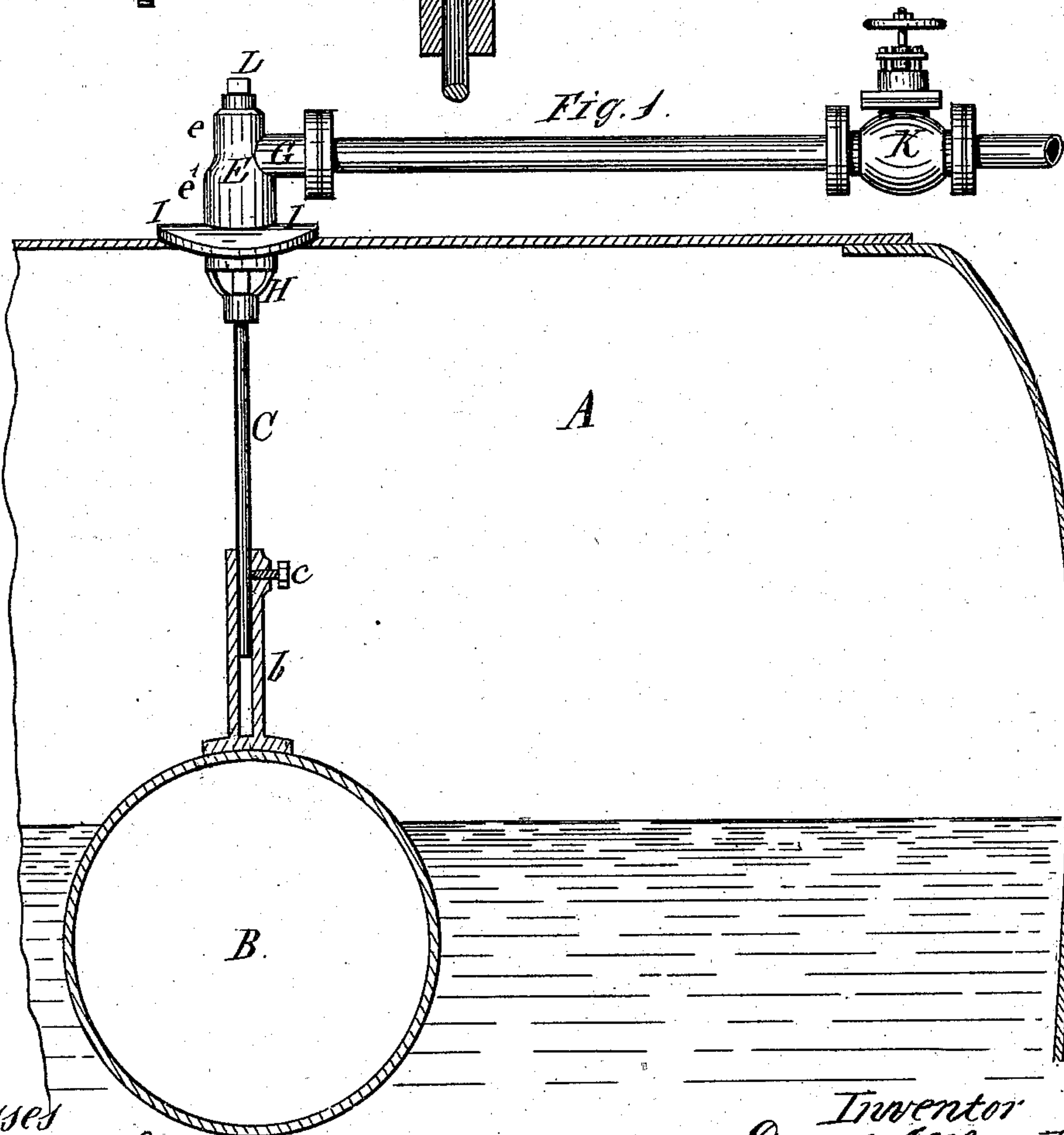
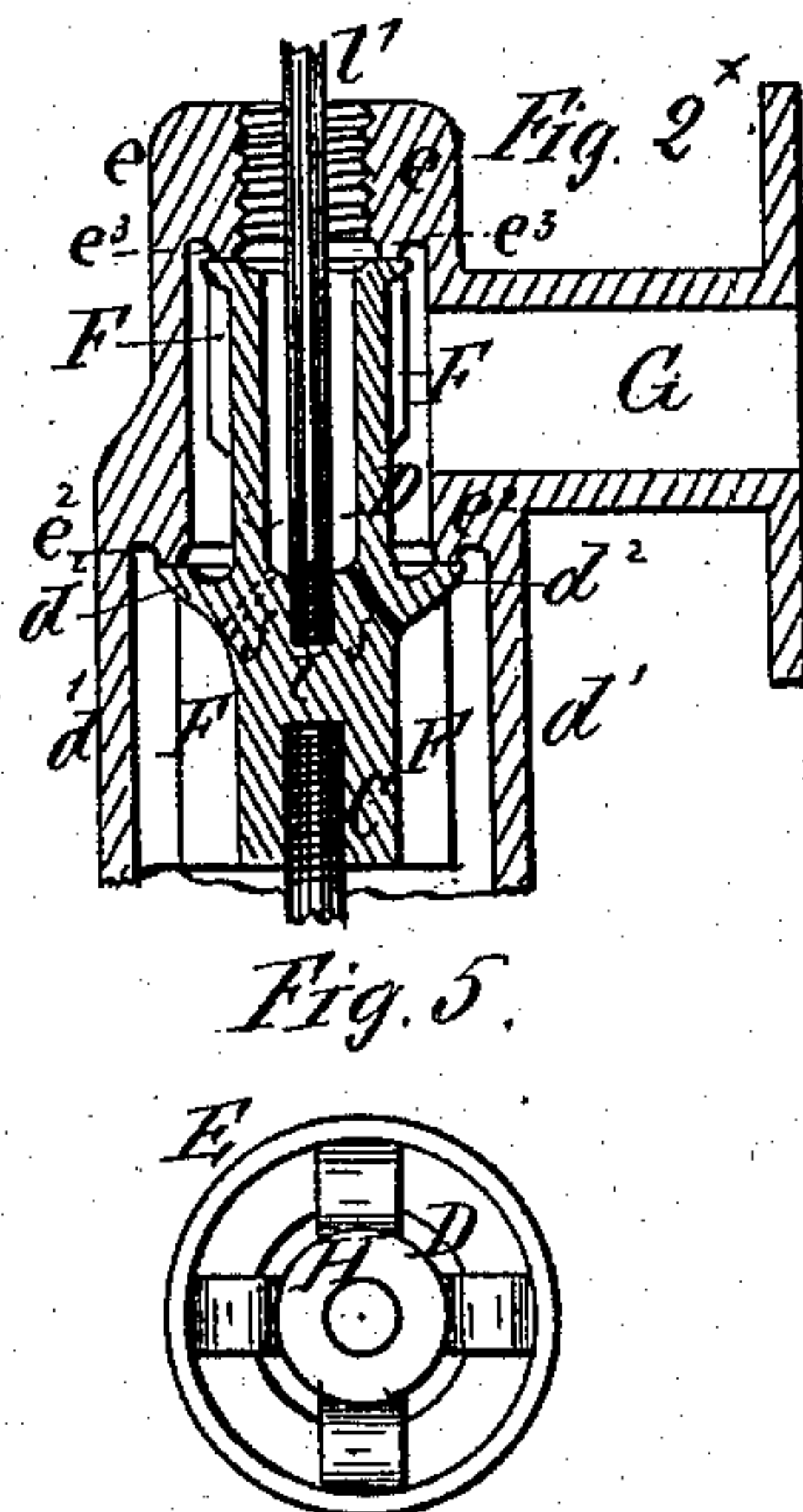
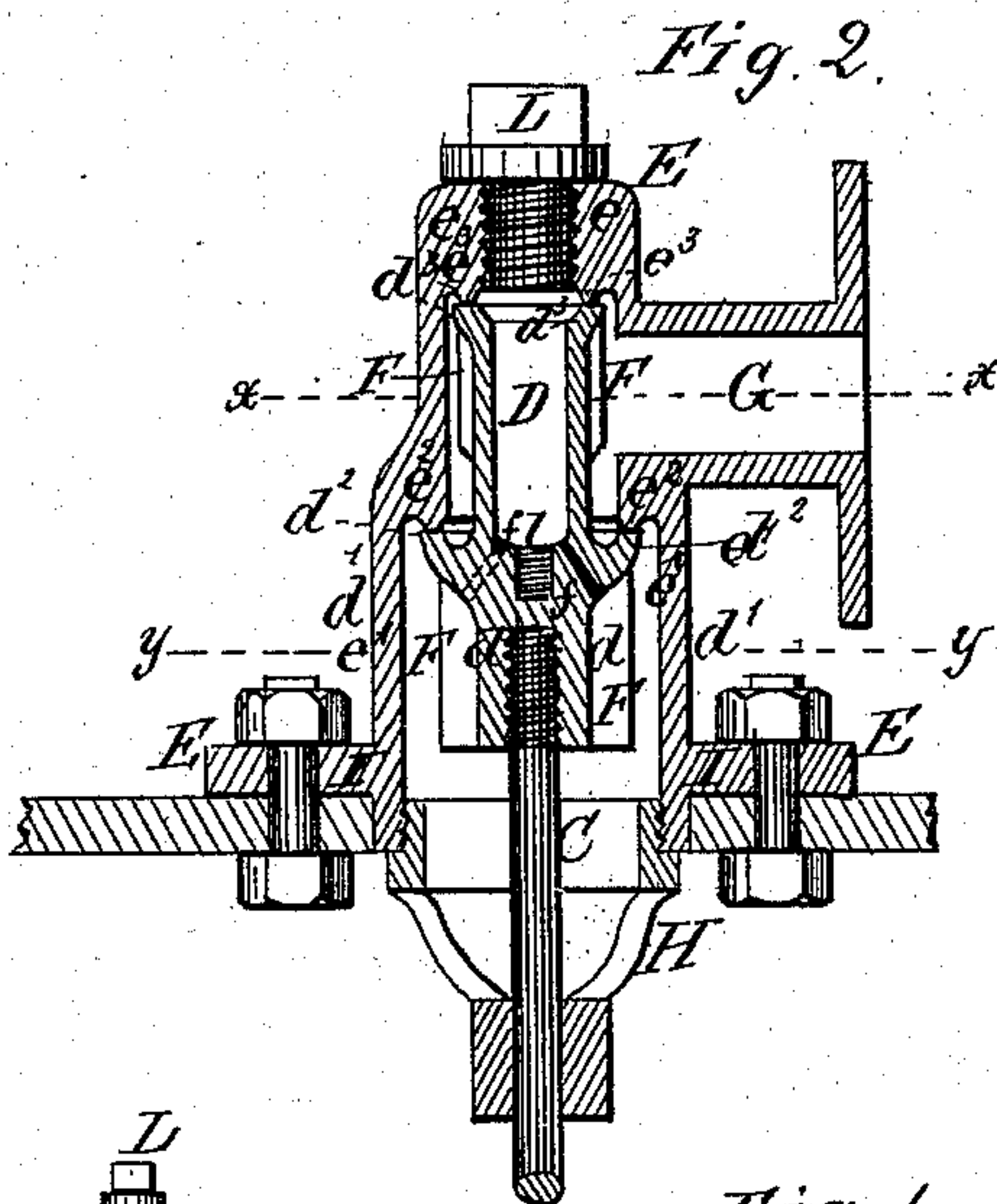
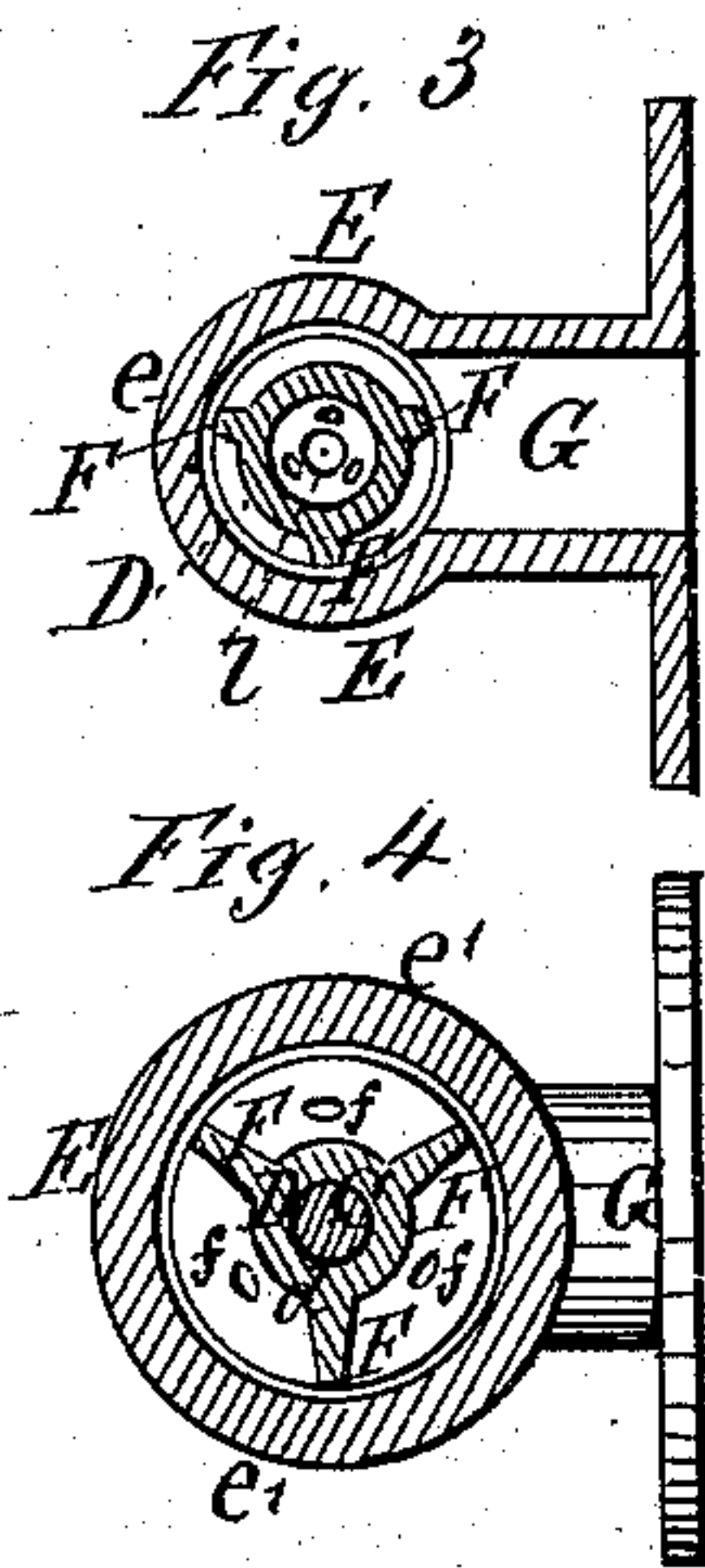


D. IFFLAND.

WATER-FEEDERS FOR STEAM BOILERS.

No. 190,044.

Patented April 24, 1877.



Witnesses
Alfred C. Leonard
Henri Guillaume

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UNITED STATES PATENT OFFICE.

DANIEL IFFLAND, OF HAMBURG, GERMANY, ASSIGNOR OF ONE-HALF HIS
RIGHT TO ERNST HADENFELD, OF SAME PLACE.

IMPROVEMENT IN WATER-FEEDERS FOR STEAM-BOILERS.

Specification forming part of Letters Patent No. **190,044**, dated April 24, 1877; application filed
January 16, 1877.

To all whom it may concern :

Be it known that I, DANIEL IFFLAND, of the city of Hamburg, in the Empire of Germany, have invented certain new and useful Improvements in Automatic or Self-Acting Feed-Valves for Steam-Boilers, of which the following is a specification:

My invention consists of a double-seated valve of peculiar construction, to permit the steam to escape through a connecting-pipe and put in motion a feed apparatus, such as an injector or other suitable apparatus adapted to be operated by steam, to inject or pump a sufficient quantity of water in the boiler to cause the float to rise and close the valve again, and also in means to grind the valve to its seat.

By means of this arrangement the level of the water in a boiler can vary only within very narrow limits.

In the accompanying drawings, Figure 1 is an elevation, partly in section, showing the general arrangement of my improved self-acting valve. Fig. 2 is a vertical transverse section of the valve and casing and its connections. Fig. 2* is a similar view, showing the valve-lifter in position. Figs. 3 and 4 are transverse or cross sections on line *xx* *yy* of Fig. 2, respectively; and Fig. 5 is an under-side view of the valve.

A is the boiler; B, the float, adjustably connected to the valve-rod C by means of the sleeve *b* and set-screw *c*, to adapt the float to be adjusted to the required water-level of a boiler.

The upper end of the rod C is screwed to the shank *d* of a cylindrical or tubular valve, D.

E is the valve-casing, also of cylindrical form, the upper portion *e* of which is contracted, or of smaller diameter than the lower portion *e*¹, and is provided on the under face of the ledge, formed at the point of contraction, with a projection or face, *e*², of annular form, constituting one of the seats for the valve, a similar annular projecting seat, *e*³, being formed in its head.

G is an outlet branch, through which the steam is conducted to any suitable feeding

apparatus, such as an injector or other apparatus adapted to be operated by steam.

H is a spider, screwed to the lower part of the casing, and forms a guide for the valve-rod C.

I is a flange on the casing, for connecting the latter, in any suitable or preferred manner, with the boiler, and K is a cut-off valve to cut off the steam from the feeding apparatus in case of leakage at the connection of the casing with the boiler.

D is the valve of cylindrical or tubular form, having an enlarged base, *d*¹, and shank *d*, said enlargement forming a slightly-projecting annular face or edge, *d*², which is seated against a similar face, *e*², on the casing E, while the upper circumference of the valve D also forms a slightly-enlarged upwardly-projecting annular face, *d*³, which has its seat against a corresponding slightly downward-projecting annular face, *e*³, on the head of the casing E.

The enlarged base *d*¹ is provided with three ports, *f*, to admit steam within the valve, and thus distribute its pressure evenly, or counterbalance it.

By means of the construction and arrangement just described a double-seated counter-balanced valve is obtained, which is very sensitive to the slightest variations in the level of the water in the boiler; hence the relative position of the float actuating said valve. The valve and shank are also provided with three vertical projections or ledges, F, forming guides to guide the valve and shank properly within the casing.

L is a screw plug or bolt screwed in the head of the casing, and by means of which access may be had to the valve when it becomes necessary to true its faces and the seats, which may be effected by grinding, as follows: *l* is a screw-threaded recess formed in the enlargement *d*¹ at the bottom of the valve, in which the stem or rod of a valve-lifter, *l*, may be screwed, by means of which the grinding is then effected.

Having now described my invention, and the means by which it may be carried into

effect, what I claim, and desire to secure by patent, is—

1. The combination, with the valve casing E, having annular seats $e^2 e^3$, of the cylindrical valve, having annular faces $d^2 d^3$, an enlarged base, d^1 , and shank d , said base being provided with ports f , and the guides F, all constructed and operating substantially as described, for the purpose specified.

2. The cylindrical double-seated valve D, the threaded recess l , adapted to receive a

valve-lifter, in combination with the casing E, having an opening in its head, substantially as described, for the purpose set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

DANIEL IFFLAND.

Witnesses:

HUGO SIMON,

GUIDO SCHMIDT.