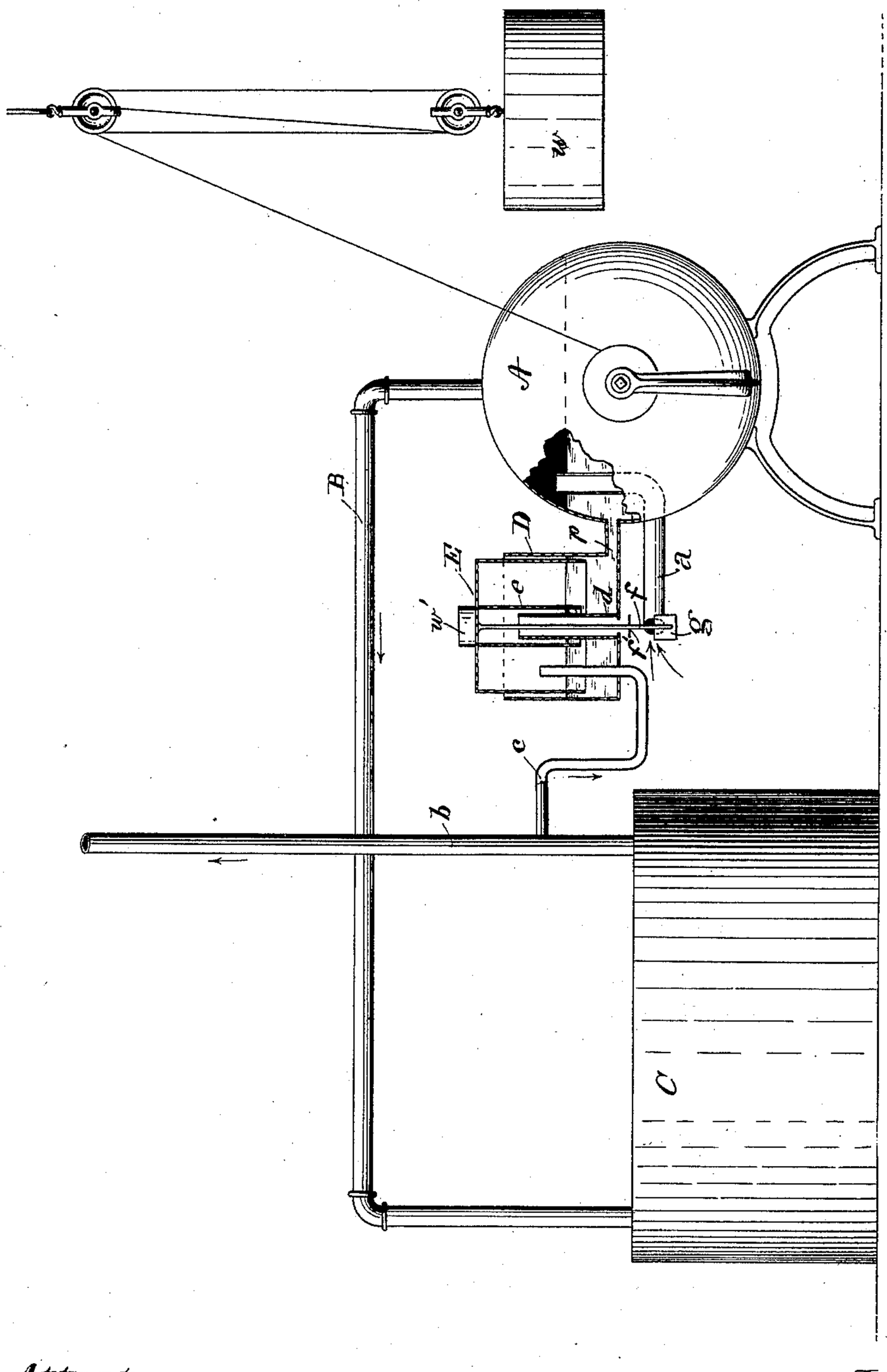
(No Model.)

J. STUBBERS.

CARBURETOR.

No. 385,485. Patented July 3, 1888.



Attest.
C. W. Dogadt.
Frank Huntington.

Inventor.
Joseph Stubbers
by Hosea & Merrill
Attys.

UNITED STATES PATENT OFFICE.

JOSEPH STUBBERS, OF CINCINNATI, OHIO, ASSIGNOR TO ANDREW J. ENGLISH AND POWEL CROSLEY, BOTH OF SAME PLACE.

CARBURETOR.

SPECIFICATION forming part of Letters Patent No. 385,485, dated July 3, 1888.

Application filed August 1, 1887. Serial No. 245,813. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH STUBBERS, a citizen of the United States, residing at Cincinnati, Ohio, have invented new and useful Improvements in Gas-Pressure Governors, of which the following is a specification.

My invention relates, primarily, to that class of air-carbureting machines ordinarily termed "automatic gas-machines," in which the air-pump is driven by a weight or spring mechanism wound up at intervals to operate only when the burners are used. In such machines the pressure at the burner depends upon the action of the pump-driving mechanism, and in practice the correspondence is not sufficiently close to insure perfect regulation, especially when the consumption of gas is variable. As applied to such machines, my improvement consists in means for automatically controlling a governing-valve actuated by the pressure of the gas in the final delivery-pipe to regulate the admission of air into and through the pumping apparatus. As applied to the ordinary gas-supply, the valve may be used to regulate the supply of gas to the meter.

The drawing attached to this specification and forming part thereof illustrates the application of my invention to the ordinary domestic carbureting apparatus or so-called "gas-machine," which is shown in elevation complete, that portion constituting my invention being sectioned to show the construction.

Referring now more particularly to the said drawing, A designates the tank of an air-pump of any approved construction, embodying substantially a bucket-wheel partially immersed in a liquid and rotated by means of a weight, *w*, to draw air in from the outside and force it thence to the carbureting-tank.

I have not thought it necessary to show the detailed construction of the air-pump, inasmuch as many forms of apparatus embodying this principle are known and used.

a in the present case designates the inlet-pipe through which air is drawn into the pump A, and B designates the air-pipe leading thence to the carburetor, C the carbureting-tank, and *b* the gas-delivery pipe leading to the burners. All these parts are of the ordinary construction and function and require no further description.

In applying my invention thereto, I attach to the outside of the air-pump tank A an open vessel, D, preferably cylindrical, connected with the tank A by a pipe, *p*, extending from the bottom of the vessel D into the liquid-space of the tank A, at a convenient distance below the surface of the liquid in the latter. The liquid will therefore rise to the same level in the vessel D as in the tank A. In the vessel D, I place an inverted cylindrical vessel, E, of smaller diameter, which acts as a gasometer, from the center of whose top casing depends a rod, *f*, having attached at its lower end, as illustrated in the present case, a flat plate, *g*, acting as a valve across the mouth of the inlet-tube *a*. The rod *f* passes down through an opening in the bottom of the vessel D, protected by a short tube, *d*, securely soldered around said orifice and rising above the liquid-line, and is provided with a stop, *f'*, below the vessel to prevent its rising too high. Another short tube, *e*, slightly larger in diameter than the tube *d*, depends from the top of the float E, around the rod *f*, and also around the tube *d*, to or nearly to the bottom of the float E, which acts in connection with the tube *d* as a vertical guide for the float E, and also by immersion of its lower end beneath the surface of the contained liquid in the vessel D as a seal to prevent leakage of gas. A pipe, *c*, communicating with the gas-delivery pipe *b*, enters from below into the vessel D and terminates within the float E, above the surface of the contained liquid. Suitable weights, *w'*, may be placed upon the top of the float E, if required.

The action of the apparatus is as follows: If from any cause the action of the pump should be too rapid and an excess of air forced through the carburetor C and into the delivery-pipe *b*, this excess of pressure would be transmitted through the pipe *c* into the float E and cause the same to rise, thereby elevating the valve *g* and closing the admission-orifice of the pipe *a*, through which air is drawn into the air-pump, the stop *f'* limiting the movement in this direction. On the other hand, a deficiency of pressure would cause a depression of the float E and of the valve *g*, thereby opening the orifice of the admission-pipe *a*.

It will be obvious that by connecting the rod

f with the handle of a suitable stop-cock in the gas-delivery pipe of the ordinary city service the same regulation of pressure of gas delivered to the burners may be secured, the vessel D being in such case independently supplied with liquid or attached in the manner described to the ordinary wet-meter. It will also be obvious that the pipe *c* in the case illustrated in the drawing is not absolutely essential to the desired effect, except in degree, because any overpressure in the delivery-pipe *b* would be communicated back into the air-space of the pump and force the liquid to a higher level in the vessel D, thereby elevating the float to some extent; but this effect is increased by communication of said pressure into the air-space of the float by means of the pipe *c*. The construction shown is therefore preferable.

I claim as my invention and desire to secure by Letters Patent of the United States—

1. In an automatic gas-machine, in combination with the air-pump, carburetor, and their connections, an open tank or vessel containing liquid, an inverted-cup float carried within the same, a pipe-connection from the gas-delivery pipe of the carburetor to the open space within the float, a valve controlling the inlet-orifice of the pump, and suitable connections between said float and air-ingress valve, whereby the pressure of gas in the delivery-pipe acts through the float to directly control the quantity of air admitted to the pump, substantially as set forth.

2. In an automatic gas-machine, in combination with the air-pump, carburetor, and their connections, an open tank or vessel connected with the pump-chamber below the liquid-line and carrying liquid thereby at a corresponding level, an inverted-cup float carried within said tank or vessel, a valve controlling the inlet-orifice of the pump, and connections between said float and valve whereby variations in the back-pressure of gas from the delivery-pipe of the carburetor causes a rise of all of the float and actuates the air-inlet valve of the pump, substantially as set forth.

3. In an automatic gas-machine of the character described, in combination with the air-pump, carburetor, their connections, and a regulating-valve controlling the admission of air to said pump, an open tank or vessel connected with the liquid-chamber of the pump and carrying liquid at a corresponding level, an inverted-cup float arranged in said tank or vessel to rise and fall with variations in the height of the liquid or in the pressure of the confined gas, a pipe-connection between the interior air-space of the float and the burner delivery-pipe, and operating connections between said float and regulating-valve, substantially as set forth.

4. A regulator for gas-machines embodying an open tank or vessel partly filled with liquid and having a central tube opening through the bottom and extending above the liquid-line, an inverted-cup float provided with a central tube extending from the top downward to or below the plane of its lower edge and embracing loosely the open tube of the containing-tank, a rod or stem depending centrally from the bottom of the float within both tubes below through the bottom of the containing-tank and adapted to connect with and operate a controlling-valve of the inlet-pipe, and a pipe-connection from the ultimate gas-delivery pipe opening through the bottom of the containing-vessel into the gas-space of the float above the liquid, constructed and arranged substantially as set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOSEPH STUBBERS.

Witnesses:
L. M. HOSEA,
CHESTER W. MERRILL.