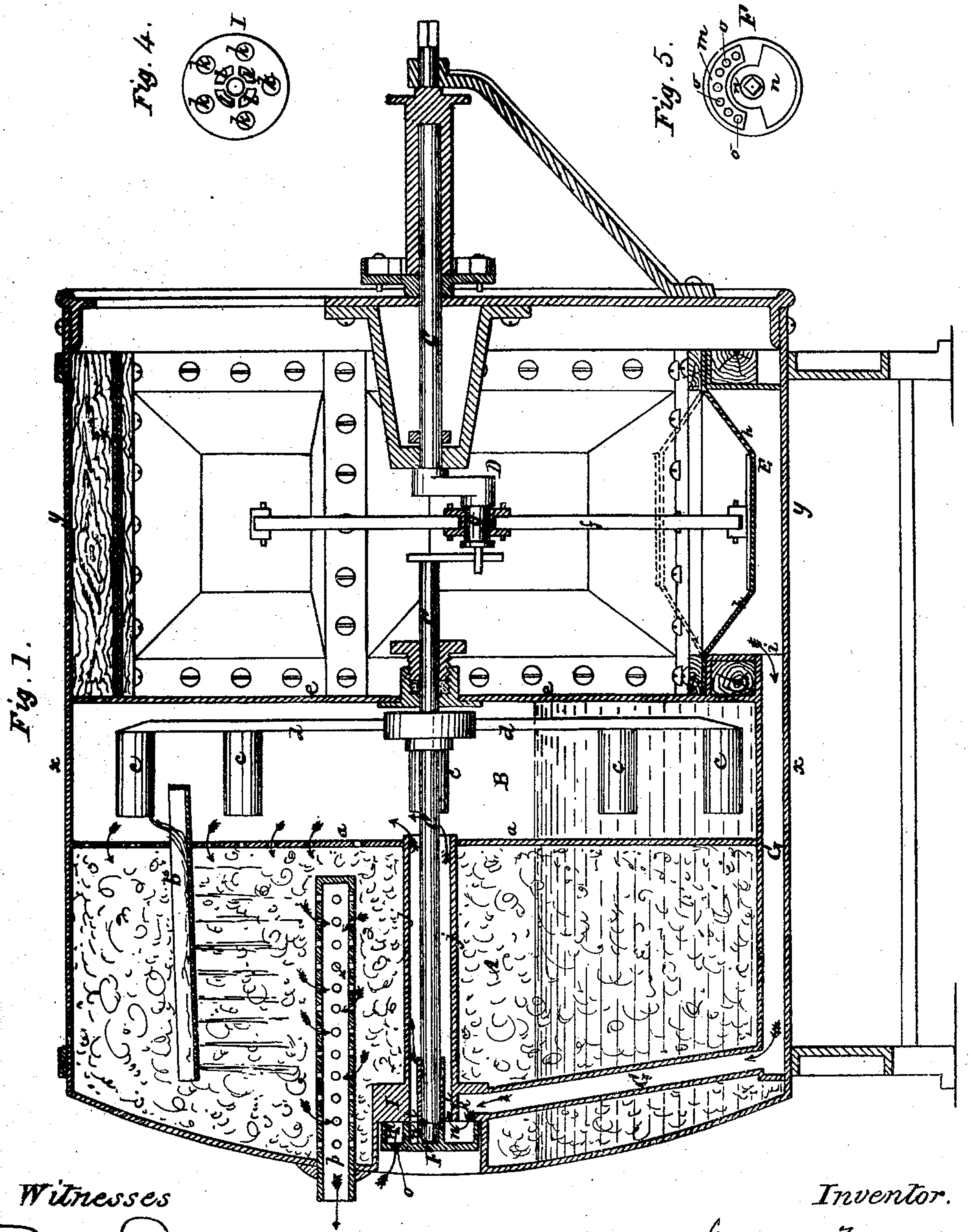
J. B. TERRY. 2 Sheets--Sheet 1.

Carbureters.

No. 133,957. Patented Dec. 17, 1872.



Witnesses

John Buckley

Jas. Williams

Inventor.

Hannah C. Terry admx of Jno. B. Terry dec'd by atty A. Pollok

AM. PHOTO-LITHOGRAPHIC CO. N.Y. (OSBORNE'S PROCESS.)

J. B. TERRY.

2 Sheets--Sheet 2.

Carbureters.

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Fig. 3.

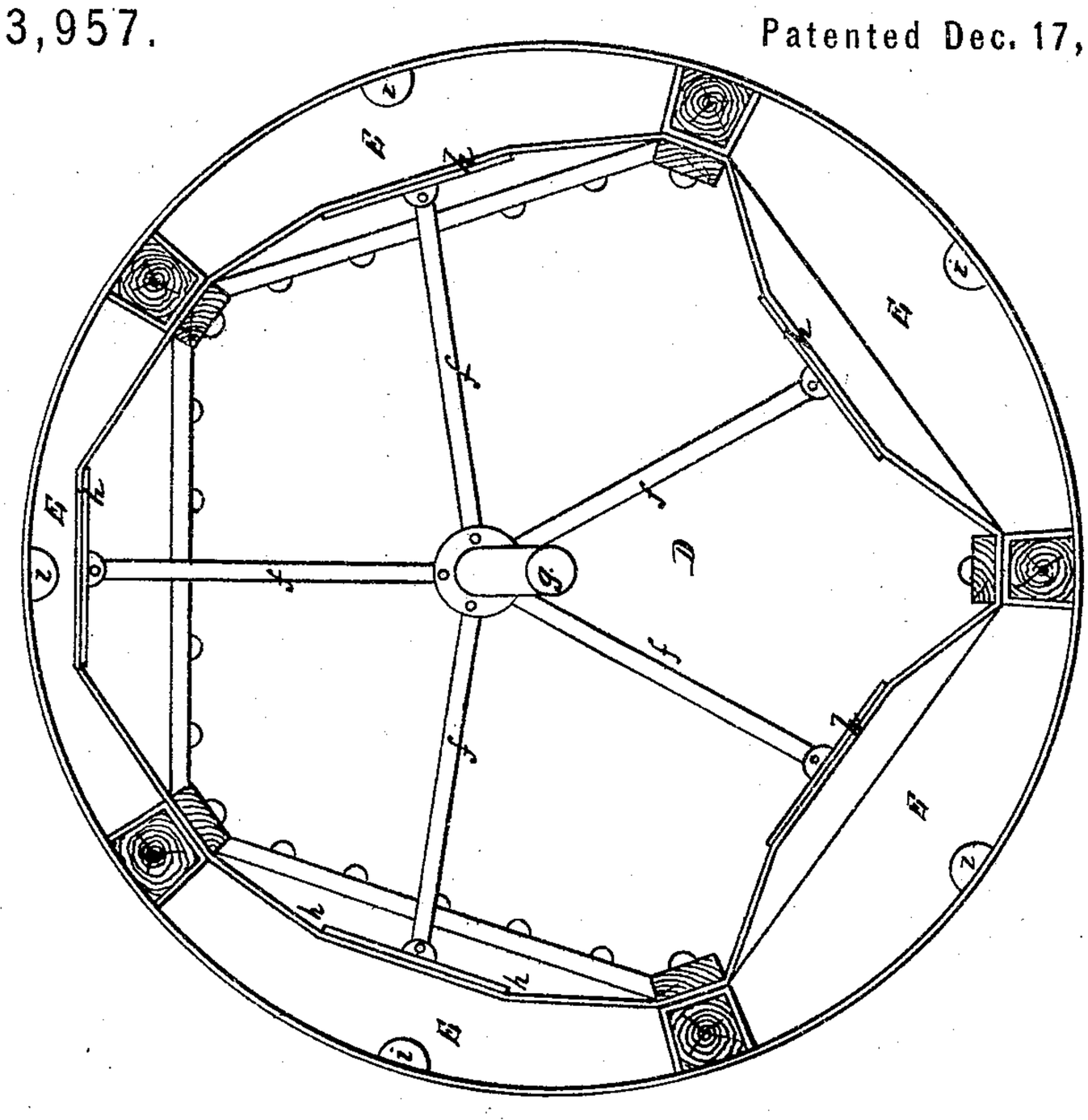
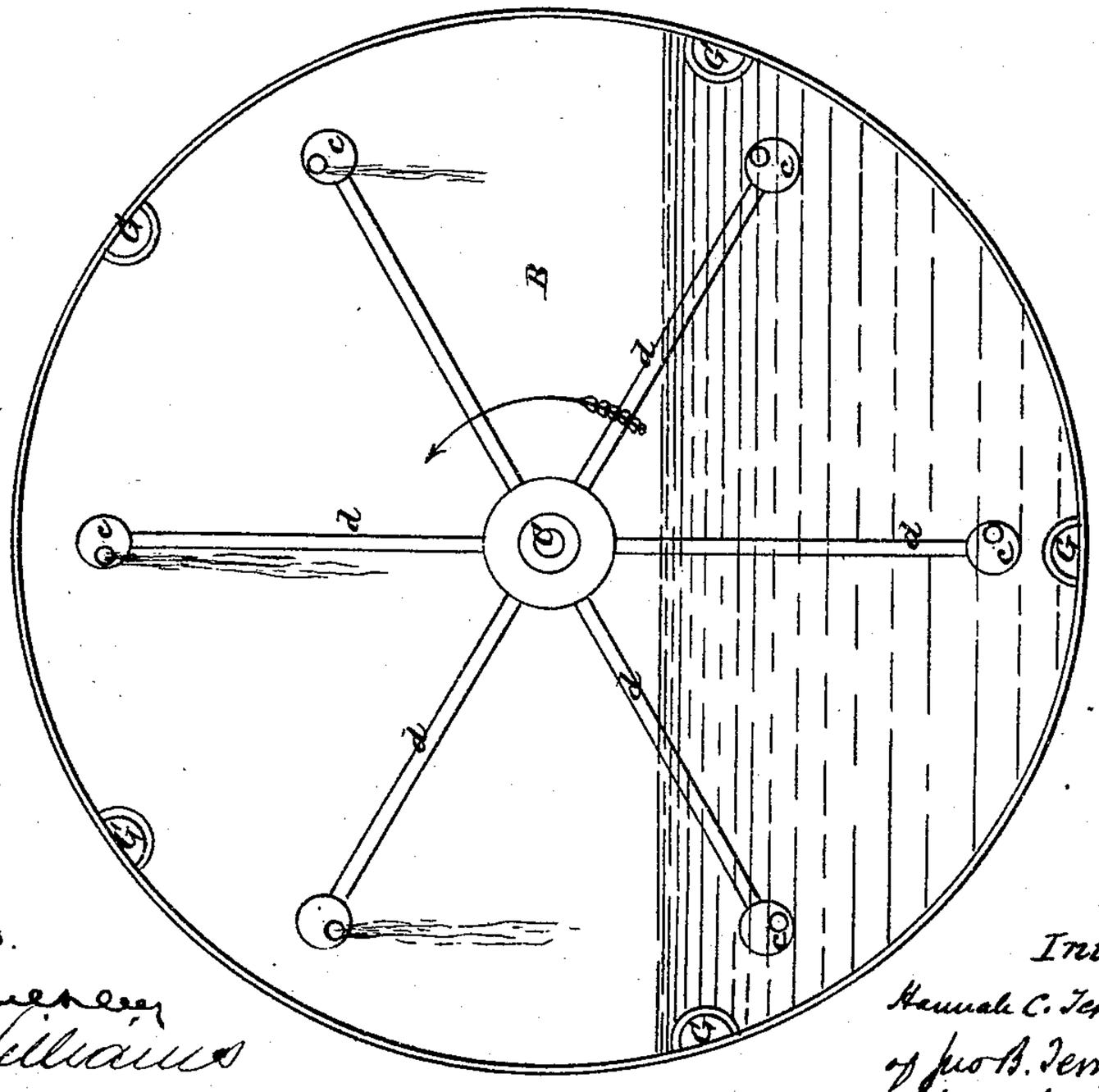


Fig. 2



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UNITED STATES PATENT OFFICE.

HANNAH C. TERRY, OF BROOKLYN, NEW YORK, ADMINISTRATRIX OF THE ESTATE OF JOHN B. TERRY, DECEASED; SAID HANNAH C. TERRY ASSIGNOR TO L. S. BURNHAM, OF SAME PLACE.

IMPROVEMENT IN CARBURETERS.

Specification forming part of Letters Patent No. **133,957**, dated December 17, 1872.

To all whom it may concern:

Be it known that JOHN B. TERRY, deceased, late of Brooklyn, Kings county, New York, did, during his lifetime, invent certain new and useful Improvements in Carbureting Apparatus, of which the following is a specification:

These improvements principally relate to the mechanism by which a continuous supply of air is caused to pass to the carbureting-chamber, and to the arrangement of the air ducts or passages through which the air to be carbureted is taken into and discharged from the pump, which supplies the carbureting-chamber with a steady and continuous current of this air.

The invention is fully illustrated in the accompanying drawing, in which—

Figure 1 is a longitudinal vertical central section of a carbureting apparatus made in accordance with this invention; Fig. 2 is a transverse vertical section of the same on the line *x x*, Fig. 1, showing the device for raising the gasoline and delivering it to the evaporating or carbureting chamber; Fig. 3 is a like section on the line *y y*, Fig. 1, and shows the arrangement of the air-pump; Fig. 4 is an end view of the stationary valve-seat, which at the same time constitutes the bearing for the crank-shaft; and Fig. 5 is a view of the interior face of the valve, which is attached to and rotates with the crank-shaft, and is seated against the valve-seat shown in Fig. 4.

The general construction of the apparatus will first be described, and afterward a more particular description will be given of those portions of the apparatus in which the invention is principally comprised.

A is the carbureting-chamber, filled with wicking, excelsior, or other absorbent material, and communicating at the bottom with the compartment B, which contains the gasoline. The two chambers are separated by a diaphragm or partition, *a*. In the upper part of the carbureting-chamber is an inclined pan, *b*, with a perforated bottom, projecting a short distance through the partition *a* into chamber B. A series of buckets, *c*, are mounted on radial arms *d* attached to shaft C; and these buckets are arranged so that during their revolution they will dip up the gasoline from the bottom of chamber B and deliver it into the pan *b*, through the bottom of which it trickles so as to permeate the mass of absorbent material in chamber A. Separated from chamber B by a partition, *e*, is the pumping or air-forcing chamber D. This chamber contains around its sides a number of bellows, E—five in this instance—each operated by an arm, *f*, projecting from the single crank *g* of shaft C, all the arms being mounted on a sleeve fitting the crank, and being pivoted at their ends to the flexible tops *h* of their respective bellows. Each bellows-chamber is closed with the exception of a single opening, *i*, through which air is drawn into and discharged from the chamber. The crank-shaft C is supported in suitable bearings, as shown, and is revolved by spring-power or other means usually employed for the purpose. By means of a tube, J, an annular chamber is formed around that part of the shaft C in the chamber A, and this tube or annular chamber opens, as shown, into the chamber B.

The devices for regulating the supply of air and for delivering the air to and conducting it from the pump, in the construction and arrangement of which this invention principally consists, will now be described.

The outer end of the tube *j* is closed by a device, I, which is secured to the case of the carbureter, and constitutes the bearing for one of the ends of shaft C, as shown in Fig. 1. This device or block, which I shall call the valve-seat, is pierced with holes *k*, corresponding in number to the bellows shown in front view in Fig. 4, one of them being also shown in longitudinal section in Fig. 1. Each one of these holes is designed to communicate with the conduit or air-passage leading from the opening *i* of one of the bellows. One of the conduits communicating with its aperture *k* in the valve-seat and with the opening *i* of its bellows is shown at G in Fig. 1. The other conduits are not shown; but their arrangement is similar to the one described. Nearer the center of the valve-seat are other openings, *l*, arranged around the center, and designed to communicate with the interior of the tube *j*, as shown in Fig. 1. Upon the valve-seat is fitted a valve, F, (see Fig.

5,) consisting of a block of cylindrical form, provided on its inner face, or that face which rests against the valve-seat, with two chambers, *m n*, each extending about half way around the valve. The one chamber *m* is pierced with holes *o*, through which the supply of air for the bellows is drawn. The other chamber *n* is not so pierced, and is designed to direct the air forced out from the bellows into the openings *l* of the valve-seat, through which the air passes into and through the tube *j*, and thence, as indicated by arrows, out into the chamber B and up through perforations in the upper part of partition *b* into chamber A, where it is carbureted, and there discharged through a service-pipe, *p*. The valve F is mounted and revolves with shaft C.

Under the arrangement described the valve device takes the place of no less than ten ordinary valves—five of them induction and five eduction valves.

It will, of course, be understood that, owing to the arrangement of the air-forcing apparatus, some of the bellows are drawing in air while the others are discharging air.

The valve F is so mounted on shaft C that its chamber *n*, which communicates with the openings *l* in the valve-seat, covers such of the openings *k* as communicate with the discharging-bellows, its chamber *m*, on the other hand, covering the openings *k* of the other bellows, which at this time are drawing in air; consequently, as the shaft revolves, and the bellows alternately and in succession rise and fall to draw in and force out air, the one chamber *n* will continually cover the orifices *k* of the discharging-bellows, while the other *m* will as continually cover the orifices *k* of those which are drawing in air. Thus this revolving valve, by traveling around with the crank-shaft, leaves all those orifices *k* which are serving as induction-orifices open and free to receive air from the exterior of the apparatus, while at the same time the chamber *n* connects all the eduction-orifices *k* together, collects all their discharging air, and conveys it to the air-inlet *j* leading to the carbureting-chamber.

Another important feature of this invention consists in the arrangement of the air-conduits G, one of which, as before stated, is shown in Fig. 1.

It is well known that the power of all gas-machines is limited to the extent of surface that they present to the surrounding air, as this, where no artificial heat is used, is all that prevents the rapid evaporation from cooling them. The apparatus herein shown is so made that the whole machine—the pumps as well as the carbureter—must cool down before it will stop working. This is effected by arranging the air-conduit G as shown, so that the air must pass through the carbureter and the body of liquid contained therein before reaching the pumps. In its passage to the pumps the warmer air will give off a portion of its heat, and after reaching the pump will be reheated before it is discharged therefrom, the apparatus working very slowly and giving ample time to the air to regain any heat it may have given off to the carbureter. The air, whether it is being taken into or being forced out from the pumps, is thus continually giving off its heat to the carbureter during its passage through the conduits, and by thus maintaining the temperature of the carbureter and supplying the heat lost by evaporation double the amount of gas can be made with the same size of machine without cooling off enough to impoverish the gas.

The apparatus is wound up, filled, and operated in the usual manner.

What is claimed as the invention of the said JOHN B. TERRY is as follows:

1. The combination, with the carbureting-chamber, crank-shaft, and air-pumps communicating with the valve-seat through separate and independent passages, as described, of the stationary valve-seat and the rotary valve moving in unison with the crank-shaft, said parts being constructed, applied, and operating to supply air to the pumps and to direct the air discharged therefrom into the carbureting-chamber, substantially as herein shown and described.

2. In combination with the air-pumps and carbureter, the air-conduits G, receiving the air which passes to and from the pumps and connecting the pumps with the carbureter and passing through the body of the latter, substantially as and for the purposes set forth.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

HANNAH C. TERRY,
Administratrix of the Estate of
Doct. J. B. Terry, deceased.

Witnesses:
WILLIAM STEWART,
MICHAEL WALLACE.