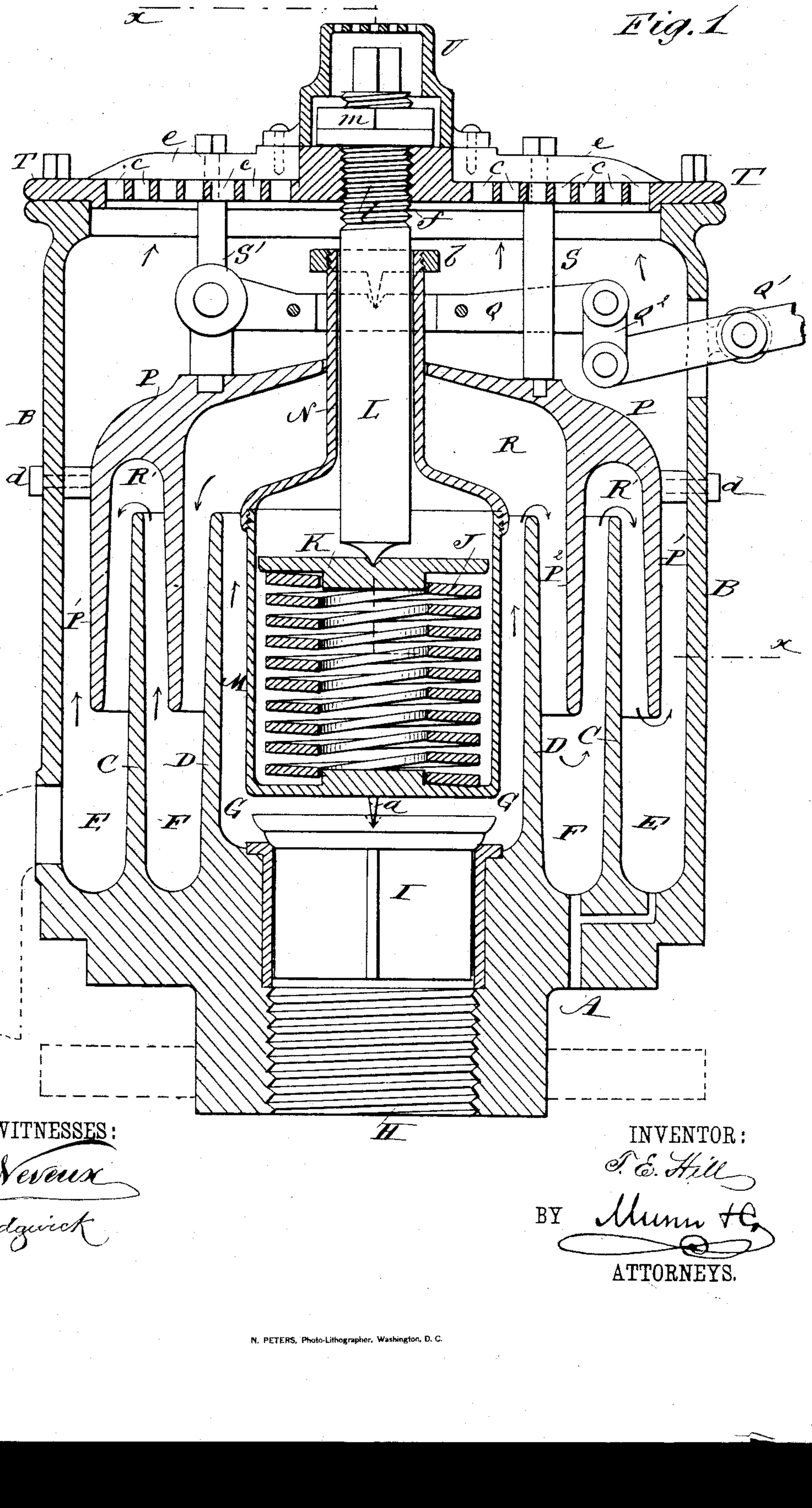
(No Model.) 2 Sheets—Sheet 1.

# T. E. HILL.

## MUFFLER FOR STEAM VALVES.

No. 342,962. Patented June 1, 1886.

Fig. 1

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(No Model.) 2 Sheets—Sheet 2.

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## MUFFLER FOR STEAM VALVES.

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*Fig. 2*

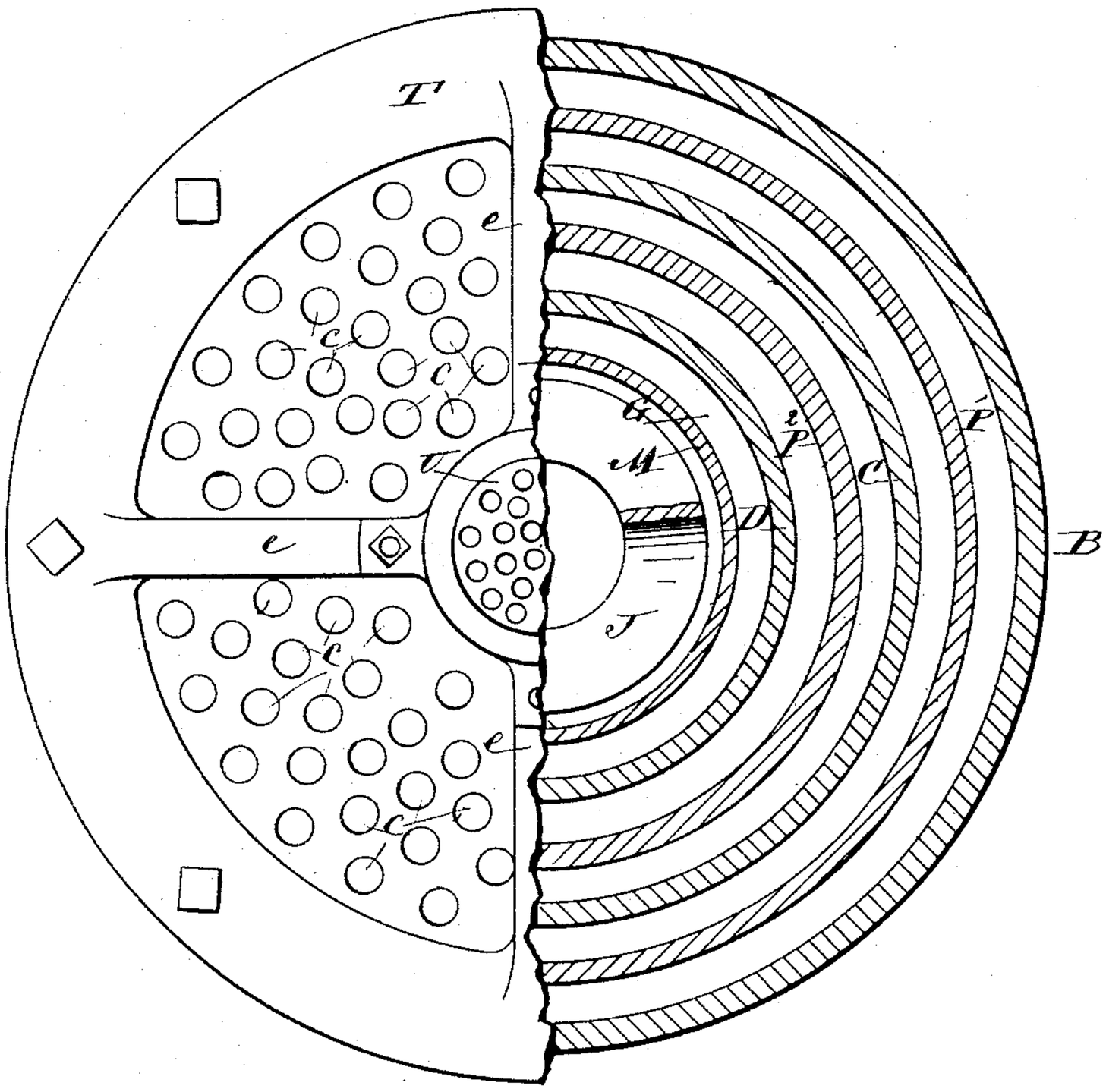
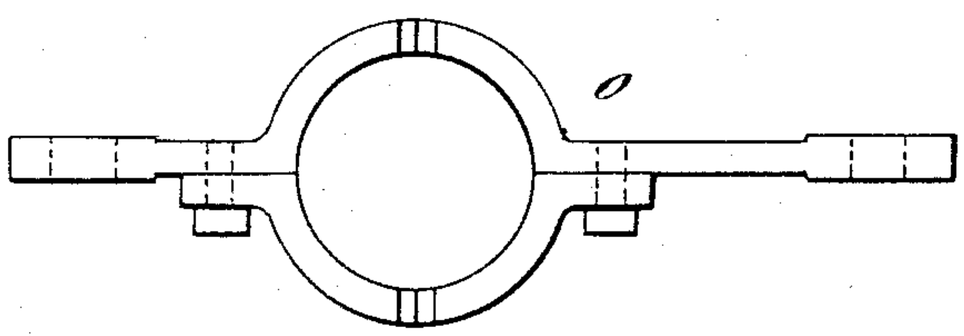



*Fig. 3*

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# UNITED STATES PATENT OFFICE.

THOMAS ENGLISH HILL, OF RAHWAY, NEW JERSEY.

## MUFFLER FOR STEAM-VALVES.

SPECIFICATION forming part of Letters Patent No. 342,962, dated June 1, 1886.

Application filed February 16, 1886. Serial No. 192,118. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS ENGLISH HILL, of Rahway, in the county of Union and State of New Jersey, have invented a new and Improved Muffler for Steam-Valves, of which the following is a full, clear, and exact description.

The object of my invention is to provide an improved muffler or device for deadening or preventing the unpleasant hissing sound incident to escape of exhaust steam from the valves of steam engines as ordinarily constructed.

The invention is embodied in the construction and combination of parts hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional elevation of my new and improved muffler, showing the same combined with a safety-valve. Fig. 2 is a sectional plan view of the same, taken on the line *x x* of Fig. 1; and Fig. 3 is a plan view of the inner lever for relieving the valve of pressure.

A represents the main casting of the muffler. This is formed with the outer upwardly-projecting circular casing, B, and with the inner upwardly-projecting concentric flanges or plates, C D, which form the annular chambers E F, and central circular chamber, G.

In the central opening, H, of the casting A is fitted the valve I, which forms the bottom of the central chamber, G. The valve I is held down to its seat against the pressure of steam by the action of the spring J, which acts between the plate K (which is held down by the heavy bolt L) and the bottom of the circular box M, which is formed or provided with the point *a*, which enters a centering-socket in the top of the valve I, as shown clearly in Fig. 1. The box M is of smaller diameter than the chamber G, formed by the flange D, so that an annular space is left between the adjacent surfaces of the said box and flange, into which steam escaping from the valve I first enters, and the upper edge of the box M has connected to it the shell N, which surrounds the bolt L loosely and reaches up through the deflector P, and is provided at its upper end with the collar *b*, whereby the shell N and the box M may be lifted against the pressure of the spring J by the inner and outer levers Q Q′.

The deflector P is by preference made in the form of a bell or hollow dome. It is held within the casing B by the studs *d d*, and is arranged to overhang entirely the chambers F G, and to partly overhang the chamber E; and in this instance the deflector is formed with two downwardly-projecting concentric flanges, P′ P². These are of such diameters respectively relatively to the diameters of the flanges D C and main outer casing, B, that they are adapted to plunge into the chamber E F and occupy a position about midway between the adjacent walls of the flanges C D and C B, respectively, as shown in Fig. 1. The flanges P′ P² form a central chamber, R, in the deflector, and also a surrounding annular chamber, R′. The former incloses the central circular flange, D, and covers entirely the chamber G, while the former (the chamber R′) incloses the flange C, so that when steam escapes from the valve I and issues from the chamber G it will be deflected downward and compelled to travel under the flanges P′ P² and over the flange C, entering at each turn chambers of gradually-increasing size, so the steam is not only compelled to travel a circuitous course, but is diffused in the chambers and its pressure reduced.

The deflector P is braced by the studs S S′, which depend from the top plate, T, and the inner lever, Q, is fulcrumed to the stud S′, and is linked to the outer lever, Q′, by the link Q², so that any downward movement of the lever Q′ will lift the lever Q and cause it in turn to lift the shell N and box M, as above described.

The top plate, T, is bolted to the upper edge of the casing B of the main casting, and it is formed with numerous holes, *c c*, through which the steam must pass, and which divide it up into small jets. The upper surface of the plate T is formed with the radial ribs *e e* for strengthening it, and the central aperture, *f*, of the plate T is screw-threaded to receive the screw-threaded upper portion, *l*, of the heavy bolt L, so that by turning the bolt L it may be longitudinally adjusted for regulating the pressure of the spring J upon the valve I.

The two jam-nuts *m* are placed upon the bolt L above the plate T for locking the bolt, and over these and the top of the bolt is placed the cap U, to protect the nuts and bolt, and this cap is perforated to permit the escape of any steam that may enter it.

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

1. The main casting A, formed with the casing B and flanges C D, and the dome P, formed with flanges P′ P², in combination with the valve I, box M, spring J, casing N, bolt L, and the levers for lifting the box M, substantially as and for the purposes set forth.

2. The combination, with the main casting having annular chambers, and the central chamber, G, of the valve I, and the box M, for inclosing the spring within the central chamber, G, substantially as described.

THOMAS ENGLISH HILL.

Witnesses:
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WM. A. MILLEG.