G. E. JOHNSON.

ACETYLENE GAS GENERATOR.

APPLICATION FILED JUNE 8, 1908.

912,380.

Patented Feb. 16, 1909.

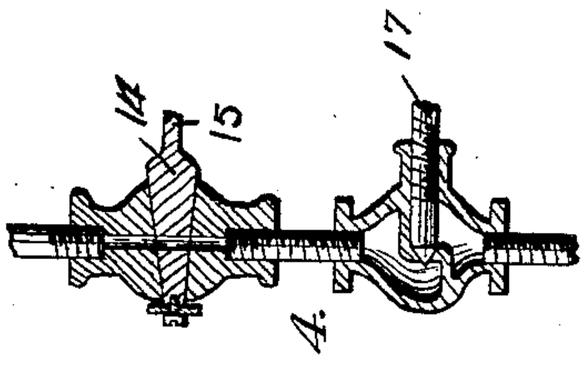

Fig. 4.

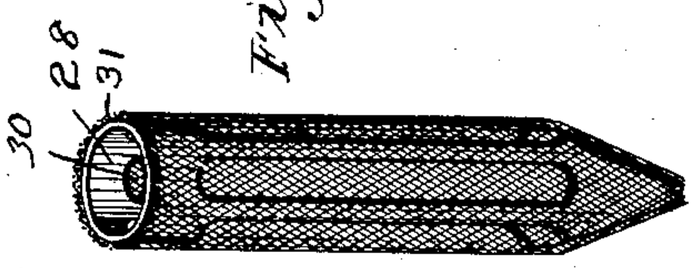

Fig. 3.

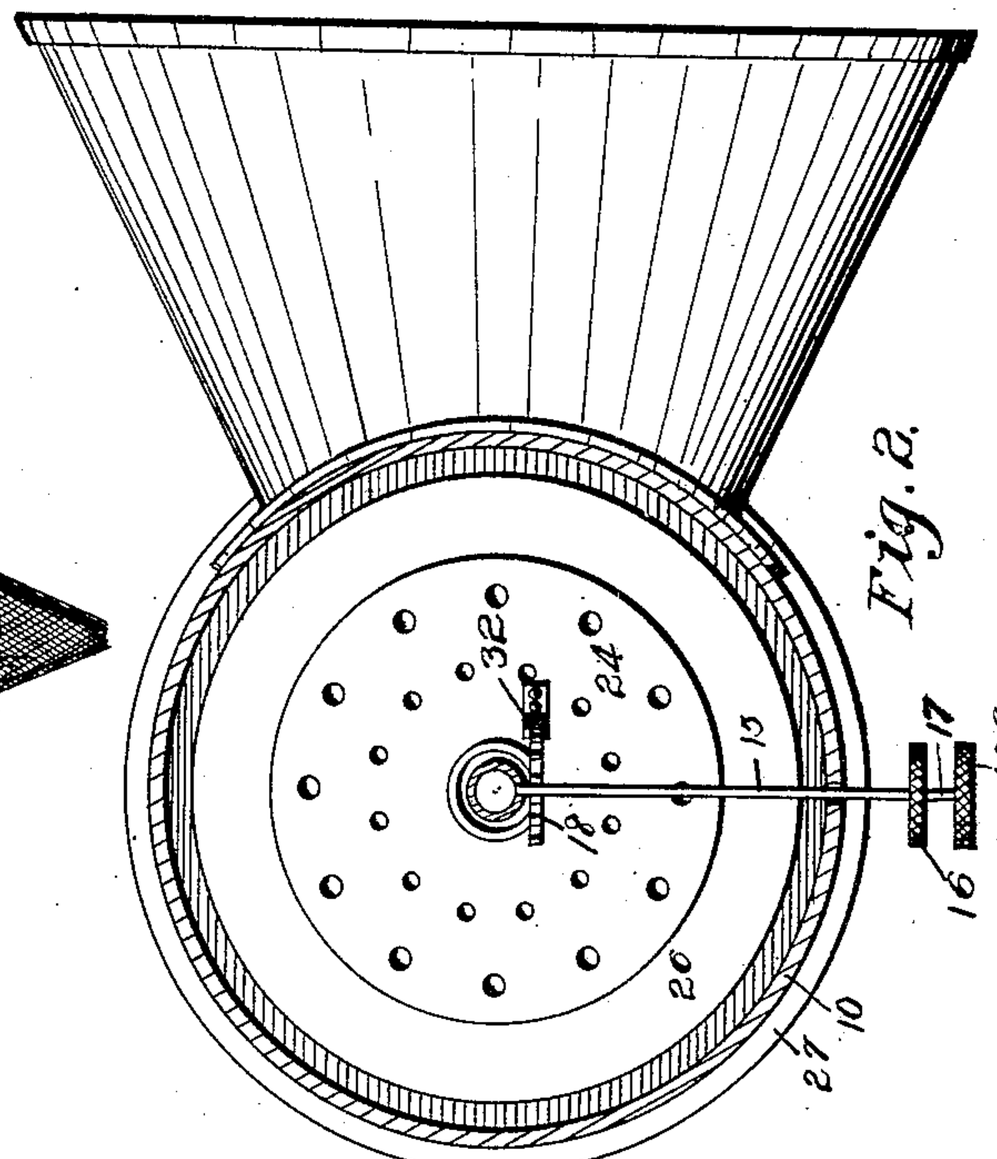

Fig. 2.

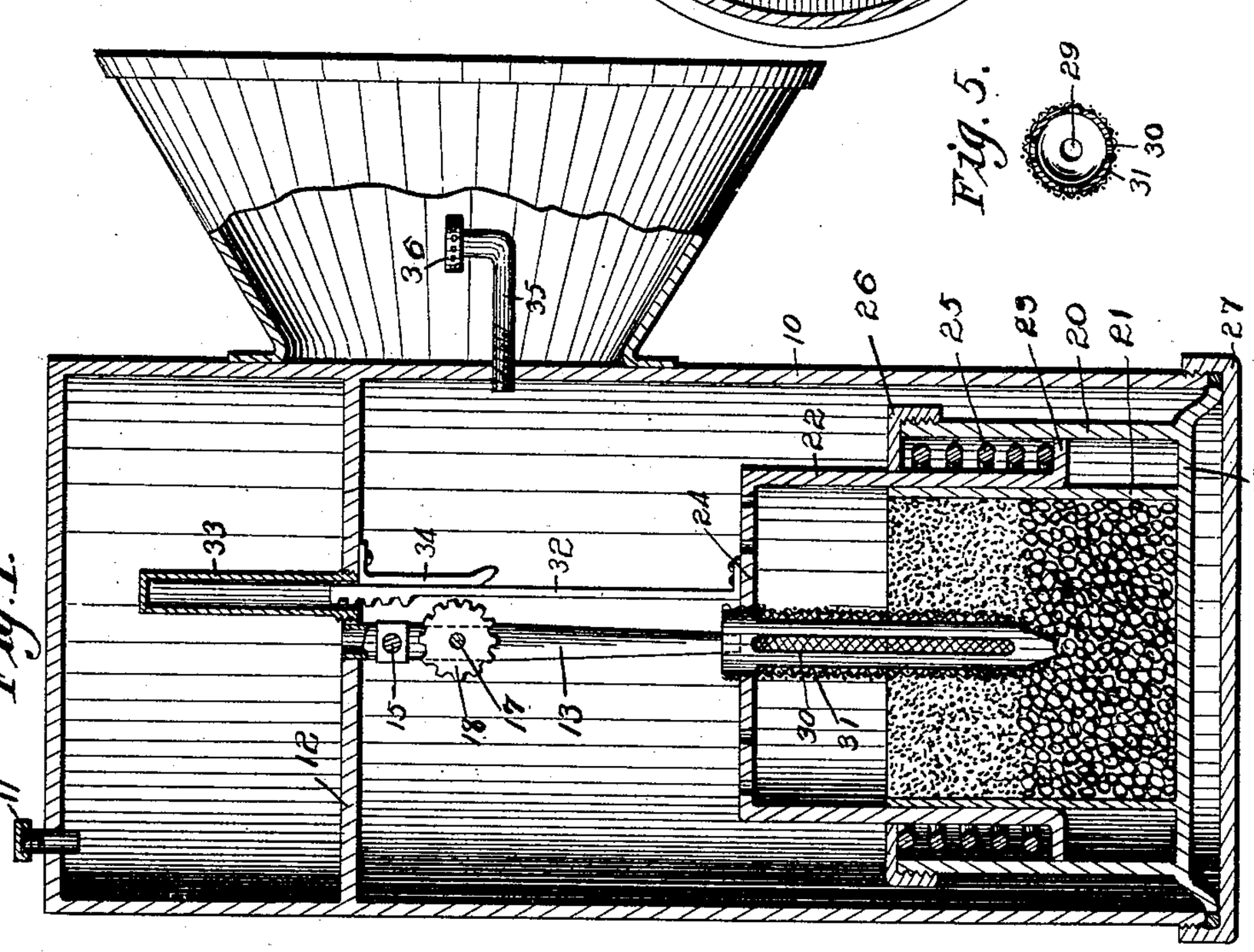

Fig. 1.

Fig. 5.

Witnesses.

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UNITED STATES PATENT OFFICE.

GEORGE E. JOHNSON, OF DES MOINES, IOWA.

ACETYLENE-GAS GENERATOR.

No. 912,380. Specification of Letters Patent. Patented Feb. 16, 1909.

Application filed June 8, 1908. Serial No. 437,312.

To all whom it may concern:

Be it known that I, GEORGE E. JOHNSON, a citizen of the United States, residing at Des Moines, in the county of Polk and State of Iowa, have invented a certain new and useful Acetylene-Gas Generator, of which the following is a specification.

The object of my invention is to provide a lamp of this kind of simple, durable and inexpensive construction, provided with a nozzle to receive water, which nozzle is so arranged that it will move downwardly through the calcium carbid in such a manner that a portion of it will always be in contact with fresh carbid, to thereby insure a uniform production of gas, and further to provide means for automatically increasing the flow of water through the nozzle as the nozzle approaches the bottom of the calcium carbid receptacle, so that the entire contents of the calcium carbid receptacle may be subjected to the action of the water for the purpose of producing gas in a uniform and regular manner.

My invention consists in the construction, arrangement and combination of the various parts of the device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims, and illustrated in the accompanying drawings, in which—

Figure 1 shows a central, vertical, sectional view of a lamp embodying my invention. Fig. 2 shows a horizontal, sectional view of same taken on a line below the water tank. Fig. 3 shows an enlarged, detail, perspective view of the nozzle. Fig. 4 shows an enlarged, detail, sectional, view of the water controlling valves, and Fig. 5 shows a sectional view of the lower end of the nozzle looking downwardly.

Referring to the accompanying drawings, I have used the reference numeral 10 to indicate a cylindrical body portion of the lamp. This body portion is open at its bottom and in its top is a water supply opening covered by a screw cap 11.

Near the upper end of the body 10 is a horizontal partition 12 to form a water chamber. A water supply pipe 13 communicates with said chamber and extends downwardly at the central portion of the lamp. In this water supply pipe 13, are two valves, the upper one 14 being provided with a valve stem 15 extended to the exterior of the lamp and provided with a hand wheel 16 whereby the valve may be manually adjusted. The lower valve 17 is provided with a small pinion 18 on the valve stem for purposes hereinafter made clear. It is also provided with a hand wheel 18ª projected through the side of the receptacle 10.

The carbid receptacle comprises a base 19 having an outer cylindrical wall 20, and an inner cylindrical wall 21 spaced apart from each other and both open at their upper ends.

The numeral 22 indicates a cylinder open at its bottom and having an outwardly projecting flange 23 at its lower end to fit between the walls 20 and 21. The cylinder 22 is provided with a perforated top 24, and in the central portion of the top is a nozzle hereinafter described. Mounted on top of the flange 23, is an expansible coil spring 25, the upper end of which is designed to engage a screw-threaded collar 26 mounted on the outer wall 20. By this arrangement of parts, it is obvious that access may be had to the calcium carbid receptacle for the purpose of cleaning or refilling it by simply removing the screw cap 27 at the bottom of the cylinder 10 and then taking out the carbid receptacle. Then the screw threaded collar 26 may be removed and the cylinder 22 raised bodily from the carbid receptacle.

The nozzle, before referred to, comprises a cylindrical body portion 28 open at its upper end and having a tapered lower end provided with a small opening 29. In the sides of the body are the longitudinal slots 30, and the entire nozzle is covered by a fabric 31 such for instance as felt, which fabric is designed to permit water to flow through it and to prevent the entrance into the nozzle of the ashes formed by the calcium carbid. The water pipe 13 is admitted into the upper end of the nozzle 28, but is not connected with the nozzle.

Fixed to the top of the cylinder 22, is a rack bar 32. This rack bar extends through the partition 12 when the cylinder 22 is at its upper limit of movement, and a tube 33 is provided to receive the upper end of the rack bar 32. Attached to the bottom of the partition 12 is a guide arm 34 to hold said rack toward the pinion 18.

Communicating with the upper portion of the gas receptacle is a discharge tube 35 connected to a burner 36 of ordinary construction.

In practical use and assuming that the receptacle is full of calcium carbid and the

water receptacle is also full, and that the lower end of the nozzle is resting upon the top of the calcium carbid, then the operator fully opens the valve 14 and partially opens the valve 17, until a sufficient quantity of water flows into the nozzle to produce gas in the desired quantity. Then the valves are left in this position and the spring 25 causes a constant downward pressure upon the nozzle. The water flows through the opening 29 in the end of the nozzle and also through the sides of the nozzle and causes the calcium carbid to decompose and form ashes. The spring pressure upon the cylinder forces the nozzle to move downwardly as fast as the calcium carbid adjacent to it is thus decomposed, hence, the nozzle will at all times, be in direct contact with fresh calcium carbid, and therefore, the flow of gas will be substantially uniform. When the nozzle gets to the point near the lower end of the carbid chamber, a large proportion of the contents of the chamber will be ashes, and therefore, it is necessary that a larger quantity of water be admitted in order to maintain a uniform flow of gas, and therefore the rack 32 is so arranged relative to the pinion 18 as to engage said pinion and turn the valve 17 in a direction tending to open it. In this way the flow of gas is made uniform until the last particle of calcium carbid has been used. That is to say, during the major portion of the nozzle movement the flow of water is steady and uniform, while the nozzle is in direct contact with the carbid, then when nearly all the carbid is decomposed, more water is required to pass through the ashes to reach the carbid at the lower corners of the carbid receptacle. This is accomplished by automatically opening the valve 17.

I claim as my invention.

1. In a device of the class described, the combination of a casing, a carbid receptacle within the casing, a nozzle shaped when in one position to rest on top of the carbid in the chamber and capable of moving downwardly through the carbid to the bottom of the chamber, a spring arranged for forcing the nozzle down into the carbid receptacle, and means for supplying water to the nozzle.

2. In a device of the class described, the combination of a casing open at its lower end, a cap detachably secured to the lower end of the casing, a carbid receptacle within the casing having two cylindrical walls spaced apart and open at their upper ends, a collar screwed to the upper end of the outer wall, and provided with an inwardly projecting flange, a cylinder slidingly mounted between the walls and having a flange at its lower end, an expansible spring arranged between the walls of the calcium carbid receptacle and in engagement with the flange on the cylinder and with the screw threaded collar, a perforated top for said cylinder, a nozzle fixed to the cylinder and having a pointed lower end with an opening therein, and slotted sides, a fabric for covering said nozzle, a water chamber, a pipe communicating with the water chamber and designed to enter the top of said nozzle, a valve in said pipe, a pinion fixed to the valve stem, and a rack bar fixed to the nozzle supporting cylinder and designed to engage said pinion when the nozzle approaches the lower end of the calcium carbid receptacle in such a manner as to open the valve.

3. In a device of the class described, the combination of a casing open at its lower end, a cap detachably secured to the lower end of the casing, a carbid receptacle within the casing having two cylindrical walls spaced apart and open at their upper ends, a collar screwed to the upper end of the outer wall, and provided with an inwardly projecting flange, a cylinder slidingly mounted between the walls and having a flange at its lower end, an expansible spring arranged between the walls of the calcium carbid receptacle and in engagement with the flange on the cylinder and with the screw threaded collar, a perforated top for said cylinder, a nozzle fixed to the cylinder and having a pointed lower end with an opening therein, and slotted sides, a fabric for covering said nozzle, a water chamber, a pipe communicating with the water chamber and designed to enter the top of said nozzle, a valve in said pipe, a pinion fixed to the valve stem, and a rack bar fixed to the nozzle supporting cylinder and designed to engage said pinion when the nozzle approaches the lower end of the calcium carbid receptacle in such a manner as to open the valve, a second valve above the first, and a valve stem connected therewith and extended to a point outside of the casing.

4. In a device of the class described, the combination of a calcium carbid receptacle, a nozzle capable in one position of resting on top of the carbid and also capable of downward movement relative to the receptacle to the bottom thereof, and means for forcing the nozzle downwardly, said means being so arranged that the nozzle will move downwardly into the carbid as fast as the carbid is turned to ashes to thereby maintain the nozzle in contact with the fresh carbid.

Des Moines, Iowa, May 19, 1908.

GEORGE E. JOHNSON.

Witnesses:
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