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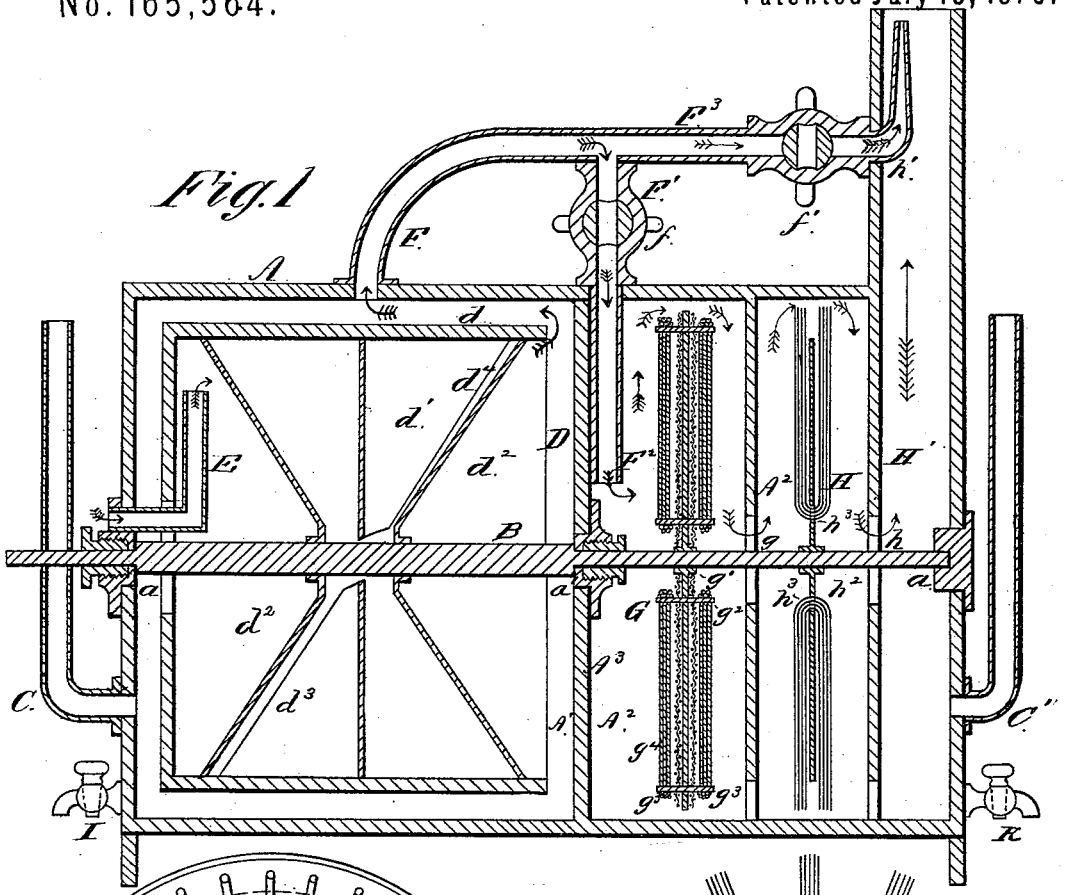
G. L. GRAY & C. C. LUSBY.

Air-Carbureter.

No. 165,564. Patented July 13, 1875.

Fig. 1



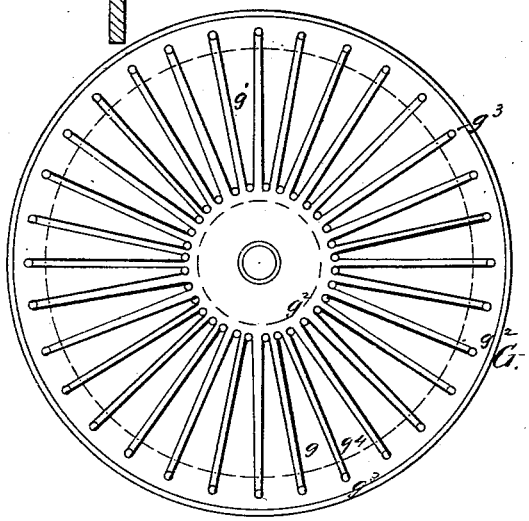


Fig. 2

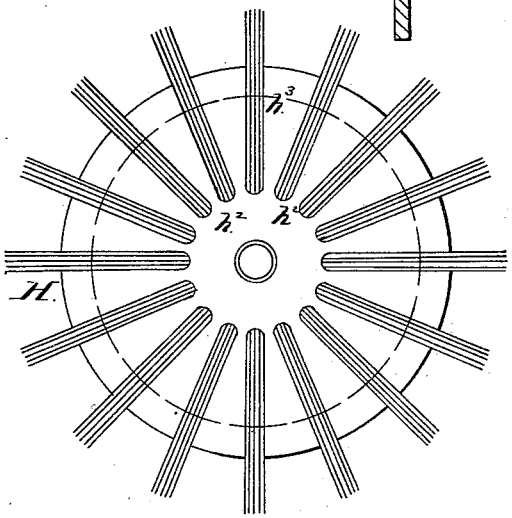


Fig. 3

Witnesses

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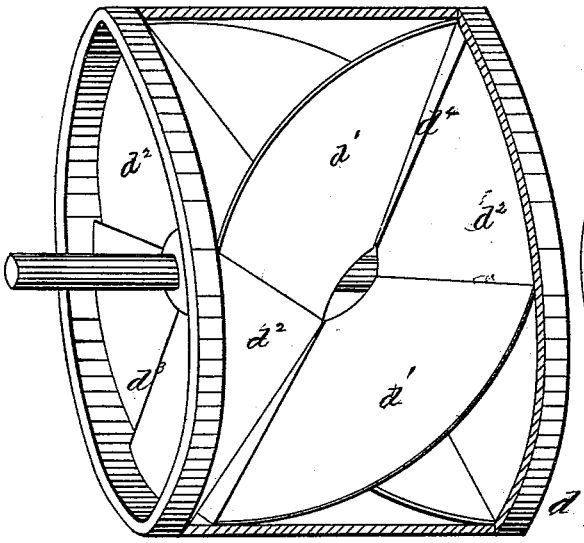

Fig. 4

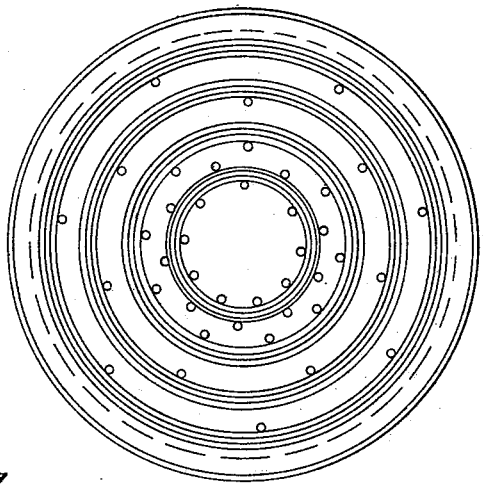

Fig. 5

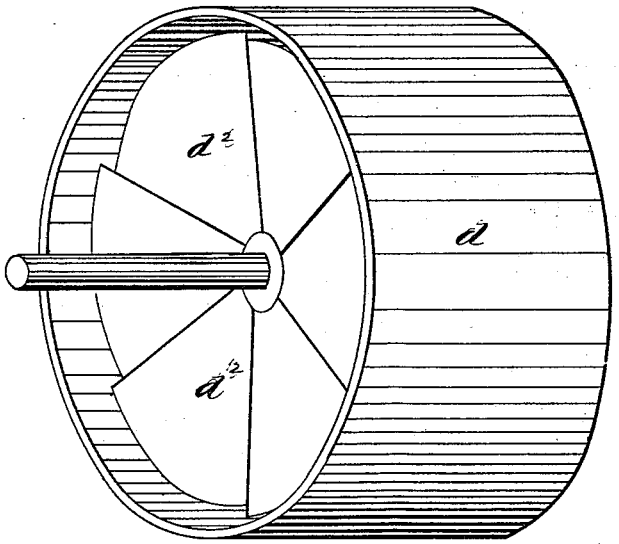

Fig. 6

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UNITED STATES PATENT OFFICE.

GEORGE L. GRAY AND COMEGYS C. LUSBY, OF PHILADELPHIA, PA.

IMPROVEMENT IN AIR-CARBURETERS.

Specification forming part of Letters Patent No. **165,561**, dated July 13, 1875; application filed April 10, 1875.

To all whom it may concern:

Be it known that we, GEORGE L. GRAY and C. C. LUSBY, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Machines for Carbureting Air; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification, in which—

Figure 1 is a vertical longitudinal section of the carbureter. Figs. 2 and 3 are face views of the respective evaporating-wheels. Figs. 4 and 6 are perspective views of the blower. Fig. 5 is a view of modification of evaporating-wheels.

The object of our invention is to provide a carbureting-machine of cheap and simple construction, which shall operate in a more perfect manner than any machine of the class heretofore produced.

The nature of our invention consists in the peculiar construction, combination, and arrangement of the various parts, having reference particularly to the following points: First, to the wings or vanes of the blower, which are made flaring or conical, and are placed diagonally with reference to the shaft in such a manner that the moment one disappears beneath the surface of the compressing-liquid the next succeeding one will enter said fluid; secondly, to the heads or hoods of the blower, which are formed concave or depressed, so as to conform to the flaring construction of the wings, the hoods on the egress or outlet end of the blower having narrower openings between them than those on the inlet end, so as to produce a more regular pressure; thirdly, to the provision of pipes so arranged that the current of air forwarded from the blower may be divided, so as to pass partly to the evaporating-wheel and partly direct to the burner, stop-cocks being provided for controlling each divided current, so as to regulate the supply of air to the evaporating-chamber according to the number of burners employed, and, also, to dilute, when necessary or expedient, the carbureted air, by mingling with it pure air direct from the blower; fourthly, the evaporating-wheel, which consists of a disk having two annular rows of pins on each side, one arranged at or about the center, the other forming a circle near the periphery or outer edge of said disk. Around these pins is passed wick or other fibrous or textile material, the office of which is to take up the gasoline for the purpose of carbureting the air forwarded to it from the blower; fifthly, to the tank, which is divided into two compartments, designated respectively as the blower-chamber and gasoline-chamber, a single shaft passing through both, serving to operate both the blower and evaporating-wheels.

Referring to the accompanying drawings, A designates a case or tank, divided into two compartments, A^1 and A^2, by a partition, A^3, A^1 being the blower-chamber and A^2 the gasoline-chamber. B is a shaft, having bearings in the ends at *a a*, and in the partition A^3 at *a'*. C C' are inlet-pipes, by which water and gasoline are admitted to the blower and gasoline chambers respectively. D represents the blower, consisting of the cylindrical case *d*, wings d^1, and heads or hoods d^2. The wings d^1 are flaring or conical shaped, being much wider at their point of attachment to the case *d* than at their opposite extremity. These wings are set diagonally with reference to the shaft B, so that as it revolves, they will enter at an angle, thus exerting their pressure gradually. The angle at which the wings are set should be between forty-five degrees and sixty degrees, preferably at sixty degrees, so as to complete the circle exactly with six wings. These wings are also set, with relation to each other, in such manner that the upper edge of one, when in a horizontal plane, will exactly coincide with the line of the lower edge of the next superjacent one. The effect of this arrangement is that, at the very moment the upper edge of one wing disappears beneath the surface of the compressing-liquid, the lower edge of the next succeeding one will enter the said liquid, thus producing a steady and uniform pressure of air.

The hoods d^2 are made sunken or depressed to conform to the flaring or tapering construction of the wings d^1, and the openings d^3 between the hoods at the exit end of the blower

are narrower than the openings d^4 at the inlet end, so as to effect a more regular pressure. E represents a pipe by which air is admitted to the blower, and F another pipe by which the air-current emerges from said blower, passing thence through the connection F^1, which is provided with a stop-cock, f, through the pipe F^2, emerging therefrom in the gasoline-chamber at the center of the first evaporating-disk G, passing then over said wheel, as indicated by the arrows, finding its exit on the opposite side through the opening g in the diaphragm A^2, passing thence in like manner over the second evaporating-wheel H, out at h, up the conduit H^1 to the dome or burner. The pipe F is continued, as shown, to meet the conduit H^1 at h^1, being provided with the stop-cock shown at f^1. By turning the stop-cock f the quantity of air admitted to the evaporating-wheels may be regulated, and the pressure of the blower controlled so as to conform to the number of burners in use at any given time, and by means of the extension F^3 of the pipe F and stop-cock f^1 pure air may be taken from the blower to dilute or impoverish the carbureted air or gaseous vapor from the gasoline-chamber. The wheel G consists of a disk, g^1, having two rows of pins, g^2 g^3, on each side, around which is wound wick or other fibrous material g^4, in the manner plainly shown in the drawing. Instead of arranging the wick as thus shown it may be wound in circles or volutes. The disk G is covered with cotton or other equivalent fibrous or textile material for taking up the gasoline. The wheel H consists of the disk h^2 having apertures h^3, through which are passed strands of hair, hemp, or other equivalent material, the ends being turned up on either side and secured by cord, or in any other suitable manner, substantially as shown in Figs. 1 and 3 of the drawing. These disks or evaporating-wheels are hung on the shaft B, which thus serves to actuate both them and the blower.

The advantages of the foregoing construction are briefly as follows: The blower and evaporating-chambers being formed in one tank admit of a more perfect construction than would be otherwise possible, and allows the blower and evaporating-wheels to be actuated by a single shaft. The described construction and arrangement of the blower effects a steady and uniform pressure of the air, thus obviating all flickering of the gas at the burner. The provision of an evaporating wheel or wheels secures a certain means of taking up and evaporating every particle of the gasoline, thus thoroughly carbureting the air, which, owing to the numerous passages it must traverse between the blower and burner, becomes heavily impregnated with the volatile fluid. The described arrangement of the air-pipes and the provision of the stop-cocks f and f^1 affords a simple and effectual method of regulating the pressure of the blower according to the number of burners in use at any given time, and also of diluting the gas when too rich or heavy.

I and K are outlet-cocks for drawing off the water and gasoline from the chambers A^1 and A^2, whenever desired or necessary.

We claim—

1. The blower, having oblique wings d^1, the upper edge of each wing being in the same plane with the lower edge of the next superadjacent wing, and with the axis of the axle, substantially as and for the purpose described.

2. In combination with the flaring diagonal wings d^1, the sunken or depressed hoods d^2, said wings occupying each one-sixth of the circumference of the blower, whereby the angle formed by one wing and its hood shall face and coincide with the corresponding angle of the next adjacent wing and its opposite hood, substantially as described.

3. In combination with the case d the heads or hoods d^2 having outlet-spaces d^4 narrower than the inlet-spaces d^3, as and for the purpose set forth.

4. An evaporating-wheel composed of the disk g^1, central and circumferential rows of pins g^2 g^3, and wick or other fibrous or textile material wound alternately from center to circumference, substantially as shown and described.

5. The combination, with a blower and carbureter upon a single shaft passing through the air and gasoline chambers, of a pipe leading from the blower-chamber to the outlet gas-tube, and having a branch entering the gasoline-chamber, said pipe and branch being furnished with cocks to regulate the quality of the gas, as and for the purpose specified.

In testimony that we claim the foregoing, we have hereunto set our hands this 1st day of April, 1875.

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COMEGYS C. LUSBY.

Witnesses:
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