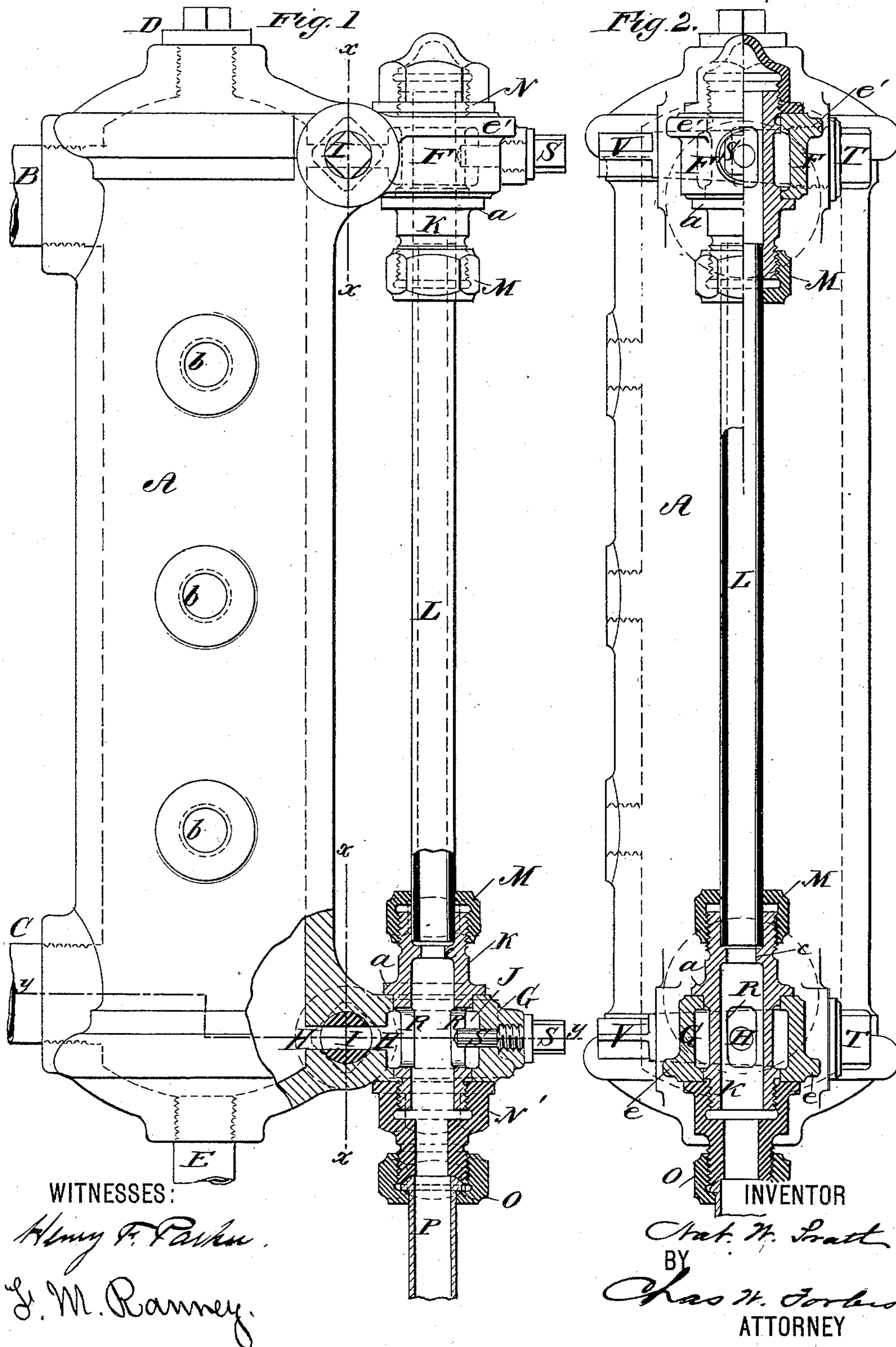


2 Sheets—Sheet 1.

No. 412,787.

Patented Oct. 15, 1889.



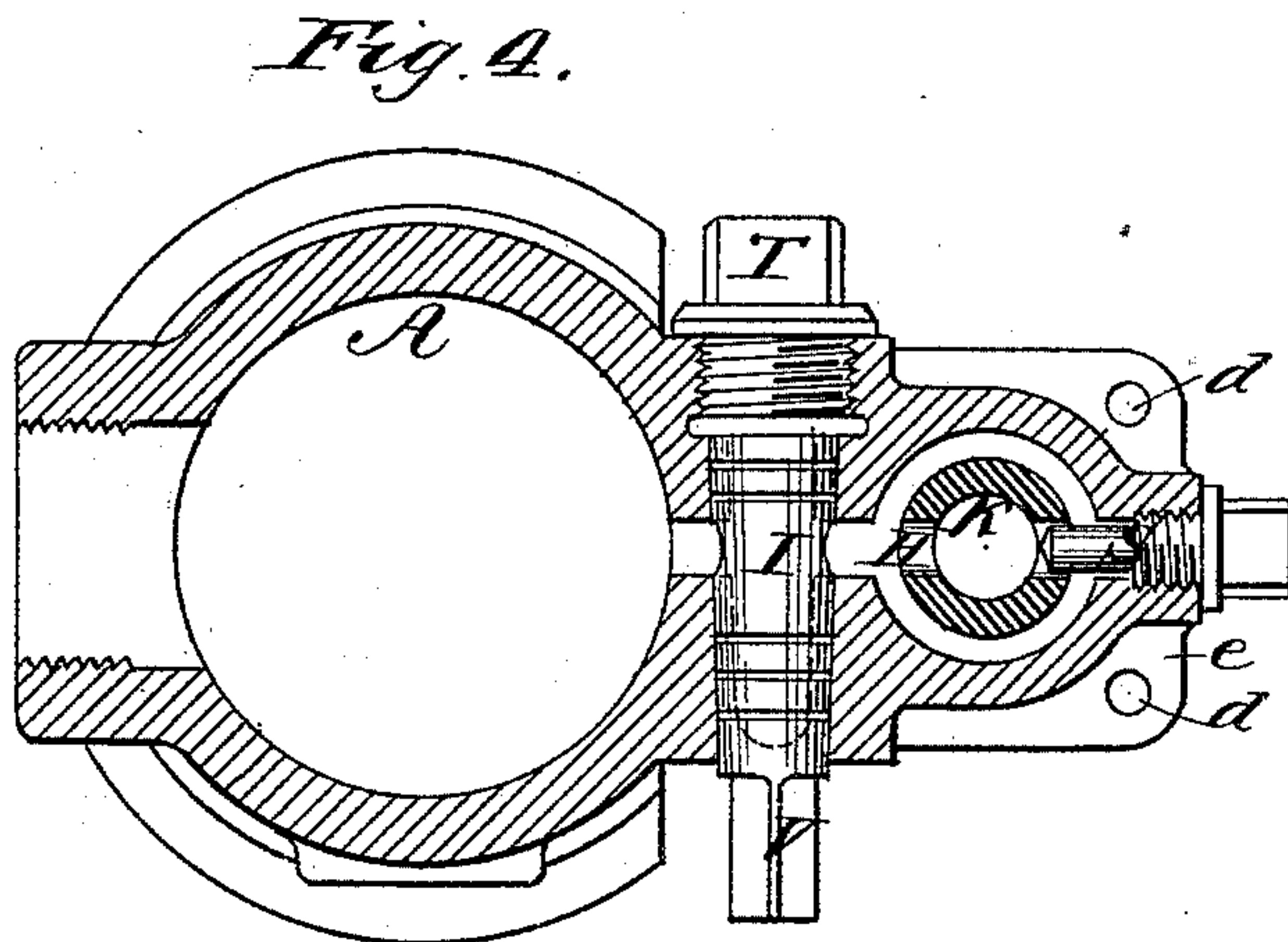
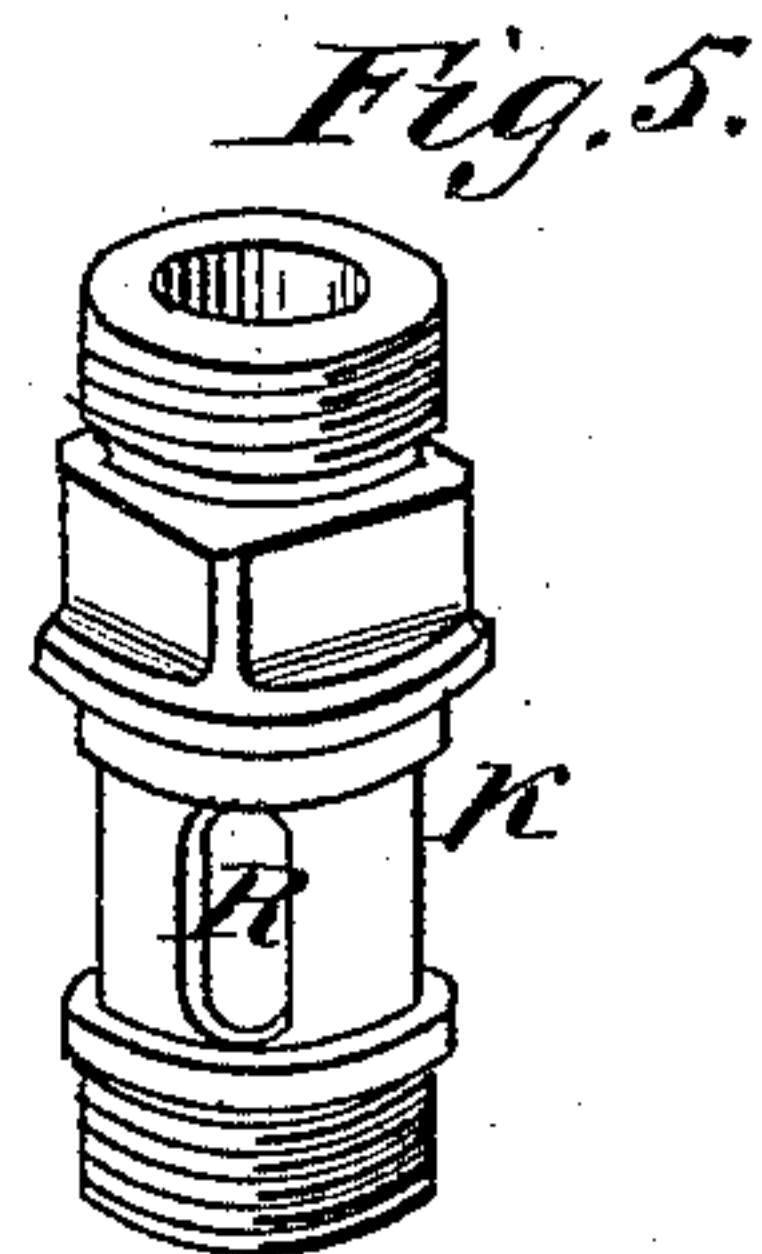
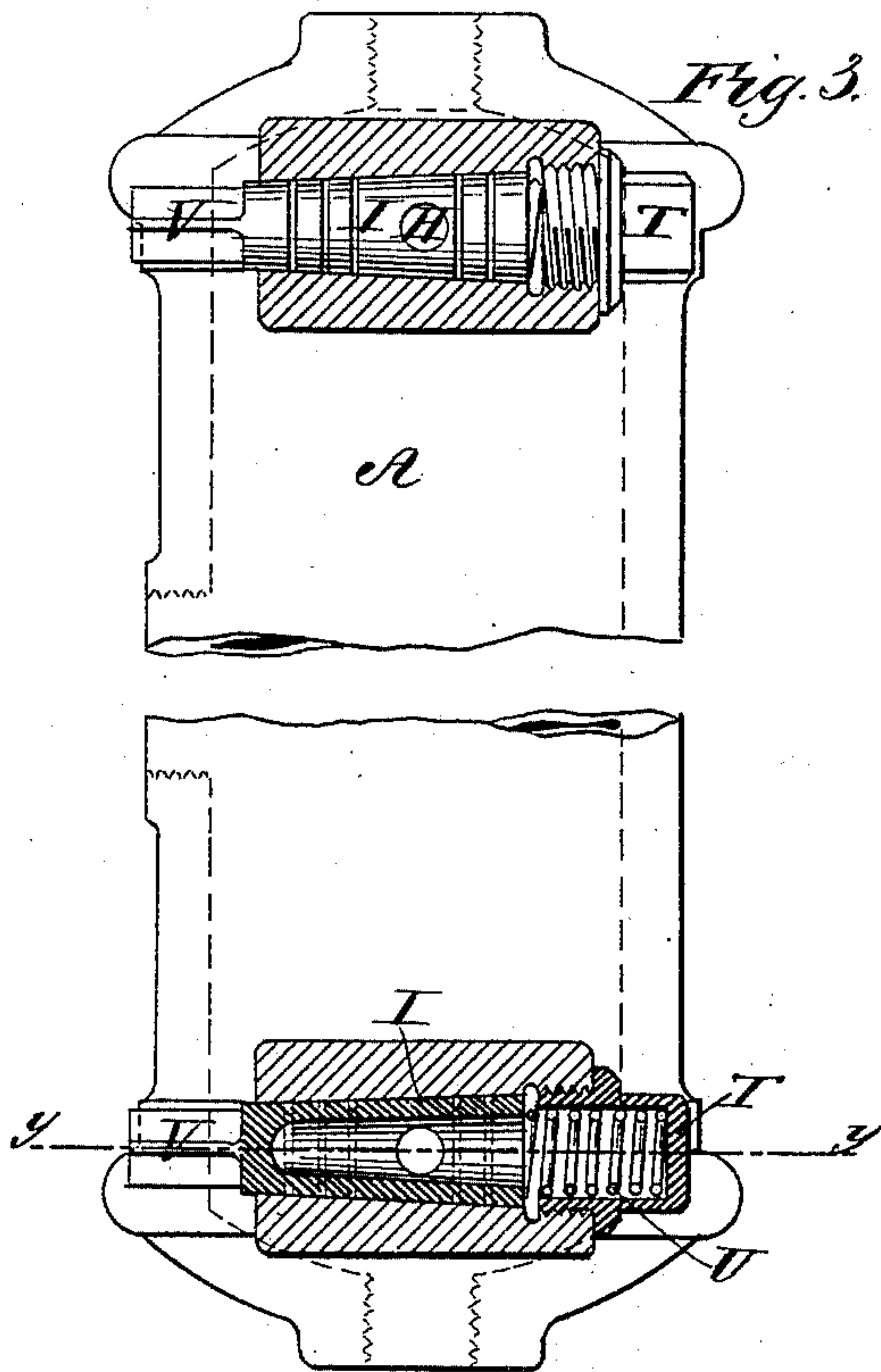
(No Model.)

2 Sheets—Sheet 2.

N. W. PRATT.
WATER GAGE.

No. 412,787.

Patented Oct. 15, 1889.



WITNESSES:

Henry F. Parker.
G. M. Ranney.

INVENTOR

Nat. W. Pratt

BY

Chas. H. Corlies

ATTORNEY

UNITED STATES PATENT OFFICE.

NATHANIEL W. PRATT, OF BROOKLYN, NEW YORK.

WATER-GAGE.

SPECIFICATION forming part of Letters Patent No. 412,787, dated October 15, 1889.

Application filed June 4, 1888. Serial No. 275,922. (No model.)

To all whom it may concern:

Be it known that I, NATHANIEL W. PRATT, a citizen of the United States, residing at Brooklyn, county of Kings, State of New York, have invented certain new and useful Improvements in Water-Gages, of which the following is a specification.

My invention relates to glass-tube gages for steam-boilers or other vessels, and is especially adapted in instances where the gage is located in conjunction with a separate stand-pipe or vertical vessel connected at points above and below the liquid-level of the main vessel.

The object of my invention is to effect compactness of construction of the essential parts of a gage so applied to facilitate the setting up of the same, and to reduce the length of the port communication between the glass tube and the stand-pipe, and to give convenient access to the same for cleaning.

To these ends my invention consists in setting the glass tube of the gage between hollow projections cast integral with the stand-pipe or body, extending horizontally from points at different levels of the latter, containing the necessary ports to communicate with the glass tube, and having the cocks for admitting or severing the steam and water or other connection seated within said projections to intercept said ports, which construction avoids the use of the separate cock-fittings such as heretofore employed.

Referring to the accompanying drawings, in which like letters of reference indicate like parts, Figure 1 is a side elevation, partly in section, of a stand-pipe such as herein referred to and a water-gage applied thereto according to the present invention; Fig. 2, an elevation at right angles to Fig. 1, partly in section; Fig. 3, a sectional elevation on the line *x x*, Fig. 1; Fig. 4, a horizontal section on the line *y y*, Fig. 1; and Fig. 5, a detail view in perspective.

A is the stand-pipe, connected at top and bottom, at B and C, by pipes conducting on a level from the steam and water levels of a steam and water drum of a sectional tubular boiler, or from the steam and water levels of any other form of boiler or vessel than the aforesaid.

D is a plug-stop at the top of the stand-

pipe, and E a drainage-pipe connected at the bottom thereof and provided with a suitable cock for drainage or blowing out of the same.

b b are apertures in the stand-pipe adapted for gage-cocks to be inserted at different suitable levels.

F and G are the hollow projections cast integral with the stand-pipe A, and having ports H cast therein, which are intercepted by cocks I, and which projections have annular or chambered portions J, vertically bored to receive the tubular fittings K projected through them.

The fittings K are adapted as nipples to hold the glass gage-tube L, and for that purpose are provided with nuts M, which hold packings in place around the ends of the tube, as in common practice. The shoulders *a* of the fittings K abut against the inner faces of the projections F G, and opposite ends of the fittings K receive clamping-nuts N N', which secure them pressure-tight in place within the hollow projections and draw the abutting shoulders *a* upon their seats. The nut N' also bears the clamping-nut O, which clamps the beveled head of the tube P, as shown, and the said tube P is usually provided with a blow-off cock, (not shown,) by means of which the glass gage is cleared of fouled material when either of the cocks I are closed, as in usual practice.

The fittings K (shown detached in Fig. 5) consist of tubes which have longitudinal slots R placed opposite in a line transversely intersecting them, so as to come opposite the ports H, and the said slots R are sustained in a line with the ports H by means of the screwed studs S entering the outermost slot, as seen in Figs. 1 and 4, and by means of these screwed studs S the fittings K are also kept from turning out of place when the nuts N or N' are applied.

The plugs of the cocks I are more clearly shown in Fig. 3, the same being hollow to allow pressure from within to apply in the direction of the taper and maintain them on their seats. The screw-caps T inclose the larger ends of the plug-seats, and, being hollow, also inclose a spiral spring U, which tends to hold the plugs toward their seats, or return them to their seats should they be removed therefrom, in cases where they stick

or become clogged and require to be started by tapping their smaller ends V. The ends V of the plugs I are squared, as shown, or otherwise adapted to receive suitable levers 5 or handles, by which the cocks are opened or closed. These plug-cocks form the subject-matter of a separate application filed December 11, 1888, Serial No. 293,249, and are not claimed herein.

10 In practice my invention is adapted for convenient access to all of the parts or for removal of the gage-tube L and replacement during the action of the apparatus by closing the cocks I. The tube L rests upon the shoulders c in the lower fitting K, and in order to 15 remove the tube the nuts M are first unscrewed and also the nut N at the top. The upper fitting K is then slid down upon the tube, its stud-screw S having been withdrawn, 20 and the tube is then free to be lifted out of its socket from against the shoulder c. The present construction, moreover, embodies a compact apparatus, and renders the necessary parts comparatively free from liability 25 to breakage. The tube is protected outwardly from damage by rods extending from the holes d in the lower flanges e of the projection G to corresponding holes in the upper flanges e' of the projection F.

30 In the present construction of apparatus the ports I are accessible for cleaning through the openings in which the studs S are inserted, and constitute straight-way ports through which a cleaning implement may be readily 35 introduced. Moreover, the said ports are shortened much more than heretofore, and the tube brought nearer to the stand-pipe or other water-containing apparatus than by

former construction. Fewer joints are employed or required to be made tight than in 40 the employment of ordinary separate fittings.

By the use of separate cock-fittings it has been necessary in practice to tap the threads for the shanks of the cocks square with the position of the gage; otherwise the parts would 45 stand out of vertical alignment and leakage result in the joints. The difficulty and skilled labor thus involved in adjusting the gage-tube sockets in an exact vertical line are obviated, the tube-nipples K standing neces- 50 sarily in a common vertical axis.

I claim as my invention—

1. The combination, with the stand-pipe or other vessel having hollow projections made integral therewith extending in a fixed posi- 55 tion from its side, of these separable tubes or nipples secured to said projections in a common axial line to receive the ends of a glass tube, and the cocks seated in the said projections to intercept the port communication of the 60 same with the said stand-pipe or other vessel.

2. The combination, with the stand-pipe or other vessel having hollow projections extending in a fixed position from its side, of tubes or nipples intersecting said projections 65 in a common axial line, clamping-nuts for securing said tubes or nipples longitudinally in place, and the herein-described screwed studs entering the longitudinal slots of said tubes or nipples at a point in line with their port 70 connection with said stand-pipe or vessel, for the purposes set forth.

NAT. W. PRATT.

Witnesses:

CHAS. W. FORBES,
AUG. CREVELING.