F. G. SCHUCHARD.

Carbureter.

No. 215,072. Patented May 6, 1879.

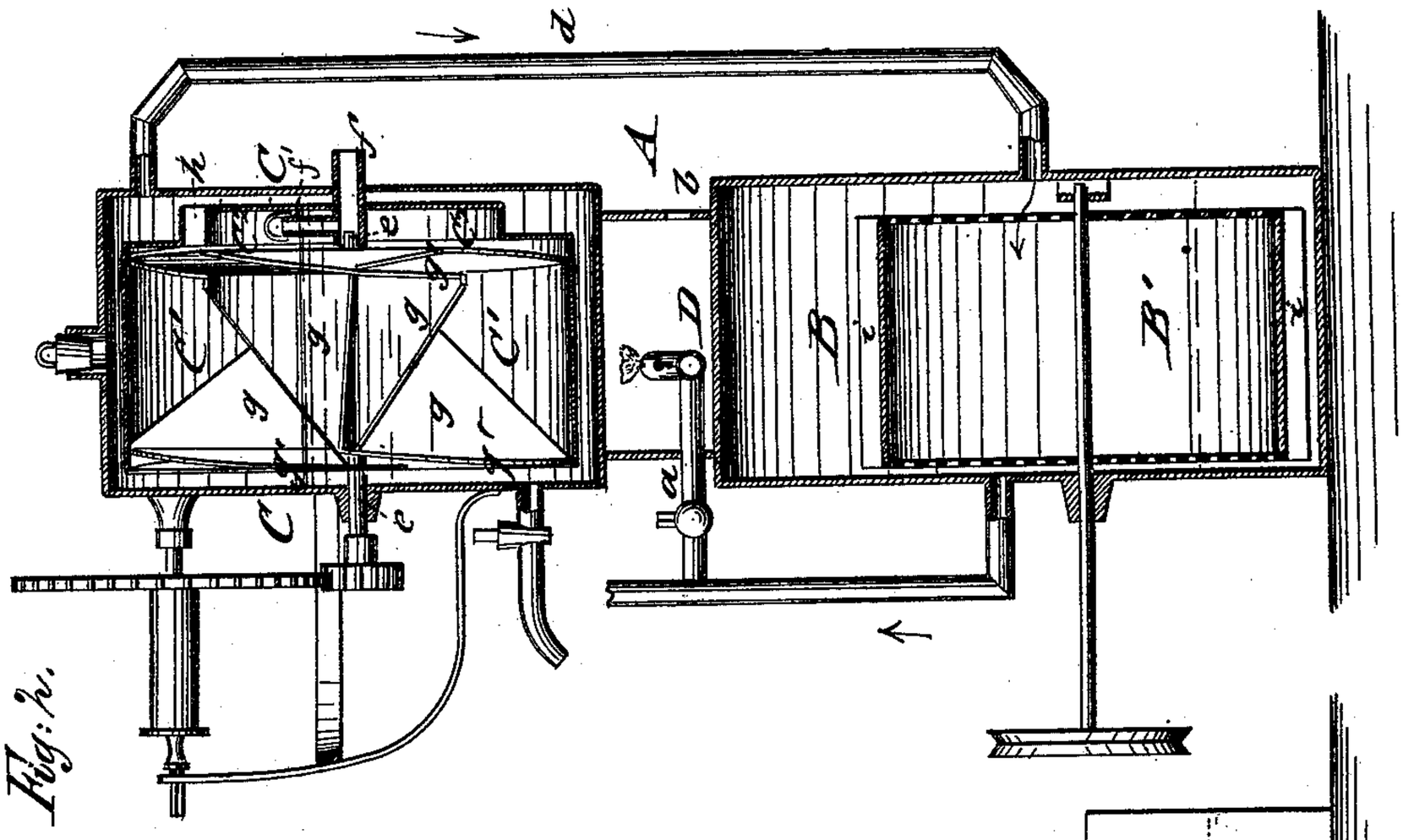

Fig: 2.

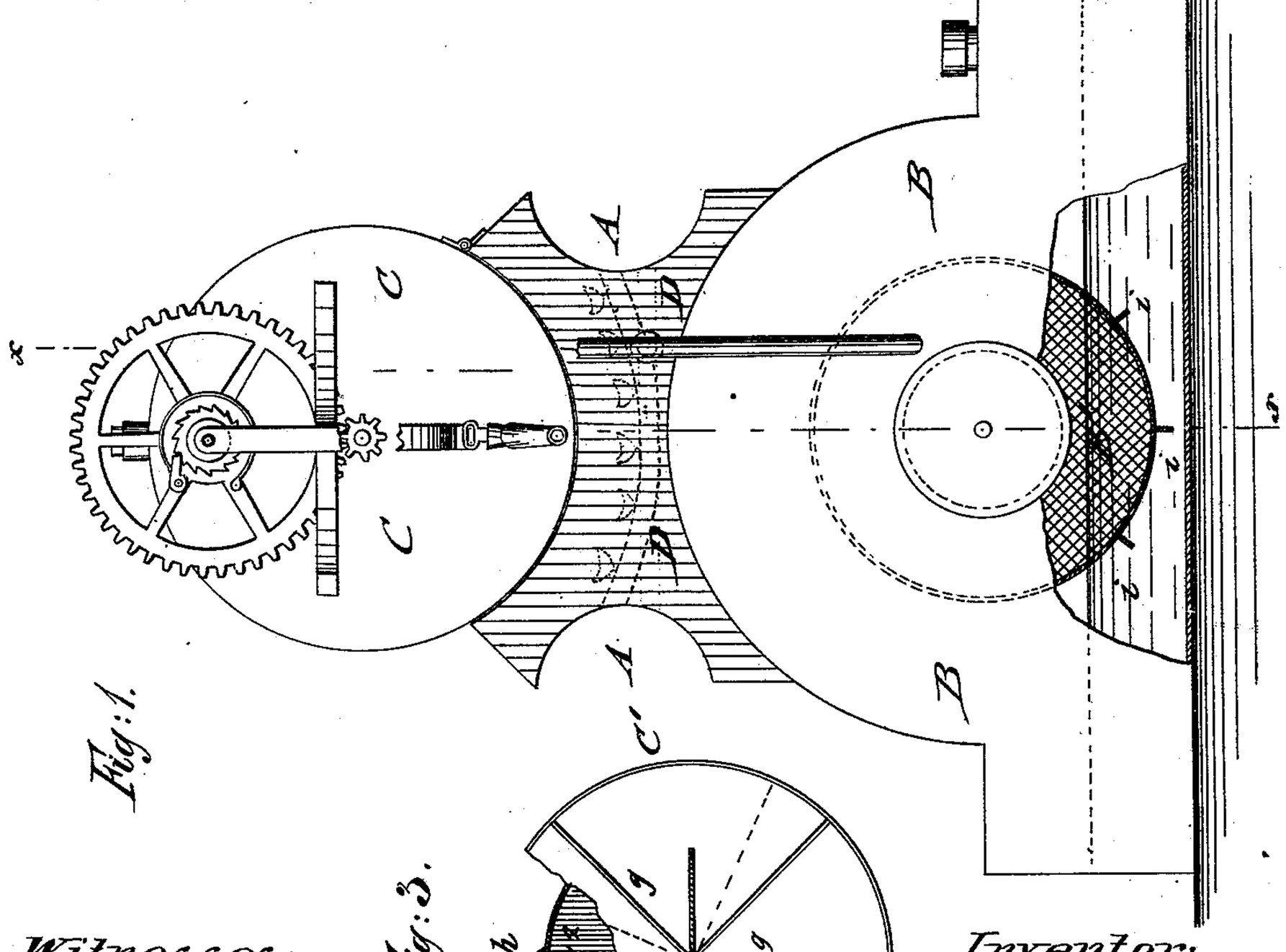

Fig: 1.

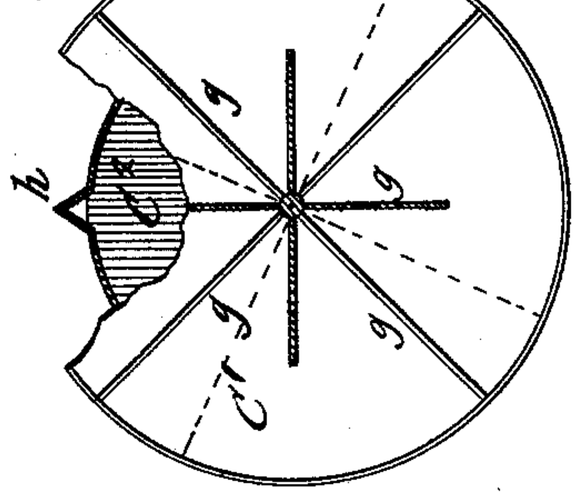

Fig: 3.

Witnesses:

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UNITED STATES PATENT OFFICE.

FRANK G. SCHUCHARD, OF BROOKLYN, NEW YORK, ASSIGNOR TO HIMSELF AND WILLIAM F. JORDAN, OF SAME PLACE.

IMPROVEMENT IN CARBURETERS.

Specification forming part of Letters Patent No. **215,072,** dated May 6, 1879; application filed February 21, 1879.

To all whom it may concern:

Be it known that I, FRANK G. SCHUCHARD, of Brooklyn, county of Kings, and State of New York, have invented certain new and useful Improvements in Carbureters, of which the following is a specification.

In the accompanying drawings, Figure 1 represents a front elevation, with part broken out, of my improved carbureter; Fig. 2, a vertical transverse section of the same on line *x x*, Fig. 1; and Fig. 3 is a detail section of the air-drum.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish an improved gas apparatus in which the air is supplied to the carbureting-drum in uniform and reliable manner; and the invention consists of a gas-machine in which the air-pump is constructed of radial wings, which extend alternately from the circumference at one side of the drum to the center shaft at the other side of the drum. These triangular wings of the drum have angular and overlapping extensions, which form the side walls, and admit the water to pass in at one side and force out the air at the opposite side.

The air-drum has an annular chamber encircling the air-entrance pipe of the pump-casing, said chamber a regulating-opening at one point of the circumference, as will be more fully described, and finally pointed out in the claims.

Referring to the drawings, A represents the outer casing of my improved gas apparatus, which contains in its broader base the reservoir B for the gasoline or other liquid hydrocarbon, and carries at the top part the air-pump C. Between the casings of the reservoir B and of the air-pump C is arranged a jet-pipe, D, which is connected by a pipe, *a*, with stop-cock *b* to the gas-main leading from the reservoir B to the distributing-pipes. The jet-pipe D is made arc-shaped, so as to be concentric, or nearly so, to the cylindrical casing of the air-pump. When the stop-cock of the connecting-pipe is opened, the gas passes through the perforations of the pipe D, and may be lighted by introducing a light through an opening, *b*, of the casing A. The heating-jets are lighted whenever the water in the air-pump is frozen up in cold weather, the heat of the same melting the ice and setting the drum quickly and conveniently into working order without the annoying interruptions caused by the freezing up of the air-pumps in the gas-machines at present in use. In large machines two or more jet-pipes may be arranged at suitable distances from each other, so that the heating of the water and the melting of the ice may be quickly accomplished. As soon as the air-pump begins to work properly the jets are extinguished by closing the stop-cock, though in very cold weather they may be left burning, so as to insure the regular and reliable working of the air-pump without any danger of the freezing up of the water.

The air-pump C is operated in the usual manner by a weight and transmitting-gear applied to the shaft of the air-drum, the weight being hoisted by a hand-crank and winding-up mechanism. The air-pump is connected by a pipe, *d*, with the reservoir B, the pipe *d* extending from the upper part of the pump-casing to a point near the shaft of the carbureting-drum B′. The water is filled in through a hole at the top of the pump-casing, and drawn off through a faucet near the bottom. The shaft *c* of the air-drum C¹ revolves in center bearings of one side wall of the pump-casing and in bearings of a central air-tube, *f*, of the opposite side wall. An upwardly-extending tube, *f′*, of the air-tube conducts the air to the interior of the air-drum C¹.

The air-drum C¹ is constructed of an exterior cylinder with interior radial rings *g*, which latter are not extended across the entire width of the drum, but made of triangular shape, so that their outer edge runs diagonally from the outer cylinder to the shaft of the drum. These wings extend alternately from the opposite sides of the drum to the shaft, as shown in Fig. 2. Each radial wing is then bent over at the outer end at an angle somewhat larger than ninety degrees, and extended until it overlaps the apex of the angle formed by the next adjoining wing and extension. The extensions *g′* of the wings *g* form the side walls of the air-drum. Between the extensions *g′* of the wings are left narrow passages, into

which the water enters at one side, while the air is forced out at the other side.

The cylinder of the air-drum is closed at one side, so as to form an annular chamber, C^2, that extends around the air-inlet tube *f'*. The air and water pass into the drum at this side, the air being forced out at the opposite side and finally compelled to pass to the connecting-pipe *d*.

The chamber C^2 has at one point of its circumference a triangular exit-aperture, *h*, as shown in Figs. 2 and 3, which passes alternately through the water and air-space of the pump, and serves as a regulator of the water-level in the drum, as otherwise the water would be continually forced toward the open side of the drum. The opening restores the proper level of the water and secures the more uniform operation of the drum.

The triangular shape of the wings and their arrangement at alternate sides of the air-drum causes their gradual and successive entrance into the water of the air-pump, and thereby the uniform and reliable forcing out of the air, so as to produce a current of constant strength in place of the unequal and interrupted current obtained by the common air-pumps. The overlapping extensions of the wings facilitate the entrance of the water and the exit of the air compressed by the alternate dipping of the radial wings into the water, and supply thereby the great desideratum in carbureters—namely, a continuous and constant current of air.

The air passes from the pump to the reservoir B, and is there forced through the carbureting-drum B', which is made of a sheet-metal cylinder with perforated side walls and of a filling of small pieces of sponge or other porous or fibrous material that is capable of absorbing the hydrocarbon and exposing it in minutely-divided state to the evaporating action of the air.

The drum B' is revolved by belt-and-pulley connection with the shaft of the air-drum. The outer cylinder of the drum has a number of radial paddles or stirrers, *i*, which pass close to the bottom of the reservoir and serve to agitate the liquid hydrocarbon and to prevent the settling of the heavier parts to the bottom of the reservoir. This mixing of the lighter and heavier parts by the paddles furnishes a uniform quality of hydrocarbon, and therefore a more uniform quality of gas throughout, which is not the case in the common machines, in which the lighter parts are first taken up by the drum and evaporated, while the heavier parts have time to settle.

The carbureting-machine is of compact and reliable construction, and overcomes to a considerable extent the objectionable feature of the gas-machines at present in use.

I am aware that heating devices for the water of the air-drum have been employed heretofore, also devices for properly stirring up the hydrocarbon, and I therefore do not claim the same.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a carbureting-machine, an air-drum constructed of an exterior cylinder and interior radial wings of triangular shape, that extend alternately from opposite sides to the center shaft, substantially as set forth.

2. In a carbureting-machine, an air-drum made of an exterior cylinder and of interior radial wings of triangular shape, that extend alternately from opposite sides to the center shaft and have overlapping extensions forming the side walls, substantially as described.

3. In a carbureting-machine, a revolving air-drum, C^1, provided with an annular chamber, C^2, at one side, said chamber having a regulating-aperture, *h*, at its circumference, in combination with the inclosing-casing of the pump and with the air-inlet tube *f f'*, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two witnesses this 18th day of February, 1879.

F. G. SCHUCHARD.

Witnesses:
PAUL GOEPEL,
ADOLF DENGLER.