F. STEELE.

Alarm Safety-Valves.

No. 143,858. Patented Oct. 21, 1873.

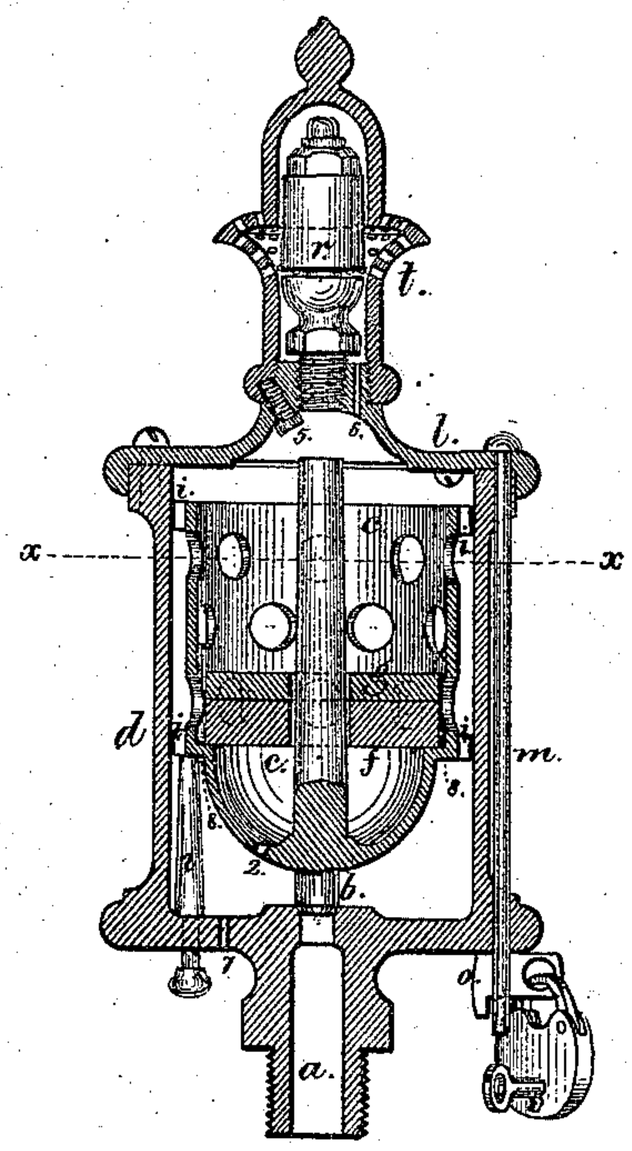

Fig. 1.

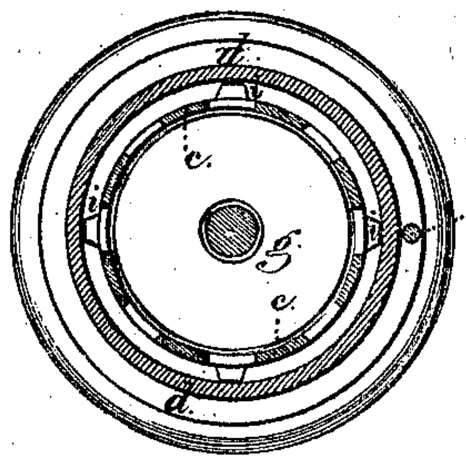

Fig. 2.

Witnesses.

Chas. A. Smith

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UNITED STATES PATENT OFFICE.

FERDINAND STEELE, OF BROOKLYN, N. Y., ASSIGNOR TO HIMSELF, HERBERT S. JEWELL, AND EDWARD M. JEWELL, OF SAME PLACE.

IMPROVEMENT IN ALARM SAFETY-VALVES.

Specification forming part of Letters Patent No. **143,858**, dated October 21, 1873; application filed March 6, 1873.

To all whom it may concern:

Be it known that I, FERDINAND STEELE, of Brooklyn, in the county of Kings and State of New York, have invented an Improvement in Pressure-Alarm for Steam-Boilers, &c., of which the following is a specification:

A direct-acting valve with a weight has been used, as in Letters Patent No. 123,176.

My present invention is made for varying the pressure upon the valve by removing or adding more or less weight, and when so regulated the alarm-whistle will blow every time the maximum pressure is exceeded. The mechanism is very strong, compact, reliable, easily locked up, and not liable to injury while standing ready for action.

I make use of a valve upon a hollow weight-case, into which removable weights, like those of a scale, are introduced, such weights bearing such a relation to the area of the valve that the given weight shall represent a certain pressure upon the valve in pounds, so that by adding or removing these weights, according to the marks upon them, the alarm can be set so as to operate at any desired pressure. The hollow weight-case is within a close chamber, to which is connected the whistle, so that the steam escaping passes through the whistle and blows the same.

In the drawing, Figure 1 is a vertical section, and Fig. 2 is a sectional plan, of the said pressure-alarm at the line *x x*, Fig. 1.

The tube *a* is screwed to the boiler or steam-pipe, and at its upper end is a seat for the valve *b*, that is at the lower end of the weight-case *c*, and these are guided within the external or inclosing case or cylinder *d*, that is cast with or permanently connected to the tube *a*. Blocks *i i* serve to guide the weight-case *c* within the cylindrical case *d;* and this weight-case *c* is hollow and may be perforated, as shown, to lessen the weight, and at the bottom is a small opening, 2, to allow of the escape of any water of condensation, to prevent an accumulation of the same in the case *d* interfering with the weight that acts to press the valve *b* upon its seat. This case *c* represents the lightest pressure at which the valve *b* will be lifted, and that is to be marked thereupon. The weights *f* and *g* are of a size to pass freely into the case *d*, and each one represents a certain pressure of steam upon the valve *b*. These weights are more or less numerous, and should vary in thickness and each be distinctly marked, so that the maximum pressure in pounds will be indicated by adding together the numbers upon the parts.

The cover *l* of the cylinder *d* may be secured by screws, and it is to be retained so as to prevent removal by the rod *m*, that has a head and passes through the head and flanges of the cylinder *d*, and is secured by a key, *o*, and suitable lock. The whistle *r* is attached to the cover *l*, and it may be of any desired character, but it is inclosed in the perforated cap *t* to prevent the whistle being injured, and a screw, 5, passing up from inside the cover *l*, prevents the cap *t* being removed. Small holes at 6 and 7 allow for water of condensation to pass away without obstructing the parts. At the lower part of the weight-case *c* there is a flange, 8, and below this is a push-pin, *v*, the head of which is below the cylinder *d*, so that the engineer can from time to time lift up the weight *c* sufficiently to ascertain that the parts are in reliable working order.

I claim as my invention—

The pressure-alarm composed of the whistle surrounded by a perforated cap, *t*, and attached to the cover *l* of the cylinder *d*, in combination with the case *c*, removable weights and valve *b*, that are within the cylinder *d* and above the valve-seat, and the push-pin *v*, the parts being secured by the locking-rod, as set forth.

Signed by me this 4th day of March, 1873.

F. STEELE.

Witnesses:

GEO. T. PINCKNEY,

CHAS. H. SMITH.