

(No Model.)

J. G. WHITE.
SAFETY VALVE.

No. 549,987.

Patented Nov. 19, 1895.

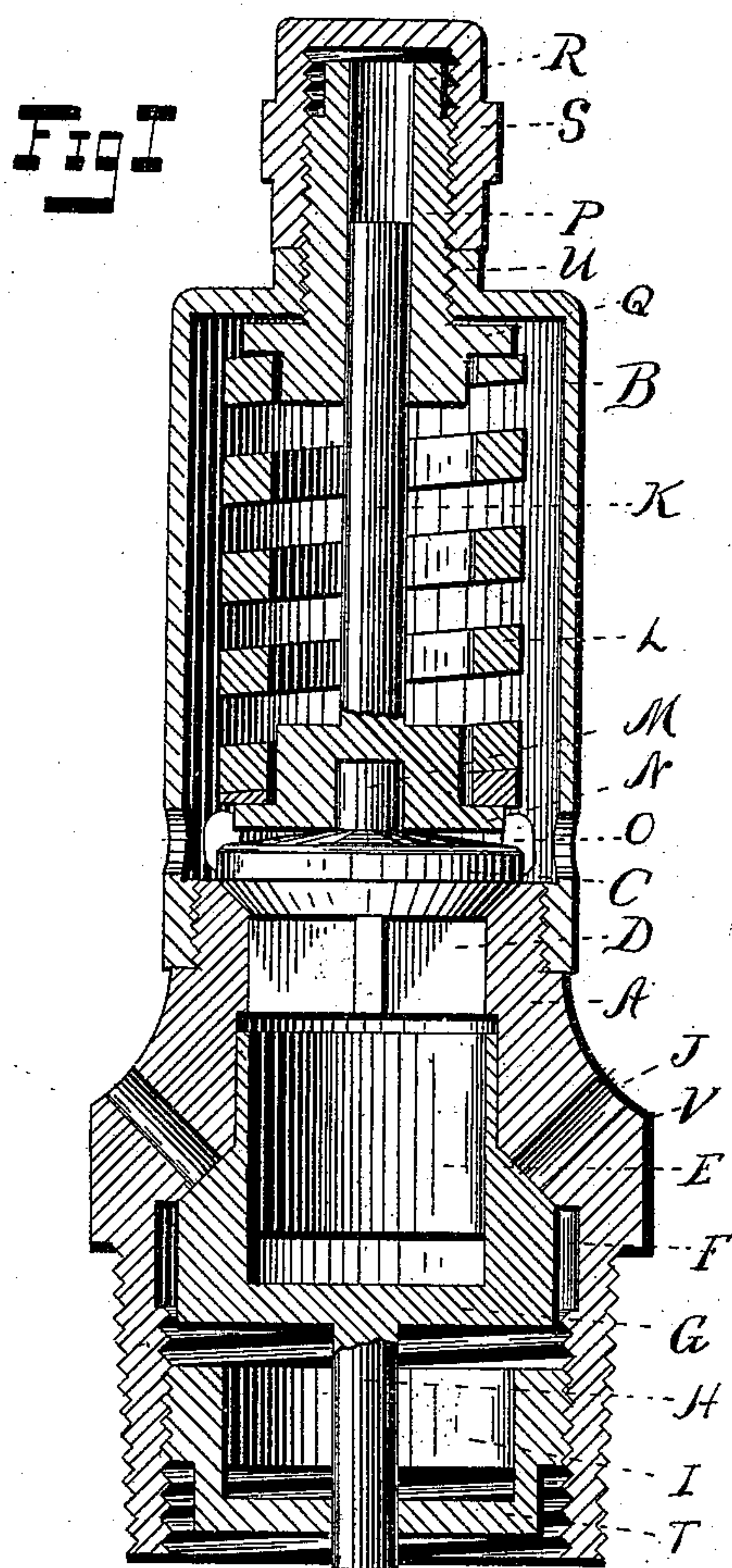


Fig. II

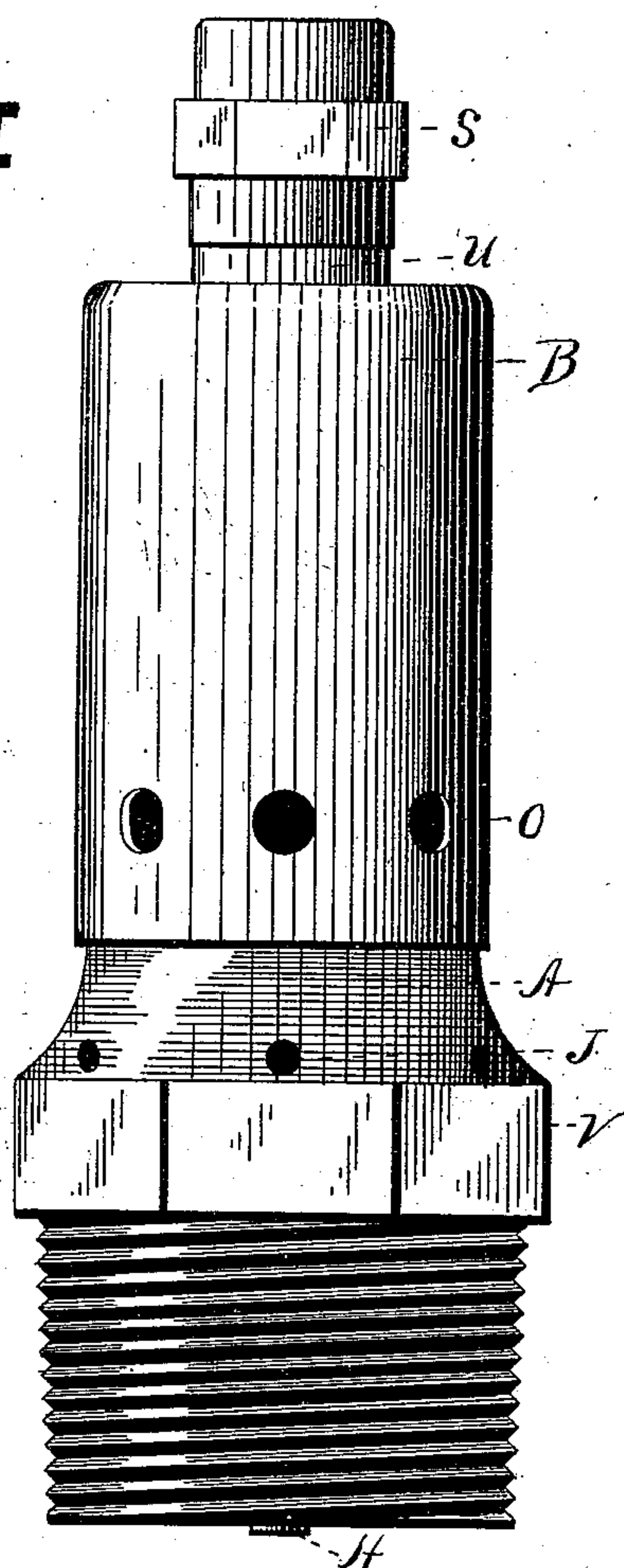


Fig. III

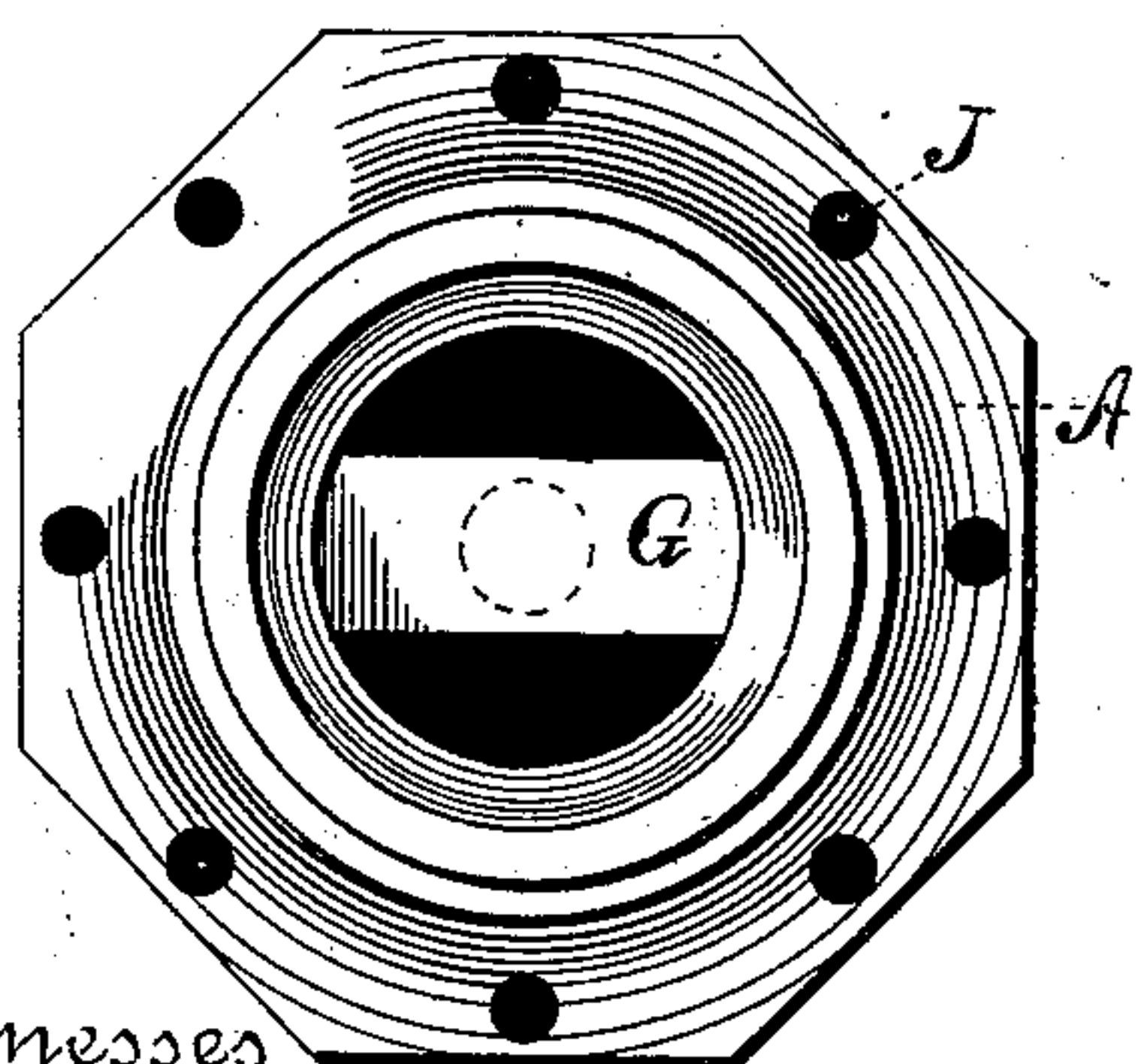


Fig. IV

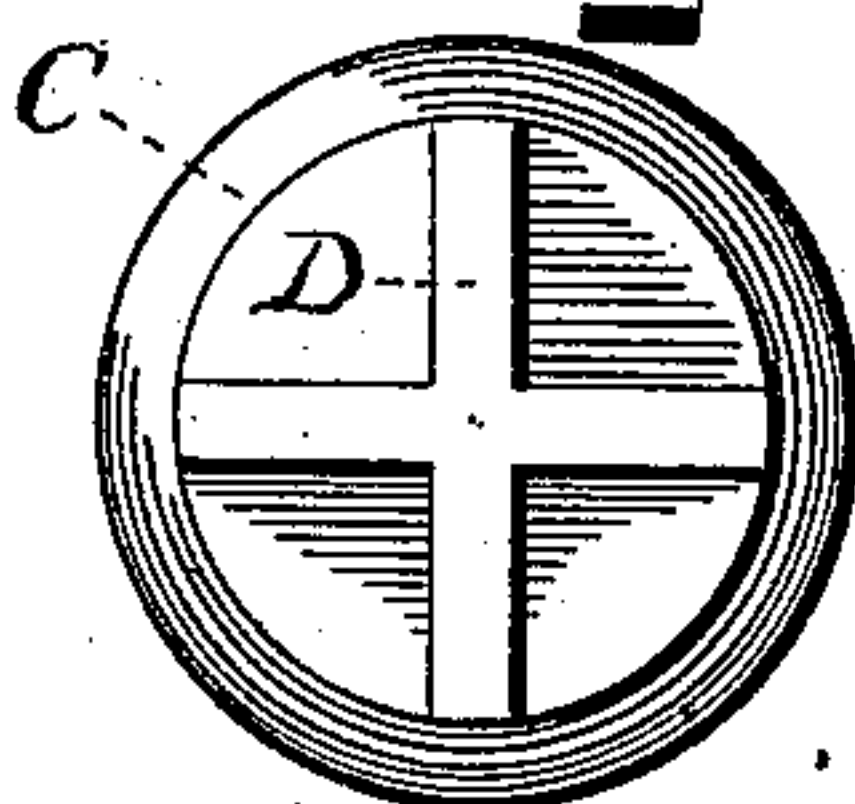


Fig. V

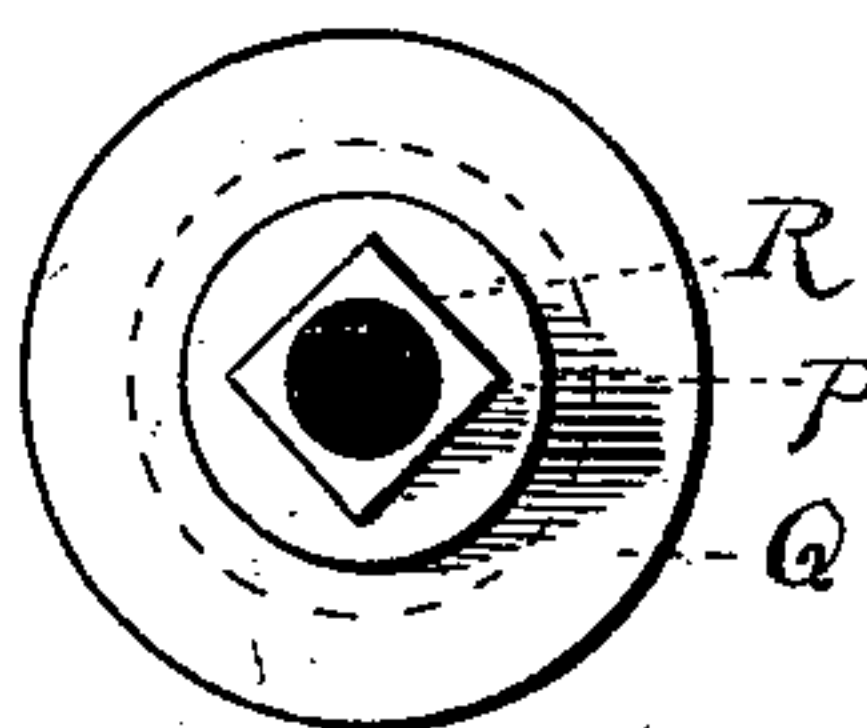
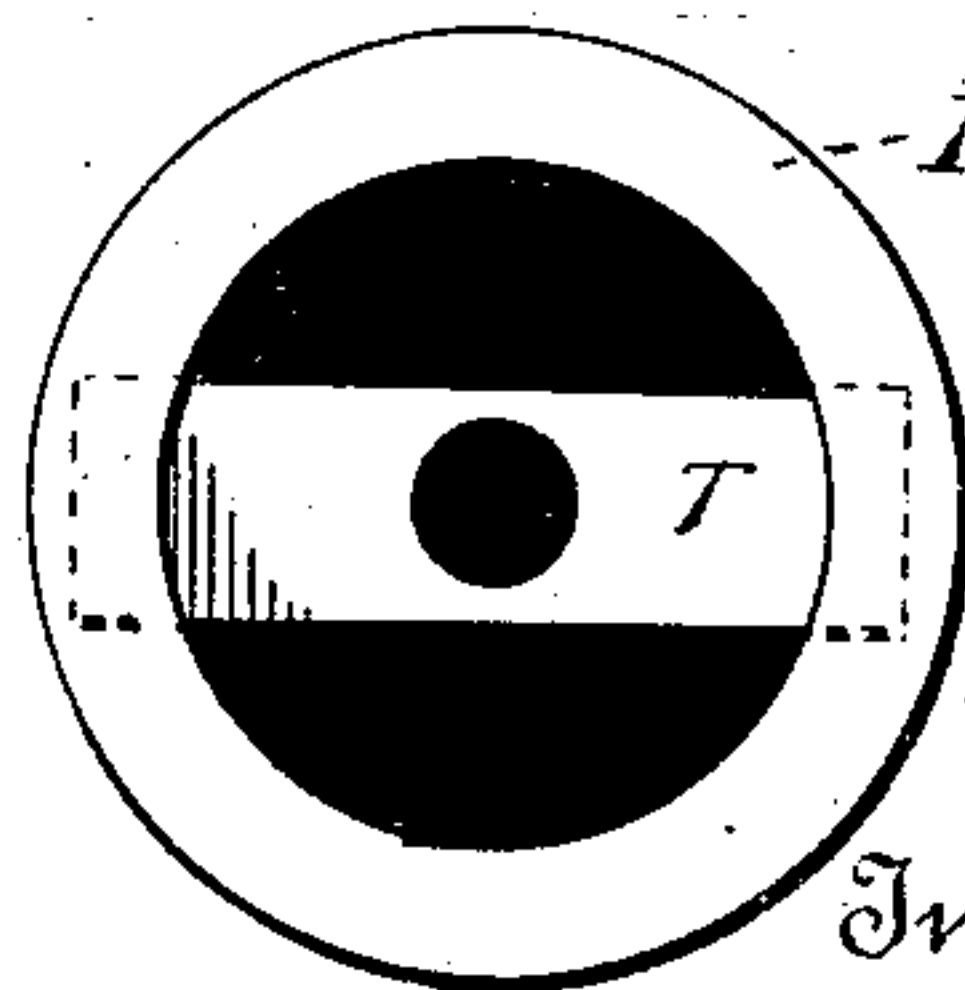


Fig. VI



Witnesses.

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UNITED STATES PATENT OFFICE.

JAMES G. WHITE, OF WESTPORT, MISSOURI.

SAFETY-VALVE.

SPECIFICATION forming part of Letters Patent No. 549,987, dated November 19, 1895.

Application filed May 6, 1895. Serial No. 548,227. (No model.)

To all whom it may concern:

Be it known that I, JAMES G. WHITE, a citizen of the United States, residing at Westport, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Safety-Valves, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in safety-valves.

The object of my invention is to provide a valve with an escape-valve and an inspiratory-valve, each being independently seated in a single casing, and each valve being provided with means for holding it in its seat under normal conditions.

My invention further consists in certain features of construction hereinafter fully described and claimed.

In the accompanying drawings, illustrative of my invention, Figure I represents a vertical sectional view of a valve constructed in accordance with the principles of my invention. Fig. II represents an elevation view. Fig. III represents a top view of the lower shell, the lower valve being in place and the upper valve removed. Fig. IV represents a bottom view of the upper valve. Fig. V represents a top view of the tension-plug. Fig. VI represents a top view of the lower valve-guide.

Similar letters of reference indicate similar parts.

A indicates the lower half of the valve-casing, which is substantially tubular in shape, the lower end being externally screw-threaded so as to be fitted to the opening in the boiler, steam-chest, or other vessel with which the valve is to be used. The external periphery of a portion of the upper part of the lower shell A, as indicated by V, is polygonal in shape, so as to be easily seized with a wrench when fitting the valve to a vessel.

The upper end of the shell A is externally screw-threaded and is fitted to the internally-screw-threaded lower end of the upper shell B. The shell B is cylindrical in form, the upper end being closed and the lower end open.

The upper end of the shell B is provided with a central boss U, through which is a vertical screw-threaded opening in which is fitted the tension-plug P, consisting of an exter-

nally-screw-threaded cylindrical body, the lower end of which is provided with a horizontally-projecting flange Q, and the upper end being squared at R, so as to be adapted to be seized by a wrench. The plug P is fitted to the opening in the boss U and is provided with a vertical central opening adapted to the valve-stem K. An internally-screw-threaded cap S is fitted to the upper screw-threaded end of the tension-plug P, and when screwed down against the boss U serves as a lock-nut holding the plug P in position.

The upper end of the shell A is provided with a seat for the expiratory valve C, said valve consisting, substantially, of a horizontal disk having vertical wings D projecting from the lower side. The wings D are movably fitted in the central vertical opening in the lower shell A. The valve C is provided with a central vertical projection cylindrical in form and loosely fitted within an opening in the enlarged lower end of the valve-stem K. The lower end of the valve-stem K is provided with an annular flange N, upon which rests the lower end of a coiled spring L, the upper end of the said spring having a bearing upon the lower side of the flange Q. The coiled spring L encircles the valve-stem K. Just below the expiratory valve C is located the vacuum-valve E, which consists of a hollow cylinder, the outer periphery of which is fitted to the central vertical opening in the lower shell A. The valve E is provided at the lower end of the cylindrical portion with an outwardly and downwardly beveled surface which fits against a seat formed in the inner wall of the shell A. The seat referred to is located opposite the polygonal portion of the shell A.

The lower end of the valve E is provided with a U-shaped yoke G, from which projects downwardly a stem H. A tubular guide I is externally screw-threaded and is fitted to the internally-screw-threaded lower end of the shell A. A U-shaped yoke T is provided for the lower end of the guide I, the said yoke being furnished with a central vertical opening, within which is fitted movably the stem H.

A series of openings J lead from the lower valve-seat through the shell A and serve as a means of ingress for the air when the lower valve is not seated. A series of openings O

are provided in the lower end of the shell B to permit the escape of steam from the inside of the shell B when the valve C is raised from its seat by the steam-pressure.

5 The following is a description of the operation of my invention: The base portion or lower shell is secured into the opening in the vessel where the valve is to be used. The tension-plug P is then adjusted to the required
10 position by screwing it upward or downward until the proper tension of the spring L is obtained, and is then locked in place by screwing the cap S against the boss U. The guide
15 I is then turned, raising the valve E near enough its seat so that the pressure of the steam will seat the valve. In the event of the pressure in the vessel to which the valve is attached becoming lower than the atmospheric pressure the valve E lowers and per-
20 mits air to enter the vessel through the openings J, the central opening in the shell A, and the tubular guide I. When the pressure in the vessel reaches a predetermined point, the valve C is raised and permits the steam within
25 the vessel to escape from the vessel through the tubular guide I, the tubular valve E, and from the shell B, through the openings O.

In an application filed by me January 31, 1895, I have shown and described a safety-
30 valve provided with inlet and outlet valves independently seated and provided with suitable inlet and outlet openings, and such I do not claim, broadly, herein.

Having thus described my invention, what

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

1. In a safety valve, the combination with an upper and a lower shell, of an escape valve seated in the lower shell, suitable openings leading to and from the said escape valve, an
40 inlet valve seated in the lower shell, an inlet opening leading from the seat of the inlet valve, and adapted to be closed by the said valve, and means for adjusting the distance moved by the inlet valve from its seat, sub-
45 stantially as described.

2. In a safety valve, the combination with a valve casing, of an inlet and an outlet valve seated in the casing, suitable openings lead-
50 ing to and from the said valves, an adjustable load carried by the outlet valve and adjustable means for limiting the movement of the inlet valve from its seat, substantially as described.

3. In a safety valve, the combination with
55 the shell A, of the shell, B, having a screw thread connection therewith, the valves C and E seated in the shell A, means connected with the shell B, for holding the valve C in its seat, openings J leading from the seat of the valve
60 E through the shell, A, and the guide, I, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES G. WHITE.

Witnesses:

WARREN D. HOUSE,
J. F. HADLEY.