

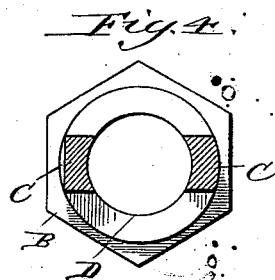
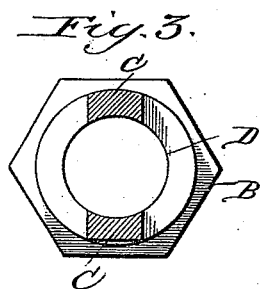
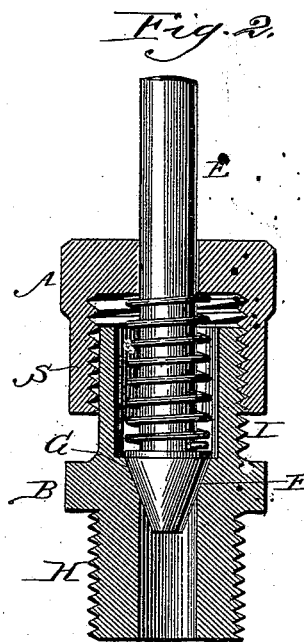
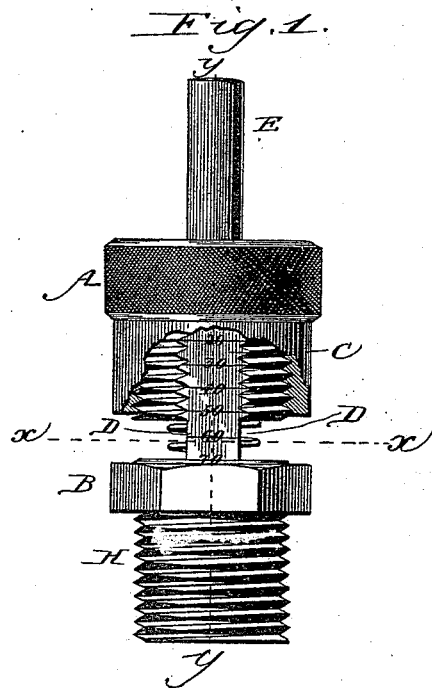
(No Model.)

W. F. WALKER.

SAFETY VALVE.

No. 347,213.

Patented Aug. 10, 1886.



Witnesses.
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UNITED STATES PATENT OFFICE.

WILLIAM F. WALKER, OF CHICAGO, ILLINOIS.

SAFETY-VALVE.

SPECIFICATION forming part of Letters Patent No. 347,213, dated August 10, 1886.

Application filed December 10, 1885. Serial No. 185,298. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. WALKER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Safety-Valves, of which the following is a full, clear, and exact description.

My invention relates to safety-valves of a new and simplified construction, so as to adapt them, by reason of their combined cheapness, convenience, and efficiency, for many purposes for which safety-valves have hitherto been unavailable by reason of their cost, complication, and liability to derangement, and the necessity for skill and experience for their proper management. Their widest use and one for which they are especially designed is as an attachment to what is known as a "water-back" or apparatus for heating water for domestic purposes affixed to stoves or ranges and connected with the water-service system, so that the water is heated before being drawn for use. When the pipes are unobstructed, an excess of pressure cannot occur from leaving the water standing a considerable time in the water-back, as the steam generated merely forces the water back in the pipes; but if the pipes should be obstructed from any cause, as they frequently are in winter by freezing, a rupture must necessarily occur which is always troublesome and expensive, and which very often results in destructive explosions.

The construction of my valve will fully appear from the following description, in connection with the accompanying drawings, in which—

Figure 1 is a perspective view; Fig. 2, a section through $y y$, Fig. 1; and Figs. 3 and 4 transverse sections.

B, Fig. 1, is the case or body of the valve having the portion H threaded, in order to attach it to the water-back or other steam-generator. The upper portion of B is also threaded to fit the screw-cap A. The interior is bored, as shown in the sectional view, Fig. 2, the upper part of the bore being enlarged sufficiently to afford free play for the inclosed spring S, while at G a bevel is formed as a seat for the valve F. The spindle E passes through a hole bored centrally in the

cap A of such a size as to let the spindle slide freely therein.

Around the spindle E is loosely coiled the spring S. It is confined between the shoulder formed by the junction of valve and spindle and the lower face of the cap A, thus holding the valve on its seat except when the pressure becomes excessive, when it will rise, allowing the steam to escape through the slots D D. These slots may be of such shape that the escaping steam will produce a sound sufficient to call attention to the excessive pressure. These slots are so located that they allow a view of the interior, and thus any derangement can more easily be seen, and any dirt, incrustation, or rust may be removed by an instrument inserted at this point without the necessity of taking the valve apart. This valve, being intended only for a relief-valve, is constructed without any stuffing-box surrounding the valve-stem. The point at which the valve will rise will of course be determined by the amount of compression of the spring, and this may be varied by screwing or unscrewing the cap A, the pressure corresponding to any degree of compression, being marked on the flattened face C, Fig. 1. By properly proportioning the area of valve-seat G to strength of spring S and pitch of screw I, the graduations may be made to correspond with the bases or tops of said screw, thus affording a very easy method of marking said graduations.

I am aware that safety-valves have been made which were kept on their seats by the direct action of a spring; also, that the pressure of such springs has been regulated by an adjusting-screw, and also that the pressure necessary to raise a safety-valve has been indicated by a graduated scale; but I am not aware that these features have all been combined in so simple and convenient a manner as in my invention and with so few and easily-made parts.

I claim—

1. The combination of the valve and stem F E with the direct-acting spring S, the external cap, A, and the tubular body B, having within it the valve-seat G, and above said seat the slots D D, all constructed as and for the purpose set forth.

2. The combination of the valve and stem
F E with the direct-acting spring S, the ex-
ternal cap, A, and the tubular body B, hav-
ing the valve-seat G, and having its upper
5 portion slotted for the free escape of steam
and its exterior graduated to indicate the re-
sistance of the spring at any given point of ten-

sion desired, all constructed and combined as
and for the purpose set forth.

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Witnesses:

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