W. W. L. KEMP.

GAS CARBURETER.

No. 188,919. Patented March 27, 1877.

FIG. II

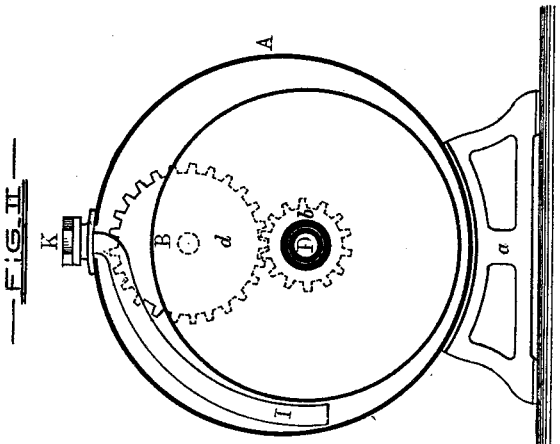


FIG. V

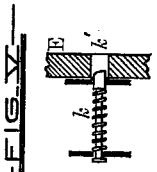


FIG. IV

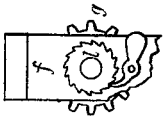


FIG. I

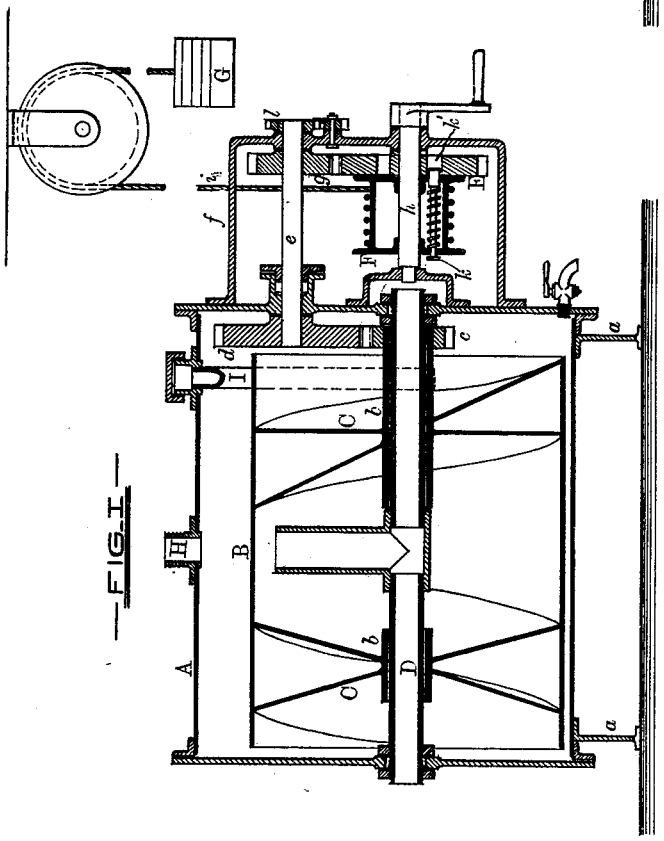
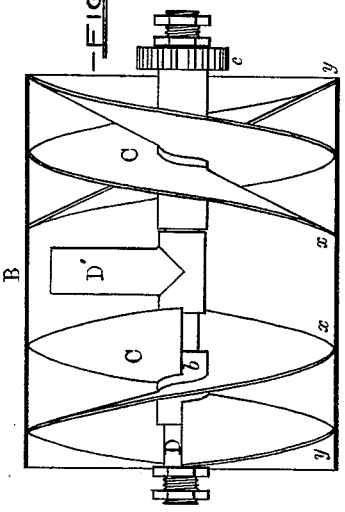


FIG. III



WITNESSES.

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Jno. Dy Patten

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UNITED STATES PATENT OFFICE.

WILLIAM W. L. KEMP, OF BALTIMORE, MARYLAND, ASSIGNOR OF ONE-HALF HIS RIGHT TO CLARENCE M. KEMP, OF SAME PLACE.

IMPROVEMENT IN GAS-CARBURETERS.

Specification forming part of Letters Patent No. **188,919**, dated March 27, 1877; application filed February 1, 1877.

To all whom it may concern:

Be it known that I, WILLIAM W. L. KEMP, of the city of Baltimore and State of Maryland, have invented certain new and useful Improvements in Gas-Machines, of which the following is a specification; and I do hereby declare that in the same is contained a full, clear, and exact description of my said invention, reference being had to the accompanying drwaing, and to the letters of reference marked thereon.

This invention relates to certain improvements in that class of gas-machines in which atmospheric air is caused to pass over and in contact with a body of light hydrocarbon fluid, and thereby become impregnated with the vapor arising therefrom, the combination of the vapor and the atmospheric air forming an illuminating compound, which is conducted through pipes to the burners.

The said invention relates specifically to the construction of the air-forcing devices and their attachments, as hereinafter partly described.

In the description of my improved gas-machine, and of the manner in which the same is used, which follows, reference is made to the accompanying drawing, forming a part hereof, and in which—

Figure 1 is a longitudinal section of the improved machine. Fig. 2 is a transverse section of the same. Figs. 3, 4, and 5 are partly sectional views of portions of the machine.

Similar letters of reference indicate similar parts in all the figures.

A is the shell of the machine, cylindrical in form and resting upon the feet *a*. The air-forcing wheel or drum consists of a cylindrical casing, B, and a series of volute disks, C C′, of a construction hereinafter fully described. The disks C C′ are secured to one or more hubs, *b*, which turn with the said disks and cylindrical casing B freely upon a hollow shaft, D, extending longitudinally of the shell A, and through the heads thereof to which it is fastened. The outer end of one of the hubs *b* is fitted with a toothed pinion, *c*, which engages with a spur-wheel, *d*, located in the shell A and upon a shaft, *e*, passing through the adjoining head to a frame, *f*, on the outside of the same. The shaft *e* is also provided with a pinion, *g*, engaging with the main spur-wheel E on the counter-shaft *h*. F is the winding drum, secured to the counter-shaft *h*, around which the cord *i* leading to the weight G is wound. The main spur-wheel E is not fastened directly to the counter-shaft, but is driven from the winding-drum through the medium of a spring-bolt, *k*, the outer end of which projects from the outer face of the drum and enters one of a series of cavities, *k′*, in the adjacent face of the spur-wheel. One side of the projecting end of the spring-bolt is rounded or beveled to allow of the independent rotation of the winding-drum in the winding or coiling of the cord and the elevation of the weight G, the main spur-wheel E during this operation being held by the pinion *g*, and a ratchet-wheel, *l*, on the outer end of the shaft *e*. The advantage of this mechanism over the spring-pawl and ratchet-wheel ordinarily used on gas-machines to effect a like result, is that the spring-bolt is protected from disarrangement, and that it is much more easily and cheaply constructed. The disks C C′, before alluded to as forming a part of the air-forcing wheel or drum, consist of right and left hand volutes or screws, each one of which is of such spiral length as to form when in place in the drum or casing B, a complete convolution, or to present an entire disk when seen from either face thereof. The disks are arranged in such manner with reference to each other, and to the casing of the drum, as to make the heads of the said drum consist of a pair of right and a pair of left hand volutes; or of a double-threaded right and a double-threaded left hand screw, the spaces between the threads or disks being the passages for conducting the air from the interior to the exterior of the drum. The entrance and clearance ends of each pair of disks, which are respectively represented by *x y*, are placed diametrically opposite to each other, in order that each head shall have an induction and an eduction port on either side of the central hollow shaft D.

In the operation of the machine, atmospheric air is conducted to the central chamber in the drum through the hollow shaft D, and

the branch thereof, D′, and as the drum revolves the said air is forced outward in opposite directions over the surface of the fluid which extends above the hollow shaft to the interior of the shell A. The carbureted air is conducted to the burners through the pipe H, situated at the top of the machine. A pipe, I, extending from the filling-aperture K, leads the fluid to a point below the hollow shaft, and thereby prevents the escape of carbureted air during the filling operation. The pipe I is curved around the cylindrical casing B, terminating at the side thereof below the hollow shaft D, as shown more particularly in Fig. 2.

In order to effect a nearly continuous movement of air from the central chamber of the air-forcing drum, the induction and eduction ports in the two heads thereof are placed in exactly opposite positions with reference to each other, as will be seen by reference to the drawing.

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

In a gas-machine, or air-carbureting machine, an air-forcing drum, consisting of a cylindrical casing with heads formed of right and left hand spiral or volute disks, arranged as double-threaded right and double-threaded left hand screws, combined with a stationary central air-conducting hollow shaft secured to the heads of the outer shell of the machine, substantially as described.

In testimony whereof I have hereunto subscribed my name this 22d day of January, A. D. 1877.

WILLIAM W. L. KEMP.

Witnesses:
GEORGE H. HOWARD,
THOS. MURDOCH.