

F. B. SCOVELL.  
SAFETY-VALVE.

No 191,078.

Patented May 22, 1877.

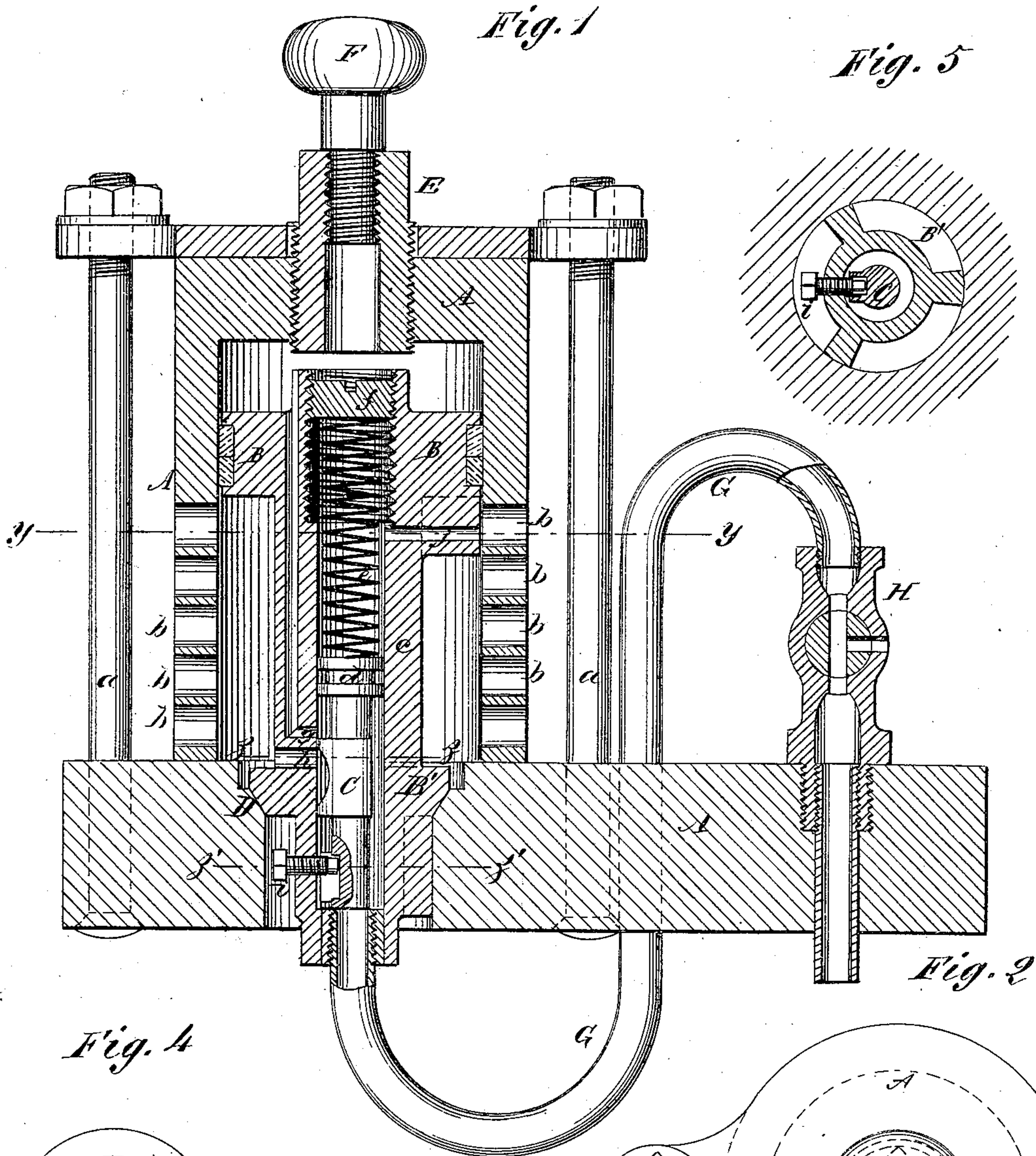
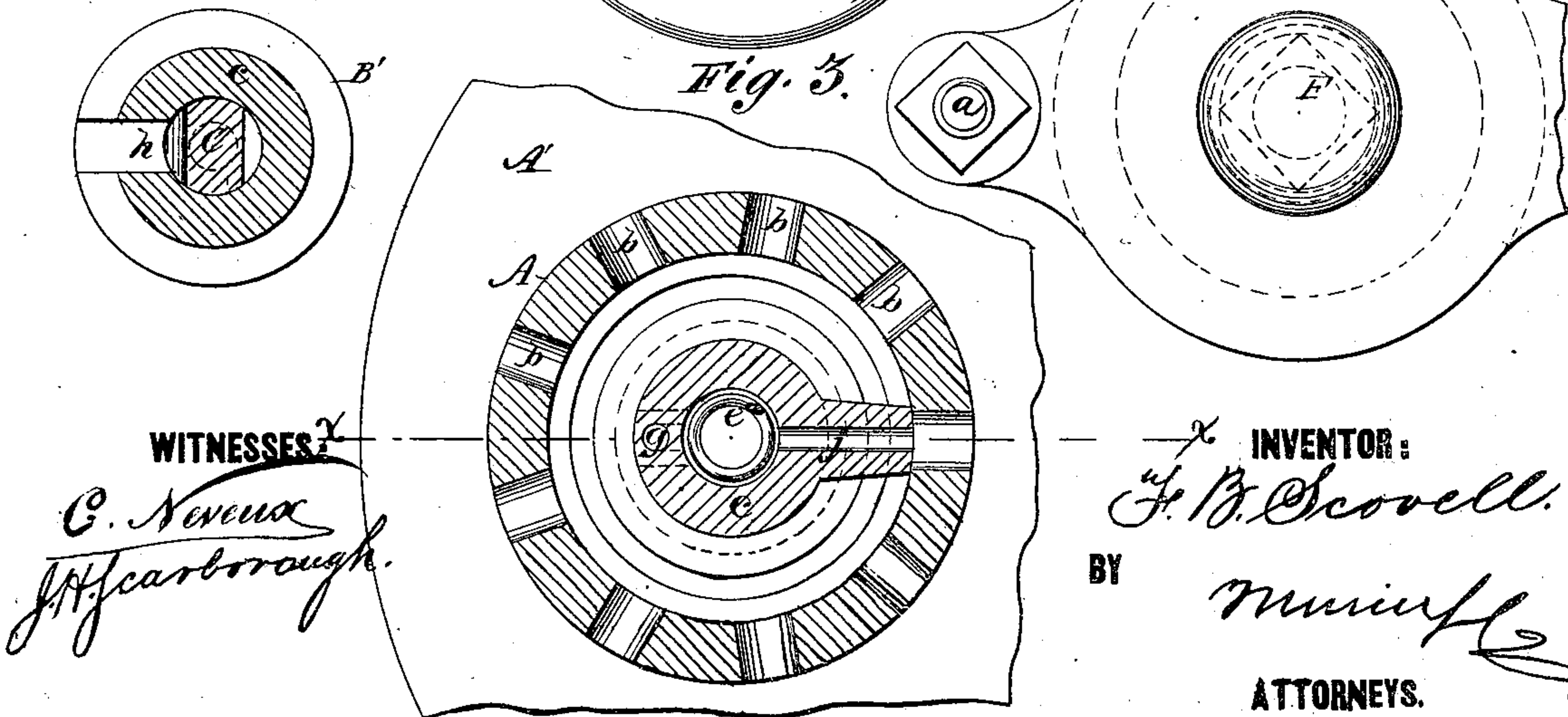


Fig. 5

Fig. 2

Fig. 4

Fig. 3



WITNESSES

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## IMPROVEMENT IN SAFETY-VALVES.

Specification forming part of Letters Patent No. 191,078, dated May 22, 1877; application filed April 23, 1877.

*To all whom it may concern:*

Be it known that I, FRANK B. SCOVELL, of Waterford, Ontario, Canada, have invented a new and Improved Safety-Valve, of which the following is a specification:

In the accompanying drawing, Figure 1 is a vertical section of my improved valve on line *x x*, Fig. 3. Fig. 2 is a plan view. Fig. 3 is a transverse section on line *y y* in Fig. 1. Fig. 4 is a transverse section on line *z z* in Fig. 1. Fig. 5 is a transverse section on line *z' z'* in Fig. 1.

Similar letters of reference indicate corresponding parts.

The invention relates to an improvement in safety-valves for steam-boilers, more particularly locomotive-boilers; and it consists in the construction and combination of parts, as hereinafter described and claimed.

In the drawing, A is a cylinder, which is secured to the casting A' by bolts *a*. This cylinder is bored to receive a piston, B, and it is perforated at *b* for the escape of steam that passes the safety-valve. A valve-seat, D, is formed in the casting A', and a valve, B', is fitted thereto. The valve B' and piston B are connected by a tubular stem, *c*. A piston, *d*, is fitted to the tubular stem *c*, and is pressed downward by a spring, *e*, which abuts against a screw plug or follower, *f*. A D-valve, C, is attached to the rod of the piston *d*, and is fitted to a seat in the stem *c*, in which the ports *g h* are formed. The port *h* communicates directly with the space in the cylinder A, between the piston B and valve B', and the port *g* communicates with the space above the piston B in the cylinder A. A stop-screw, *i*, passes through the valve-stem, and engages a slot in the rod of the piston *d*, for limiting the motion of the said piston. A passage, *j*, leads from the interior of the hollow stem *c* to the perforations *b*, for the escape of any steam that may pass the piston *d*.

A tubular screw, E, passes through the top of the cylinder A, and limits the motion of the piston B and valve B'. F is a plug, that is screwed into the upper end of the tubular screw E. The lower end of the tubular valve-stem is connected, by means of a pipe, G, with a three-way cock, H, which may be screwed

directly into the boiler near the safety-valve, or it may be placed remotely from the valve in a pipe connected with the steam-room of the boiler.

The operation of my improved valve is as follows: Steam is admitted through the three-way cock H, pipe G, space in the stem *c*, and port *g*, to the space in the cylinder A above the piston B. The said piston being greater in area than the valve B', the counter-pressure exerted on it is more than sufficient to hold the valve to its seat. When the pressure of steam rises above the prescribed limit, the piston *d* is forced upward against the pressure of the spring *e*, carrying the valve C with it, so that it covers the ports *g h*. The steam above the piston B is thus permitted to escape when the valve B' is raised by pressure of steam from below, and steam escapes from the boiler until the normal pressure is regained, when the spring *e* throws the piston *d* downward, moving the valve C, admitting steam through the port *g* to the space in the cylinder A above the piston B, when the steam so admitted will force down the piston, and cause the valve B' to regain its seat.

The pipe G is of sufficient length to spring sufficiently to permit the valve to move the required distance. The motion of the piston B and the valve B' is limited by the tubular screw E, and the pressure of the spring *e* upon the piston *d* is regulated by turning the screw-follower *f*. This is accomplished by removing the screw-plug F from the tubular screw E and turning the follower *f* by means of a screw-driver. If it is required to do this while the steam is up, the cock H may be turned, and the valve B' held to its seat by turning the tubular screw E. The three-way cock H serves the double purpose of shutting steam off from the cylinder A, so that the valve may rise, and of freeing the cylinder from steam or any water that might accumulate therein.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination of sliding valve C and tube, having piston-head *d*, with the tubular stem *c*, having vertical and lateral passages *g h*, opening interiorly at contiguous points,

to admit of communication with the valve, the piston B, valve B', spring *e*, and laterally-perforated cylinder A, all as shown and described, to operate as specified.

2. The combination of the adjustable tubular screw E and its removable plug F with the cylinder and the piston B, as shown and

described, for the purpose of facilitating access to, and adjustment of, the screw-plug *f*, as and for the purpose specified.

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Witnesses:

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