

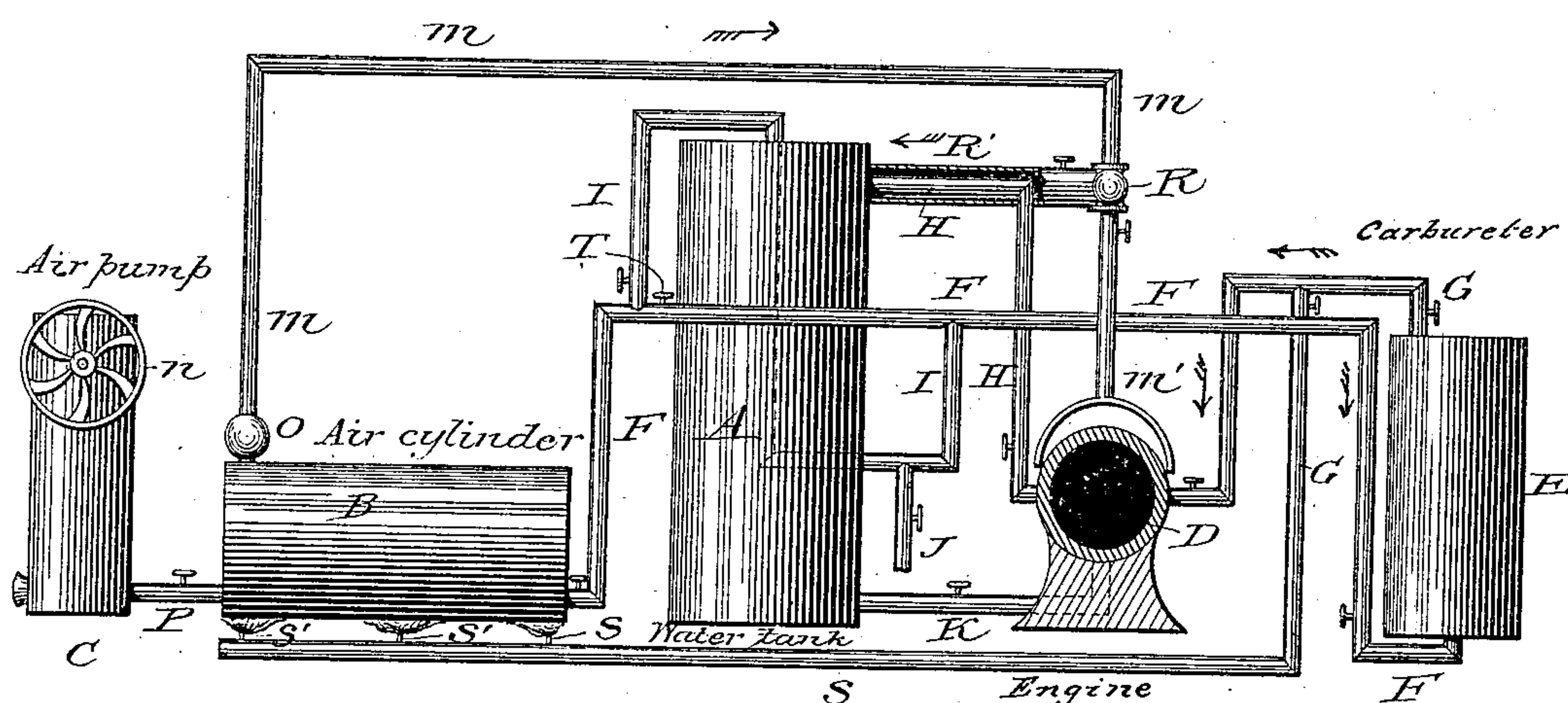
(No Model.)

I. JAMES.

APPARATUS FOR MANUFACTURING, USING, AND FURNISHING MOTIVE  
POWER BY AID OF AIR AND HYDROCARBON OILS.

No. 326,430.

Patented Sept. 15, 1885.



Witnesses:  
H. M. Coulter,  
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Att'y

# UNITED STATES PATENT OFFICE.

IRA JAMES, OF MATTOON, ILLINOIS.

APPARATUS FOR MANUFACTURING, USING, AND FURNISHING MOTIVE POWER BY AID OF AIR AND HYDROCARBON OILS.

SPECIFICATION forming part of Letters Patent No. 326,430, dated September 15, 1885.

Application filed June 4, 1885. (No model.)

*To all whom it may concern:*

Be it known that I, IRA JAMES, a citizen of the United States, residing at Mattoon, county of Coles, State of Illinois, have invented certain new and useful Improvements in the Apparatus for Manufacturing, Using, and Furnishing Motive Power for Machinery by the aid of Air and Hydrocarbon Oils, and that Letters Patent were granted to me by the United States, bearing date of February 3, 1885, numbered 311,493, covering the original apparatus, which I desire to improve and perfect; and I do declare that the following is a full, clear, and exact description of my invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, and the letters of reference marked thereon, and forming part of this specification.

The objects of my invention are to facilitate the operation and working of gas-engines used in connection with air-gas, and to aid in the cooling of the cylinder after the explosion of the gas; also, to provide better means for keeping up a current of water or its agitation in the water-tank, pipes, and around the cylinder; also, to provide means for using the heat in the water-tank in aiding the manufacturing of the gas needed to operate the apparatus, and thereby reduce the cost of production. I attain these objects by the use of the following mechanism, illustrated in the accompanying drawing, wherein the figure gives a complete view of my apparatus as in operation, in which—

C is an ordinary air-pump; P, connecting-pipe from air-pump to air cylinder or reservoir B; F, air-pipe leading from and connecting air-cylinder to the carburetor E.

D is a gas-engine, being connected to the carburetor E by the gas-pipe G, for supplying gas to the engine D.

A is a water tank or reservoir used for cooling the cylinder of the engine D, and being connected at the bottom of the tank by the pipe K and at the top by the pipe H.

Tapping the gas-pipe G near the carburetor, I place the pipe S, leading therefrom to the base of the air-reservoir, where it supplies

such burners as may be necessary for heating the air contained therein, as shown at s'.

On the top of my air-reservoir is placed a pipe, M, having set therein a weighted valve, O. This pipe leads on to the cylinder D, where I place as many diverging pipes as may be necessary for its purpose in cooling the cylinder D. Tapping the pipe M at the point R, I form an elbow and lead the pipe R (having incased the pipe H) into the water-tank A.

Intersecting the air-pipe F, leading from the cylinder B, I connect the bent pipe I, and introduce it into the top of the water-tank A and bring it down inside, as shown by the dotted lines I, thence at right angles and out of the side of the tank A, and up again into the pipe F, and from there to the carburetor. Intersecting the bent pipe I, near its outlet from the tank A, is a drip-pipe, J. All of the said pipes leading in the different directions are supplied with suitable valves and stop-cocks.

The manner of operating my apparatus is as follows: After charging the carburetor with such quantity of oil as necessary and opening pipe F, leading from the air-pump to the carburetor, I apply power to the pump and force the air into the reservoir B. From thence into the carburetor E. I then open the stop-cock of pipe S and allow gas to pass to the burners S', which, being ignited, assists in heating the air as it passes through the reservoir B. By opening the stop-cocks of pipe G it will permit the gas generated in the carburetor E to pass to the gas-engine D. The stop-cocks of the pipes R and H, leading from and to the water-tank A, being opened, I am ready for the igniting the gas and setting the engine in motion. After the engine has been running for some time I find that the cylinder gets heated. I believe this is caused for the want of motion in the water. In order to overcome this I utilize the surplus air from the air-reservoir B by conducting it from the weighted valve O through the pipe M, thence to the point R, where it enters pipe R' and is conducted into the tank A, thereby creating a suction from the pipe H and aiding in causing a current of the water, and in its commotion thereby keeping the water from rising above a certain temperature in the tank A.



When it is not convenient to use the water in the tank A, I utilize the air from the pipe M by directing it in as many currents as deemed desirable to the cylinder D, and there-  
 5 by keeping it cool; or the water and cold air can be used jointly for the cooling of the cylinder D. After the water in the tank A has become heated I adopt means for utilizing the same by closing the stop-cock T in the pipe  
 10 F and opening the stop-cock in pipe I, and conduct the air from the holder B down through the hot water in the tank A, then out and up again into the pipe F, thereby heating it in its passage through the pipe I, enabling  
 15 me to dispense with the burning of part or all of the burners under my air-reservoir. In case any steam forms or water gets into the pipe I or F, it can be drawn off through the drip-pipe J.  
 20 The using of water for the cooling of the cylinder D is not, I am fully aware, of itself new; but the introducing of a jet of air into the cylinder A in the manner described is, I think, useful and novel, and the utilizing of  
 25 the hot water to aid in heating the air in producing gas is also new and useful.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

30 1. In combination with an air-pump, air-reservoir, carburetor, gas-engine, and water-tank, pipe M, with one or more radiating arms, *m'*, supplied with valves or cocks, and  
 35 as means for conducting a current of air in contact with cylinder of gas-engine, substantially as described, and for the purpose set forth.

2. In combination with an air-pump, air-reservoir, carburetor, gas-engine, and water-tank, pipe M, with intersecting pipe R, incasing pipe H, and being supplied with valves  
 40 or cocks as a means for conducting a current of air into water-tank to cause agitation, substantially as described, and for the purpose set forth.

3. In combination with an air-pump, an  
 45 air-reservoir, carburetor, gas-engine, and water-tank, pipe F, having intersecting it the bent pipe I, with the drip-pipe J, being supplied with valves or cocks to aid in heating  
 50 the air in its passage to carburetor by utilizing the heat of water in the tank, substantially as described, and for the purpose set forth.

4. Combined with an air-pump, air-reservoir, carburetor, gas-engine, and water-tank, the pipes F, I, M, *m'*, R, and J, all provided  
 55 with suitable valves or stop-cocks, and all bent and connected as described, substantially as shown, and for the purpose set forth.

5. The combination, with an air-pump, of air-reservoir and carburetor, gas-engine and  
 60 water-tank, and the pipes I, M, *m'*, R', and J, all provided with valves and stop-cocks, and all connected as described, substantially as shown, and for the purpose set forth.

In testimony that I claim the above as my  
 65 own I affix my signature in the presence of two witnesses.

IRA JAMES.

Witnesses:

WALTER S. RICE,  
 ABNER RICE.