No. 616,130. Patented Dec. 20, 1898.

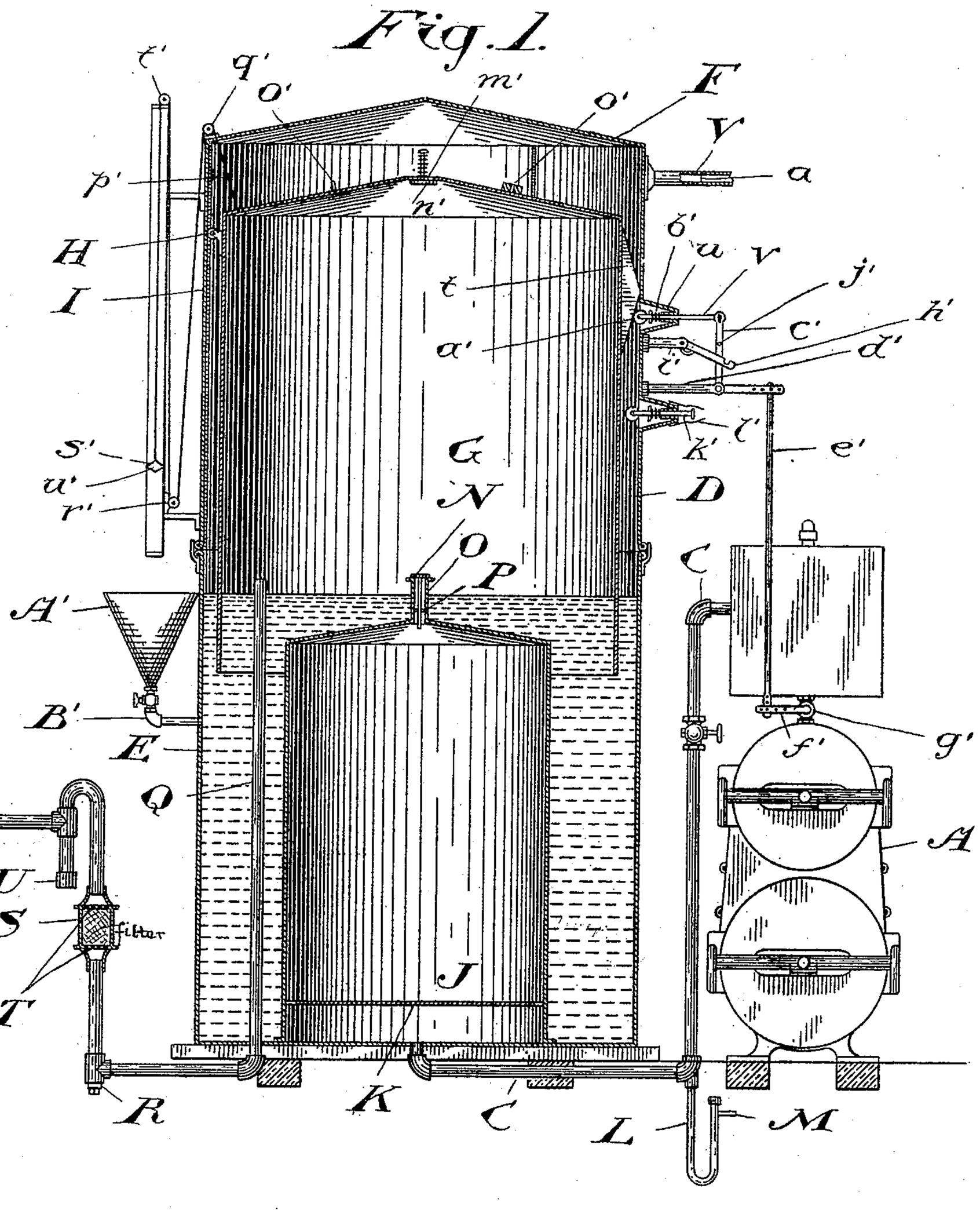
E. A. MORTON-BROWN.

APPARATUS FOR PRODUCING ACETYLENE GAS.

(Application filed Sept. 16, 1896.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.



Witnesses

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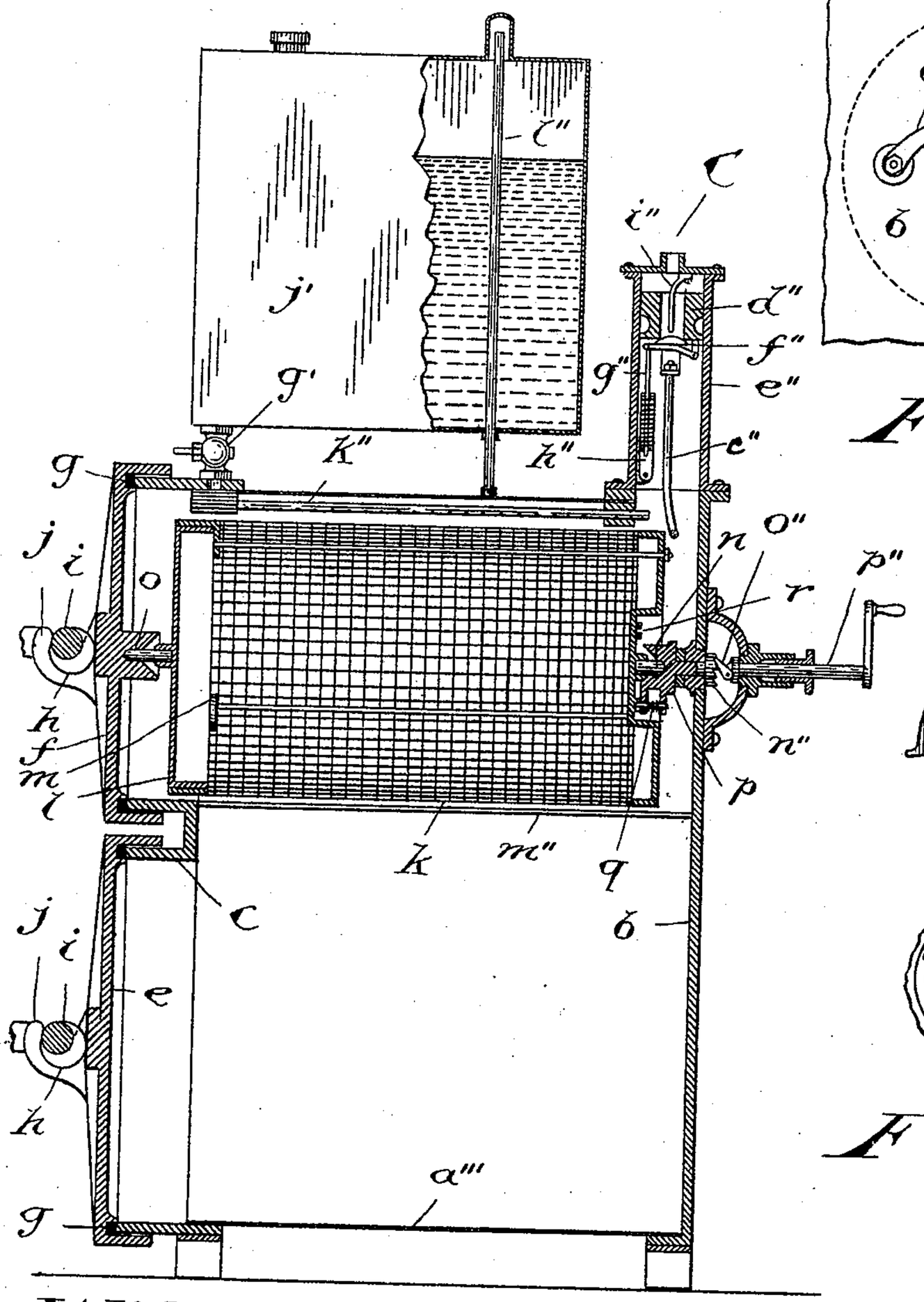
2 Sheets—Sheet 2.

Fig. 2.



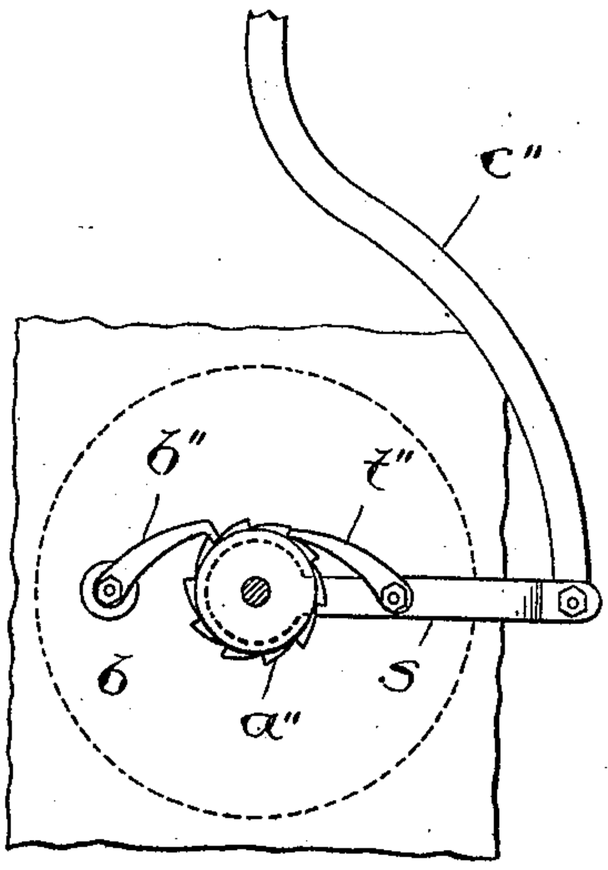


Fig. 3.

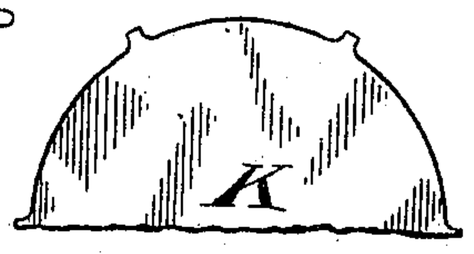


Fig. 4.

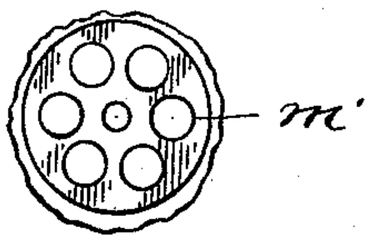


Fig. 5.

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UNITED STATES PATENT OFFICE.

ERNEST A. MORTON-BROWN, OF WOODSTOCK, CANADA, ASSIGNOR OF ONE-HALF TO FRANK MAUNDRELL, OF SAME PLACE.

APPARATUS FOR PRODUCING ACETYLENE GAS.

SPECIFICATION forming part of Letters Patent No. 616,130, dated December 20, 1898.

Application filed September 16, 1896. Serial No. 606,017. (No model.)

To all whom it may concern:

Be it known that I, ERNEST ALBERT MORTON-BROWN, piano-tuner, of the town of Woodstock, in the county of Oxford and Province of Ontario, Canada, have invented a certain new and Improved Apparatus for the Production and Storage of Acetylene Gas, (for which I obtained Letters Patent in Canada on October 14, 1896, under No. 53,766, and in Great Britain on October 12, 1897, under No. 22,628, and applied for Letters Patent in Germany on November 16, 1896, under No. K. B. 23,923,) of which the following is a full, clear, and exact description.

The object of my invention is to devise an automatic apparatus for the production and storage of acetylene gas which will be efficient, economical, and safe; and it consists, essentially, of a generator in which the decomposition of the calcium carbid is effected in a rotatable perforated or open-work cylinder, by the rotation of which the lime is shaken from the surface of the carbid, of a condenser located in the water-tank of the gas-holder, of automatic apparatus for regulating the water-supply and for closing it off when the gas-supply to the holder ceases, and in such other improvements as are hereinafter more particularly described and then definitely claimed.

Figure 1 is a sectional view of the whole apparatus. Fig. 2 is a sectional detail of the generator. Fig. 3 is an enlarged detail in elevation of a portion of the carbid-cylinder-rotating mechanism. Fig. 4 is a plan view of half the diaphragm in the condenser. Fig. 5 is a plan view of the valve-opening in the top of the gas-holder.

In the drawings like letters of reference indicate corresponding parts in the different figures.

In Fig. 1, A is the generator, hereinafter more particularly described, and C the gas-exit pipe leading from the top of the generator.

D is the gas-storage apparatus, consisting of the tank E, the closed cover F, and the holder G, the lower end of which is open and is immersed in the water in the tank E in the usual manner.

A′ is a funnel connected by a pipe B′, provided with a suitable stop-cock, with the interior of the tank E. By means of this funnel water may be introduced into the tank as becomes necessary, the funnel being preferably so proportioned that its upper surface represents the usual level of the water within the tank.

The holder G is provided with a suitable number of guide-wheels H, running on guides I on the inside of the closed cover F.

Located in the tank E is the condenser J, which serves the double purpose of condensing moisture contained in the gas and of reducing the quantity of water contained in the tank E. The gas-exit pipe C from the generator enters the bottom of the condenser below the center of the diaphragm K, which is provided with a series of openings around its outer edge. Thus the gas entering the condenser from the pipe C strikes the center of the diaphragm and is deflected by it, so as to be compelled to pass upward in contact with the sides of the condenser. These being cooled by the water in the tank E condense the major part of the moisture contained in the gas. The moisture thus condensed runs down to the pipe C and into the water seal L, which is provided with the overflow-pipe M. Thus the condensed moisture running into the seal is allowed to overflow without permitting the escape of gas. Situated at the top of the condenser is a valve N, which closes an opening formed in the top of the condenser or of a tube O, connected thereto. The stem of this valve is steadied by a skeleton guide P, which is shaped so as to permit of the free passage of gas. This valve permits of the escape of the gas in the condenser in a series of puffs, but will close to prevent any backflow taking place.

Q is the gas-exit pipe from the holder. This pipe passes down through the water in the tank, its upper end being located above the level of the same. After passing through the bottom of the tank the pipe is turned horizontally and then upward again. At the elbow is located the plug R, which may be withdrawn when desired to clear the pipe of any condensed water. Above the plug is located the safety-chamber S. This chamber has a quantity of loose asbestos or crushed

pumice therein, held between two gauze diaphragms T. The purpose of this chamber is to prevent the flame running down the pipe to the holder from any of the burners in the event of a mixture of air and gas being present at any time in the pipe or holder. The gauze diaphragms would probably be sufficient, but the asbestos is an additional precaution. Above the safety-chamber S the pipe is bent downward again and the cap U placed on its end, by the removal of which collected moisture may be withdrawn from the pipe. Above this cap the connection with the pipe leading to the burners is formed.

Connected to the top of the closed cover F is an outlet-pipe V, which serves to permit of the egress and ingress of the air as the holder G rises and falls. To avoid accidents occurring through an explosive mixture of air and gas formed within the closed cover, a gauze diaphragm *a* is placed in this pipe.

On reference to Fig. 2 the construction of the generator A will be readily understood. The body of the generator is preferably made of galvanized sheet-iron in the form indicated. The ends of the generator are preferably formed of castings *b* and *c*, the casting *c* being preferably flanged to receive the circular covers *e* and *f*, an air-tight joint being insured by the use of the rubber packing *g* between the covers and the casting. The covers are held in place by means of the eccentrics *h*, formed on spindles *i*, which are held by the hooks *j*, formed on or connected to the casting *c*. By revolving these spindles the covers *e* and *f* may be clamped tightly against the casting *c*.

k is a cylinder constructed of wire-netting, perforated sheet metal, or a grating of bars.

l is a flanged cover fitting within the end of the cylinder *k* and bearing against the lugs *m*, formed thereon. These lugs also form a connecting-point for the longitudinal brace-rods connecting the ends of the cylinder. A pivot *n* is connected to the end of the cylinder and a pivot *o* to the cover. The pivot *o* has its bearing in a projection on the inside of the cover *f*, which is preferably formed with a cone-shaped opening to guide the pivot into its proper place when the cylinder is put in position. The pivot *n* has its bearing in a bearing-piece *p*, which is similarly shaped to the projection on the inside of the cover *f*. This bearing-piece *p* is suitably journaled in the casting *b* and is provided with a spring-operated pin *q*, adapted to engage with any one of a series of holes *r*, formed in the end of the cylinder *k*. Journaled on the bearing-piece *p* is a lever *s*, on which is pivoted a pawl *t''*, adapted to engage with the ratchet-teeth *a''*, formed on the bearing-piece *p*. (See Fig. 3.) *b''* is a pawl pivoted on the casting *b* and also adapted to engage with the ratchet-teeth *a''*.

c'' is a connecting-rod pivoted at one end to the lever *s* and connected at the other end to the piston *d''* of the cylinder *e''*, connected to the top of the generator and communicating therewith. The piston *d''* has pivoted thereon a valve *f'''*, which is adapted to close the central passage through the piston. To the valve is pivoted a rod *g''*, which passes through the end of a pivoted guide *h''*. Between a pin through the end of the rod *g''* and the head of the pivoted guide *h''* is located a coiled spring which is in a state of tension when the parts are in the position shown in Fig. 2.

i'' is a finger connected to the upper end of the cylinder *e''* and so placed that if the piston *d''* rises above its normal limit the finger will come in contact with the valve *f'''* through the central opening in the piston and force it open, thus permitting of an escape of gas.

C is the exit-pipe from the generator, which is connected, as previously described, to the gas-holder.

j'' is the water-tank, which is connected with the spray-pipe *k''*, located within the generator and above the cylinder *k*. The connection between the tank and the spray-pipe is provided with a valve *g'*, to the spindle of which is connected a lever *f'*, operated as hereinafter described. (See Fig. 1.)

l'' is a pipe connecting the generator with the space above the water-level in the tank, so that the pressure above the water is maintained at the same point as the pressure in the generator into which it is introduced. A suitable screw-cap is preferably provided for the introduction of fresh water into the tank when required.

One or more bars *m''* are preferably placed across the machine below the cylinder *k* to support it when being slid into place.

The operation of the generator is substantially as follows: The cover *f* is taken off and the cylinder *k* removed from the machine. The cover *l* is then removed and a quantity of carbid placed in the cylinder. After replacing the cover the cylinder is slid into place again, the shape of the bearing-piece *p* facilitating the entrance of the pivot *n* into its proper place. If the spring-actuated pin *q* does not at once fit the hole *r*, it will drop into one as soon as the bearing-piece *p* is rotated, as hereinafter described. The cover *f* is then replaced, the pivot *o* rising into position in the manner similar to pivot *n*. After the cover *f* is clamped into place the water may be turned on, and a fine spray of water will then fall upon the carbid in the cylinder. As the gas is generated it gradually lifts the piston *d''*, the central opening in which is closed by the valve *f'''*. As the piston rises the spring on the rod *g''* is gradually compressed till finally the valve will rise no further and the piston is lifted away from it, the gas escaping through the opening in the piston. As soon as the valve is removed the slightest distance from its seat, so as to allow of the passage of gas, the spring on the rod *g''* will immediately draw the valve down to its lowest point, preventing the valve again closing till the escape of gas has permitted

the piston to drop, when the valve again seats itself and the piston will begin to rise once more. As the motion of the piston is communicated by the connecting-rod c'' to the lever s and pawl t'' the latter will revolve the bearing-piece p a short distance every time the piston rises, the dog b'' preventing the bearing-piece from going back when the lever s and its connections again drop. As the bearing-piece is connected with the end of the cylinder k, as previously described, the rise and fall of the piston d'' imparts an intermittent rotary motion to the cylinder k, thus effectually turning over the carbid in the cylinder. The lime formed by the decomposition of the carbid is thus shaken off and drops through the meshes of the cylinder, leaving fresh surfaces of carbid to be acted upon by the water spray.

As it may sometimes be desirable to revolve the cylinder by hand, I provide the bearing-piece p with a ratchet-wheel n'', located outside the casting b. With this ratchet-wheel a pawl o'' engages. This pawl is pivoted on a disk at the end of the spindle p'', carried in a gas-tight bearing and provided with a suitable crank-handle or hand-wheel. By this connection a rotary motion may be imparted to the cylinder at any time without reference to the automatic mechanism for operating the same. The gas passing intermittently through the piston d'' escapes through the exit-pipe C, which is preferably provided with a check or cut-off valve, as indicated in Fig. 1. It should be mentioned that a gauze diaphragm may be placed in this pipe between the generator and the holder as a safety measure and also at any other points where experience shows it to be advisable.

Access may be had to the lower part of the generator to remove the lime dropped through the perforations of the cylinder by removing the cover e.

Although I describe a specific mode of construction of the cylinder e'' and piston d'' for revolving the carbid-cylinder k, yet any other device which would intermittently rotate the carbid-cylinder by the action of the gas generated would answer the purpose of my invention, or if the apparatus is placed in a position where an attendant is always on hand the hand-operated rotating device would prove sufficient.

It will now be necessary to describe the apparatus for controlling the water-supply and through it the generation of the gas.

Connected to the side of the holder is what is termed a "bridge" t, formed with upper and lower inclined surfaces. Sliding in a suitable air-tight guide u is a spindle v, having journaled at its inner end the wheel a', normally pressed inward in the path of the bridge t by means of the coil-spring b' pressing against a pin on the spindle and the guide u. The outer end of this spindle is pivoted to the lever c', which itself is pivoted at its upper end to the standard d'. The lower end of this lever is pivoted to the connecting-rod e', which is adjustably pivoted to the lever f', connected to the spindle of the valve g'. From this construction it will be seen that as the gas-holder descends the spindle v is pushed outwardly, which outward motion is by the connections described transmitted to the lever on the spindle of the valve g' and the water-supply gradually turned on. As the holder rises the spring b' returns the spindle to its original position, and the water-supply is thus cut off again. Upon the supply of water depends, of course, the rate of production of acetylene, and thus the production of the gas is controlled automatically, so as to maintain a practically unvarying supply in the holder. When the carbid becomes exhausted, the gas-holder will continue to descend till the highest part of the bridge t has passed the spindle v. As the holder continues to descend the inclined upper surface of the bridge permits the spindle to move in again, and the water-supply is again cut off, thus avoiding waste during the interval between the exhaustion of the generator and the introduction of a fresh supply of carbid therein. As it is necessary to maintain a good supply of water when first setting the apparatus in action, I provide a hook h', pivoted on the standard i'. The notch of this hook may be engaged with a pin j', and the length of the hook is so proportioned that when the hook is so engaged with the pin the valve g' is held open and a constant flow of water is maintained. Inward pressure maintained on the connections by the spring b' serves to maintain the pin and the hook in contact. As soon, however, as the holder rises sufficiently far to bring the bridge t in contact with the wheel a' the connections of the spindle v are moved outwardly and the hook, thus released, falls to the position indicated in the drawings, further downward motion being prevented by the stop indicated at its pivot-point.

k' is a spindle similarly mounted and provided with a wheel and coil-spring, such as provided for the spindle v. The outer end of this spindle has a central plate connected thereto, which when the spindle is moved outwardly forms a connection between the springs l', to which may be connected the wires of an electric-bell circuit. When the bridge t falls low enough to push out the spindle k and thus complete the contact between the springs l', the bell-circuit is closed and warning given that the gas is becoming exhausted from the generator.

In the top of the holder G is formed an opening or openings m'. (See Figs. 1 and 5.) These openings are closed by the valve n', the spindle of which extends upwardly through the central hole shown in Fig. 5. A coil-spring is placed on the spindle of the valve bearing against the top of the holder and a head formed on the said spindle. If the generation of gas is not stopped by the closing

of the water-supply and the holder G rises too far, the head formed on the spindle of the valve n' comes in contact with the top of the closed cover F, and the valve is pressed downward, thus affording an exit for the surplus gas. This gas may escape through the outlet-pipe V.

On the top of the holder are placed a series of studs o' on which may be placed weights to regulate the pressure upon the gas now in the holder.

In Fig. 1 it will be seen that a cord p' is connected to the holder G. This cord passes out through a small hole in the top of the closed cover F over a pulley q', connected to the top thereof, thence down under a pulley r', connected to the board s', and thence up and over a pulley t', connected to the top of the said board. A weight or indicator u' is connected to the end of this cord, which thus serves to indicate at all times the exact position of the holder G. The board s' is suitably supported from the closed cover F.

The points of my invention which I consider particularly important are the use of a rotatable cylinder in the generator to contain the carbid operated upon by the water-spray, so that the lime formed by the decomposition of the calcium carbid is shaken from the lumps of carbid by the rotation of the cylinder and dropped through the perforations to the bottom of the generator, thus leaving new surfaces of carbid to be acted upon by the water-spray; the use of automatic means for causing the revolution of the perforated cylinder; the use of a condenser located within the water-tank of the storage apparatus which serves to deprive the gas of its surplus moisture and also reduces the weight of water required; providing the gas-holder with a closed cover provided with a pipe, so that all gas escaping either by leakage or in the operation of the relief-valve at the top of the holder may be conveyed to a place where its odor will cause no annoyance; providing the water-regulating apparatus with means for turning the water off when the supply of calcium carbid in the generator is exhausted, as well as for automatically regulating the generation of gas under ordinary circumstances, and also in the various details of construction set out in the claims forming a part of this specification.

It will of course be understood that the construction shown may in many cases be varied considerably without departing from the spirit of my invention.

What I claim as my invention is—

1. In acetylene-gas apparatus, the combination of a generator comprising a chamber, a removable cover for said chamber, a cylinder having one of its ends journaled in a bearing-piece located at the inner end of said chamber and its other end journaled in said cover, and mechanism for rotating said cylinder, located at the inner end of said cylinder, whereby the cover may be removed without moving said operating mechanism, substantially as described.

2. In an apparatus for the production and storage of acetylene gas, a generator comprising a chamber and a removable cover for said chamber, in combination with a rotatable perforated or open-work cylinder pivoted at one end in a bearing-piece journaled in one end of the chamber and at the other in a bearing-piece formed on said removable cover, a connection between the end of the cylinder and the first-mentioned journaled bearing-piece to adapt them to rotate together, and means for rotating the said first-mentioned bearing-piece, whereby said cover may be removed without moving the latter substantially as and for the purpose specified.

3. In an apparatus for the production and storage of acetylene gas, a generator comprising a chamber, and a removable cover for said chamber, in combination with a rotatable perforated or open-work cylinder pivoted at one end in a bearing-piece journaled in one end of the chamber and at the other in a bearing-piece formed on said removable cover, a connection between the end of the cylinder and the first-mentioned journaled bearing-piece to adapt them to rotate together, means for rotating the said bearing-piece by the action of the gas generated acting through said first-mentioned bearing-piece, whereby said cover may be removed without moving operating means, substantially as and for the purpose specified.

4. In an apparatus for the production and storage of acetylene gas, a generator comprising a chamber, and a removable cover for said chamber, in combination with a rotatable perforated or open-work cylinder pivoted at one end in a bearing-piece journaled in one end of the chamber and at the other in a bearing-piece formed on said removable cover, a connection between the end of the cylinder and the first-mentioned journaled bearing-piece to adapt them to rotate together, and means for rotating the said bearing-piece, a spray-tube within the chamber, a water-tank with which the said spray-tube is connected, and a pipe connecting the chamber with the space above the water in the tank, substantially as and for the purpose specified.

5. In an apparatus for the production and storage of acetylene gas, a generator comprising a chamber, and a removable cover for said chamber, in combination with a rotatable perforated or open-work cylinder pivoted at one end in a bearing-piece journaled in one end of the chamber and at the other in a bearing-piece formed on said removable cover, a connection between the end of the cylinder and the first-mentioned journaled bearing-piece to adapt them to rotate together, and means for rotating the said first-mentioned bearing-piece, a spray-tube within the chamber, a water-tank with which the said spray-tube is connected, and a pipe connecting the chamber with the space above

the water in the tank, and a removable cover closing an opening in the lower part of the chamber for the removal of the lime dropped through the cylinder, substantially as and for the purpose specified.

6. In an apparatus for the production and storage of acetylene gas, a generator comprising a chamber, and a removable cover for said chamber, in combination with a rotatable perforated or open-work cylinder pivoted at one end in a bearing-piece journaled in one end of the chamber and at the other in a bearing-piece formed on said removable cover, a connection between the end of the cylinder and the journaled bearing-piece to adapt them to rotate together, a lever pivoted on the said bearing-piece, a pawl pivoted on the said lever, a ratchet-wheel formed on the said bearing-piece with which the said pawl engages; a connecting-rod pivoted to the end of the lever, a cylinder communicating with the chamber, a piston adapted to reciprocate within the said cylinder and connected with the end of the aforesaid connecting-rod, a valve adapted to close an opening formed in the piston, means for automatically opening the valve when the piston has been raised to a predetermined extent, and a gas-exit above the piston, substantially as and for the purpose specified.

7. In an apparatus for the production and storage of acetylene gas, a generator comprising a chamber, and a removable cover for said chamber, in combination with a rotatable perforated or open-work cylinder pivoted at one end in a bearing-piece journaled in one end of the chamber and at the other in a bearing-piece formed on said removable cover, a connection between the end of the cylinder and the first-mentioned journaled bearing-piece to adapt them to rotate together, a portion of the said first-mentioned bearing-piece extending outside the chamber so that means for rotating the cylinder by hand or machinery may be applied thereto, whereby said cover may be removed without moving said first-mentioned bearing-piece and operating means, substantially as and for the purpose specified.

8. In an apparatus for the production and storage of acetylene gas, a generator comprising a chamber, and a removable cover for said chamber, in combination with a rotatable perforated or open-work cylinder pivoted at one end in a bearing-piece journaled in one end of the chamber, and at the other in a bearing-piece formed on said removable cover, a connection between the end of the cylinder and the journaled bearing-piece to adapt them to rotate together, a lever pivoted on the said bearing-piece, a pawl pivoted on the said lever, a ratchet-wheel formed on the said bearing-piece with which the said pawl engages; a pawl pivoted on the wall of the chamber and adapted to engage with the said ratchet-wheel to prevent back motion; a connecting-rod pivoted to the end of the lever; a cylinder communicating with the chamber; a piston adapted to reciprocate within the said cylinder and connected with the end of the aforesaid connecting-rod; a valve adapted to close an opening formed in the piston; means for automatically opening the valve when the piston has been raised to a predetermined extent and a gas-exit above the piston, substantially as and for the purpose specified.

9. In apparatus for the production and storage of acetylene gas, the combination of the tank E; the condenser J, provided with a gas inlet and outlet; the diaphragm K, having an opening or openings around its periphery; and the holder G, substantially as and for the purpose specified.

10. In apparatus for the production and storage of acetylene gas, the combination of the tank E; the condenser J, provided with a gas-inlet and the outlet-valve N; the diaphragm K having an opening or openings around its periphery; and the holder G, substantially as and for the purpose specified.

11. In apparatus for the production and storage of acetylene gas, a gas-holder suitably arranged and supported to rise and fall with variations in the consumption and generation of gas, in combination with a generator; a water-supply pipe leading to the generator; a valve in the said pipe; a lever connected to the spindle of the valve; a bridge with an inclined face, connected to the side of the gas-holder; a suitably-supported spindle adapted to be moved by the said bridge, and connected directly or indirectly with the valve-stem lever, and means tending to keep the spindle pressed inwardly, substantially as and for the purpose specified.

12. In apparatus for the production and storage of acetylene gas, a gas-holder suitably arranged and supported to rise and fall with variations in the consumption and generation of gas, in combination with a generator; a water-supply pipe leading to the generator; a valve in the said pipe; a lever connected to the spindle of the valve; a bridge with two inclined faces set in reverse directions one above the other, connected to the side of the gas-holder; a suitably-supported spindle adapted to be moved by the said bridge, and connected directly or indirectly with the valve-stem lever, and means tending to keep the spindle pressed inwardly, substantially as and for the purpose specified.

13. In apparatus for the production and storage of acetylene gas, the gas-holder D, suitably arranged and supported to rise and fall with variations in the consumption and generation of gas, in combination with a generator; the water-supply pipe B leading to the generator-bridge *t;* the valve *g';* the lever *f'*, connected to the spindle of the valve; the connecting-rod *e';* lever *c';* standard *d'*, connected to the cover F, or other suitable part; the spindle *v* suitably supported and adapted to be moved by said bridge *t*, pro-

vided with an inclined face; and a spring adapted to press the said spindle inward, substantially as and for the purpose specified.

14. In apparatus for the production and storage of acetylene gas, the gas-holder D, suitably arranged and supported to rise and fall with variations in the consumption and generation of gas, in combination with a generator; the water-supply pipe B, leading to the generator; the valve g'; the lever f' connected to the spindle of the valve; the connecting-rod e'; lever c'; standard d' connected to the cover F, or other suitable part; the spindle v suitably supported; wheel a'; bridge t provided with two inclined faces, and a spring adapted to press the said spindle inward, substantially as and for the purpose specified.

15. In apparatus for the production and storage of acetylene gas, the gas-holder D, suitably arranged and supported to rise and fall with variations in the consumption and generation of gas, in combination with a generator; the water-supply pipe B leading to the generator; the valve g'; the lever f' connected to the spindle of the valve; the connecting-rod e'; lever c'; standard d' connected to the cover F, or other suitable part; the spindle v suitably supported; wheel a'; bridge t, provided with two inclined faces; a spring adapted to press the said spindle inward, and the hook h' suitably pivoted and adapted to engage with the pin j', substantially as and for the purpose specified.

16. In apparatus for the production and storage of acetylene gas, a part adapted to rise and fall with variations in the consumption and generation of gas, and provided with a bridge with two inclined faces, in combination with a generator; a water-supply pipe leading to the generator; a valve in the said pipe; a suitably-supported spindle adapted to be moved by the aforesaid bridge; a spring tending to keep the said spindle pressed inwardly and means for imparting the motion of the spindle to the valve, substantially as and for the purpose specified.

17. In apparatus for the production and storage of acetylene gas, a gas-holder suitably arranged and supported to rise and fall with variations in the consumption and generation of gas, in combination with two contact-springs suitably supported and insulated; a spindle; a spindle suitably supported and adapted to make and break contact between the springs; a bridge with an inclined face adapted to move the said spindle outwardly, and a spring adapted to move it inwardly, substantially as and for the purpose specified.

18. In an apparatus for the production and storage of acetylene gas, a gasometer provided with the usual rising-and-falling dome, a closed cover for said tank completely covering said dome and allowing the latter to rise therein, a relief-valve in the top of the dome located and arranged to open when the dome rises and causes the valve to strike the top of said cover, and an outlet for said cover, substantially as described.

Woodstock, September 2, 1896.

ERNEST A. MORTON-BROWN.

In presence of—

BYHANNAH B. THACKER,

HARRY MUNDY.