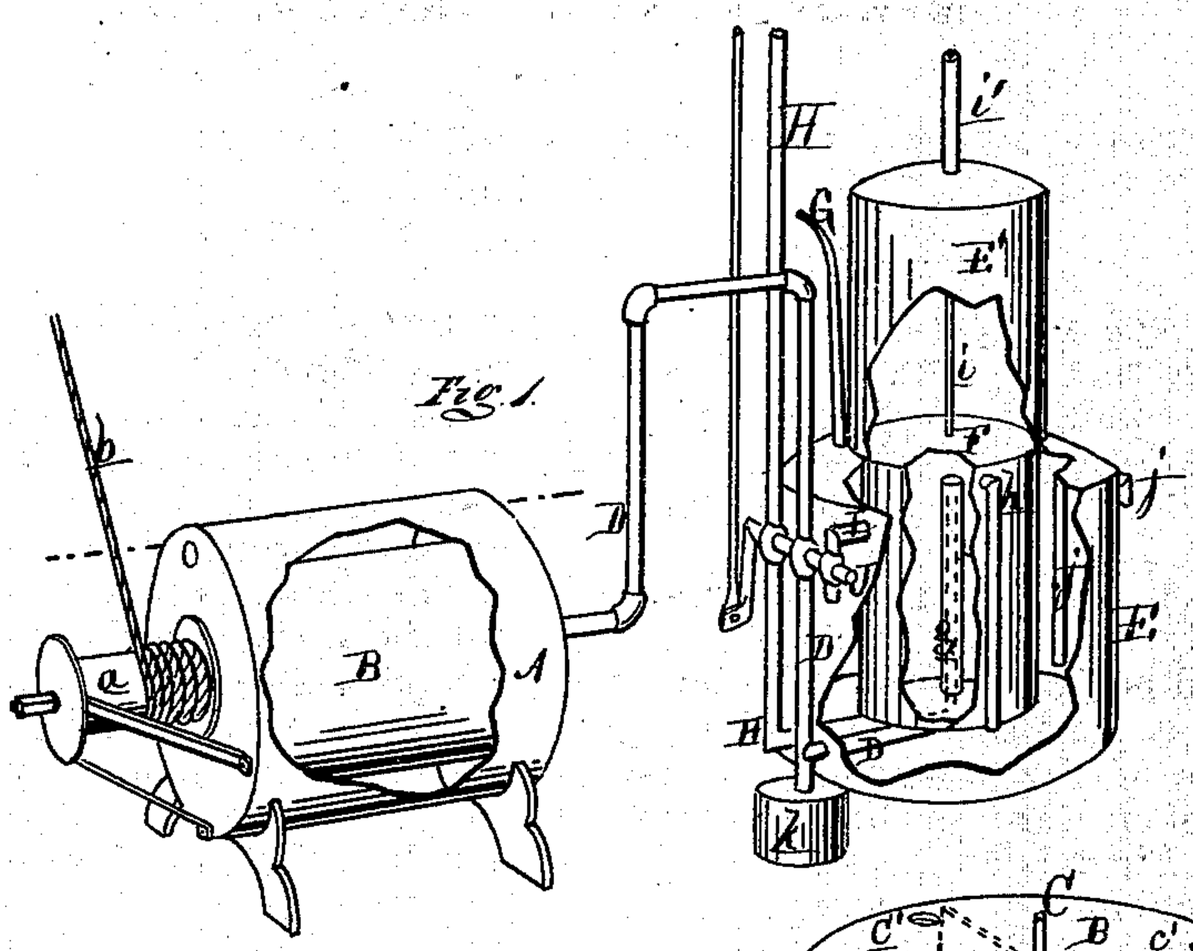
I. L. CARR.

Carbureters.

No. 146,313. Patented Jan. 13, 1874.

Fig. 1.



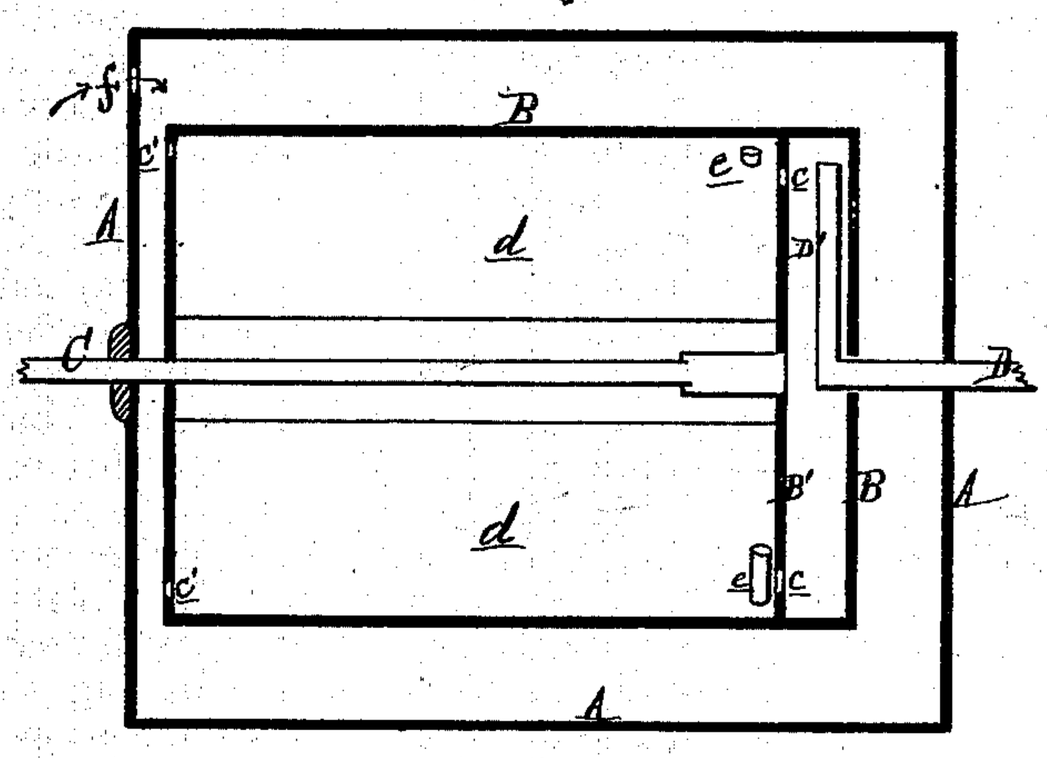


Fig. 2.

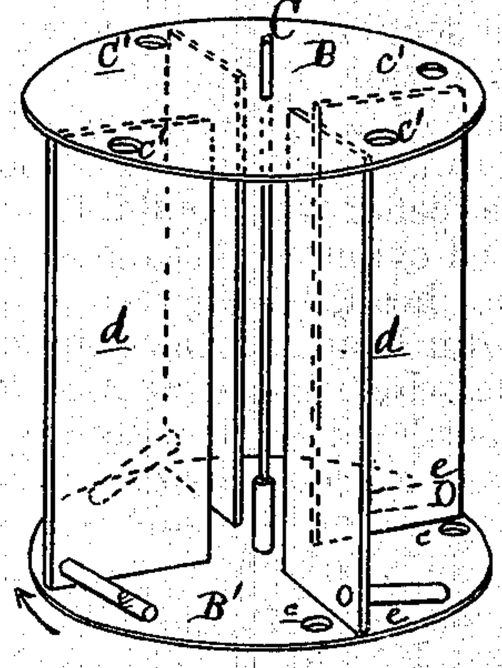


Fig. 3.

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ISRAEL L. CARR, OF DETROIT, ASSIGNOR TO HIMSELF AND DANIEL D. SPAULDING, OF JACKSON, MICHIGAN.

IMPROVEMENT IN CARBURETERS.

Specification forming part of Letters Patent No. **146,313**, dated January 13, 1874; application filed July 31, 1873.

To all whom it may concern:

Be it known that I, ISRAEL L. CARR, of Detroit, in the county of Wayne and State of Michigan, have invented certain Improvements in Gas-Machines, of which the following is a specification:

This invention relates to gas-machines; and consists, mainly, in certain details of construction, which will be fully described hereinafter.

Figure 1 is a perspective view of my gas-machine, parts of the air-pump and carbureter being broken away to show the internal construction. Fig. 2 is an enlarged longitudinal vertical section of the air-pump. Fig. 3 is a perspective view of the rotary drum.

In the drawing, A represents the shell of the air-pump mounted on legs, and is usually placed in the cellar of the building to be lighted. B is a closed cylinder, having at or near one end an inner head, B′, between which and the adjacent outer head is formed an air-chamber. C is a shaft, which forms the axis of one outer and the inner head of the cylinder B, its protruding end being journaled through a stuffing-box in the head of the shell A, where it receives a spool, *a*, on which is wound a cable, *b*, led over an overhead pulley, and weighted to impart a rotary movement to said drum, in the usual manner. D is the air-pipe led through the other head of the shell A and the adjacent one of the cylinder B, for which it forms a trunnion, and is turned up at D′ into the upper part of the air-chamber, between its outer and inner heads. In the latter head, B′, four apertures, *c*, are made near the periphery, ninety degrees apart. In the opposite head four other holes, *c′*, are made, also ninety degrees apart near the periphery, but not in line with the holes *c*. On the shaft C are secured four radial arms or buckets, *d*, extending outwardly to the shell of the cylinder. These buckets are so placed that a hole, *c*, will come just in advance of each at one end, while a hole, *c′*, will come just behind it at the opposite end. *e* is a tube inserted through each bucket near the periphery at the outer end, and extends back nearly half-way to the next bucket. *f* is an air-inlet in the upper part of the outer or reel end of the shell A, which is filled with water for about two-thirds of its height, the water, of course, rising to the same plane in the cylinder.

The cylinder B and its buckets being rotated in the direction of the arrow in Fig. 3, air enters the space between the two uppermost buckets through the hole *c′*. In the rotation of this drum, as soon as this hole *c′* passes under the surface of the water, the air becomes compressed until it finds an exit, which it does by flowing back through the pipe *e* into the next chamber behind it, whose hole *c′* has, meantime, passed under the water, and thus equalizes the higher pressure of the first chamber with the lower one of the following one. At this time the hole *c* of the second chamber is above the surface of the water, and discharges the air into the chamber between the two heads, whence it passes down the pipe D′ into the air-pipe D, and is forced along to the carbureter continuously during the rotation of the drum, the pressure being equalized in the succeeding chambers in the manner described.

E is the carbureter-tank, usually placed in a pit below the surface of the ground, outside of the building, for safety against fire or explosions, the air-pipe D entering it at one side near the bottom, extending to the center, and is carried up nearly to the plane of its top, as seen in Fig. 1. F is a cylindrical float closed at both ends, the lower end having a tube, *g*, secured in its axis, which tube is sleeved over the upturned end of the air-pipe D, which forms a guide for it in its rise and fall. From the upper part of the float F one or more delivery-pipes, *h*, extend down the outside to its bottom, delivering the air received in its interior under the surface of the gasoline, with which the carbureting-tank is filled. The top of the carbureting-tank has mounted on it a cylindrical dome, E′, which receives the float F as the latter rises within it. The float has rising from its axis a guide-rod, *i*, which is received in a guide-tube, *i′*, rising from the dome, which tube is closed by a screw-cap. *k* is a drip-cup placed at the lower elbow of the air-pipe outside the tank, to catch the moisture condensed from the air in its flow through the pipe which is buried in the ground. G is the gas-pipe, through which the carbureted air flows from the carbureter to the service-pipe.

H is the filling-pipe, passed down the side of the tank, alongside the air-pipe, and enters the tank near the bottom, preferably discharging under the float. I is a combined safety-vent and overflow-pipe, issuing from near the top of the tank, and having its outer end turned down. The pipes D, H, and I are fitted with stop-cocks, all on the same plane, through all of which extends a single plug, J, having the "way" for the pipe D cut through it at a right angle with the ways for the pipes H and I, so that when it becomes necessary to fill the tank the plug is rotated by its crank a quarter revolution, which opens the filling-pipe and vent-pipe, while it closes the air-pipe. The cap on the guide-pipe *i'* should be also removed, so that when the tank is filled to the proper height, the protrusion of the float-guide *i* from the guide-tube will notify the attendant to cease pouring in more gasoline. Should he fail to notice it, the surplus will flow out of the vent-pipe I, which must be open for the passage out of the air displaced by the entering fluid. When he closes the filling-pipe and vent, he opens at the same time the cock in the air-tube.

No gas can flow back through the air-pipe into the air-pump, where it would be liable to produce an explosion if a light were brought near it, for the reason that the delivery-pipes of the float are immersed in the hydrocarbon of the tank, which thus makes a liquid seal.

At *j* is shown an overflow-pipe, extending to the bottom of the tank, which might be used in connection with a separate air-vent; but the arrangement of the safety-vent and overflow-pipe I, I deem preferable.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The condense drip-cup *k*, arranged, with relation to the pipe D, as and for the purpose set forth.

2. The safety-vent and overflow-pipe I, constructed and arranged as described, for the purpose specified.

3. The plug J, arranged in the cocks of the pipes D, H, and I, substantially as and for the purpose set forth.

ISRAEL L. CARR.

Witnesses:

H. F. EBERTS,

H. S. SPRAGUE.