No. 754,774. PATENTED MAR. 15, 1904.

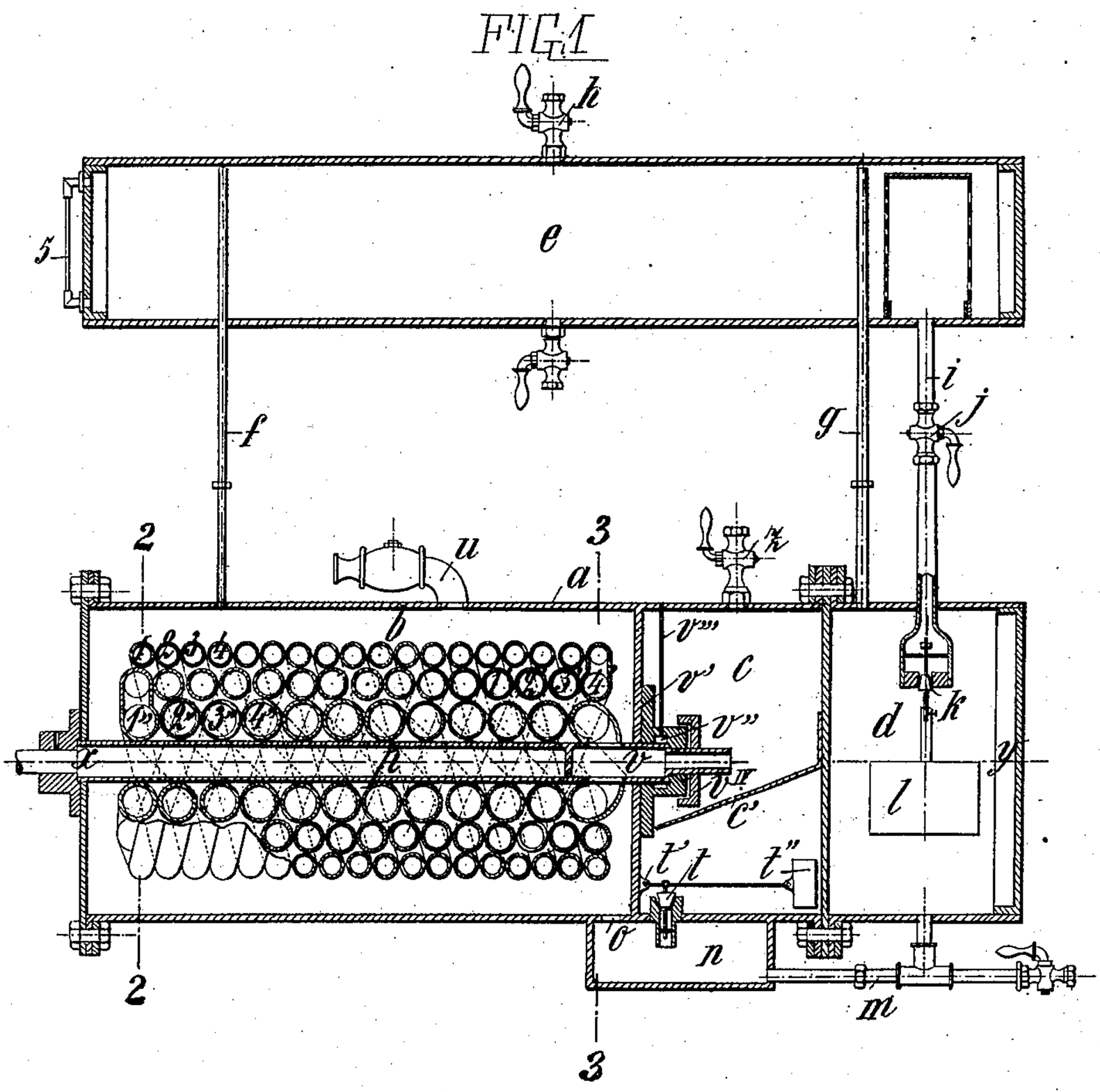
F. JAS.

CARBURETER.

APPLICATION FILED JULY 3, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

FIG. 1



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NO MODEL. 2 SHEETS—SHEET 2.

FIG. 2.

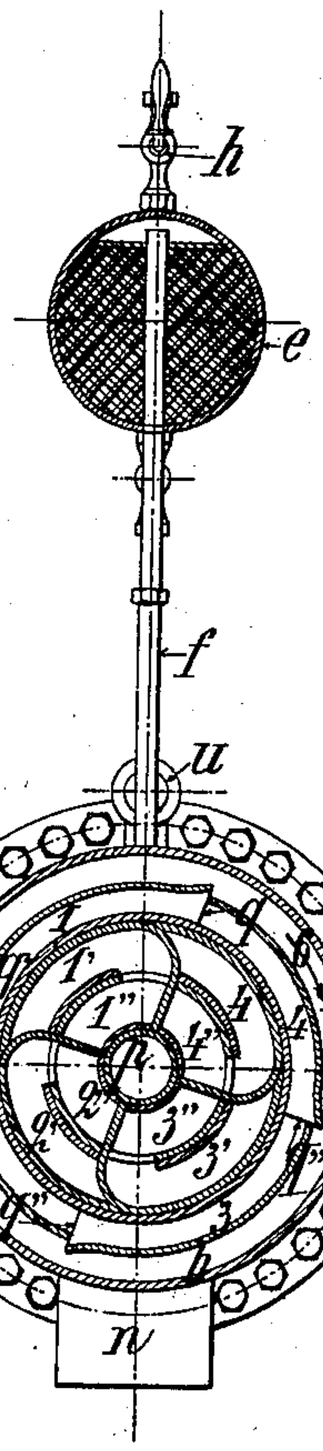
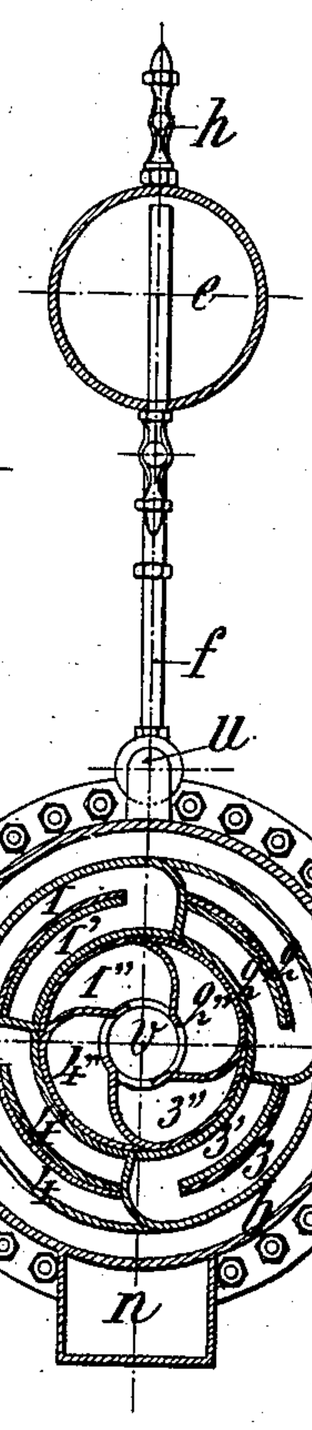


FIG. 3.



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UNITED STATES PATENT OFFICE.

FRANÇOIS JAS, OF PARIS, FRANCE.

CARBURETER.

SPECIFICATION forming part of Letters Patent No. 754,774, dated March 15, 1904.

Application filed July 3, 1903. Serial No. 164,112. (No model.)

To all whom it may concern:

Be it known that I, FRANÇOIS JAS, engineer, a citizen of the Kingdom of the Netherlands, and a resident of Paris, in the Republic of France, have invented new and useful Improvements in Carbureters, which improvements are fully set forth in the following specification.

Appliances with which a combustible gas is produced by passage of air through a volatile liquid hydrocarbon are already known. For illuminating purposes the utilization of these appliances presents certain defects. Either the production of the gas is not regular, which results in producing at the burners supplied by the service-pipe an unsteady flame, or apparatus cannot be charged while operative, which gives rise to stoppages. The apparatus hereinafter described completely obviates these defects. It may be charged while operative, and its arrangement insures uniformity in the production of the gas.

In the accompanying drawings a carbureter, which forms the subject of this invention, is represented by way of example.

Figure 1 is a longitudinal section of the apparatus. Fig. 2 is a vertical transverse section taken on line 2 2 of Fig. 1; and Fig. 3 is a vertical transverse section taken on line 3 3, Fig. 1.

The apparatus consists, broadly, of a cylinder *a*, closed at its two extremities and divided into three compartments *b c d* by two transverse partitions. The only communications which these three compartments present one with the other or with the atmosphere are those hereinafter described. In addition to the compartment *b*, which is the largest, and the compartment *d* both communicate by means of two tubes *f g* with a reservoir *e*, arranged above the cylinder. This upper reservoir *e* serves to contain the hydrocarbon, coming from a second reservoir or even from the cask in which it has been transported (not represented in the drawings) communicating with the reservoir *e* by a nozzle, which may be closed by a cock *h*.

The tubes *f g*, which proceed from the top of the compartments *b* and *d*, traverse the reservoir *e* and open into its upper portion. A conduit *i*, closed by a cock *j*, also places the reservoir *e* in communication with the compartment *d*. This conduit, which starts against the lower wall of *e*, terminates in the compartment *d* in an orifice obturated by a valve *k*, acting in combination with a float *l*. An envelop of metallic tissue or filtering material surrounds in the reservoir *e* the aperture of the conduit *i* and arrests all foreign bodies which may be contained in the liquid hydrocarbon.

The compartment *b* is traversed by a longitudinal shaft *p*, around which are wound four coils or conduits 1 2 3 4, the convolutions of which are arranged side by side in three superposed rows. These coils participate in the movement of rotation upon itself, which may be given to the shaft *p* by a motor of any suitable kind by means of a belt and of a pulley fast upon the said shaft.

At the left-hand extremity of the apparatus, Fig. 1, the four coils 1, 2, 3, and 4 are open in the chamber *b*. These apertures *q q′ q″ q‴* are diametrically opposite. If we assume for a moment that the chamber *b* contains liquid hydrocarbon up to a certain level, it will be apparent that the apertures *q q′ q″ q‴* will alternately come, owing to their rotation with the shaft *p*, either in contact with the liquid or in contact with the air situated above it, which air enters the compartment *b* through the admission-socket *u*. Each coil will therefore take up alternately a certain quantity of liquid hydrocarbon and a certain quantity of air. These fluid and liquid beads or sections will travel in the coils, first of all in the outer row from left to right, owing to the inclination of the convolutions, then from right to left in the intermediate row 1′ 2′ 3′ 4′, the convolutions of which are inclined in the inverse direction, and finally in the central row 1″ 2″ 3″ 4″ from left to right again. The fluid and liquid beads, the pressure of which increases in proportion as they proceed in the apparatus, finally enter the tubular socket *v*, which communicates with the compartment *c*.

When the apparatus is started, the level *y* is assured in the compartments *b* and *d* by opening the cock *j* of the conduit *i*, the hydrocarbon of the reservoir *e* finding an outlet at the lower part of the conduit *i*, since the

valve *k*, by reason of gravity and of the action of the float *l*, leaves its seat, passes into the compartment *d*, then into the compartment *b* through the nozzle *m* and the chamber *n*, which communicates directly with the compartment *b* through the orifice *o*, formed in the wall of the cylinder *a*. The float *l* is adjusted upon the rod of the valve *k* in such a manner that the float being lifted by the hydrocarbon which rises in the compartment *b* causes the valve *k* to obturate the orifice of the conduit *i* when the hydrocarbon reaches the level *x y* in *b* and in *d*. The provision of hydrocarbon contained in the reservoir *e* is then completed by opening the cock *h*, which places the said reservoir in communication with the vessel, (not shown,) but in having care that the level of the hydrocarbon which may be checked by means of a level 5 does not reach the upper part of the tubes *f g*, these tubes only serving to insure equality of pressure in the compartments *b* and *d* and the reservoir *e*. The cock *h* is then closed and the shaft *p* caused to rotate. The coils rotate in the direction indicated by the arrow 6. Each of the apertures *q q' q'' q'''* enters the hydrocarbon in turn, then effects a half-revolution in the air contained in the compartment *b*, whereupon it is again immersed in the hydrocarbon, as explained above.

The carbureted air under pressure, the recondensed vapors, and the unvolatilized hydrocarbon after having traversed the coils enter the compartment *c* through the hollow portion *v* of the shaft *p*. The carbureted air proceeds to the utilization appliances through the conduit *z*, while the unvolatilized hydrocarbon falls upon an inclined plane *c'* and thence slides to the bottom of the compartment *c*. When this hydrocarbon attains a certain height, it lifts the float *t''* of a lever articulated at *t'*, controlling a valve *t*, and under the influence of the pressure obtaining in the chamber *c* returns to the chamber *b*.

The hydrocarbon contained in the chambers *b* and *d* is gradually consumed as the carbureted air is produced. Now the pressure of the gas in the chamber *c* depends upon the height of the liquid in the chamber *b*. It is therefore necessary that the level of this liquid should be maintained constant, and this is produced by the float *l*. As soon as the level falls the valve *k* opens and a certain quantity of hydrocarbon coming from the reservoir *e* replaces the hydrocarbon consumed. Gas adapted for illuminating purposes or for motive power is therefore contained in the chamber *c* at a constant pressure. This gas may be employed directly if the pressure is suitable. If this is not so, it may be passed through a pressure-reducer.

The hollow portion *v* of the shaft *p* rotates in a journal *v'*, supported by the partition separating the chambers *b* and *c*. In this journal is formed an annular space *v''*, which the lubricating-oil enters through the pipe *v'''*. A ring v^{IV}, acting as a stuffing-box, prevents any possibility of an escape of gas from the chamber *c* into the chamber *b*.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. A carbureter, comprising a cylinder divided by partitions into three compartments, a shaft in one compartment journaled in one end of the cylinder and in one partition and hollow at one end protruding into the second compartment, a discharge-valve in the upper part of said second compartment, a plurality of conduits wound spirally around said shaft each having one of its ends diametrically the farthest distance from the shaft and its other end terminating in the hollow end of the shaft, a reservoir, a valved supply-pipe connecting the same with the third compartment, means connecting the said third compartment with the first, and means in said third compartment controlling the valved supply-pipe depending on the height of the liquid in the first and third compartments, substantially as set forth.

2. A carbureter, comprising a cylinder divided by partitions into three compartments, a shaft in one compartment journaled in one end of the cylinder and in one partition and hollow at one end protruding into the second compartment, a discharge-valve in the upper part of said second compartment, a plurality of conduits wound spirally around said shaft each having one of its ends diametrically the farthest distance from the shaft and its other end terminating in the hollow end of the shaft, a reservoir, a valved supply-pipe connecting the same with the third compartment, means connecting the third compartment with the first, means in said third compartment controlling said valved supply-pipe depending on the height of the liquid in the first and third compartments, and pipes connecting the upper part of the first and third compartments with the upper part of the reservoir for the equalization of pressure in said reservoir and compartments, substantially as set forth.

3. A carbureter, comprising a cylinder divided by partitions into three compartments, a shaft in one compartment journaled in one end of the cylinder and in one partition and hollow at one end protruding into the second compartment, a valve in the upper part of said second compartment, a plurality of conduits wound spirally around said shaft each having one of its ends diametrically the farthest distance from the shaft and its other end terminating in the hollow end of the shaft and each increasing in cross-section from its outermost convolution to its innermost, a reservoir, a valved supply-pipe connecting the same with the third compartment, means connecting said third compartment with the first,

and means controlling said valved supply-pipe depending on the height of the liquid in the first and third compartments, substantially as set forth.

4. A carbureter, comprising a cylinder divided by partitions into three compartments, a shaft in one compartment journaled in one end of the cylinder and in one partition and hollow at its end protruding into the second compartment, a plurality of conduits wound spirally around said shaft each having one of its ends diametrically the farthest distance from the shaft and its outer end terminating in the hollow end of the shaft and each increasing in cross-section from its outermost convolution to its innermost, a reservoir, a valved supply-pipe connecting the same with the third compartment, means connecting said third compartment with the first, an inclined plate in said second compartment below the hollow end of the shaft, a discharge-valve for the upper part of the second compartment, a valved opening in the bottom of said second compartment communicating with said connecting means, and means in said third compartment controlling said valved supply-pipe depending on the height of the liquid in the first and third compartments, substantially as set forth.

5. A carbureter, comprising a cylinder divided by partitions into three compartments, means in one compartment for intimately mixing a liquid and gas adapted to discharge into the second compartment, a gas-discharge valve in said second compartment, a reservoir, a valved supply-pipe connecting the same with the third compartment, means connecting said third compartment with the first, and means in said third compartment controlling the valved supply-pipe depending on the height of the liquid in the first and third compartments, substantially as set forth.

6. A carbureter, comprising a cylinder divided by partitions into three compartments, means in one compartment for intimately mixing a liquid and gas adapted to discharge into the second compartment, a gas-discharge valve in said second compartment, a reservoir, a valved supply-pipe connecting the same with the third compartment, means connecting the third compartment with the first, means in said third compartment controlling said valved supply-pipe depending on the height of the liquid in the first and third compartments, and pipes connecting the upper part of the first and third compartments with the upper part of the reservoir for the equalization of pressure in said reservoir and compartments, substantially as set forth.

7. A carbureter, comprising a cylinder divided by partitions into three compartments, means in one compartment for intimately mixing a liquid and gas adapted to discharge into the second compartment, a reservoir, a valved supply-pipe connecting the same with the third compartment, means connecting said third compartment with the first, an inclined plate in said second compartment below the discharge end of said mixing means, a gas-discharge valve for the upper part of the second compartment, a valved opening in the bottom of said second compartment communicating with said connecting means, and means in said third compartment controlling said valved supply-pipe depending on the height of the liquid in the first and third compartments, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

FRANÇOIS JAS.

Witnesses:
EMILE LEDRET,
J. ALLISON BOWEN.