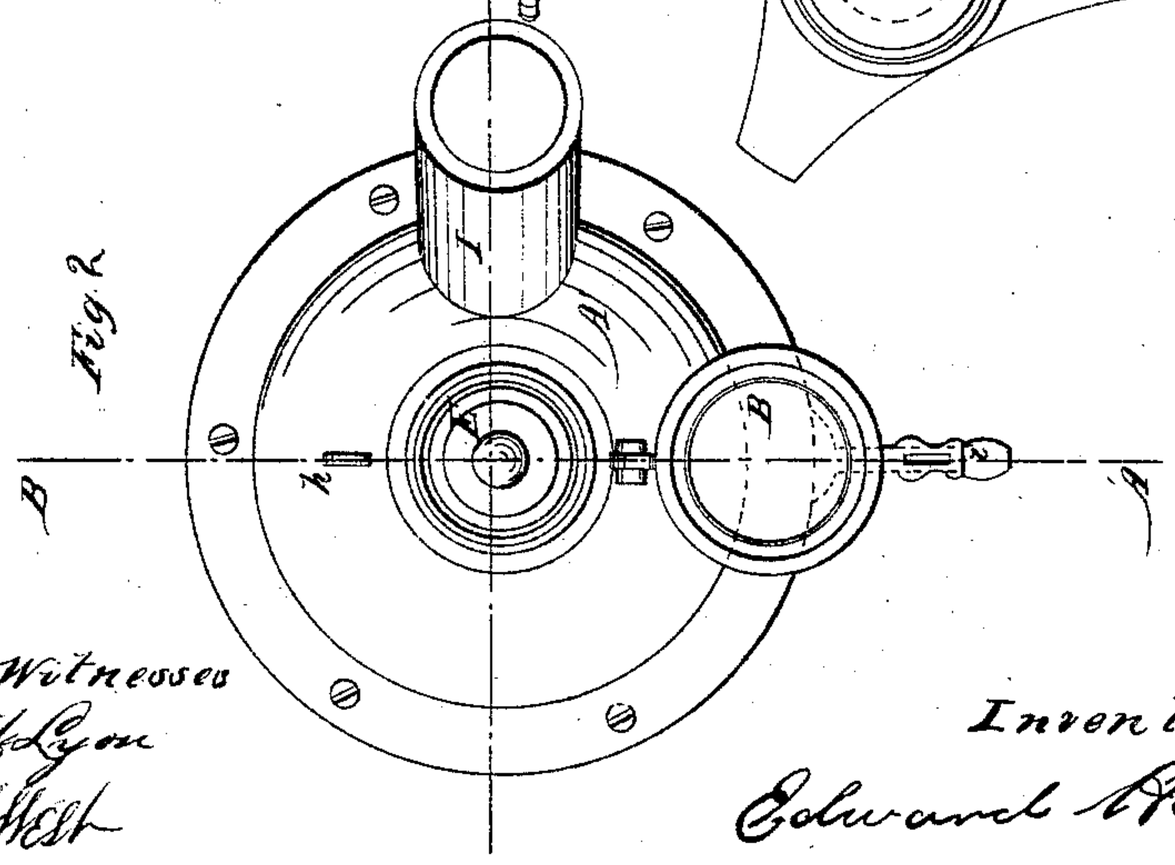


Fig. 2



Witnesses
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UNITED STATES PATENT OFFICE.

EDWARD HAMILTON, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN STEAM SAFETY-VALVES.

Specification forming part of Letters Patent No. **56,409**, dated July 17, 1866.

To all whom it may concern:

Be it known that I, EDWARD HAMILTON, of the city of Chicago, in the county of Cook and State of Illinois, have invented a certain new and Improved Safety-Valve for Steam-Boilers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification.

The nature of my invention consists in the construction of a safety-valve for steam-boilers in which the valve is held down by a spring inside of the case instead of the lever and weight ordinarily used outside, and in a novel method of adjusting the same, and in providing a means for testing it.

Figure 1 is a plan view of a portion detached. Fig. 2 is a top-plan view of the apparatus with the case opened. Fig. 3 is a side elevation, and Fig. 4 a vertical section of the same, like letters in the various figures indicating like parts.

To enable others skilled in the art to make and use my invention, I will describe its construction and operation.

The outside shell or case, A and A′, is made of iron, brass, or other suitable metal, and I prefer the globular form shown, although it can be made to work equally as well in any other form. The lower half is cast with a tube, H, attached, which tube is inserted into the boiler in the usual manner. To the upper end of this tube, at the shoulders *j*, the valve *e* is fitted. This valve *e* is supported and held in place by the shaft F, which shaft is kept in position by the cross-bar *f* in the tube or pipe H, through which it passes at the lower end, and at the upper it passes through the plate C centrally and up into the spring box or cylinder D about one-third the length of the cylinder. Inside of the cylinder there is a small plate, *b*, attached and resting upon a shoulder of the shaft, which plate *b* supports the lower end of the spring *a*.

About midway between the valve *e* and the small plate *b*, I attach to the shaft the annular projection *d*, and under this I place the inner end of the testing-lever G. This lever has for its fulcrum the shell or case A, and projects outward so as to form a handle, so that by pressing upon this lever the engineer can at all times ascertain the working condition of the valve without opening the case or shell.

On the top of the lower half or hemisphere of the globe I place the plate C, Figs. 1 and 4, and on this I place the spring cylinder or box D, which is made large enough to contain a spring, *a*. This spring may be either a coiled, spiral, or volute spring; and although very little, if any, steam will penetrate the box or cylinder, as it is closely attached to the plate C, it may be found advisable to galvanize or otherwise protect the spring from corroding, although it will last a long time without any protection in this respect.

The pressure of the spring upon the valve *e* is regulated and adjusted by the gage-screw E, which screw passes through the upper end of the spring-box D and presses against the plate *c* in the upper end of the cylinder and above the spring. As this screw is turned down it compresses the spring, so that the pressure which is transmitted through the shaft F to the valve *e* can be regulated or gaged to any required degree of pressure or resistance. When the required degree is obtained the cup B is brought to place and locked by the hasp *i*, staple *h*, and lock *g*. It will be obvious that other forms than the padlock can be used.

I have not given dimensions, as the device will require to be made in a variety of sizes, and is increased or diminished. About the proportions given in the drawings will be sufficient. Variations will not, however, impair its working. Its operation will be readily understood from the drawings.

When the pressure in the boiler rises above the degree to which the spring *a* is set by the screw E the valve *e* will lift, when the steam will pass into the shell or case and out at I. By these means I am enabled to produce a safety-valve that can be inclosed and locked up securely, the condition of which can be at all times tested, and that is specially adapted for use on marine engines.

Having thus described my invention, what I claim is—

1. The combination and arrangement of the valve *e*, provided with the stem F, spiral spring *a*, and set-screw E with the case D, all located within the case A, as shown and described.

2. In combination with the valve *e*, arranged as set forth, the lever G, arranged to operate as set forth.

EDWARD HAMILTON.

Witnesses:
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