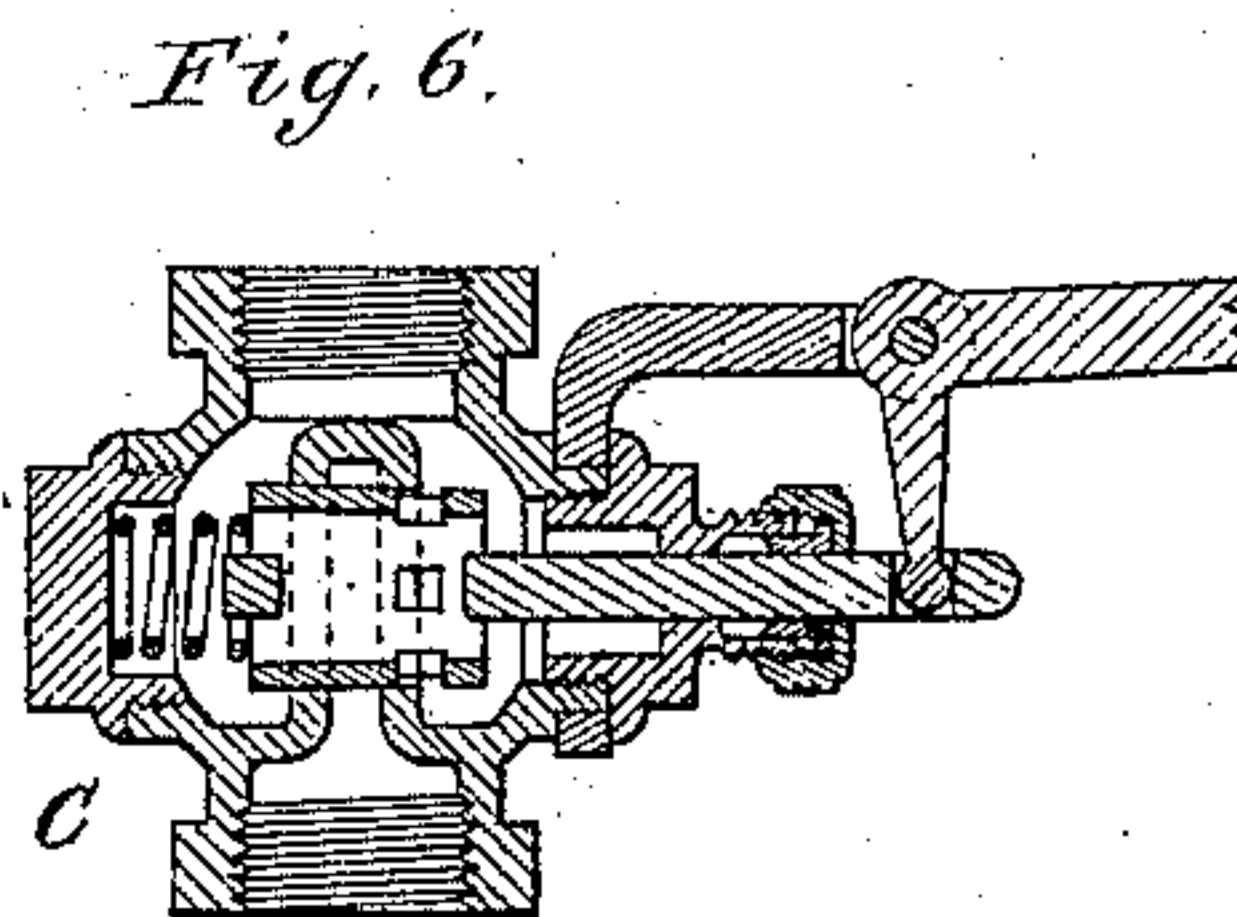
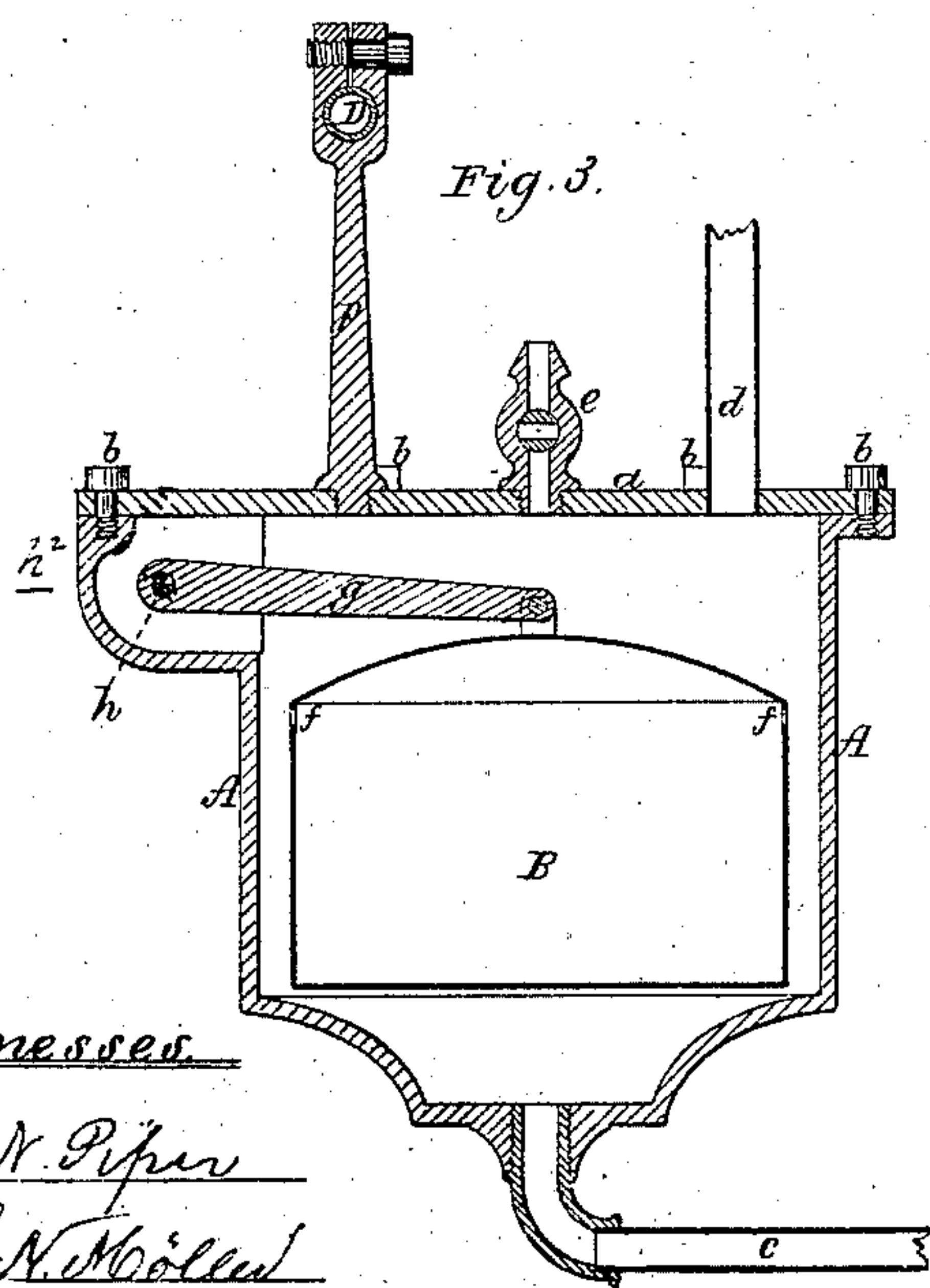
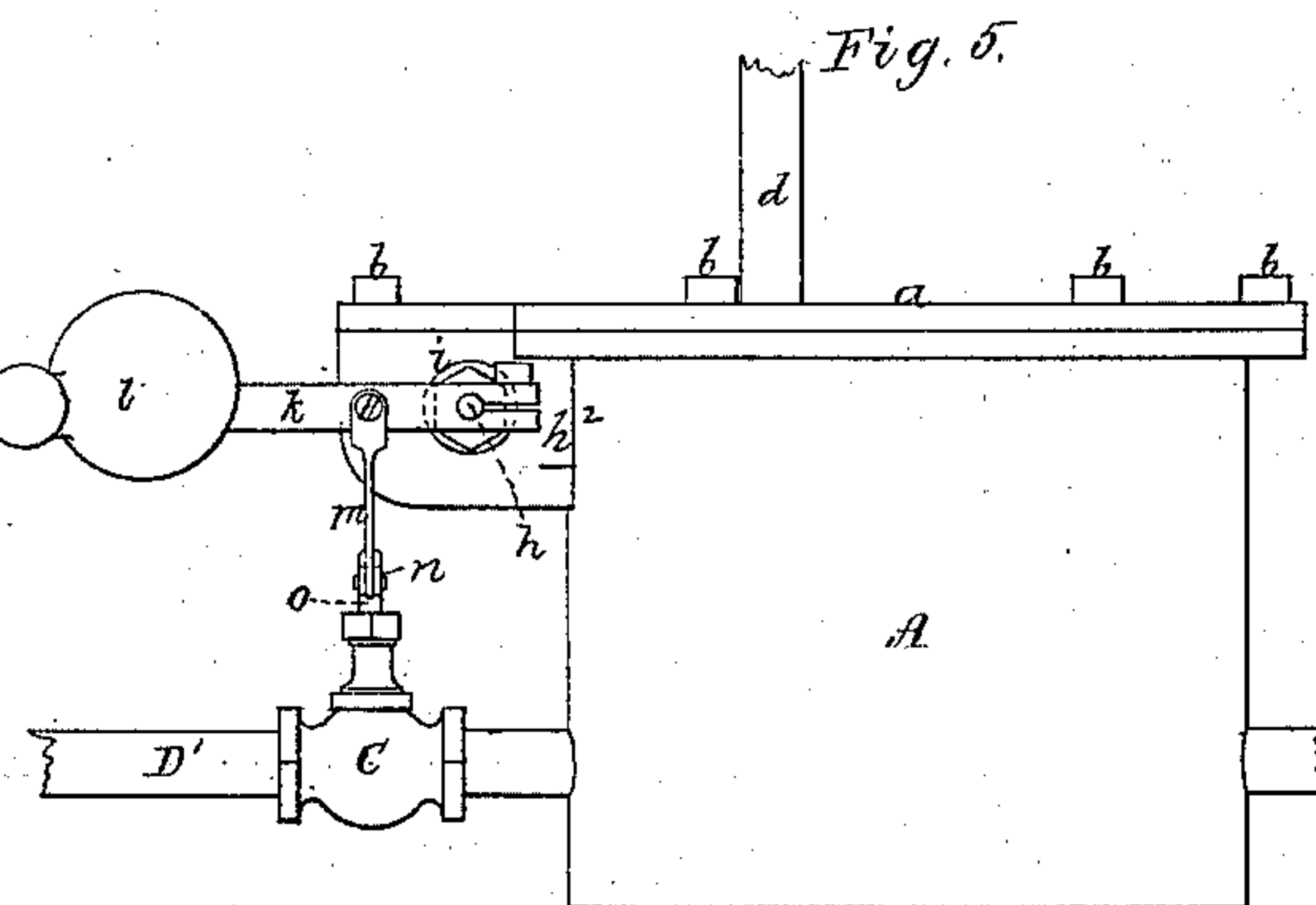
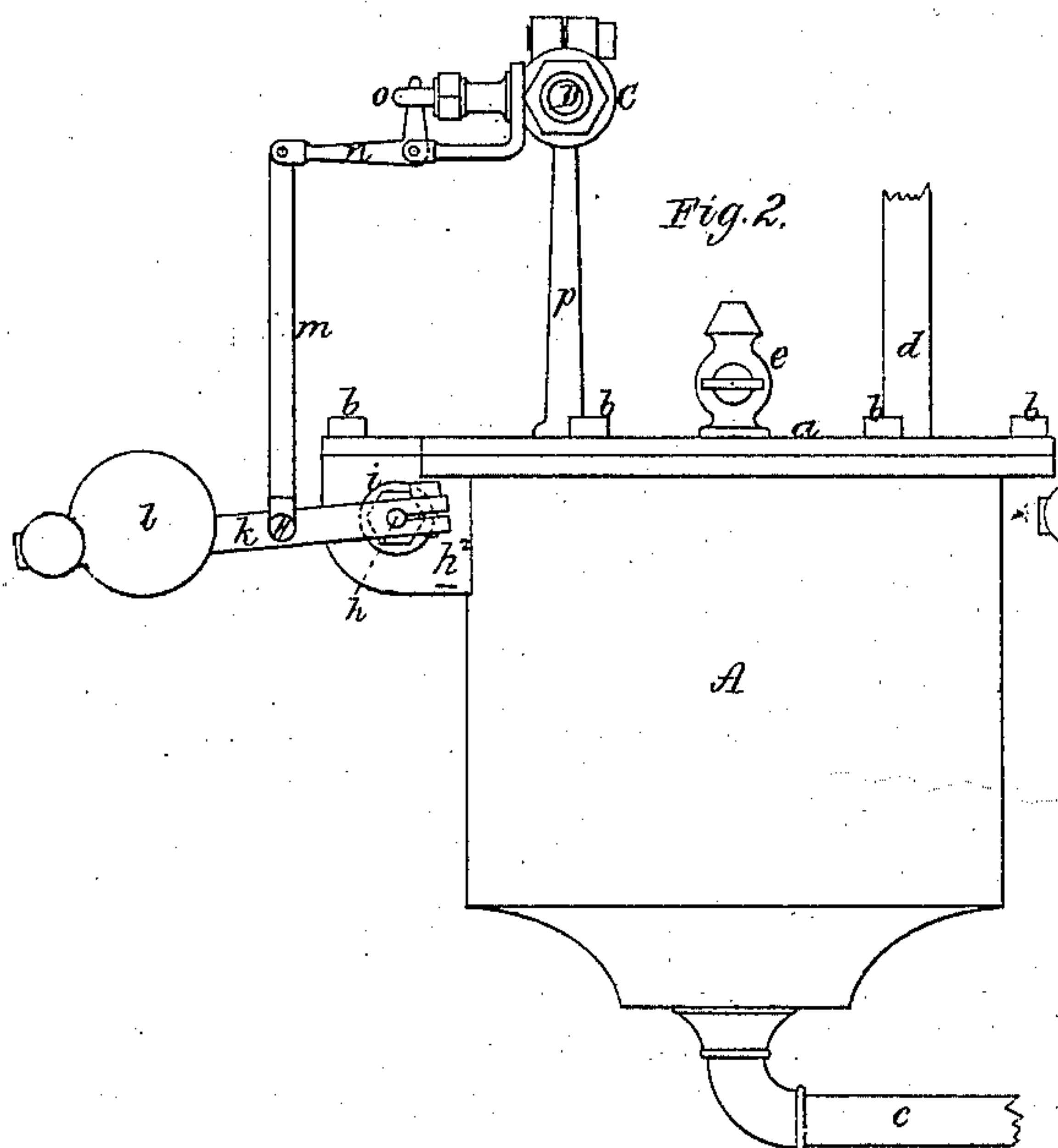
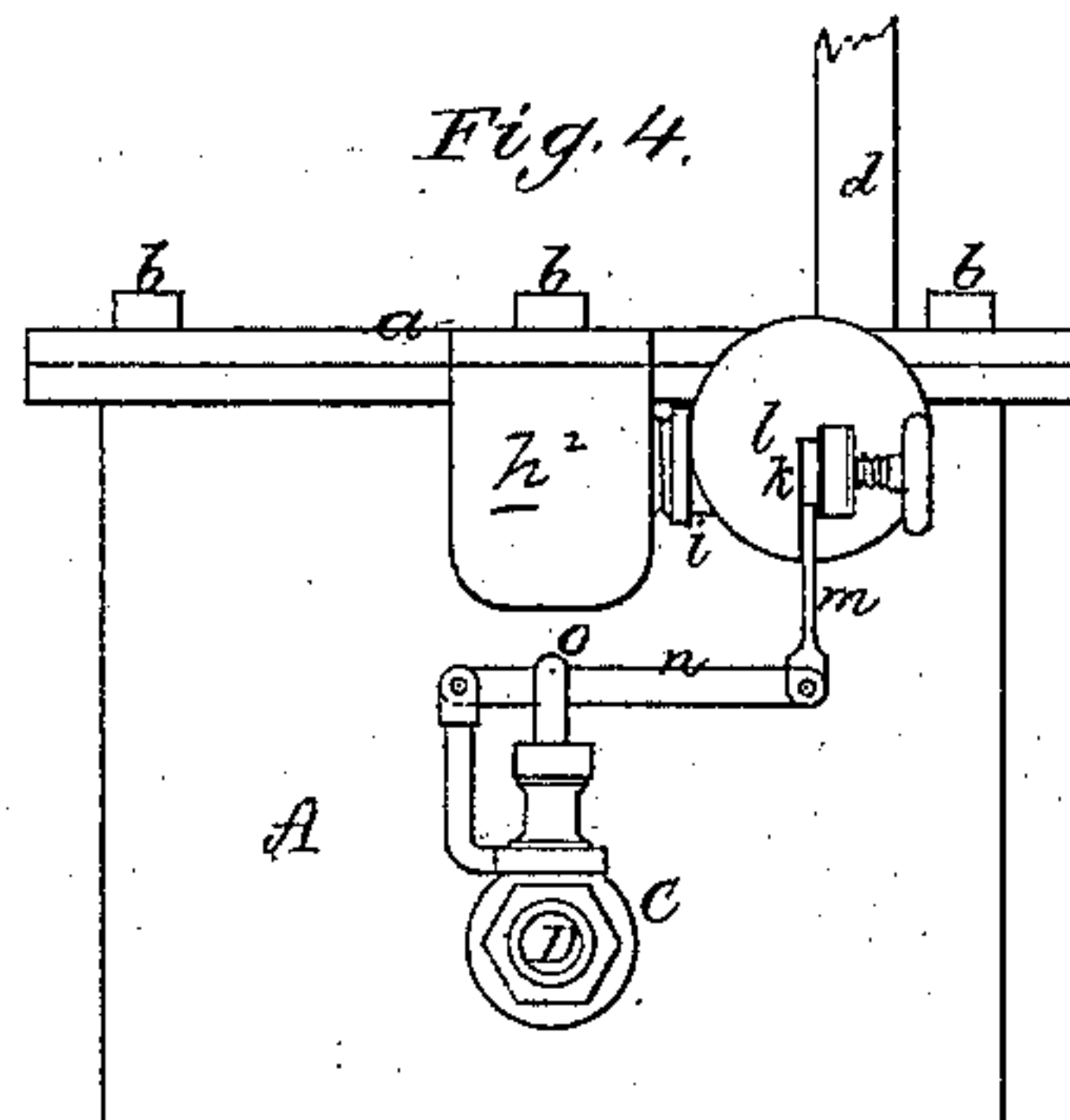
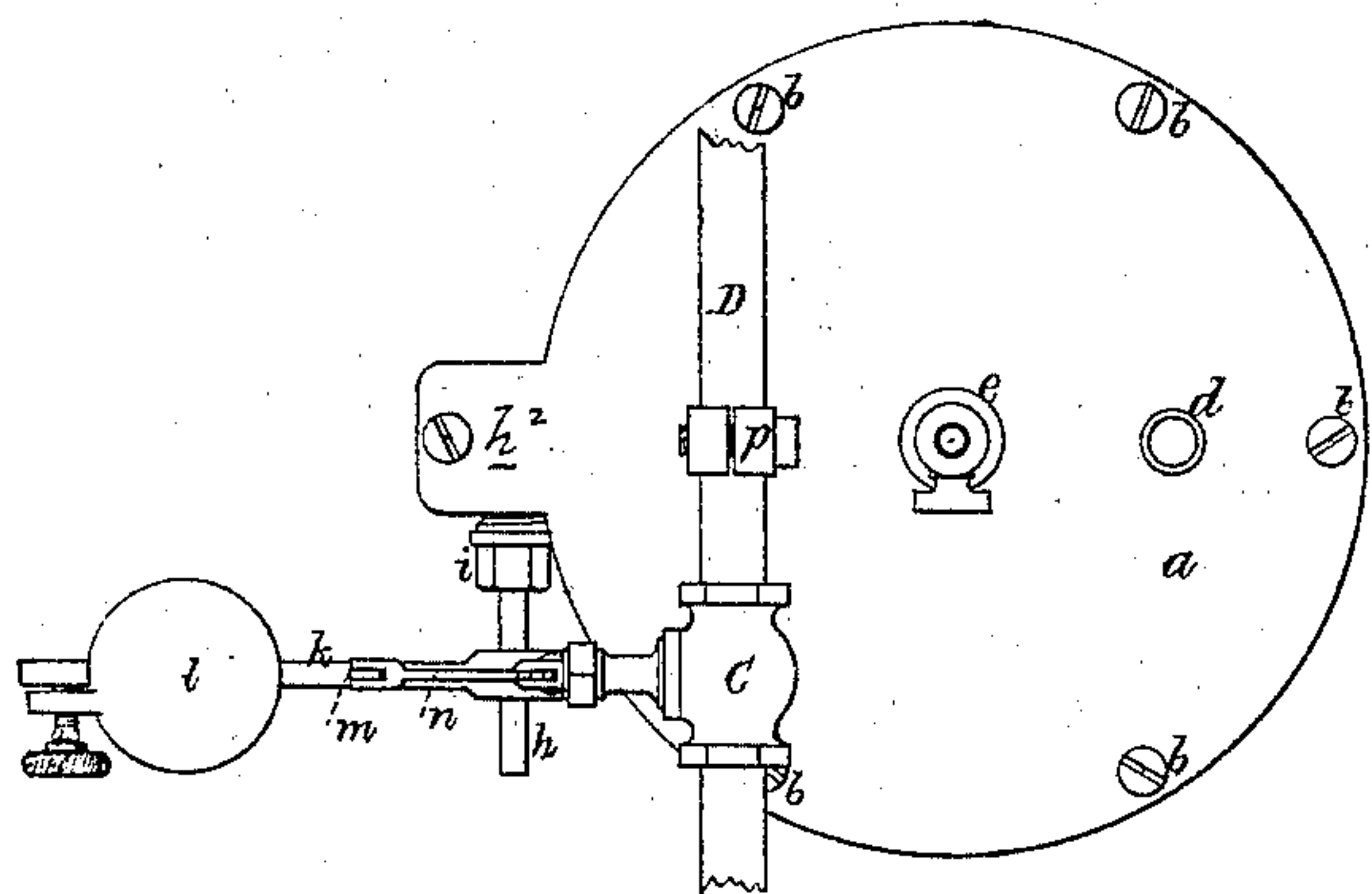


R. BERRYMAN.  
Improvement in Feed-Regulators for Steam-Boilers.  
No. 133,189      *Fig. 1.*      Patented Nov. 19, 1872.



Witnesses  
S. N. Piper  
S. N. Mollen

Robert Berryman.  
by his attorney.  
H. W. Hedy



# UNITED STATES PATENT OFFICE.

ROBERT BERRYMAN, OF HARTFORD, CONNECTICUT.

## IMPROVEMENT IN FEED-REGULATORS FOR STEAM-BOILERS.

Specification forming part of Letters Patent No. 133,189, dated November 19, 1872.

*To all whom it may concern:*

Be it known that I, ROBERT BERRYMAN, of the city and county of Hartford and State of Connecticut, have invented an Improved Regulator, of which the following is a specification:

My invention relates to an apparatus for regulating the passage of steam or water to or from boilers, heaters, steam-traps, pumps, &c.; and consists of a steam-tight casing, A, containing a hollow float, B, open at the top, and suspended from a lever, which extends through the casing and has on its outer end a weight, *l*. This lever may be connected, by suitable links or rods, to a cock or valve in a steam or water pipe, and the casing may be perforated to connect thereto pipes *b c* communicating with the steam and water spaces of a boiler, the admission of water to which depends upon the position of the lever.

Hollow open floats heretofore used in alarms and indicators have generally depended for their upward movement upon the uncertain action of springs, or upon the pressure of steam on the valves to which the floats were connected.

It will be seen, however, that in the present instance the full power of the weight *l* is exerted to raise the float the moment the latter is submerged on water being admitted to the vessel A. By this use of a weighted lever in connection with the open float such a force is applied to the valve or cock which is to be adjusted (both on admitting water to and discharging it from the vessel A) that the movements are more prompt, positive, and certain than those resulting from the action of springs, while ordinary cocks may be substituted for valves operating by steam pressure, heretofore employed.

The operation of the apparatus is the same whether the movement of the lever effects the

turning of a cock in the steam-pipe of the supply-pump or in the discharge-pipe of the casing A, Fig. 5, when the apparatus is used as a steam-trap. In either case the lever acts promptly and with considerable force to either open or close the valve or cock with which it is connected.

The case A or its cap may be cast with a hollow projection, *h*<sup>2</sup>; and the lever for supporting the float consists of arms *k g*, connected to a rock-shaft, *h*, extending through a stuffing-box at one side of the projection *h*<sup>2</sup>. By thus constructing the case with a hollow projection the length of the inner arm of the lever may be increased without unduly enlarging the casing, and the packing of the lever at the point where it extends through the casing is more readily effected than if it passed through the rounded body of the same.

I am aware that bucket or open floats and counter-balances are not new; that the same have been arranged within boilers, so that the weight should preponderate while the proper water-level was maintained; and I am also aware that an apparatus similar to mine in construction, but differing in principle and operation, has been used. I therefore disclaim the said features and combinations, and claim as my invention—

The case A, the double-armed horizontal vibrating lever and rock-shaft *k h g*, extending laterally through a packed opening in the case, a bucket-float attached to the inner end of the lever, and a preponderating weight attached to the outer arm, all constructed, combined, and arranged to operate substantially as set forth.

ROBERT BERRYMAN.

Witnesses:

R. H. EDDY,  
J. R. SNOW.