

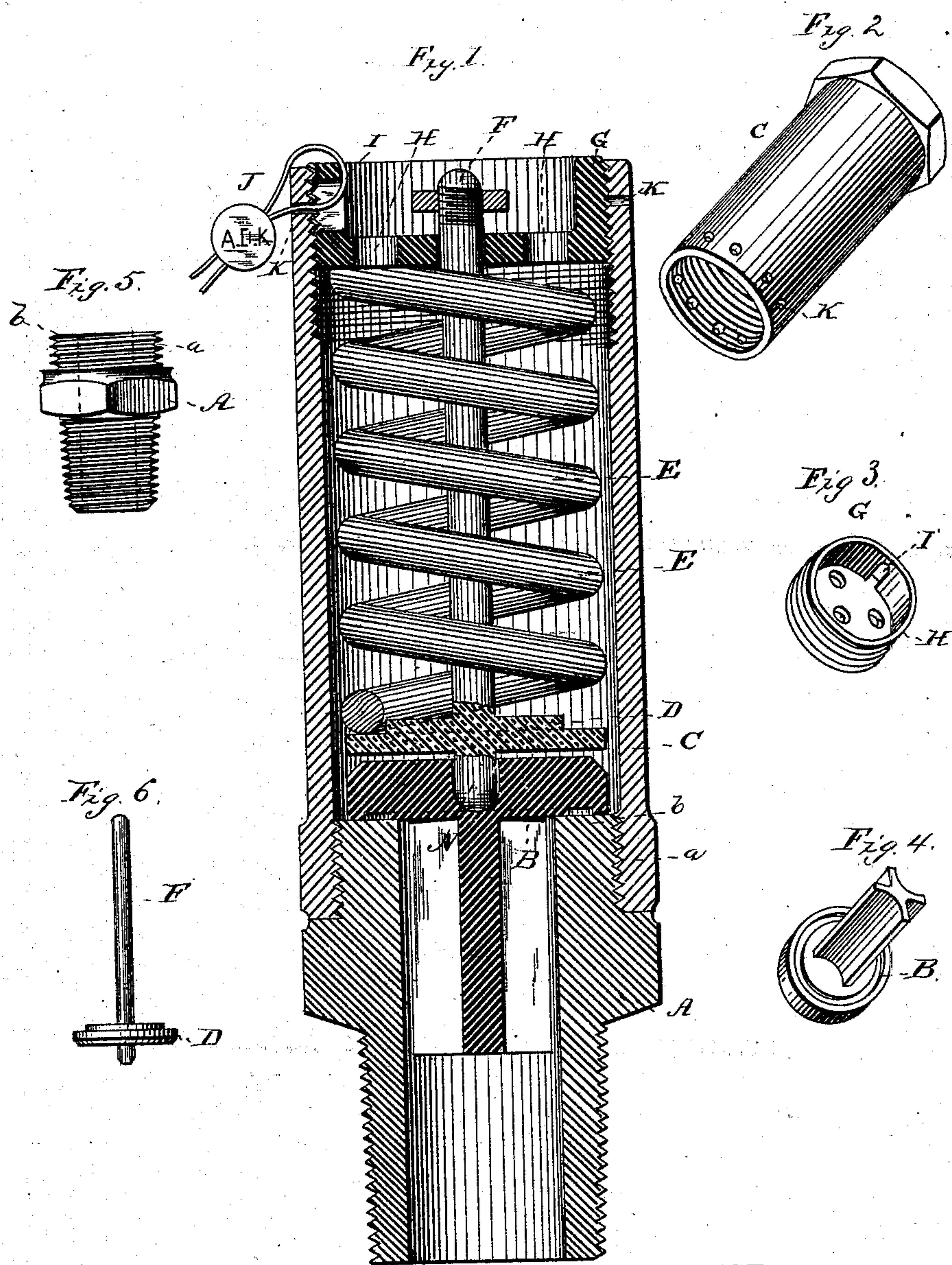
(No Model.)

A. D. KILBORN.

SAFETY VALVE.

No. 274,787.

Patented Mar. 27, 1883.



Witnesses

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UNITED STATES PATENT OFFICE.

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SAFETY-VALVE.

SPECIFICATION forming part of Letters Patent No. 274,787, dated March 27, 1883.

Application filed January 15, 1883. (No model.)

To all whom it may concern:

Be it known that I, A. D. KILBORN, of Tucson, in the county of Pima and Territory of Arizona, have invented certain new and useful Improvements in Safety-Valves; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

My invention has for its object to provide a more simple and effective safety-valve for steam-boilers generally than those now in use.

It consists in devices by which the valve is held to its seat by means of a spring, with means for adjusting the tension of the spring, the parts being located within a shell or casing, and the adjusting devices being so connected that the valve can be removed from the boiler for inspection, repairs, or the substitution of a new valve, without interfering with or altering the tension at which the spring is set, in combination with an automatic cushioning-valve, whereby said valve is prevented from battering.

It further consists in the construction and arrangement of the cup-shaped regulating device, whereby the tension of the spring is regulated and sealed, in combination with the central spindle and spring holding-disk, said spindle being adapted to hold the spring-disk and cup with the case in the position to which it is set while detached from the boiler, as described.

Figure 1 is a vertical section of my improved safety-valve. Fig. 2 is a vertical detached perspective view of the cage or casing. Fig. 3 is a perspective view of the perforated cup-cap, clearly showing the elongated aperture for the sealing thereof to the casing. Fig. 4 is an inverted perspective view of the valve; Fig. 5, a detached view of the double screw-threaded thimble or socket, one end of which screws into the boiler and the other end into the cage or casing, and whose upper end forms the valve-seat; and Fig. 6 shows a plan view of the spindle and disk upon which the spiral spring operates.

A is the base, to which the shell or cap C is

attached by means of the screw-threads *a*. The upper end of the base forms a flat seat, *b*, upon which the valve B works; and to permit a free movement of the valve when discharging steam or allow it to be readily seated, I provide a spindle, F, having on it near its lower end a disk, D, upon which one end of the spring E is seated; the lower end of the spindle, passing through the disk, enters a cavity formed in the top of the valve, and its upper end is screw-threaded to receive a nut for retaining the structure in position when removed from the boiler. The inner and upper end of the shell or casing is screw-threaded, to receive the cup-shaped perforated nut or cap G. This nut is to regulate the tension of the spring, the upper part of which rests against the nut. The center perforation serves as a guide for the stem or spindle F. The other perforations or holes, H, around the center are to permit the free escape of the steam, and at the same time to muffle it and to prevent the disagreeable noise thereof. On the upper end of the case is a series of holes, K, and on the side of the nut is an elongated hole, I. After the tension of the spring has been adjusted to allow the valve to open at a predetermined pressure, the holes I and K are made to register with each other, when a piece of wire is inserted and their ends sealed together, thereby preventing any tampering with the adjustment of the valve. By placing the end of a properly-formed wrench in the holes in the cap it may be screwed up or down, thereby adjusting the spring to any desirable degree of tension. The valve has double seats and a flat face provided with a recess, the face corresponding to that of the seat. The area of the valve exposed to the steam-pressure being much greater when open than when closed, the pressure in the boiler will therefore fall below the pressure that opens the valve before the valve closes. On the face of the valve is an annular recess, in which is confined a portion of the steam just before the valve is seated, thereby cushioning it and preventing the valve from battering.

It will be seen by the above description and drawing that the device is simple in its construction and readily taken apart and examined without interfering with the tension-ad-

justing device of the spring, and which is held together by screwing the nut on top of the spindle to the proper position.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a safety-valve, the combination, with the internally-screw-threaded shell, of the perforated cup-shaped nut, the spring, and the valve, substantially as shown and described.

2. In a safety-valve, the combination, with the shell, of the perforated cup-shaped nut, the spindle provided with a disk, the spring, and the valve, substantially as shown and described.

3. In a safety-valve, the combination, with the shell having a series of perforations near its upper end, of the perforated nut having an elongated hole in its side, the seat, the spring,

and the valve, substantially as shown and described.

4. The combination, in a safety-valve, of the casing, constructed as described, the spindle having a disk on one end and a screw-nut upon the other, with the cup-shaped nut, and spring interposed between said nut and disk, whereby the above parts are secured to each other when detached from the boiler, and the tension of the spring does not require resetting, as described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

ALDEN DAVID KILBORN.

Witnesses:

WM. W. FOSTER,
CHAS. F. DODGE.