

E. G. ALLEN.
STEAM SAFETY VALVE.

No. 81,320.

Patented Aug. 25, 1868.

Fig 1

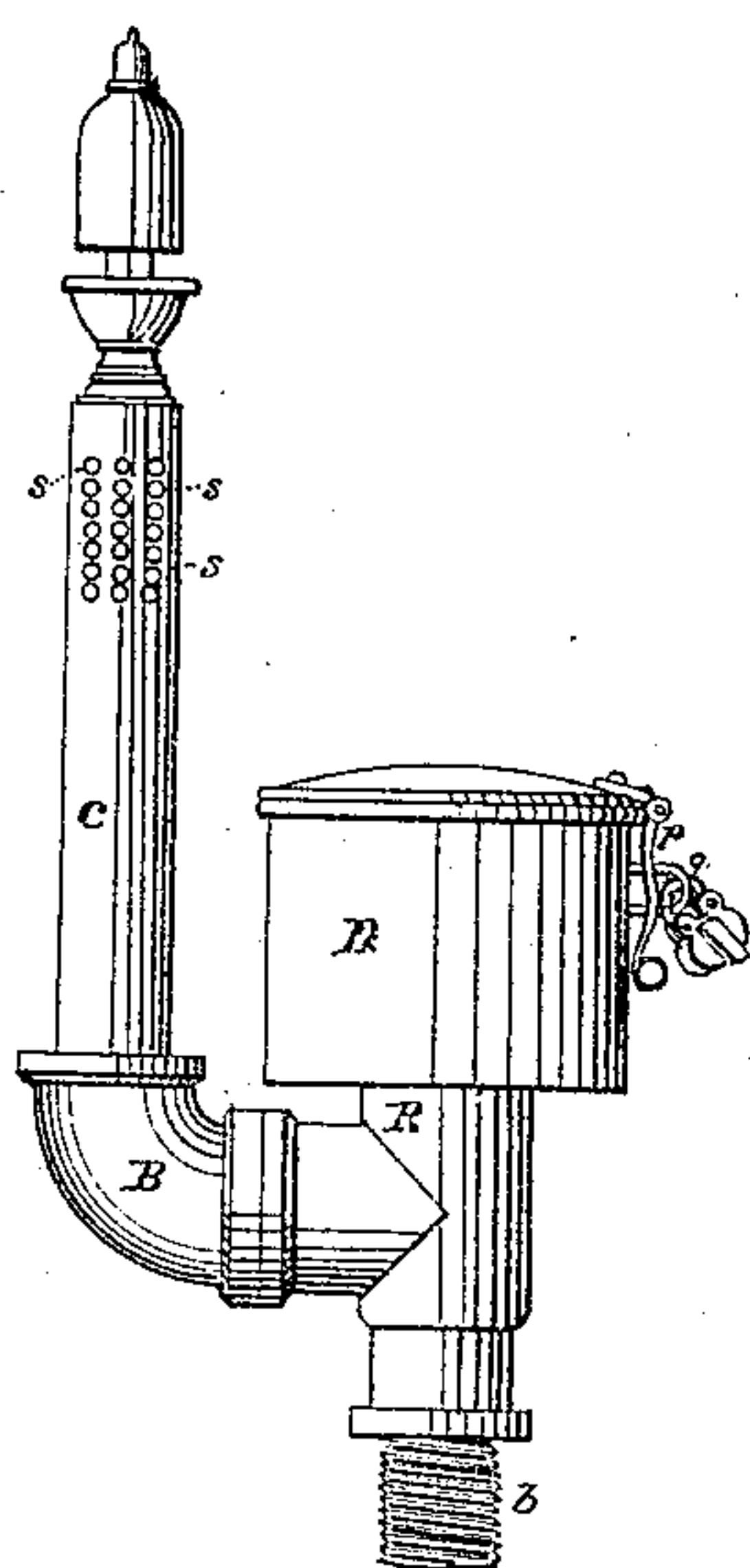


Fig 2

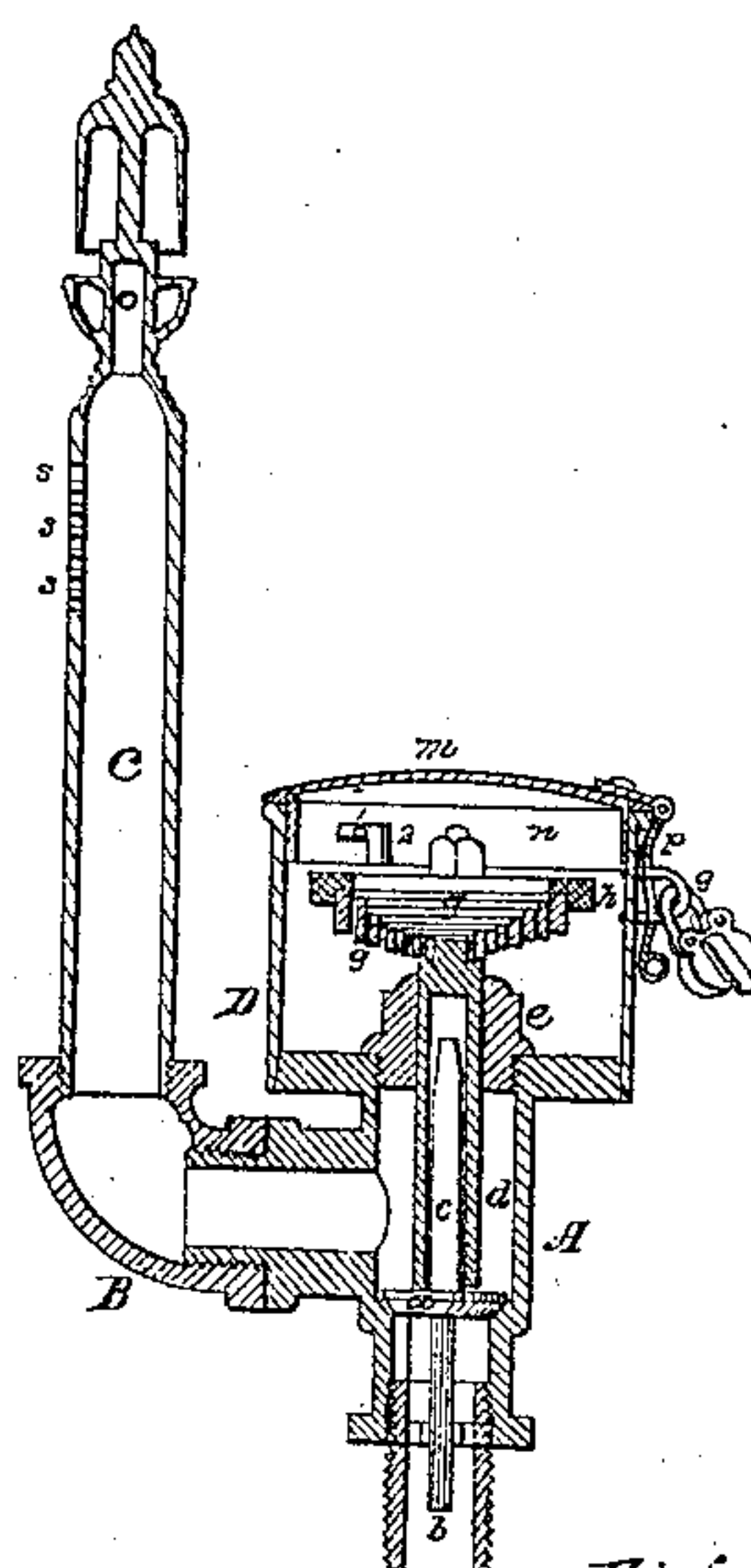


Fig 3

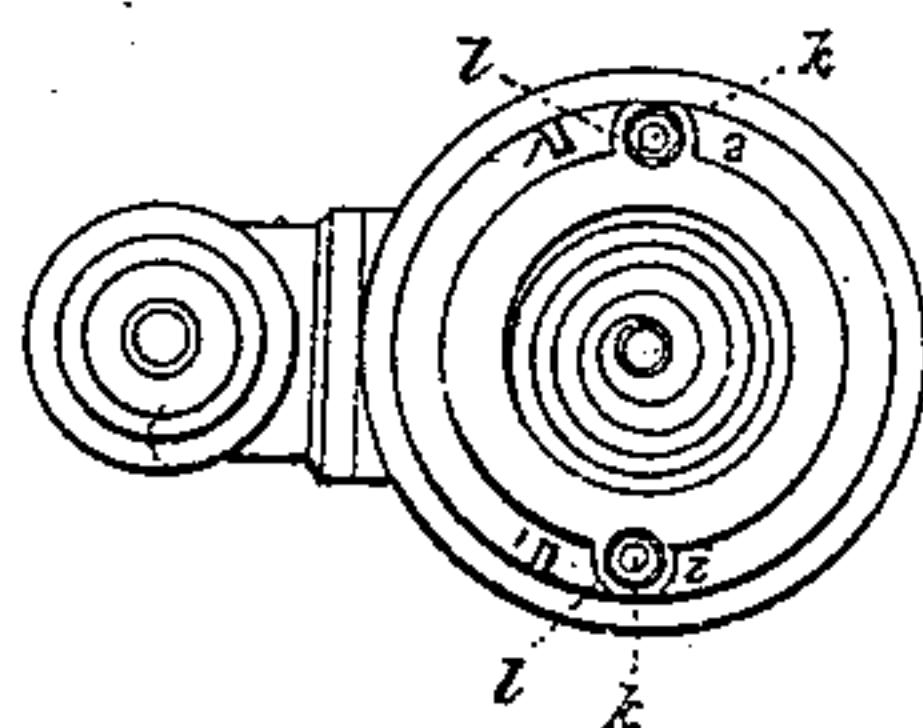
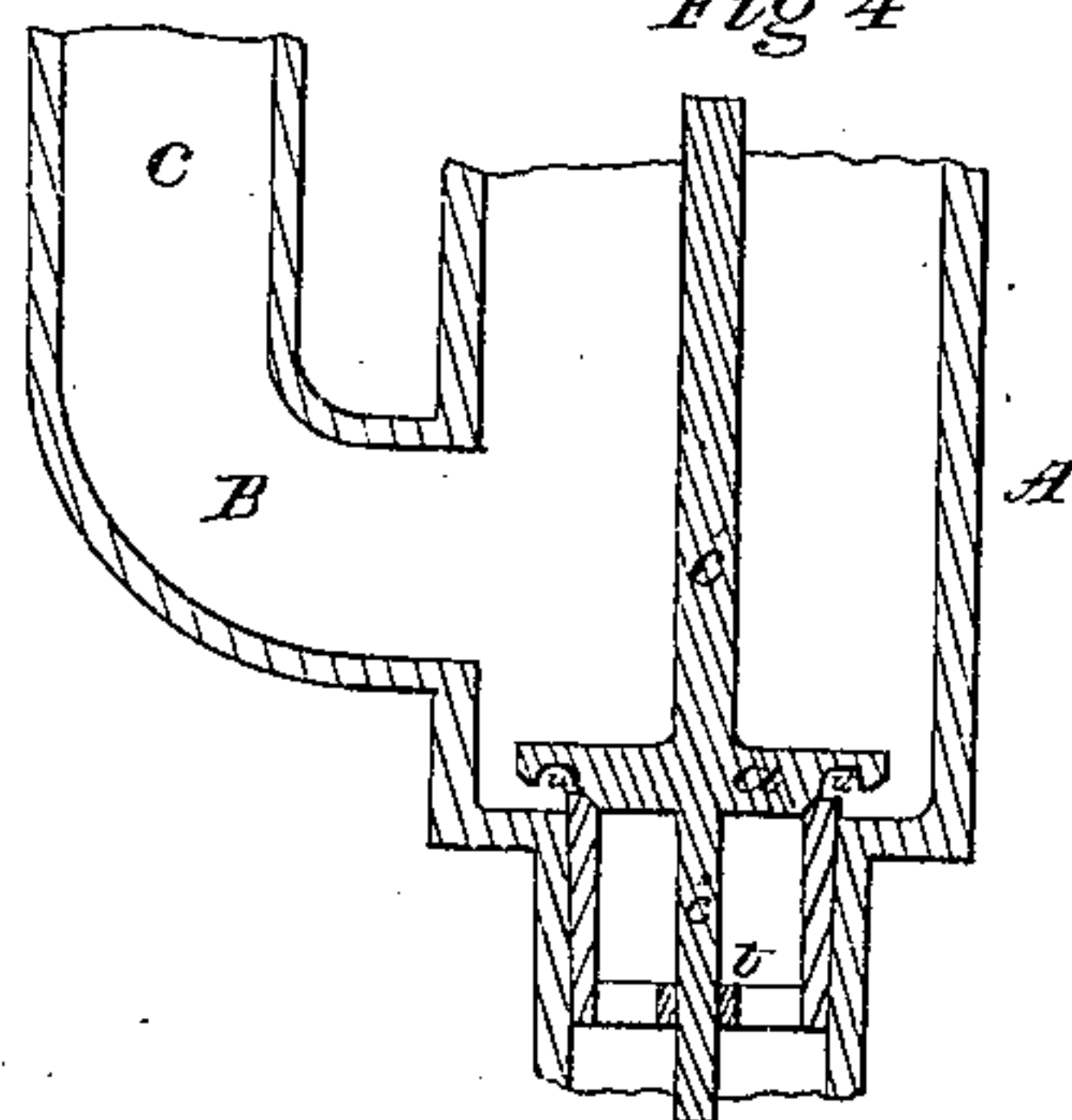


Fig 4



Witnesses

Madam
O. N. Pickering

Inventor

E. G. Allen

United States Patent Office.

E. G. ALLEN, OF BOSTON, MASSACHUSETTS.

Letters Patent No. 81,320, dated August 25, 1868.

IMPROVEMENT IN STEAM SAFETY-VALVES.

The Schedule referred to in these Letters Patent and making part of the same.

Be it known that I, E. G. ALLEN, of Boston, in the county of Suffolk, and State of Massachusetts, have invented a new and improved Lock-Up and Alarm Safety-Valve, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents an elevation of a safety-valve embodying my invention.

Figure 2 is a vertical section of the same.

Figure 3 is a top view, with the cover of the valve-casing removed; and

Figure 4 is a section of a valve and a casing on an enlarged scale.

The object of my invention is to produce a valve which shall insure certainty of relief to the boiler under any required pressure, and which will sound an alarm at the first escape of steam, by means of a whistle, and, also, which shall be so protected as to prevent it from being tampered with under any circumstances without detection.

And the invention consists in the combination, with a tapering volute spring, of a sleeve, upon which the said spring is supported, and which rests directly upon the valve, enclosing the valve-stem, thus causing the spring to press evenly upon the valve, and insuring an unfailing and precise action of the same.

The invention further consists in providing the escape or let-off pipe, near the whistle, with a series of openings or holes, whose combined area is equivalent to that of the valve-opening, thereby securing a free discharge of the steam, and preventing any tampering with the valve through the said pipe.

The invention further consists in so arranging a whistle with reference to the safety-valve that, at the first escape of steam from said valve, the whistle will be sounded, and will continue to sound so long as the steam continues to escape.

Referring to the drawings, A represents the valve-box, in which is fitted, in the usual manner, the valve *a*. To the upper side of the valve *a* is attached the spindle *c*, which is enclosed by a sleeve, *d*, supported upon the valve at its lower end. The sleeve *d* passes through the nut *e*, which is screwed to the upper plate *r* of the case A. The sleeve is fitted snugly, but so as to slide freely in the said nut. On the upper end of the sleeve *d* is supported the tapering volute spring *g*, the upper portion or larger diameter of which is let into a ring or bearing, *h*, provided with openings on either side, which fit over rods *k* attached to the plate *r*, and are threaded at their upper ends, by which means the spring may be readily adjusted, by nuts *l l*, to any required pressure.

To the plate *r* is attached the casing D, which encloses the spring *g*, and is provided with a cover, *m*, which is attached to the casing, by means of what are termed bayonet-joints, consisting of a right-angled slot, fitting over a pin on each side of the inner surface of the casing, so that by placing the cover on the casing, and turning it upon the joints until a hasp on the outside is brought upon the eye, which holds a padlock, the same can be secured, locked, or sealed, and all access to the valve or spring is effectually prevented by any unauthorized person.

The upper portion of the escape-pipe C is provided with a series of holes, the combined areas of which are equal to the area of the valve-opening, so as to allow of a free discharge of the steam, and, at the same time, prevent any access to the valve through such pipe.

The form of valve I design using is shown in fig. 4. It is constructed with an enlargement above the seat, in the under side of which is a groove, or it may be a V-shaped recess, or simply a flange, so as to provide a large surface for the action of the steam at the moment the valve rises from its seat, for the purpose of counterbalancing the pressure of the spring, and admitting of an enlarged opening to the valve. The valve being steadily retained in position by means of the spindle and sleeve, a free and precise action will be always insured.

The valve can be adjusted to any desired pressure, and when so adjusted, and the cover secured by a lock or seal, cannot be altered or tampered with in any way without violence to the case so as to lead to discovery.

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

1. The combination of a spring, *g*, sleeve *d*, and stem *c*, substantially as and for the purpose specified.

2. Constructing the let-off pipe with the perforations s s s, as and for the purpose described.
3. So arranging a whistle with reference to the safety-valve that, at the first escape of the steam from said valve, the whistle will be sounded, and will continue to sound so long as the steam continues to escape, substantially as shown and described.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

E. G. ALLEN.

Witnesses:

D. N. PICKERING,

J. H. ADAMS.