E. HAYNE.

ACETYLENE GAS GENERATOR.

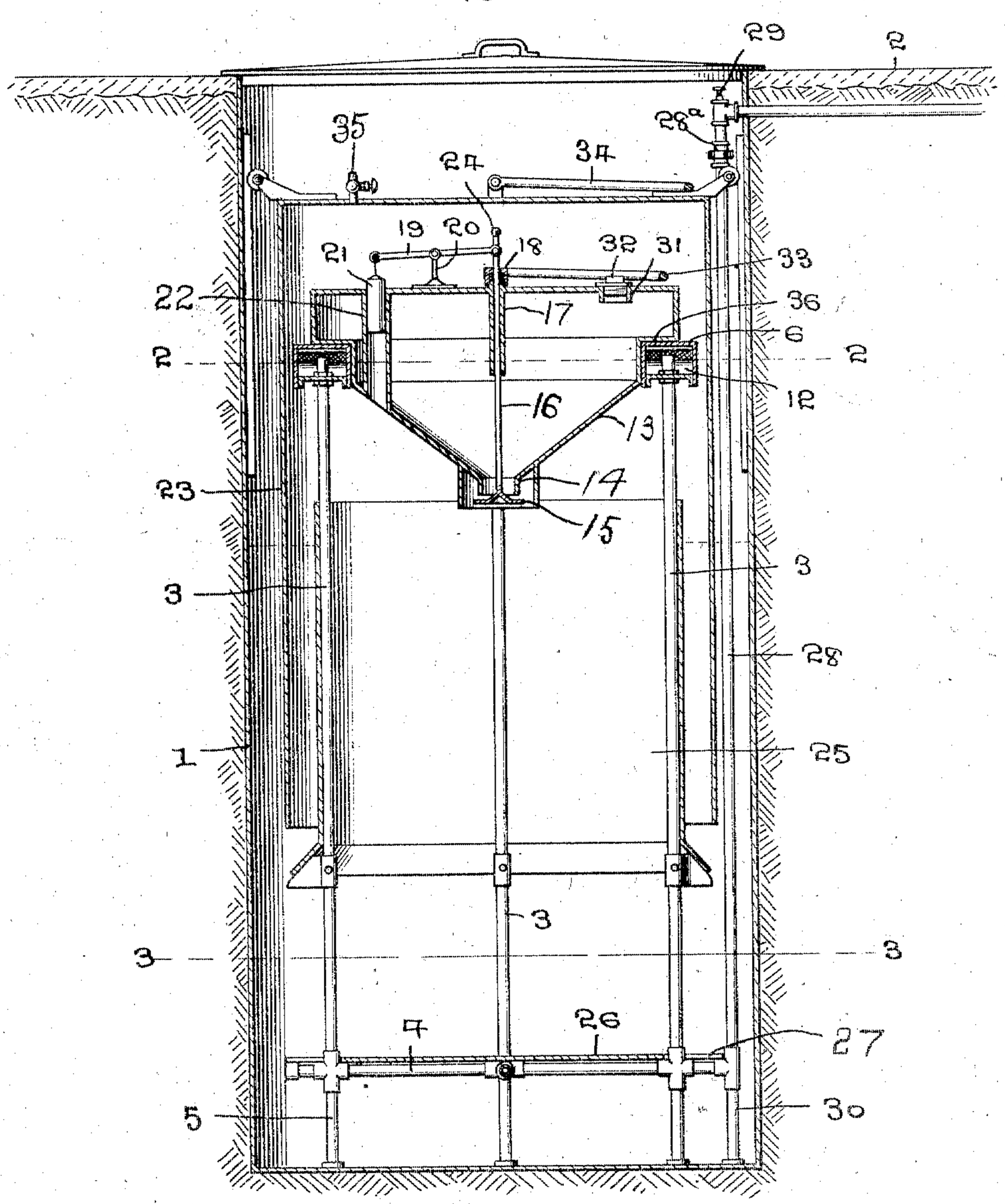
APPLICATION FILED MAR. 22, 1910.

982,961.

Patented Jan. 31, 1911.

3 SHEETS—SHEET 1.

Fig. 1.

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3 SHEETS—SHEET 2.

Fig. 2.

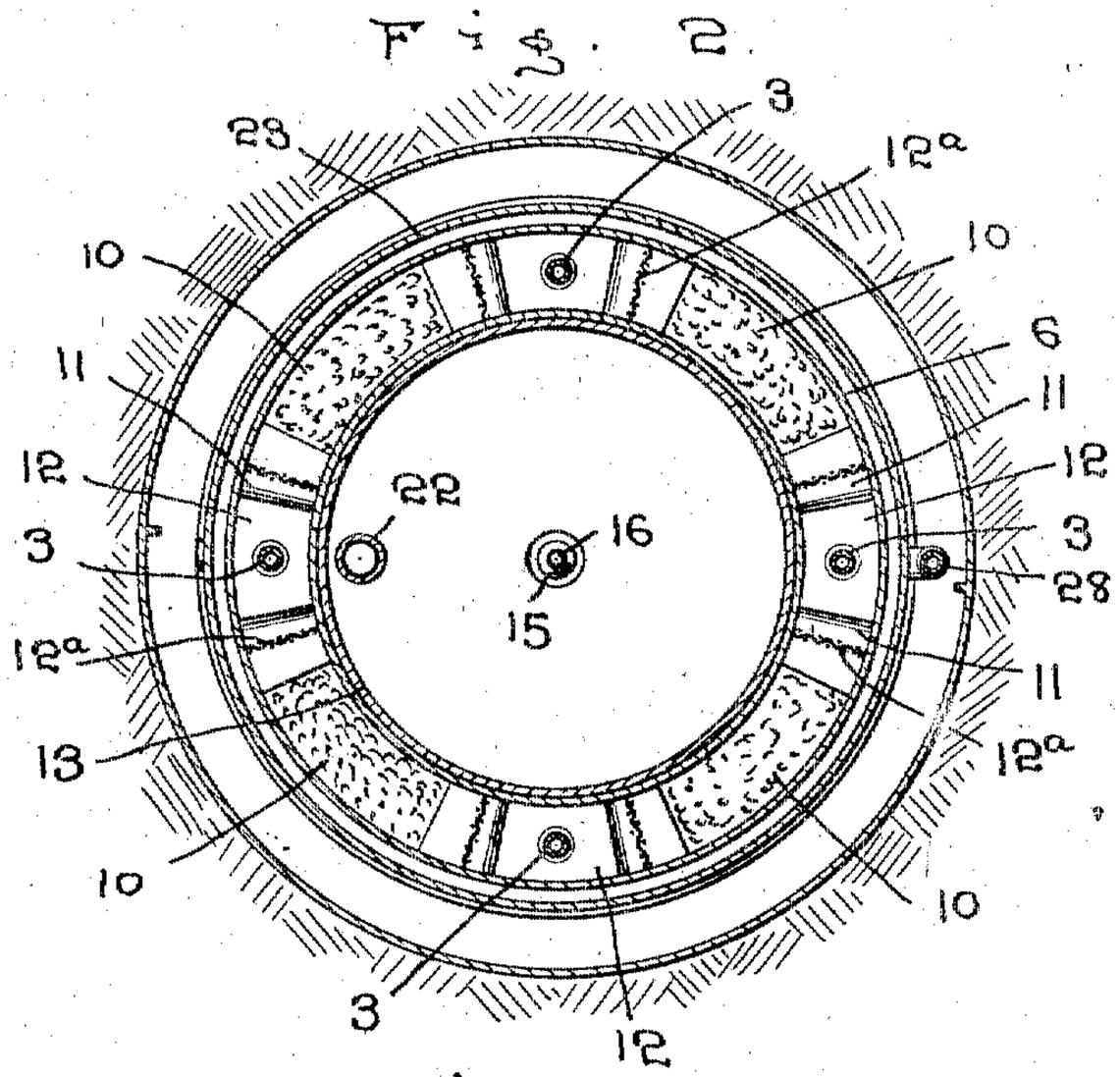
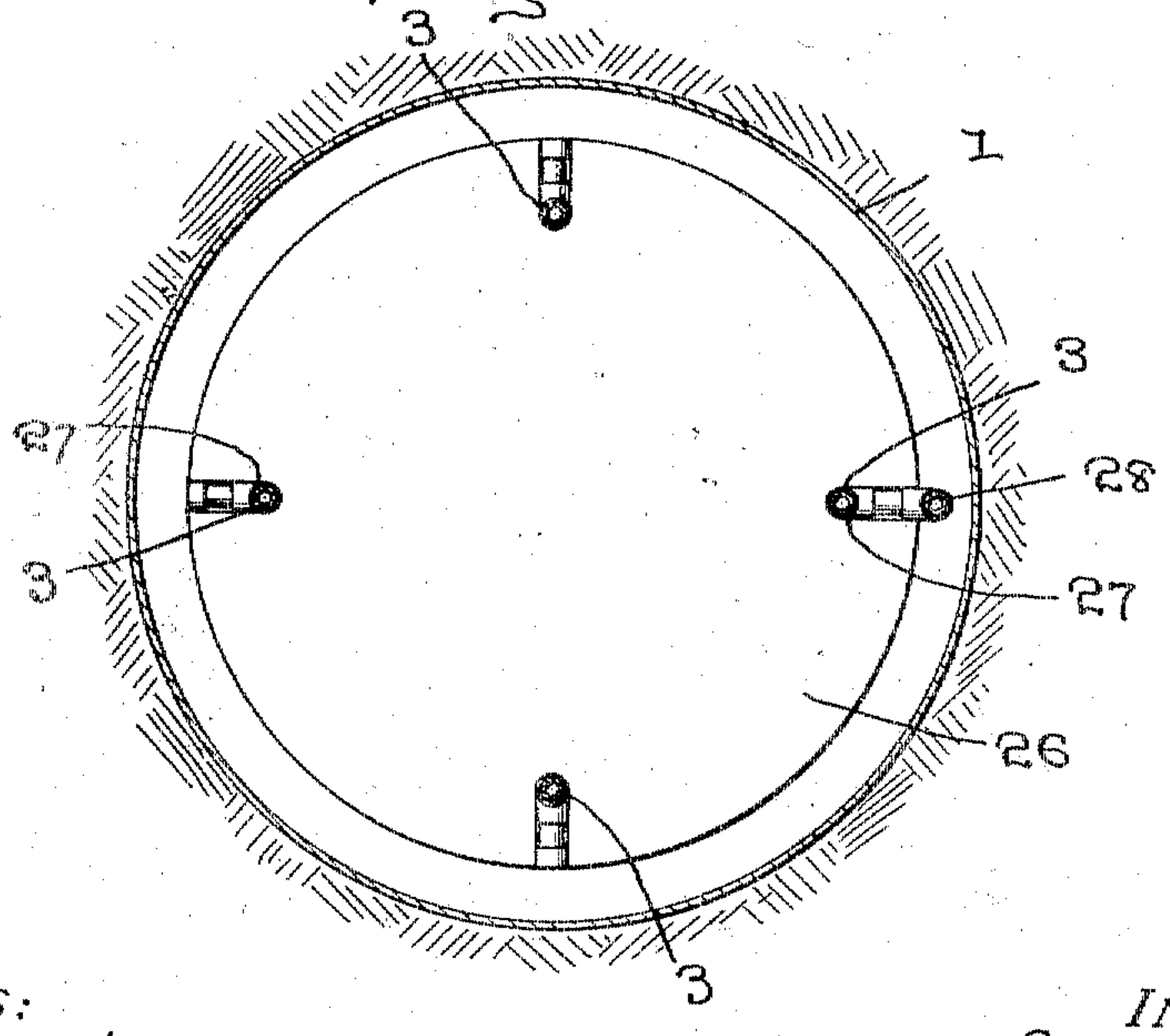



Fig. 3.

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3 SHEETS—SHEET 3.

Fig. 4.

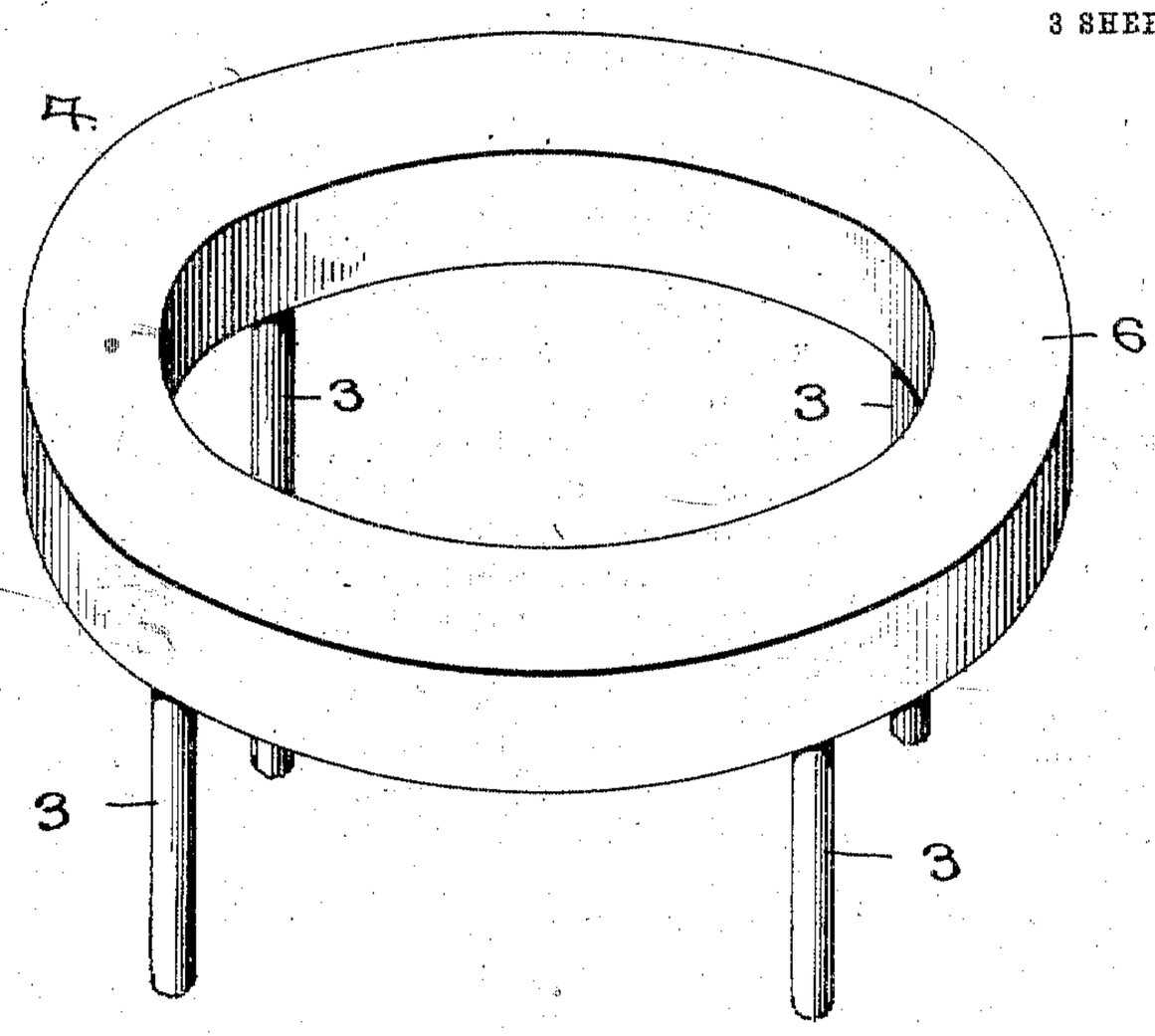



Fig. 5.

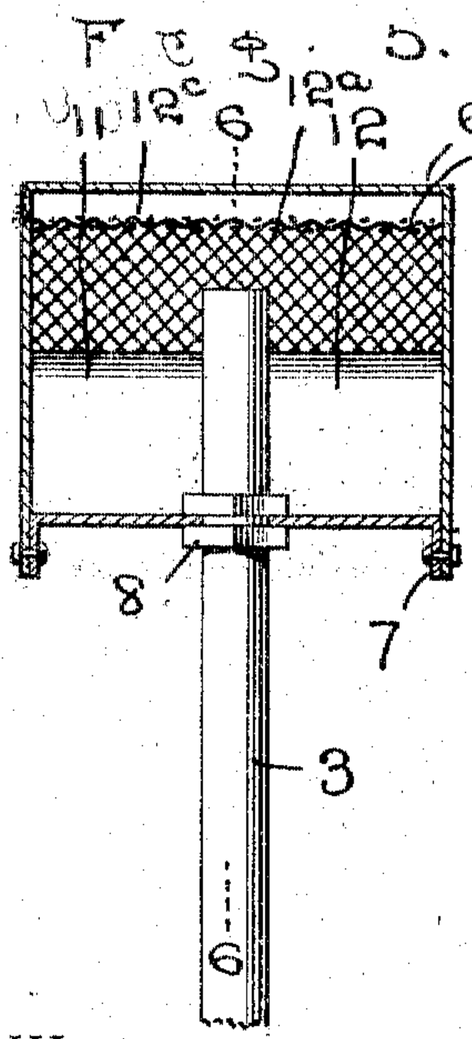
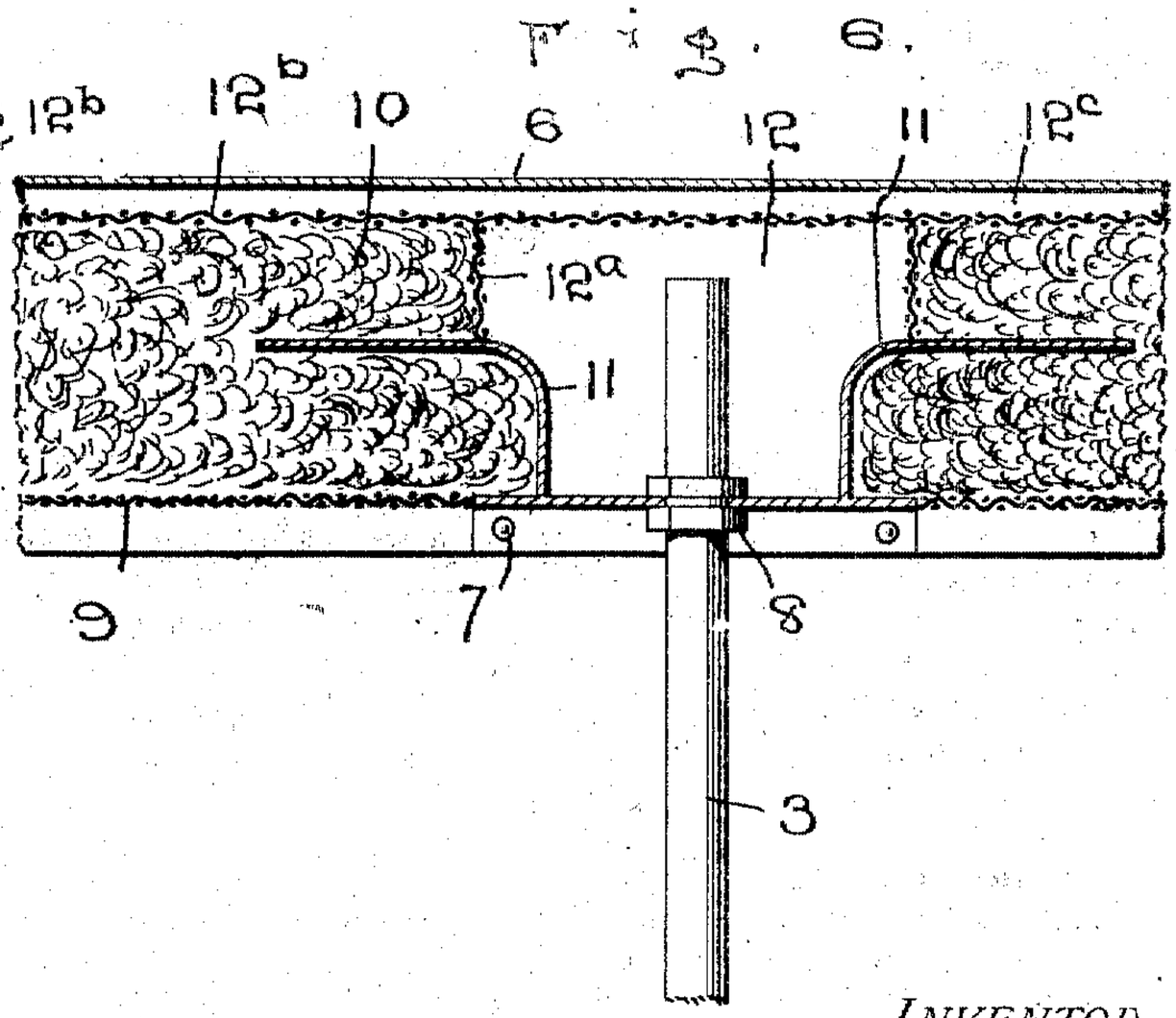



Fig. 6.

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# UNITED STATES PATENT OFFICE.

EDWARD HAYNE, OF OTTAWA, ILLINOIS.

## ACETYLENE-GAS GENERATOR.

982,961. Specification of Letters Patent. Patented Jan. 31, 1911.

Application filed March 22, 1910. Serial No. 550,902.

*To all whom it may concern:*

Be it known that I, EDWARD HAYNE, a citizen of the United States, residing at Ottawa, in the county of Lasalle and State of Illinois, have invented certain new and useful Improvements in Acetylene-Gas Generators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to new and useful improvements in acetylene gas generators and my object is to provide a device of this class which may be disposed at a distance from the building and positioned in an opening in the ground if so desired.

A further object is to provide a suitable storage tank for the generating parts.

A further object is to provide a bell within the casing or housing in which to confine the generated gases.

A further object is to provide a carbid chamber and automatic means for discharging the carbid therefrom in predetermined quantities.

A further object is to provide suitable pipes which extend from the lower end of the housing to the carbid chamber.

A further object is to provide a suitable filter at the upper ends of said pipes through which the gas passes before entering the pipes.

A further object is to provide a shield below the carbid chamber.

A still further object is to provide a condensing and cooling means at the lower ends of said pipes, and, a still further object is to provide means to catch and hold the residuum from the carbid.

Other objects and advantages will be hereinafter referred to and more particularly pointed out in the specification and claims.

In the accompanying drawings which are made a part of this application, Figure 1 is a central vertical sectional view through the generator. Fig. 2 is a transverse sectional view as seen on line 2—2 Fig. 1. Fig. 3 is a similar view as seen on line 3—3 Fig. 1. Fig. 4 is a perspective view of the filter frame. Fig. 5 is a transverse sectional view through the filter frame on an enlarged scale, and, Fig. 6 is a sectional view as seen on line 6—6 Fig. 5.

Referring to the drawings in which similar reference numerals designate corresponding parts throughout the several views, 1 indicates the housing which is preferably seated in an opening in the ground, the upper end of said housing being surrounded by cement 2 or the like, which protects the housing and at the same time prevents water from soaking into the earth immediately around the housing.

Resting upon the bottom of the housing are vertically disposed pipes 3 which are preferably four in number, said pipes being connected together at a point adjacent their lower ends by means of cross pipes 4, that portion of the pipes below the cross pipes being used as water traps 5. The upper ends of the pipes 3 enter a ring 6 which is preferably channel shaped in cross section, the open face of the ring being positioned downwardly and sectional plates 7 are secured between the walls of the ring 6 at the point of entrance of the pipes into the ring, the pipes being introduced through said plates and held in position by means of nuts or the like 8, which nuts fit on opposite sides of the plate. The remaining portion of the open edge of the ring is covered with wire gauze or other perforate material 9 so that the gas may readily pass into the ring, the gauze and sectional plates being positioned a distance above the lower edges of the ring, thus thoroughly protecting the same against damage from a blow or otherwise. The ring 6 is filled with any suitable filtering medium 10, whereby the gases will be purified before entering the pipes 3 and to insure that the gas will pass through the filtering medium before entering the upper ends of said pipes, shields 11 are placed on opposite sides of the upper ends of said pipes and extend upwardly from the plates 7 to a point near the center of the ring, the upper portions of said shields being curved and extended horizontally. The shields extend transversely of the ring and from wall to wall thereof, thus forming a chamber 12 around the upper end of the pipes and to prevent the filtering medium from entering the chamber 12, sections of wire gauze $12^a$ are placed on opposite sides of the pipes and extend from the horizontal portions of the shields upwardly to a section of wire gauze $12^b$ in the upper portion of the ring. The gauze $12^b$ is spaced a distance from the closed face of the ring 6 to form a passage $12^c$, whereby the gas may freely pass around the ring and enter the pipes after it has fil-

tered through the filtering medium 10. Resting upon the ring 6 is a carbid chamber 13, the lower portion of which is cone shaped and terminates in a nozzle 14, which nozzle is adapted to form a passage for the carbid into the housing 1. The open end of the nozzle 14 is adapted to form a seat for a valve 15, which valve is greater in circumference than the circumference of the nozzle, whereby the flow of the carbid will be retarded or stopped even though the valve is slightly open. The shaft 16 to which the valve 15 is secured is extended upwardly through a sleeve 17, said sleeve being of sufficient length to guide the shaft and is surrounded at its upper end with a stuffing box 18 to prevent leakage of the gas or carbid at this point.

Attached to the shaft 16 at a point below its upper end is a rocking beam 19 which is pivoted to a standard 20 at its longitudinal center, the opposite end of the beam from that secured to the shaft 16 having a weight 21 thereon which is preferably circular in cross section and enters a socket 22 extending downwardly through the carbid chamber 13, said weight being adapted to normally hold the valve 15 seated against the nozzle 14.

Surrounding the upper portion of the pipes 3 and the carbid chamber 13 is a bell 23, the upper end of which is closed, while the lower edge thereof extends below the surface of the water within the housing 1 and thereby forms a water seal and thus retains the gas in the bell. As the gas is removed from the bell, said bell descends and engages a ball 24 on the upper end of the shaft 16, the weight of the bell forcing the shaft and valve attached thereto downwardly, which releases the carbid and discharges a new supply thereof into the water in the lower portion of the housing. As the pressure of the gas increases, the bell is moved upwardly and the weight thereof removed from the shaft 16, whereupon the weight 21 will rock the beam 19 and elevate the shaft 16 and valve attached thereto, thus stopping a further flow of the carbid.

Surrounding the pipes 3 and extending from a point substantially in line with the lower end of the nozzle 14 to a point normally below the lower end of the bell 23 is a jacket 25 which is adapted to limit the space into which the carbid is discharged thus insuring against pieces falling so far out as to release bubbles of gas beyond the limits of the bell also causes the major portion of the residuum from the carbid to settle upon a false bottom 26 positioned below the lower end of said jacket which bottom is more accessible for cleaning, either by removal or in the vessel; than the true bottom. The peripheral edge of the false bottom 26 is provided with notches 27, which notches receive the pipes 3 and serve to hold the bottom 26 in position, the cross pipes 4 forming a rest for the false bottom. One of the cross pipes 4 is extended beyond the vertical pipes 3 and to this extension is attached the line pipe 28, which conveys the gas from the tank to the dwelling or other points of usage, a controlling valve 29 being secured to the line pipe, whereby the flow may be regulated. The sections of the line pipe 28 are preferably secured together by the usual form of union $28^a$, whereby the pipe may be quickly detached and the generating parts removed from the housing 1 and in view of this fact, the parts may be removed or replaced at any time. The lower end of the pipe 28 is also provided with a water trap 30 and in conjunction with the water traps 5, the gases will pass into the line pipe in a dry state. The water traps are positioned below the plane of the cross pipes 4 and prevent water from accumulating in said cross pipes and at predetermined intervals a hose may be introduced through the pipes 3 and the accumulated water removed from the water traps. The carbid is introduced into the chamber 13 through an opening 31, which opening is normally closed by means of a plug 32. The carbid chamber 13 is provided with a bail 33, whereby the same may be readily removed when being charged with carbid and the bell 23 is likewise provided with a bail 34 so that said bell can be readily handled when introducing or removing the same from position.

In operation, the carbid chamber 13 is filled with carbid through the opening 31 and the plug 32 then placed in position. The bail 33 is then grasped and the carbid chamber lowered into the housing 1 until the shoulder 36 formed on the carbid chamber rests upon the ring 6, after which the bell 23 is placed in position over the carbid chamber the cock 35 is opened, allowing the imprisoned air to escape, the bell being lowered until the upper end thereof engages and lowers the shaft 16, the cock being then closed it will be readily seen that as soon as the carbid thus released comes in contact with the water in the housing, gases will be formed, which will result in raising the bell out of engagement with the standard. As the gases arise in the bell 23, they pass through the filtering medium 10 and into the pipes 3, the gases being purified by the filtering medium. Any water or vapor passing through the filtering medium and into said pipes 3 will be condensed and such condesation collected by the chambers 5, thereby supplying the gases to the line pipe 28 in a dry, purified state.

It will thus be seen that I have provided a very cheap and economical form of acetylene generator and one that will be positive in its operation. It will further be seen

that by providing the housing, as shown, the generator may be placed at a distance from the building and entered in an opening in the earth's surface. It will likewise be seen that by providing the ring and filling the same with any suitable form of filtering medium, such as waste, charcoal. etc., the gases will be thoroughly purified before entering the supply pipes and it will likewise be seen that by providing the shields in the ring, the gases will always pass through the filtering medium before reaching the pipes. It will further be seen that the carbid will be automatically discharged from the carbid chamber and that said chamber in view of its simplicity can be readily removed from the generator and re-charged with the carbid. It will likewise be seen that by providing the water traps, any vapors in the gas which may be condensed will be collected in said chambers, thus obviating the possibility of clogging of the pipes or the collection of water therein, which would result in freezing and bursting the pipes or preventing the flow of the gas therethrough.

What I claim is:

1. In a generator of the class described, the combination with a housing, of a plurality of pipes extended vertically in said housing, a ring surrounding the upper ends of said pipes and having portions of its lower face open, filtering medium within said ring, means to retain the filtering medium in the ring, additional means to cause the gases to pass through said filtering medium before entering said pipes, a carbid chamber seated on said ring, a bell surrounding said chamber and the upper portions of said pipes, means automatically operated by said bell to discharge the carbid into the housing and water traps at the lower ends of said pipes.

2. In a generator of the class described, the combination with a carbid chamber, a bell and a valve automatically operated by said bell to release the carbid from the chamber, of pipes, a ring receiving the upper ends of said pipes, filtering medium in said ring, shields in said ring adapted to form chambers around the ends of said pipe, means to exclude the gases from direct communication with said chambers, cross pipes connecting the first mentioned pipes adjacent their lower ends and water traps below said cross pipes.

3. In a gas generator, the combination with a carbid chamber and a bell, of a plurality of pipes, a ring into which the upper ends of said pipes take, means for the entrance and exit of a gas from said ring, cross pipes adjacent the lower ends of the first mentioned pipes and water traps below said cross pipes and connected thereto.

4. In a generator of the class described, the combination with a carbid chamber, a bell surrounding said chamber, a plurality of pipes supporting said chamber and cross pipes connecting the first mentioned pipes, of a packet below said carbid chamber and surrounding said pipes and a removable bottom adapted to rest on said cross pipes, said removable bottom being adapted to collect the residuum from the carbid.

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

EDWARD HAYNE.

Witnesses:

GUS KNEUSSL,

E. H. MEGAFFIN.