(No Model.)

J. BLONDEL, FILS.

APPARATUS FOR CARBURETING AIR.

No. 307,170. Patented Oct. 28, 1884.

FIG. 1

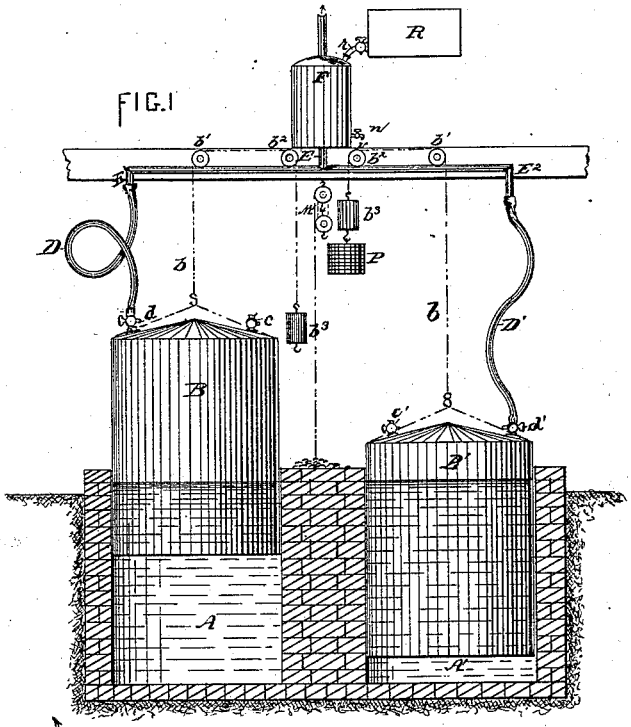


FIG. 2.

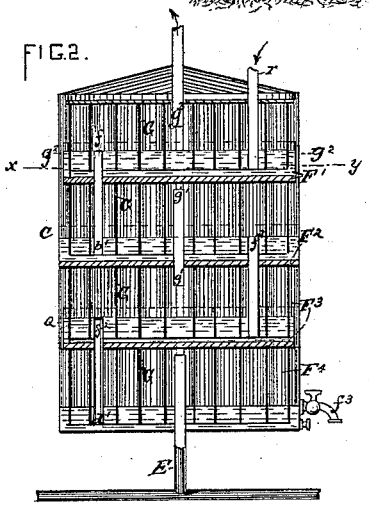


FIG. 4.

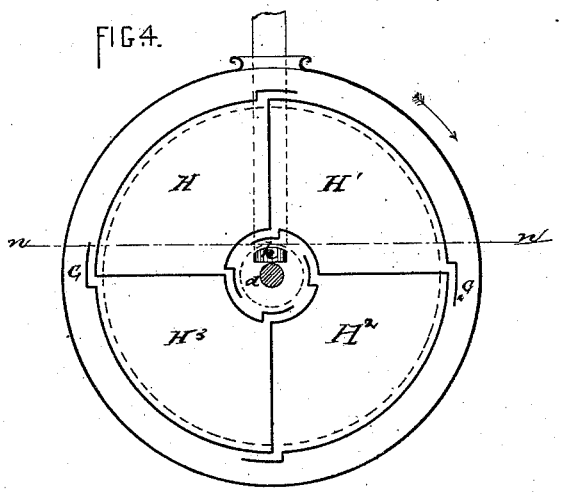
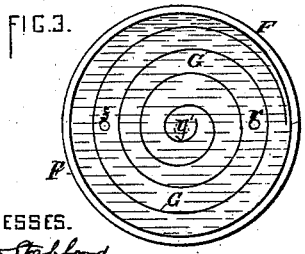


FIG. 3.



WITNESSES.
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UNITED STATES PATENT OFFICE.

JULES BLONDEL, FILS, OF NEUVILLE VITASSE, FRANCE.

APPARATUS FOR CARBURETING AIR.

SPECIFICATION forming part of Letters Patent No. 307,170, dated October 28, 1884.

Application filed March 14, 1883. (No model.) Patented in France September 9, 1882, No. 150,975; in Belgium September 23, 1882, No. 59,096; in Italy September 30, 1882, No. 14,634; in England January 27, 1883, No. 461, and in Spain July 5, 1883, No. 3,118.

To all whom it may concern:

Be it known that I, JULES BLONDEL, Fils, (Junior,) of Neuville Vitasse, Department of Pas-de-Calais, in the Republic of France, have invented certain new and useful Improvements in Apparatus for Carbureting Air; and I do hereby declare that the following is a full and exact description thereof.

The object of this invention is to produce carbureted air for heating and lighting purposes, as well as for the production of motive power. The apparatus which I have devised for this purpose is of simple construction and permits the manufacture of gas in a substantially automatic manner. It may be constructed with greatly-varying capacity, and is on that account particularly adapted for use in country places, and generally in situations where coal-gas cannot be advantageously manufactured on a large scale. I believe, however, that even in large cities the invention may be worked with great economy.

The accompanying drawings form a part of this specification, and represent what I consider the best means of carrying out the invention.

Figure 1 is an elevation, partly in section, of the entire apparatus. Fig. 2 is a vertical section of the carburetor proper. Fig. 3 is a horizontal section on the line *x y*, Fig. 2. Fig. 4 illustrates a modified form of certain parts.

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

A A′ are two capacious tanks of masonry filled with water, in which the large inverted vessels or bells B B′ are capable of moving up and down. The vessels B B′ are suspended on chains *b*, running over sheaves $b' b^2$. Their weight is counterbalanced by suitable weights, b^3, suspended from the free ends of the chains *b*. At the tops of the bells B B′ are provided cocks *c d* and *c′ d′*, respectively, the cocks *c c′* serving for admission of air into the bells, while the cocks *d d′* allow the passage of the air, when expelled from the bells B B′, through flexible tubes D D′ and the stationary tubes E′, E^2, and E into the carburetor F, in which the air becomes charged with hydrocarbon, as will be hereinafter described.

The operation of the apparatus so far as described is as follows: Supposing the bells B B′ to be in the position indicated, the bell B having its rim immersed to only a slight distance in the water, the cock *c* is closed and the cock *d* opened. The bell B gradually descends into the water, thus driving the air contained therein out through the cock *d* and pipes D, E′, and E into the carburetor F. At any time during the descent of the bell B the cock *d′* of the bell B′ is closed and the cock *c′* is opened. Then the weight P is hooked to the counter-weight b^3 of the bell B′. This is conveniently done by the block and tackle M. The weight on the free end of the chain *b* of the bell B′ being thus increased, this end will descend, and the bell B′ will thus be lifted nearly out of the water, atmospheric air being allowed to rush in through the open cock *c′*. When the bell B′ has attained the highest position desired, the cock *c′* is closed, the cock *d′* opened, and the weight P again removed, thus allowing the bell B′ to gradually descend and drive the air now contained therein into the carburetor F, as will be understood. The same operation is repeated with reference to the bell B and its cocks *c d* after it has arrived in its lowest position.

The carburetor F consists of an exterior shell, the interior of which is divided by horizontal partitions F′ F^2, &c., into two or more compartments. In Fig. 2 I have shown four such compartments.

The space in each compartment is divided by a web of woolen or other suitable fabric, G, arranged spirally, as indicated in Figs. 2 and 3, the lower edge of said fabric being immersed in a volatile hydrocarbon liquid contained in the bottom of each compartment of the carburetor. The liquid passes from a reservoir, R, through a connecting-pipe, *r*, provided with a suitable stop-cock, into the uppermost compartment, filling the same up to the level of the pipe *f*. When the liquid has reached this level, it begins to flow through said pipe down into the second compartment, filling the same to a corresponding level; thence it passes through a pipe, *f′*, into the third compartment, thence through a pipe, f^2,

into the fourth compartment, from whence it is allowed to escape through a cock, f^3, as soon as it reaches the orifice opening from said cock.

The liquid which I propose to employ in most cases is benzine of a gravity of 0.680. The air which it is desired to charge with hydrocarbon passes in the direction opposite to the liquid. It enters the carburetor through the pipe E in the lowermost compartment, near the center; thence it traverses the spiral space formed by the fabric G to the periphery of the carburetor F; thence it travels upward through the partition F^3 into the next compartment, from near the periphery of which it passes spirally inward toward the center; thence it passes through the tube g' into the center of the next compartment, from whence it travels outward again toward the periphery, and up again through the annular space g^2, provided around the partition F', and inward again toward the center of the first compartment, from whence it escapes through the pipe g^3 either into a suitable reservoir or directly into the pipes, which direct it to the place where it is to be consumed. The fabric G has its lower edge immersed in the benzine or other hydrocarbon liquid, and is constantly kept wet by its capillary attraction, and the air, passing in contact with the extended surface of the fabric G, takes up a large quantity of the volatile liquid in a gaseous form.

Fig. 4 shows a modified arrangement for forcing the air into the carburetor. In this form I employ a wheel having four or other suitable number of partitions or buckets, H H', &c., which are open both at the periphery and near the center. The casing surrounding such wheel is partially filled with water, and on revolving the wheel in the direction of the arrow the air caught in each bucket is driven out on such bucket being immersed in the water through the opening near the center, and escapes through a passage, *h*, as indicated.

I claim as my invention—

In a gas-carbureting apparatus having the carburetor F, pipes E' E^2, and flexible pipes D D', the combination, with the tanks A A' and bells B B', and with suitable inlet and outlet passages, of the sheaves *b'* b^2, cord *b*, weights b^3, the interchangeable weight P, adapted to operate either bell, and the tackle M, for operating said weight P, as set forth.

This specification signed this 24th day of January, 1883.

JULES BLONDEL, FILS.

Witnesses:

EUG. DUBOIS,

CRÉMERS.