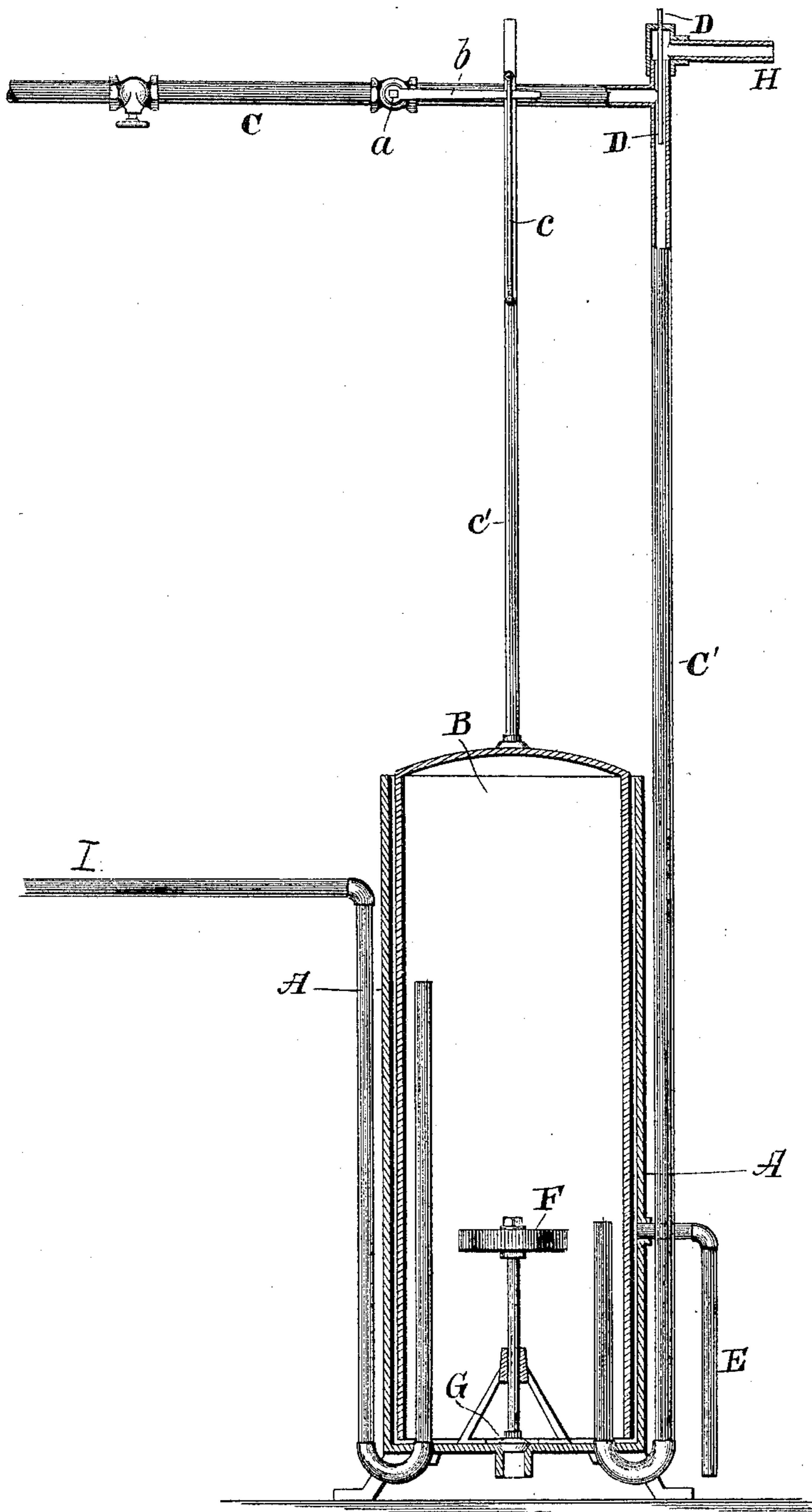


(No Model.)

J. M. BOIS.  
AIR HOLDER FOR GAS APPARATUS.

No. 581,843.

Patented May 4, 1897.



Witnesses  
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# UNITED STATES PATENT OFFICE.

JAMES M. BOIS, OF AURORA, NEW YORK.

## AIR-HOLDER FOR GAS APPARATUS.

SPECIFICATION forming part of Letters Patent No. 581,843, dated May 4, 1897.

Application filed March 17, 1896. Serial No. 583,619. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES M. BOIS, a resident of Aurora, in the county of Erie and State of New York, have invented certain  
5 new and useful Improvements in Air-Holders for Gas Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable  
10 others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in apparatus for compressing air, and is designed particularly for use in connection with gas-producing machines employed for producing  
15 gas for domestic purposes.

The object of the invention is to provide economical means for supplying air to the apparatus wherein the air and gas are mixed; and it consists in the combination of parts,  
20 as will be more fully described, and pointed out in the claims.

The accompanying drawing is a view in vertical section of my improved apparatus.

A represents a vessel, preferably sheet-iron, and open at top, and B is a similarly-shaped vessel of slightly less diameter than the vessel A and placed therein in an inverted position.

C is a water-supply pipe provided with a  
30 valve *a*, having handle *b*, which latter is loosely connected by loop *c* and rod *c'* with the closed top of the holder B. When the vessel or holder B is down, the valve is in its opened position, thus permitting a full head  
35 of water to pass the valve. When, however, the holder B is filled or elevated by the air under same to the highest position required, it automatically cuts off the flow of water by means of the loop *c* and rod *c'* before referred  
40 to. This rod *c'* is provided at its upper end with a loop *c*, embracing the end of handle *b*, whereby a limited rise and fall of the holder is permitted without operating the valve. The pipe C communicates with pipe C'. This  
45 pipe C' is provided at its upper or outer end with a small pipe D, open to the outer air, the inner end of said pipe passing and extending a short distance beyond the outlet of pipe C. Thus it will be seen that as the water in  
50 pipe C passes into pipe C' it draws in air through pipe D. The pipe C' extends below

the holder and is then bent upwardly into U shape, forming a water trap or seat, which being constantly filled with water prevents the escape of the compressed air in the holder  
55 when the water-supply is shut off. The water and air discharged into pipe C pass upward through the U-shaped trap and are discharged into the holder. After they enter the holder the air separates from the water  
60 and is confined within the holder until desired for use, while the water, or rather the excess of water, is permitted to escape through an overflow E. If desired, however, instead of employing an overflow I can use the float  
65 F and valve G shown. With this latter construction when the water reaches the float it elevates the latter, which raises valve G and permits the water to escape. When the water assumes its proper level, the flow again  
70 closes the valve and holds it closed until the lever is again raised.

To prevent the flooding of pipe C', which would result in choking up pipe D and preventing the ingress of air, I have provided  
75 the overflow-pipe H, which latter is designed to relieve the pipe C' of any surplus of water. This pipe H would not be needed where the pressure of water was uniform, but in cities, where the pressure varies, it is essential to  
80 provide means to take off this excess of water.

The air injected into the holder operates to raise the holder B, and hence the air is stored under pressure and is forced by this pressure through pipe I to a mixing-chamber, where  
85 it is mixed with the gas. This arrangement is exceedingly simple and dispenses altogether with the cumbersome and expensive blowers which have heretofore been used for storing the air and forcing it through the carbureter.  
90 By making the holder of two sections, one inverted and closed by a water seal and connecting the inverted section to the valve in the water-pipe, an excess of pressure of air in it is prevented. The pressure can be reg-  
95 ulated in each particular instance by weighting the inverted vessel B.

In the operation of the device water is permitted to flow through pipes C and C' into the holder, the water, as before explained,  
100 carrying with it air drawn in through pipe D. The air as it is discharged into the holder

gradually elevates the inverted vessel B until the latter reaches the limit of its up movement. Before, however, this limit is reached the lower end of loop *c* has engaged handle *b* 5 and shut off the supply of water, and consequently the supply of air. If no gas, however, is being consumed, the holder will remain in its elevated position. When, however, the burners, or any of them, are opened, 10 the weight of the holder B then forces the air through the pipe I to the mixing-chamber and forces the mixed air and gas at a uniform pressure, irrespective of the number of burners being used, into the house. As the air 15 leaves the holder the section B thereof begins to descend until the upper portion or end of loop *c* engages the handle *b* and again opens the valve, thus permitting the water to flow through pipe C' into the holder and again fill 20 the same with air. By this arrangement a constant supply equal to the demand is maintained, and as the operation is automatic and is controlled simply by a flow of water the expense of running the apparatus is extremely 25 slight.

Having fully described my invention, what

I claim as new, and desire to secure by Letters Patent, is—

1. In an apparatus for storing air, the combination with an outer vessel, and an inner 30 inverted vessel therein, of a water-pipe discharging into the lower end of the vessels and terminating in a U-shaped lower end, an overflow out through which water escapes when it reaches a certain height, an air-pipe lead- 35 ing into the water-supply pipe, and a valve in the water-pipe operated and controlled by the movements of the inner inverted vessel, substantially as set forth.

2. In an apparatus for storing air, the combination with an inner and outer vessel, of a 40 water-pipe having an outlet or overflow pipe therein and an air-pipe open at both ends, extending a short distance into the water-pipe, substantially as set forth. 45

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JAMES M. BOIS.

Witnesses:

C. S. DRURY,  
S. W. FOSTER.