No. 815,390. PATENTED MAR. 20, 1906.

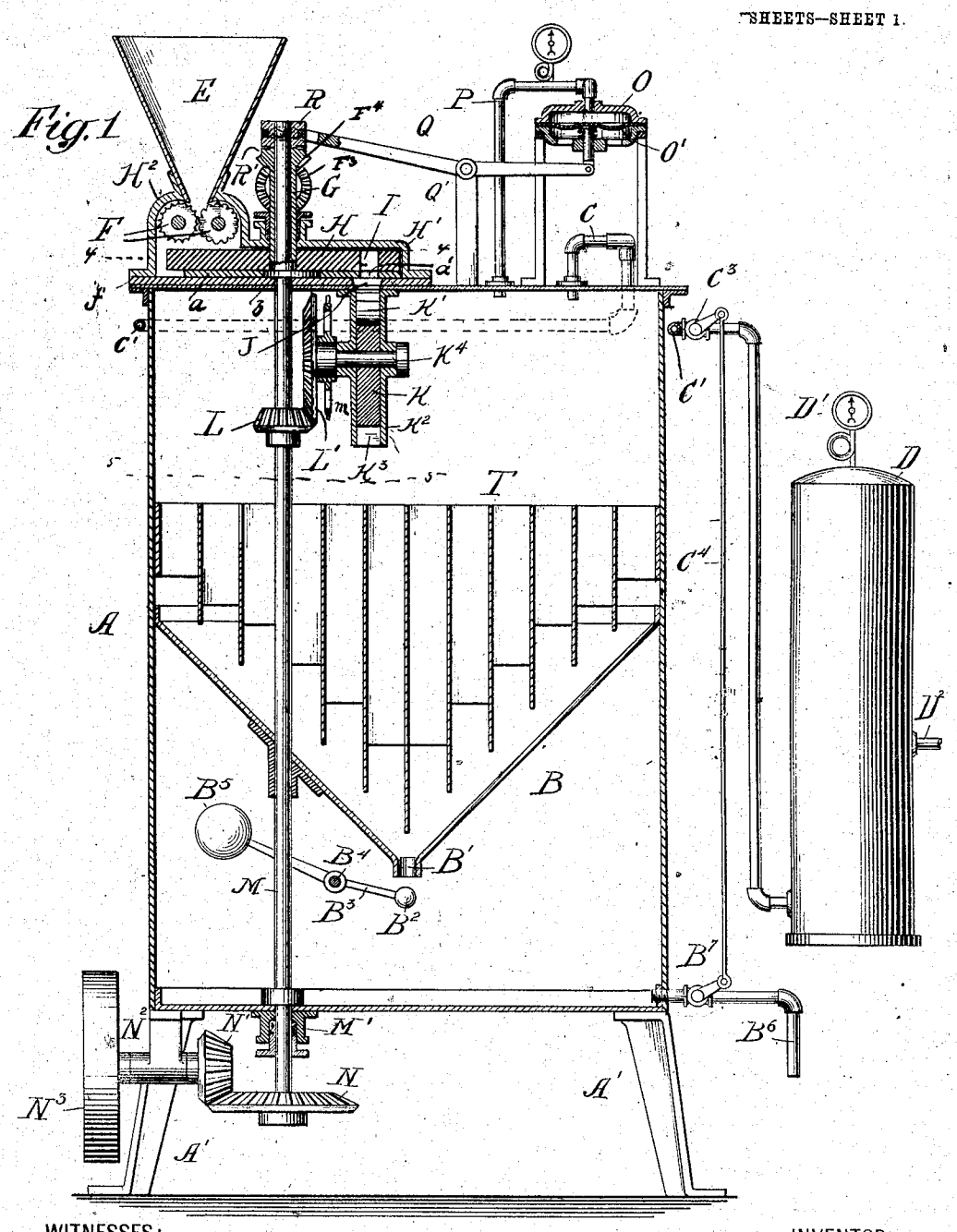
J. W. VAUGHN.

ACETYLENE GENERATOR.

APPLICATION FILED NOV. 25, 1904.

2 SHEETS—SHEET 1.

Fig. 1



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2 SHEETS—SHEET 2

Fig. 2.

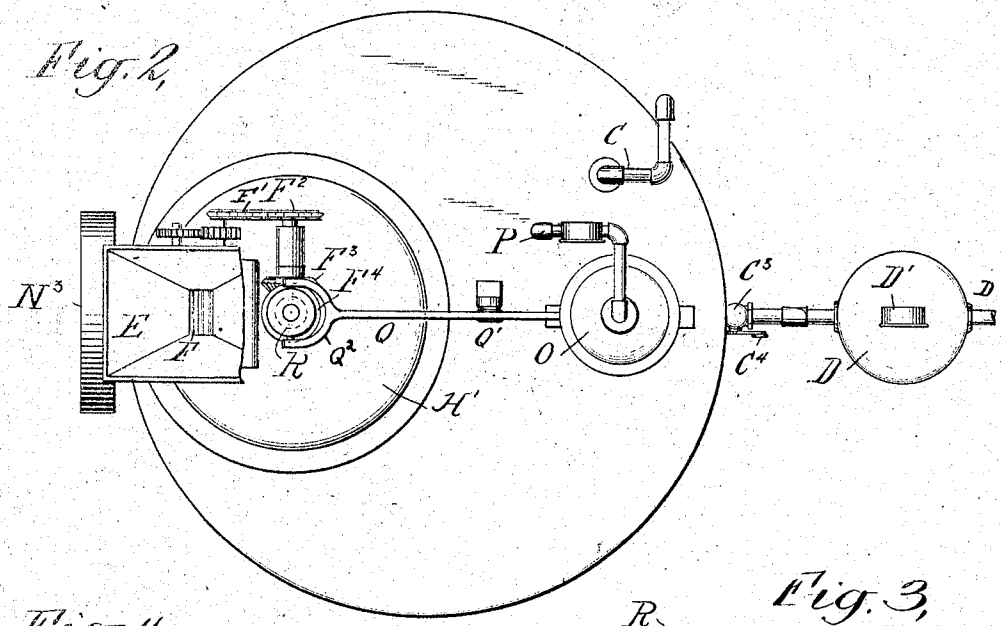


Fig. 3.

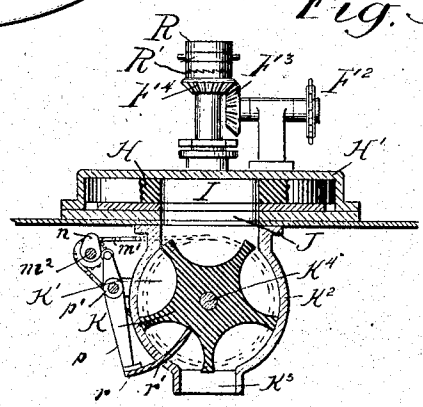


Fig. 4.

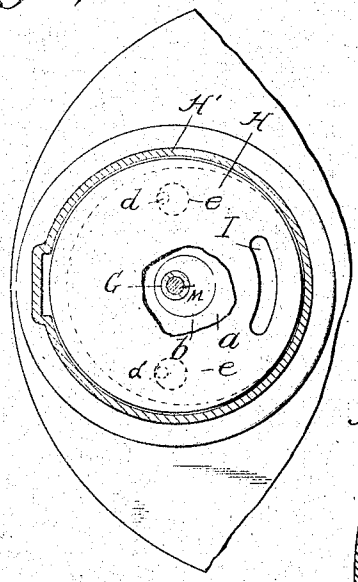
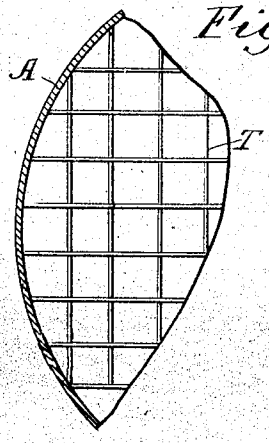


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOHN W. VAUGHN, OF NOROTON HEIGHTS, CONNECTICUT.

ACETYLENE-GENERATOR.

No. 815,390. Specification of Letters Patent. Patented March 20, 1906.

Application filed November 25, 1904. Serial No. 234,109.

To all whom it may concern:

Be it known that I, JOHN W. VAUGHN, a citizen of the United States, residing at Noroton Heights, county of Fairfield, State of Connecticut, have invented certain new and useful Improvements in Acetylene-Generators, of which the following is a specification.

The object of my invention is to provide a new and improved acetylene-gas generator which is especially adapted for generating acetylene gas which is to be used in a motor for driving a vehicle of any kind—for example, an automobile or a boat—which generator is simple in construction, effective in use, is controlled by the motor, and has numerous other advantages which will be pointed out in this specification.

In the accompanying drawings, in which like letters of reference indicate like parts in all the figures, Figure 1 is a vertical longitudinal section of my improved acetylene-gas generator. Fig. 2 is a plan view of the same. Fig. 3 is a detail sectional view of part of the feeding mechanism. Figs. 4 and 5 are sectional views on the lines 4 4 5 5, respectively, of Fig. 1, parts being broken away and others omitted.

A generator A is preferably made of sheet metal of cylindrical shape and is secured to legs or supports A′. It is provided with an intermediate hopper-bottom B, having a neck B′, which can be closed by a valve B^2 on one end of a lever B^3, pivoted at B^4 and carrying at its opposite end a float B^5. The space below the hopper-bottom serves for the accumulation of lime, which can be washed out from time to time through the outlet-pipe B^6. The gas generated in the generator A escapes through a pipe C, connected with the top of the generator, which pipe C first extends upward, then around the top of the generator, as shown at C′, so as to prevent water entering the gas-tank when the vehicle is upset, and then this pipe extends to the bottom of the gas-tank D, having a suitable pressure-gage D′, from which tank the gas is drawn as required through a pipe D^2. The pipe B^6 has a cock B^7, and the pipe C C′ has a cock C^3, which cocks are connected with each other by a rod C^4. These cocks are so connected that when the cock B^7 is opened to wash out the lime from the generator A the cock C^3 is closed to prevent the escape of gas from the tank D. The carbid is placed into a funnel or hopper E, beneath which are located two crushing-rolls F, which are driven by a chain F′ from a sprocket-wheel F^2, mounted on the same shaft with a beveled cog-wheel F^3, which shaft is suitably supported in bearings on the top of the apparatus. The beveled cog-wheel F^3 is engaged with the beveled cog-wheel F^4 on a neck or tube G, projecting upward from a feeding-disk H, mounted to turn horizontally and contained in a closed flat casing H′ on the top of the generator, said casing being part of the casing H^2, in which the crushing-rolls F are mounted.

The feeding-disk H is provided with an opening I, extending from top to bottom, which opening is so located that as the disk rotates this opening I passes beneath the two crushing-rolls F at their point of contact. The disk H rests upon a thinner disk *a*, which has a slot *a′*, that can register with the slot H. This thinner disk is arranged eccentrically to the disk H and is provided with a central aperture loosely containing an eccentric disk *b*, which is fixed on the sleeve G and rests on a top plate *f*, upon which the plate *a* rests. The top plate *f* is provided with a slot J, that can register with the slot I in the disk H and the slot *a′* in the disk *a*. The disk *a* is provided with two circular guide-openings *e*, Fig. 4, into which pins *d* project, so that when the eccentric disk *b* is rotated with the sleeve G and disk H said disk *a* will be moved to bring its slot *a′* into and out of register with the slots I and J.

Beneath the opening J a feed-wheel K, having a series of pockets K′ in its rim, is mounted in a suitable casing K^2, having an open neck K^3 at the bottom. The wheel K is mounted on a horizontal shaft K^4, mounted in the casing K^2, which shaft carries a beveled cog-wheel L′, engaging the beveled cog-wheel L on a vertical shaft M, which passes through the above-mentioned sleeve G and through suitable openings in the funnel E and through a stuffing-box M′ in the bottom of the generator.

A sprocket-wheel *m* is fixed on the shaft K^4 above described, and over this sprocket-wheel *m* a sprocket-chain *m′* is passed, which also passes over a shaft m^2, carrying a cam *n*, which can act on a roller on the upper shorter end of a lever *p*, pivoted at *p′* and provided at its lower end with a curved plate *r*, which passes through a slot *r′* in the casing K^2. The inner end of this curved plate *r′* rests against the bottom of the pockets K′ in the wheel K, and as this wheel rotates this plate

r is withdrawn and moved inward, at all times passing along the bottom of the pockets, then forced into the next pocket, and so on, so as to form a seal and prevent the escape of acetylene gas through the neck K^5 into the casing K^2, and so on, up into the hopper E. A beveled cog-wheel N on the end of the shaft M engages a pinion N′ on one end of a shaft N^2, carrying a pulley N^3. A casing O contains a diaphragm O′ and is connected by a pipe P with the top of the generator. The diaphragm is suitably connected with one end of the lever Q, pivoted at Q′ on the top of the generator, and said lever Q has a forked end Q^2, which embraces a clutch R, which is so mounted on the upper end of the shaft M that it can rotate with said shaft and can slide up and down on the same. The upper end of the sleeve or tube G is shaped as a clutch member R′ and adapted to be engaged with the clutch R.

For the purpose of preventing undue splashing of the water in the generator a series of intersecting vertical plates T are located in the same. When this motor is used on a vehicle or a boat, the irregular movements are apt to cause splashing of the water, and this splashing has to be avoided as much as possible, as it might cause injurious or detrimental results.

The operation is as follows: The pulley N^3 is driven from the motor, and as long as the motor is in operation the shaft M is thus rotated. From the shaft M the sleeve G is rotated by means of the clutch member R and R′, and from this sleeve G the sprocket-wheel F^2 is rotated by means of the beveled gearing F^3 and F^4, and thereby the rollers F are rotated and crush and pulverize the carbid passing from the lower end of the hopper E. This crushed carbid drops upon the disk or plate H, which is attached to the sleeve G and rotates with the same. As the opening or slot I passes beneath the two feed-rollers F it is filled with crushed carbid. At that time the disk *a* is in its extreme position to the left, Fig. 1, and forms a bottom for the slot I, and as the disk H rotates the carbid in the slot is carried around until the slot I in the disk H registers with a slot J in the plate *f*. By that time the disk *a* has been moved by the eccentric *b* to its extreme position to the right, and the slots I in the disk H, the slot *a′* in the disk *a*, and the slot J in the disk *f* now register and the carbid can drop from the slot J into one of the pockets K′ of the rotating wheel K and is carried around by said wheel and drops through the neck K^3 into the water in the generator. It is thus seen that as long as the motor is in operation the feeding of the carbid takes place. As all the feed mechanism is operated by the shaft M, it is evident that the feeding will take place in proportion to the speed of the motor, and thus the supply of gas is kept up with the requirements of the motor. In case, however, on account of the too rapid feed of the carbid more gas is generated than the motor can consume, even at this high speed, the pressure rises in the generator and acting on the diaphragm O′ forces the same downward, whereby the clutch member R is disengaged from the clutch member R′, and thus the carbid-grinding rollers F and the disk H are no longer operated, and consequently carbid is no longer fed into the generator. As the gas in the generator is consumed the pressure sinks, the clutch member R is again engaged with the clutch member R′, and the feeding mechanism thrown in gear, and so on. The water in the lower part of the generator normally holds the float B^5 so high as to keep the valve B^2 open; but when the deposited lime in the generator is to be washed from the lower part of the generator the float B^5 sinks as this water runs off, the valve B^2 closes the neck B^3 and prevents the gas from passing out of the upper part of the generator and keeps this neck closed until the lower part has again been filled with water.

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

1. In an acetylene-generator, the combination with a water-receptacle and a carbid-receptacle, of carbid-crushing means beneath the carbid-receptacle, a carbid-feeding device, and means for operating the carbid-crushing devices and feeding devices from a common shaft, substantially as set forth.

2. In an acetylene-generator, the combination with a water-receptacle and a carbid-receptacle, of carbid-crushing means beneath the receptacle, a carbid-feeding device, and means for operating the carbid-crushing devices and feeding devices from a common shaft, and pressure-operating devices for throwing said carbid-pulverizing and carbid-feeding devices out of gear with the motor-driven parts, substantially as set forth.

3. In an acetylene-generator, the combination with a water-receptacle and a carbid-receptacle, and means for feeding the carbid into the water, and a series of plates located on edge in the generator, substantially as set forth.

4. In an acetylene-generator, the combination with a water-receptacle and a carbid-receptacle, feeding devices for feeding the carbid into the water-receptacle, and a series of plates located on edge in the generator, and intersecting each other, substantially as set forth.

5. In an acetylene generator, the combination with a carbid-hopper, a rotating feed-plate beneath the hopper and having a slot, a reciprocating plate beneath the rotating plate and also having a slot, a fixed plate on

which the reciprocating plate rests, which latter plate also has a slot, and means for rotating the rotating plate and reciprocating the reciprocating plate so as to cause the slots in the rotating plate, reciprocating plate and fixed plate to register, and to be brought out of register alternately, substantially as set forth.

6. In an acetylene-generator, the combination with a carbid-hopper, of a feed device beneath the hopper, a casing beneath the feed device, a wheel rotating in said casing and having pockets, an outlet-neck at the bottom of the casing, and a plate having one edge in contact with the rim of the wheel having pockets, and means for moving said plate inward and outward so as to always keep its one edge in contact with the rim part of the pocketed wheel, substantially as set forth.

7. In an acetylene-generator, the combination with a carbid-hopper, and a feed device, of a casing into which the feed device can drop the carbid, a wheel mounted to rotate in said casing and having pockets in its rim, and a plate forming a seal with said pocketed wheel and means for operating the said seal-plate, substantially as set forth.

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

JOHN W. VAUGHN.

Witnesses:
OSCAR F. GUNZ,
SOPHIE M. BAEDER.