

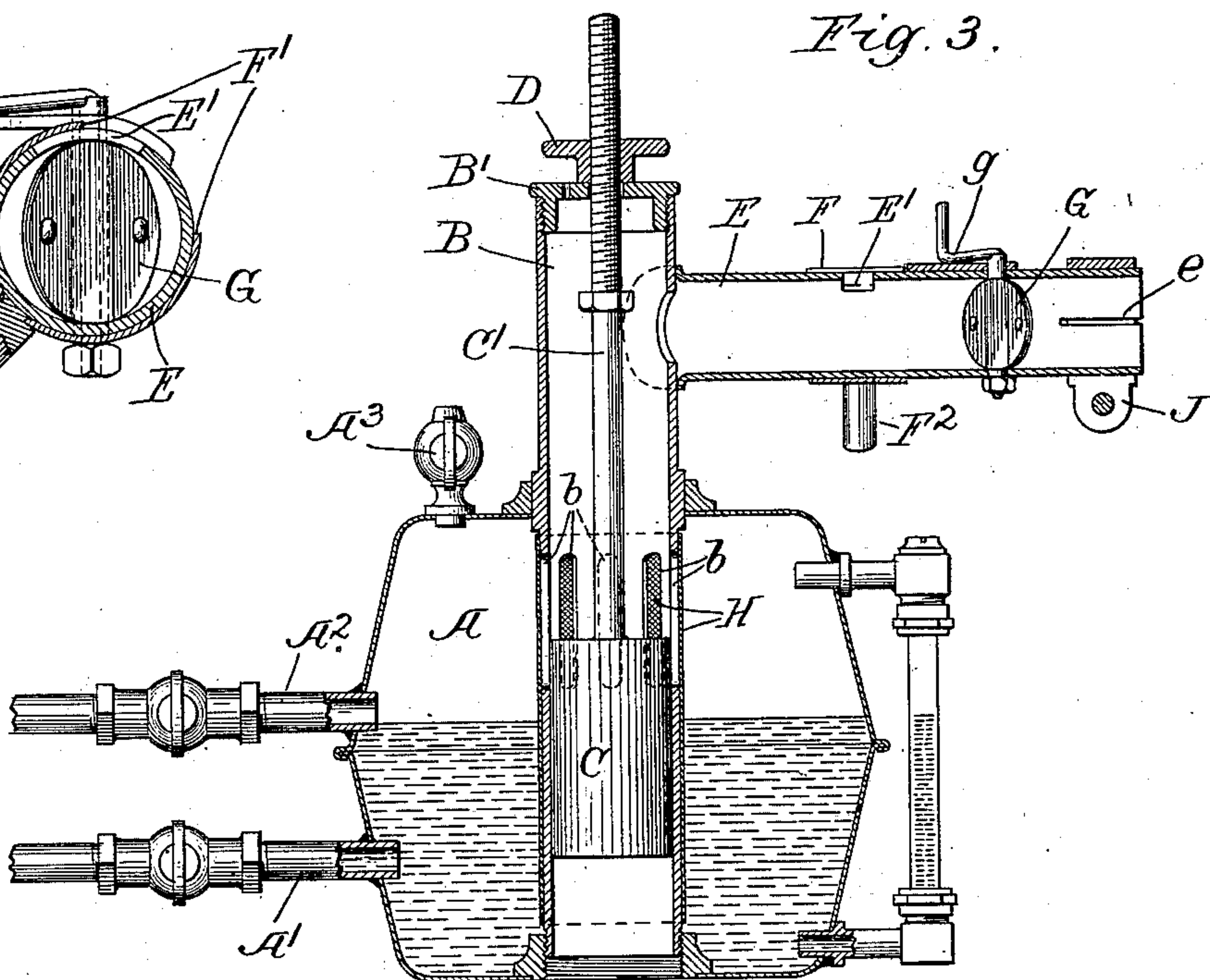
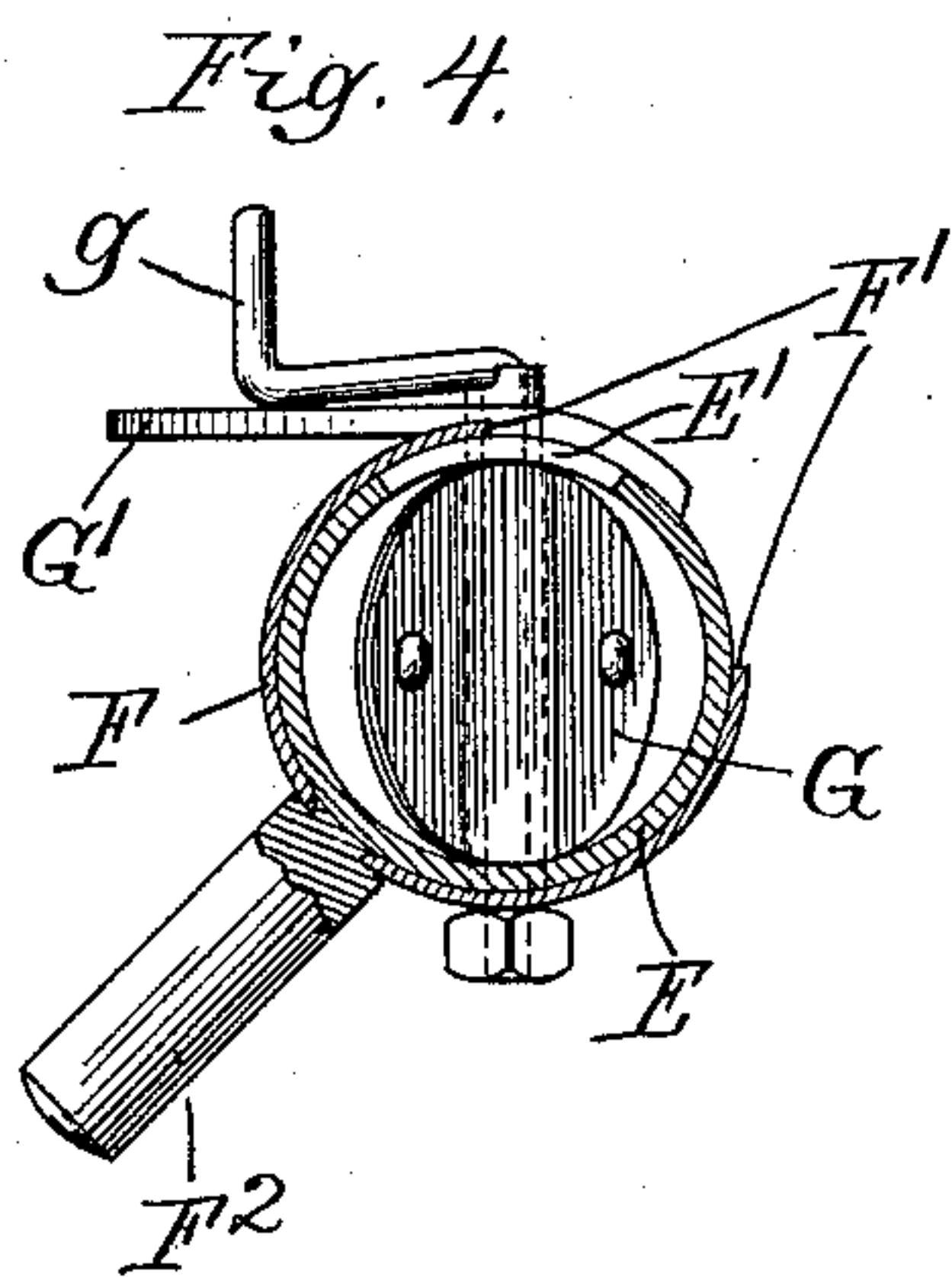
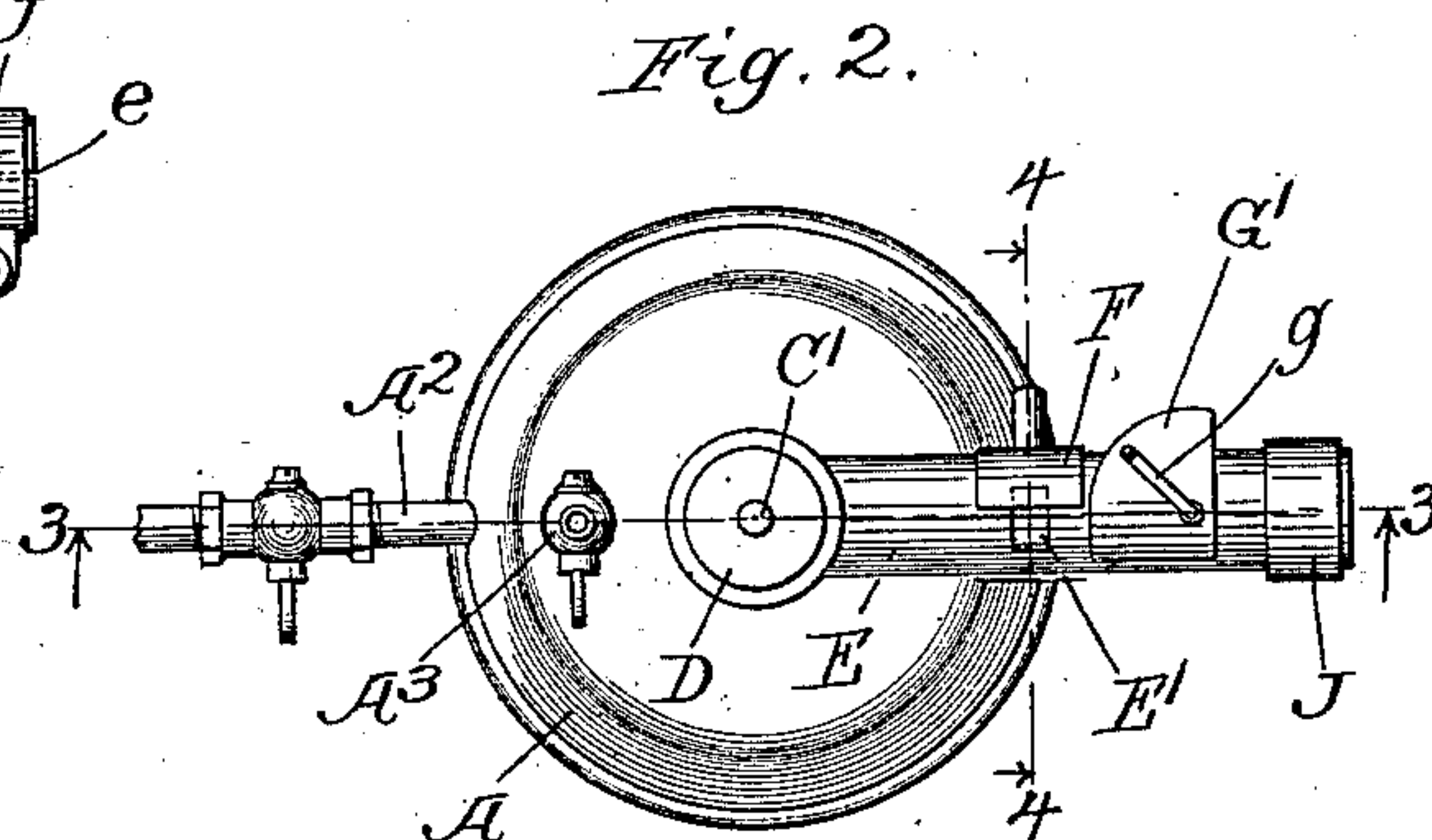
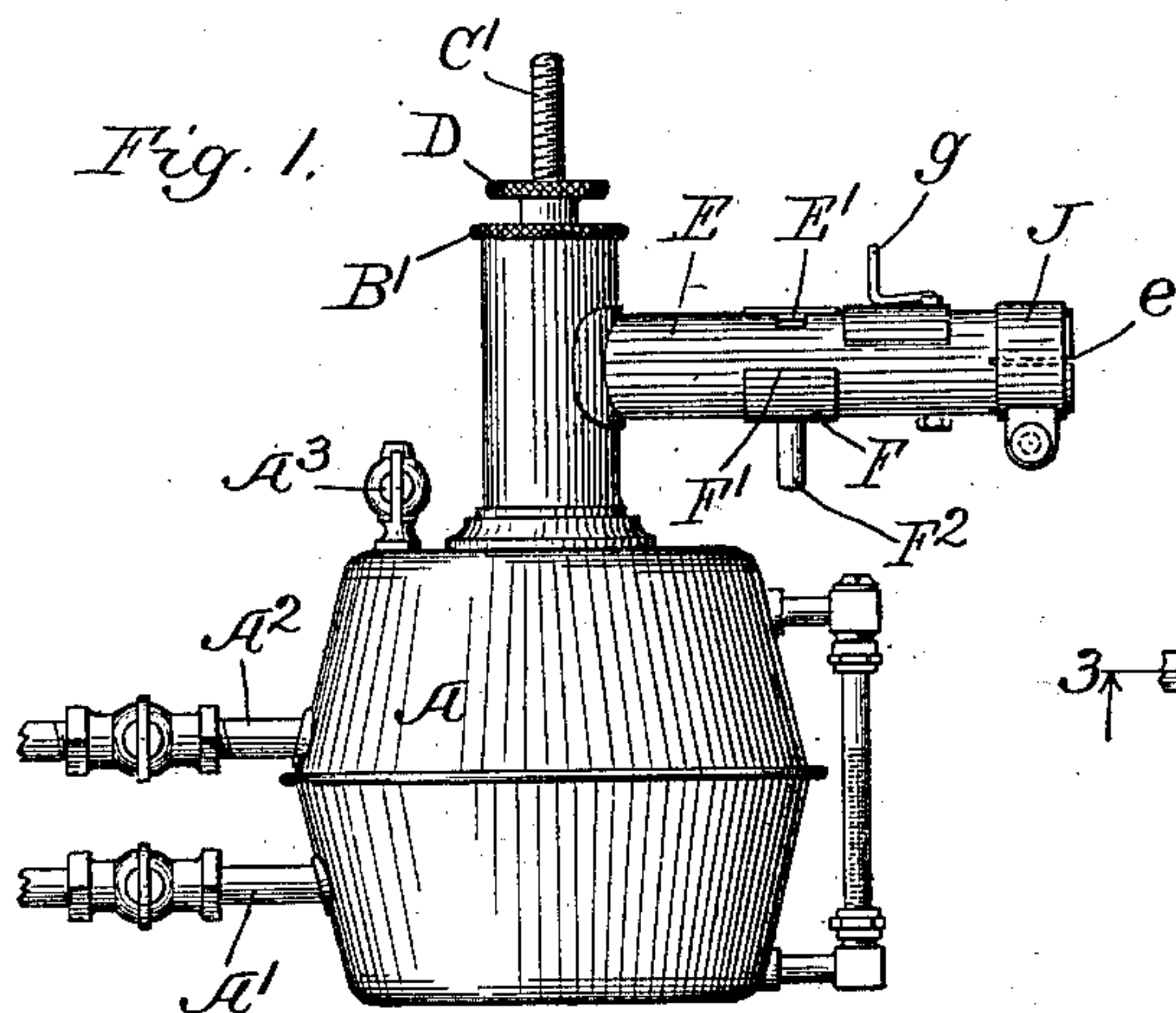
No. 661,697.

Patented Nov. 13, 1900.

T. B. JEFFERY.
CARBURETER.

(Application filed Aug. 11, 1899.)

(No Model.)



Witnesses.

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UNITED STATES PATENT OFFICE.

THOMAS B. JEFFERY, OF CHICAGO, ILLINOIS.

CARBURETER.

SPECIFICATION forming part of Letters Patent No. 661,697, dated November 13, 1900.

Application filed August 11, 1899. Serial No. 726,852. (No model.)

To all whom it may concern:

Be it known that I, THOMAS B. JEFFERY, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Carbureters for Gas-Engines, which are fully set forth in the following specification, reference being had to the accompanying drawings, forming a part thereof.

The purpose of this invention is to provide an improved appliance for the purpose of effecting the vaporization of any suitable liquid and the mixture of the vapor with air in controllable proportion, the special utility of such device being to furnish and control the supply of an explosive-gas mixture to gas-engines.

The invention consists in features of construction which are set out in the claims.

In the drawings, Figure 1 is a side elevation of my improved carbureter. Fig. 2 is a plan of the same. Fig. 3 is a vertical section at the line 3 3 on Fig. 2. Fig. 4 is a detail section at the line 4 4 on Fig. 2.

A is a chamber for the liquid to be vaporized and mixed with air. It is connected with a suitable source of supply by a pipe A' and is provided with an overflow A², by means of which the level of liquid in the chamber is kept uniform. It has also an air inlet or vent controlled by a valve A³ at the upper part.

B is a tube constituting a vapor-chamber, which extends through the chamber A from top to bottom, being secured liquid-tight at the bottom of the chamber. This tube has a number of longitudinal slots *b b b*, located above the liquid-level, as determined by the position of the overflow-pipe A². Around the tube B there is applied a suitable porous fabric H, constituting a capillary diaphragm over the aperture *b*, adapted to operate as a wick or capillary conductor for the liquid. Common cotton muslin or linen fabric I find suitable for this purpose, and when this is employed several layers or wrappings are applied about the tube, covering the longitudinal slots *b b* and extending also below them around the tube to any desired distance into the liquid, so that the latter, being absorbed by the fabric at the lower immersed portion, will be drawn up thereinto by capillary action

and saturate the fabric throughout its entire extent. Within the tube B is a close-fitting piston-valve or shutter C, whose stem C' extends up through the tube and protrudes from the outer end thereof, passing through the cap B' of the tube, which is apertured for the stem, and otherwise closes the top of the tube. This stem is threaded and exteriorly provided with a nut D, bearing upon the upper side of the cap and serving as a means of adjusting and checking the shutter, so that it may stand at any desired position in the vertical length of the tube. The length of the shutter is sufficient to cover the entire length of the slots *b b*, and the stem C' is adapted to permit it to be adjusted in the tube, so that any desired portion of the slots from the upper end downward may be exposed, the remainder being covered by the shutter. From the side of the tube B above the chamber A the pipe E is extended and adapted to be connected with the explosion-chamber of the motor to be supplied from the carbureter. In this pipe is an air-inlet opening E', controlled by an exterior sleeve-valve F, which may be set so that its aperture F' registers to any desired extent with the aperture E' or is out of registration therewith. A handle F² is provided to manipulate the sleeve-valve. Beyond this air-inlet—that is, between the same and the connection with the motor—there is provided in the pipe E a cut-off valve G, whose stem is preferably provided with an index-finger *g*, (which may also be a crank-arm, as illustrated,) by which the extent of opening of the valve may be indicated on a quadrant-dial G', mounted outside the pipe E.

The operation of this structure may now be understood. The chamber A being supplied with gasoline or other suitable liquid, the same standing therein to the height of the overflow, the capillary wick H becoming saturated with liquid exposes a certain portion of its saturated surface over the apertures *b b*, &c., in the tube B, and the device being in communication with the motor the proper movement of the motor-piston (or any other means which causes a partial vacuum in the motor-cavity) produces suction through the pipes E and B, drawing from the surface of

the diaphragm-wick H, exposed over the apertures *b*, vapor or a very finely-subdivided spray of liquid which rapidly becomes vapor and which takes in through the air-port E' a charge of air dependent upon the uncovered extent of said opening. By means of the protruding stem C' of the shutter C the area of wick exposed over the aperture *b* can be regulated, and the quantity of vapor drawn at any sucking action of the motor can be controlled and at the same time the amount of air admitted through the air-port E' can be regulated by the sleeve-valve F, so as to render the mixture of vapor and air suitable for explosion in the motor. The quantity of air and gas which is taken into the explosion-chamber at each action of the motor is regulated by the valve G, according to the work to be done—that is, the amount of power to be developed at each explosion.

It will be obvious that the particular form of the passage through which the vapor is drawn and the particular arrangement by which the capillary diaphragm is interposed and kept saturated is comparatively immaterial, the essence of the invention consisting in the employment of such diaphragm in suitable relation to the liquid and to the gas-intake pipe of the motor to cause the suction of the latter to take the fluid through the diaphragm and from its exposed area. In order to adapt this device to be readily connected to the gas-intake nipple or pipe of any gas-engine to which it may be applied, I split the end of the pipe *e e* and provide outside of it a clamp J to close it together and bind it upon such intake pipe or nipple. This makes it possible to attach and detach it very promptly.

A suitable gage-glass may be attached to the chamber A to indicate the stage of the liquid therein, and the liquid-level may then be regulated by adjustment of the supply-valve in the pipe A' without regard to automatic means of maintaining said level—to wit, the overflow.

I claim—

1. In a carbureter, two chambers, one for a carbureting liquid and having an air-inlet above the liquid-level, the other chamber having an exhaust connection; a partition-wall which separates the two chambers, apertured to afford communication above the liquid-level of the first chamber; a capillary diaphragm which obstructs such communication and extends down below the liquid-level; and a shutter or valve which covers or obstructs more or less of the aperture of said wall; and suitable means for adjusting such shutter to vary at will the unobstructed area of such aperture.

2. A carbureter comprising a fluid-chamber and means for maintaining a liquid-level therein; a vapor-chamber and a wall which separates it from the fluid-chamber apertured above the liquid-level of the latter, the sep-

aration being complete below that level; a capillary element on the side of said wall toward the liquid-chamber constituting a diaphragm obstructing such aperture and extending down below the liquid-level.

3. A carbureter, comprising a liquid-chamber and a vapor-chamber, a passage through which they communicate, a capillary diaphragm which obstructs such communication on the side toward the liquid-chamber, a valve which controls such communication on the side toward the vapor-chamber, such vapor-chamber having a discharge-opening for vapor beyond such valve.

4. A carbureter, comprising a vapor-chamber and a liquid-chamber; a passage through which they communicate; a capillary diaphragm which obstructs such communication on the side toward the liquid-chamber; a valve which controls such communication on the side toward the vapor-chamber; said vapor-chamber having a discharge-opening beyond said controlling-valve; and a valve which controls such discharge-opening to regulate the quantity of mixed air and vapor discharged.

5. A carbureter, comprising a liquid-chamber and a vapor-chamber; a passage through which they communicate; a capillary diaphragm which obstructs such communication on the side toward the liquid-chamber; a valve which controls the communication on the side toward the vapor-chamber; the liquid-chamber having an air-inlet and a valve which controls such inlet; the vapor-chamber having a discharge-opening and a valve which controls such opening.

6. A carbureter comprising a liquid-chamber and a tubular vapor-chamber intruded thereinto and apertured for communication with the fluid-chamber; a capillary fabric covering the aperture of the tubular chamber and extended below the liquid-level of the fluid-chamber; and a piston-valve or shutter arranged to play within the tubular chamber to cover or obstruct more or less of the aperture thereof.

7. A carbureter, comprising a fluid-chamber and a vapor-chamber, a capillary diaphragm consisting of a web, part of whose extent is exposed in the liquid, the other part being out of the liquid, and constituting a diaphragm which obstructs the sole communication between the vapor-space of the liquid-chamber and the vapor-chamber, the liquid-chamber having an air-inlet above the liquid-level of said chamber, and the vapor-chamber having an air-outlet and provided with suitable means for exhausting the vapor through such outlet.

8. A carbureter, comprising a chamber for containing carbureting liquid; a tube intruded thereinto and exteriorly thereof provided with exhaust connection, and having, within the chamber-wall, apertured, above the liquid-level therein; a capillary dia-

phragm, covering the apertures of such tube
and extending down into the liquid; and a
valve or shutter which obstructs more or less
of the apertures of the tube; and suitable
5 means for adjusting such valve to vary the
area of the unobstructed portion of the aper-
tures.

In testimony whereof I have hereunto set
my hand, in the presence of two witnesses, at
Chicago, Illinois, this 8th day of August, 1899. 10
THOS. B. JEFFERY.

Witnesses:

CHARLES T. JEFFERY,
CHAS. S. BURTON.