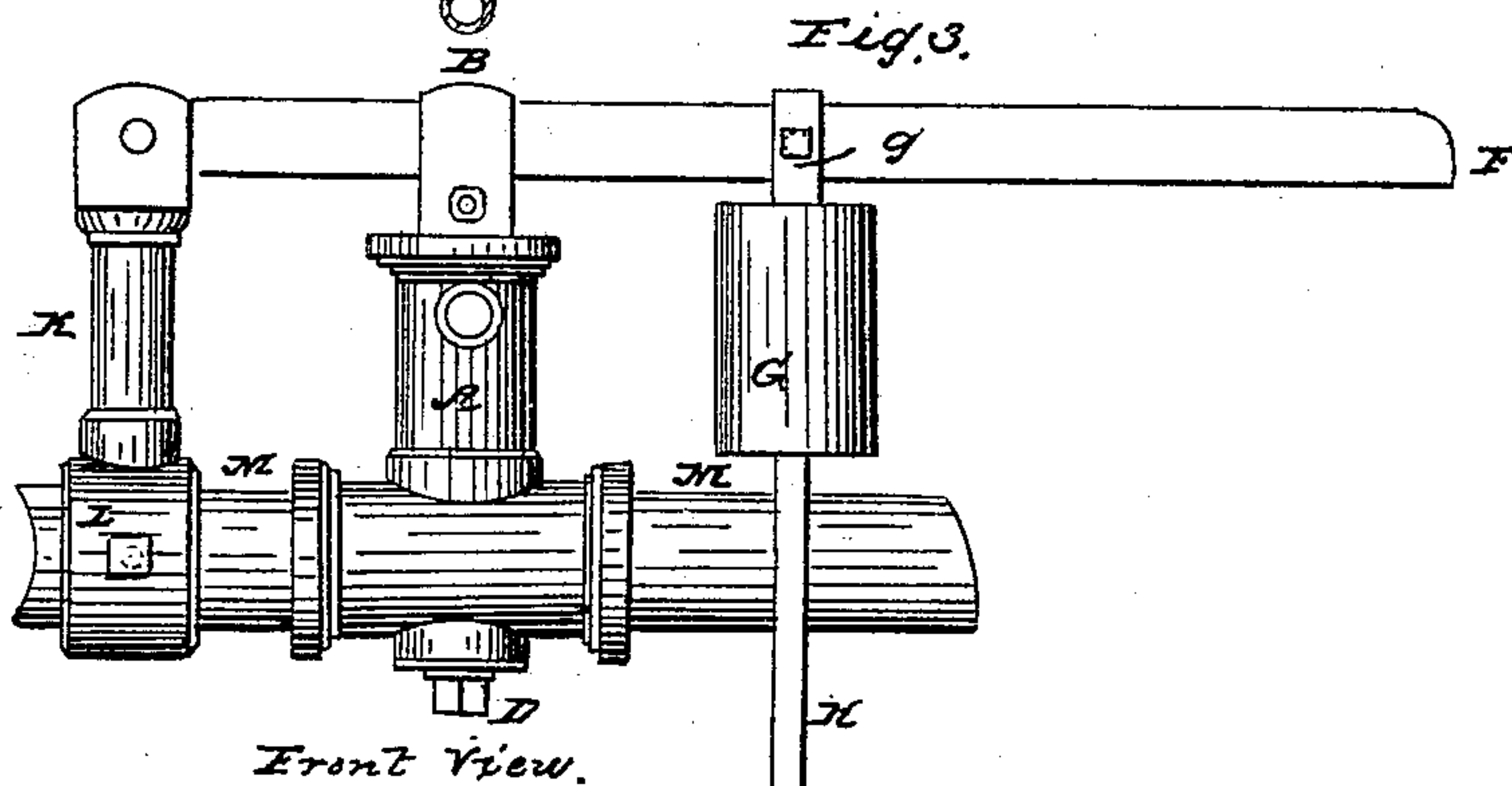
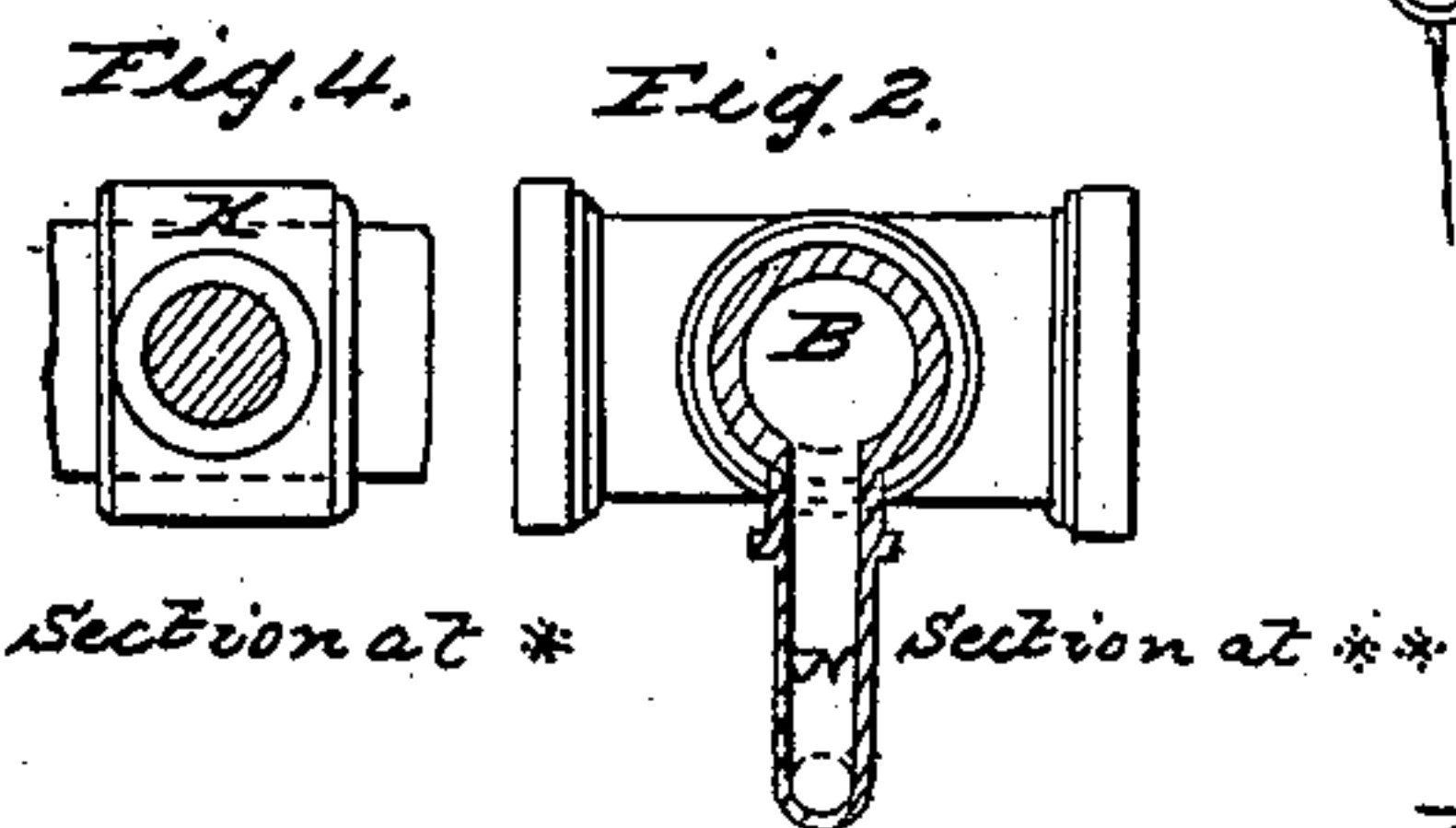
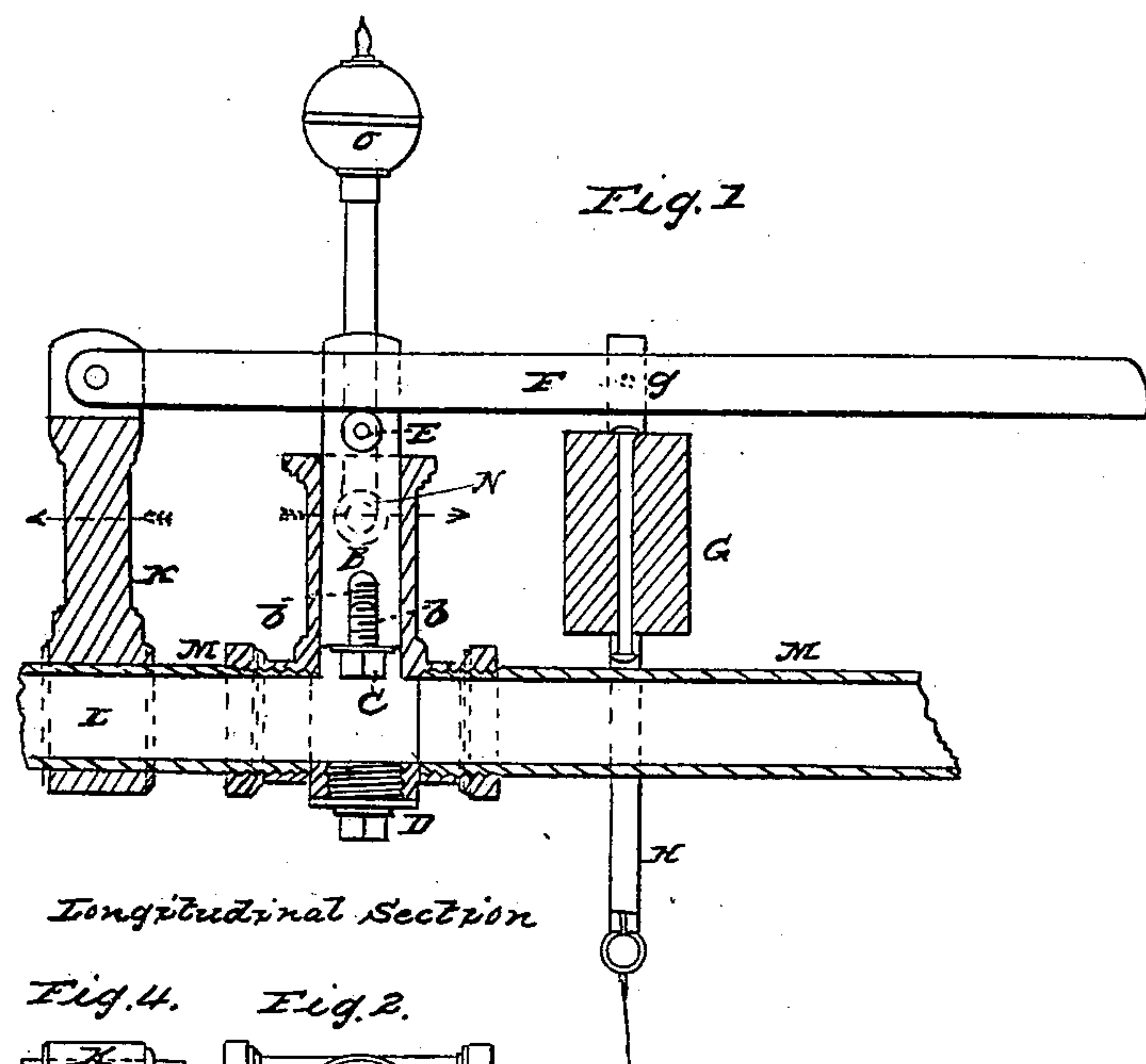


C. H. FORD.

Steam Damper Regulator and Indicator.

No. 52,114.

Patented Jan'y 16, 1866.



Witnesses:
Alex. A. & H. H. H. H.
John A. Deane

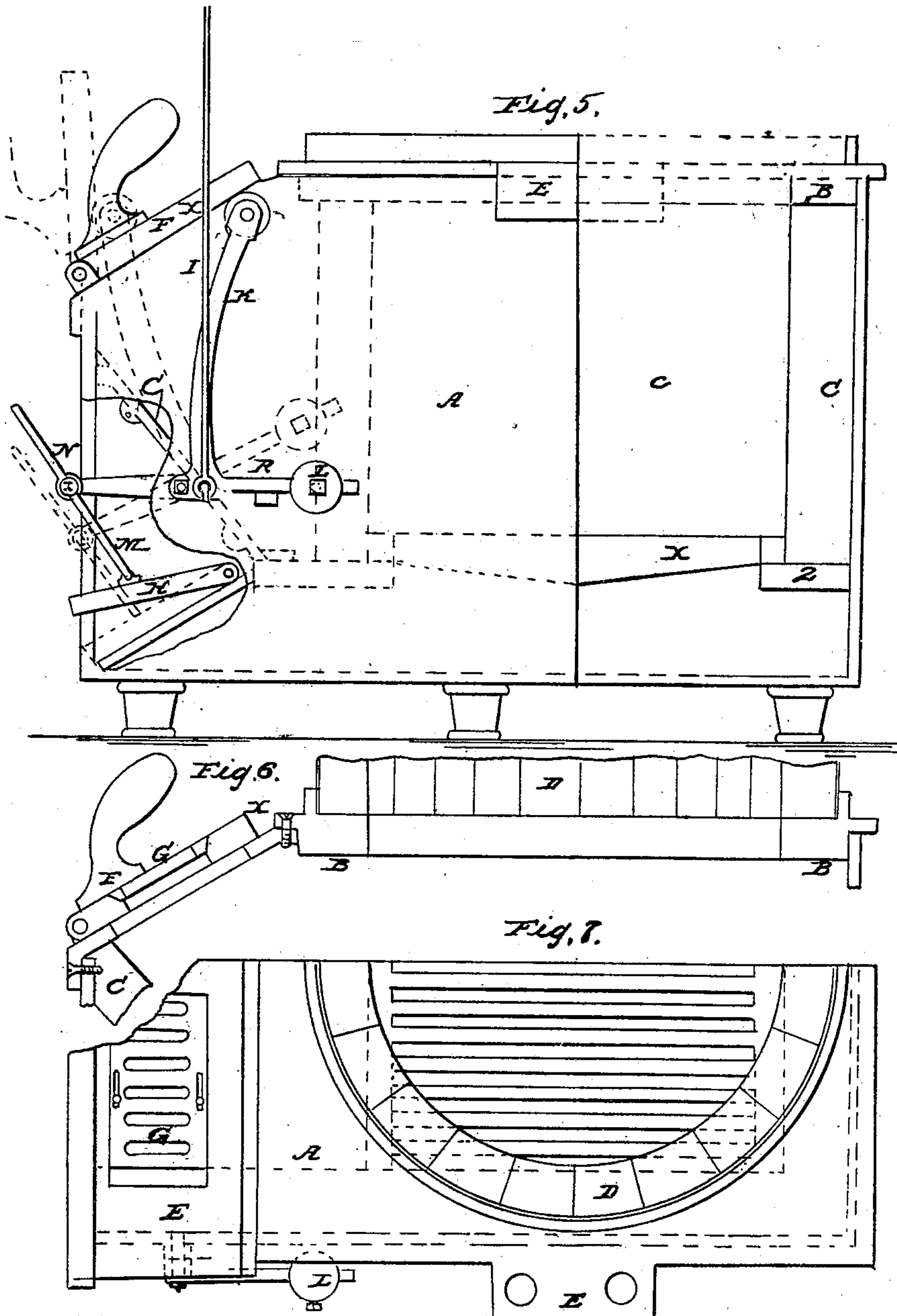
Inventor:
Charles Henry Ford.

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J. M. A. H. H. H.

Inventor:
Charles Henry Ford

UNITED STATES PATENT OFFICE.

CHARLES HENRY FORD, OF BALTIMORE, MARYLAND, ASSIGNOR TO HIMSELF, HAYWARD HUTCHINSON, JESSE L. HUTCHINSON, AND ELIAS S. HUTCHINSON, OF SAME PLACE.

IMPROVEMENT IN STEAM DAMPER-REGULATORS AND INDICATORS.

Specification forming part of Letters Patent No. 52,114, dated January 16, 1866.

To all whom it may concern:

Be it known that I, CHARLES HENRY FORD, of the city and county of Baltimore, and State of Maryland, have made new and useful Improvements in Steam-Pressure Indicators and Damper-Regulators; and I do hereby declare the following to be a full, clear, and exact description of the nature, construction, and operation of the same, sufficient to enable one skilled in the art to which it appertains to construct and use the same, reference being had to the accompanying drawings, which are made part of this specification, and in which—

Figure 1 is a vertical longitudinal section of the apparatus. Fig. 2 is a horizontal section at *, Fig. 1. Fig. 3 is a side elevation. Fig. 4 is a section at *, Fig. 1. Figs. 5, 6, and 7 are views of the furnace.

The invention consists of an adjustable apparatus on the steam-pipe, which is so arranged as to open and close the doors or damper of a furnace and sound an alarm on reaching a certain point.

In the drawings, K is a post, whose foot, forming a sleeve, is movable on the steam-pipe M so as to be adjustable toward and from the cylinder A, whose foot-flanges are entered by the pipe, forming a tight joint therewith. The required adjustment of the post K is maintained by the set-screw L, which attaches the foot of the post K to the steam-pipe M.

Pivoted to the post K is a lever F, which passes through a gain or slot in the upper part of the piston B, which works smoothly within the cylinder A, having a packing, *b*, on its lower end, which is packed by means of the set-screw C, which enters the piston B and compresses the packing. The lever F moves upon a friction-roller, E, and the packing-screw C is reached by withdrawing the screw-plug D, which enters the foot-flange of the cylinder.

Entering the cylinder A is a pipe, N, which leads to a stand-pipe, on which is an ordinary steam-whistle, O, so arranged that when the piston B reaches a certain height the steam shall escape into said pipe N and blow an alarm on the steam-whistle.

Suspended to the lever F is a weight, G,

which is adjustable to such point on the lever as shall balance the desired steam-pressure on the face of the piston B, in the manner usual in safety-valves.

Suspended by a rod from the shackle of the weight G is a chain, J, which passes down and is attached to one of the arms of a rock-shaft, Fig. 5, which, by its upward arm, operates the furnace-door, and by another arm actuates the damper which admits air under the fire in the furnace.

The adjustability of the post K permits a greater range of adjustment as to pressure by a variation as to the distance between the piston and post, as well as that between the piston and the weight.

The operation of the apparatus is as follows: When the steam presses upon the lower face of the piston B with a greater force than is counterbalanced by the combined weight of the weight G and its attached chain, &c., the lever F will rise, open the furnace-door, and close the damper, much or little, according to the extent of the pressure of the steam. This will have the effect of reducing the amount of air admitted to the fire, and also, admitting cold air above the fire through the furnace-door will dampen the fire by reducing the draft. If the pressure under the piston B be excessive it will rise still farther, and, exposing the opening of the pipe N, the steam will rise into the whistle O and sound the alarm.

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

1. The arrangement of the adjustable post K, weighted lever F, piston B, and the packing arrangement C *b*, substantially as described.

2. In combination with the piston B and lever F, the rod or chain I and rock-shaft R, actuating the damper H and furnace-doors X, one or both, substantially as described.

CHAS. HY. FORD.

Witnesses:

JOHN W. HUTCHINSON,
W. H. HAYWARD.