

C. C. SCHMIDT.
Safety-Valves.

No. 146,716.

Patented Jan. 20, 1874.

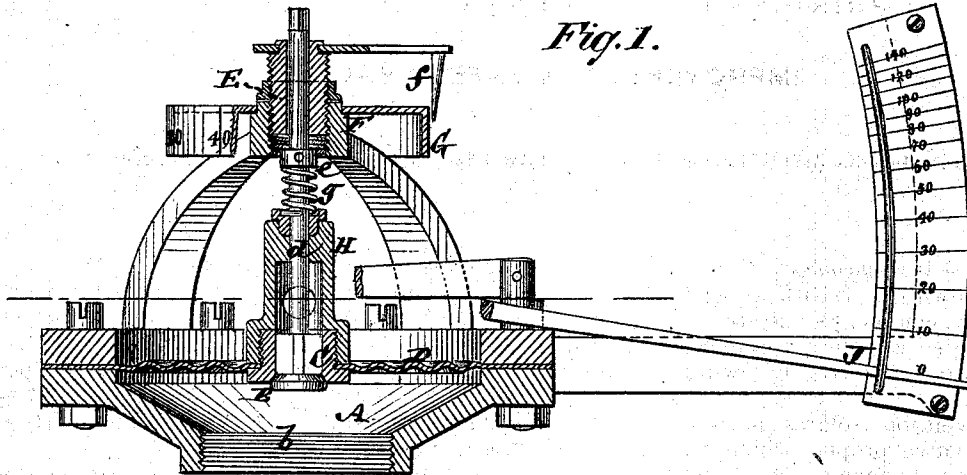


Fig. 1.

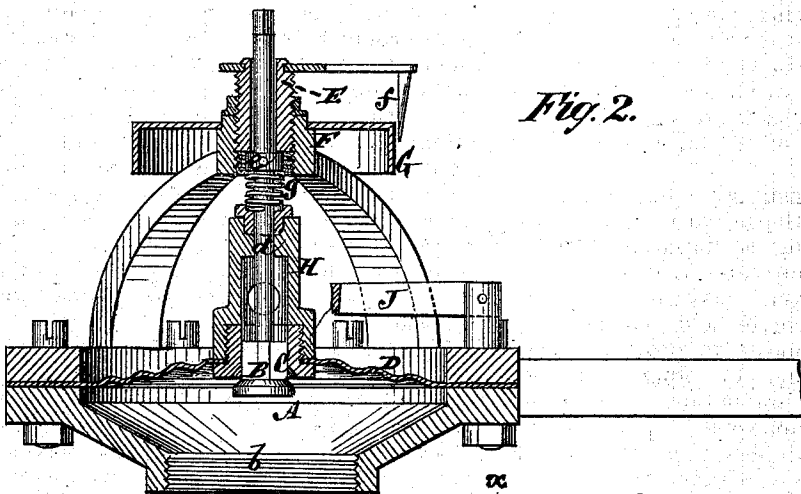
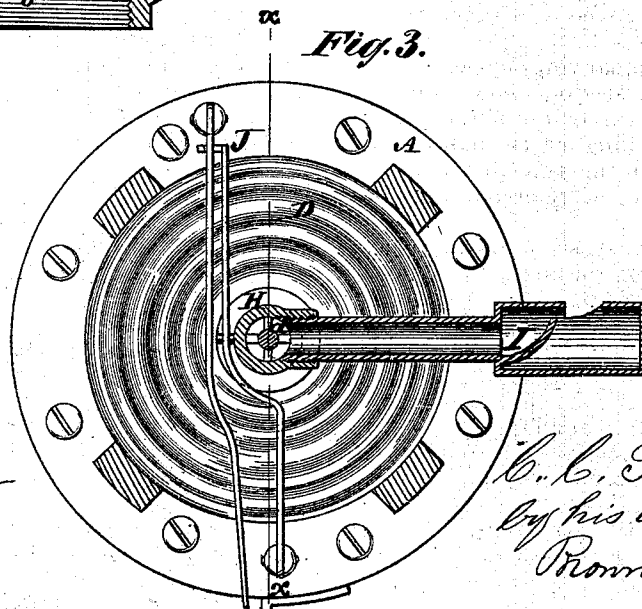


Fig. 2.



UNITED STATES PATENT OFFICE

CHRISTIAN C. SCHMIDT, OF NEW YORK, N. Y.

IMPROVEMENT IN SAFETY-VALVES.

Specification forming part of Letters Patent No. **146,716**, dated January 20, 1874; application filed December 9, 1873.

To all whom it may concern:

Be it known that I, CHRISTIAN C. SCHMIDT, of the city, county, and State of New York, have invented certain Improvements in Safety-Valves, of which the following is a specification:

The invention relates to a combination, with the valve proper, which may either be movable or stationary, of a movable valve-seat and attached spring, composed of an elastic diaphragm, against which the pressure of the steam, gas, fluid, or vapor acts, to lift the seat away from the valve, and by the large surface which it presents relatively to the valve, all probability of the latter sticking is avoided.

The invention consists in a stop, preferably made adjustable, with the valve and movable valve-seat having a diaphragm-spring attached, whereby the valve and seat move in common till a given pressure is reached, after which the valve is held by the stop, and the valve-seat moves to provide for the escape of the fluid, gas, or vapor controlled by the valve. The invention likewise includes certain combinations of parts or devices with the valve proper and movable valve, whereby an improved or more perfect action is obtained.

In the accompanying drawing, Figures 1 and 2 represent sectional elevations of my improved safety-valve, in different positions as regards its working parts, and Fig. 3 a horizontal section of the same on the line *x x*.

Similar letters of reference indicate corresponding parts.

A is the valve-case or chamber, and *b* the inlet thereto, for the steam, gas, fluid, or vapor, but which it will here suffice to refer to as steam. B is the valve proper, seating upward, and closing a hollow valve-seat, C, which latter has attached to it a spring or corrugated elastic diaphragm, D, outside of or surrounding said seat, and making a close joint at its edges with the case A, such diaphragm forming an elastic extension of the movable valve-seat.

Supposing the valve proper B to be held from moving, which may be done in various

ways, then the steam acting under the valve-seat and its attached elastic diaphragm, said seat and diaphragm are moved away from the valve, and the steam allowed to escape through the hollow valve-seat. The large surface presented by the valve-seat and its accompanying spring, effectually prevents all possibility of the valve sticking.

To provide for adjustment of the valve so that it will open at variable pressures, the valve proper B is provided with a stem, *d*, on which is a collar or projection, *e*, that, after said valve has moved up in common with the valve-seat C and its attached elastic diaphragm D, to a given height, which corresponds to a given pressure, comes in contact with a stop, E. This stop restricts said valve's further movement, so that any increased pressure lifts the valve-seat C, with its attached elastic diaphragm D, away from the valve, and so provides for escape through the seat.

The stop E is constructed to screw up and down through an eye or screw-box, F, in a frame mounted on or attached to the case, whereby said stop may be variously adjusted, to provide for the collar *e* of the valve-stem coming in contact, sooner or later, with said stop E, according to the pressure at which it is required to blow off.

An index, *f*, may be attached to said stop for movement around a suitably-graduated dial, G, to regulate the position of the stop to the limit of pressure required. Furthermore, the hollow valve-seat or hollow clamp H of the diaphragm screwing thereon, may have connected with it a whistle, I; also, have connected with it, if desired, a lever-indicator, J, for indicating the pressure on the valve.

A spring, *g*, interposed between the collar *e* and top of the hollow clamp H, or gland fitted therein, serves to keep the valve proper B to its seat during its descent in common with the valve-seat, or till the valve proper in its ascent is arrested by the stop.

I claim—

1. The combination of an adjustable stop, E, and projection or collar *e*, with the valve and

movable valve-seat, having attached elastic diaphragm forming an extension of said seat, whereby the valve and valve-seat move in common for a given distance, essentially as and for the purposes herein set forth.

2. The spring *g*, in combination with a collar or projection on the valve-stem, the hol-

low valve-seat C, the valve B, and the elastic diaphragm D, substantially as specified.

CHRISTIAN CHARLES SCHMIDT.

Witnesses:

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MICHAEL RYAN.