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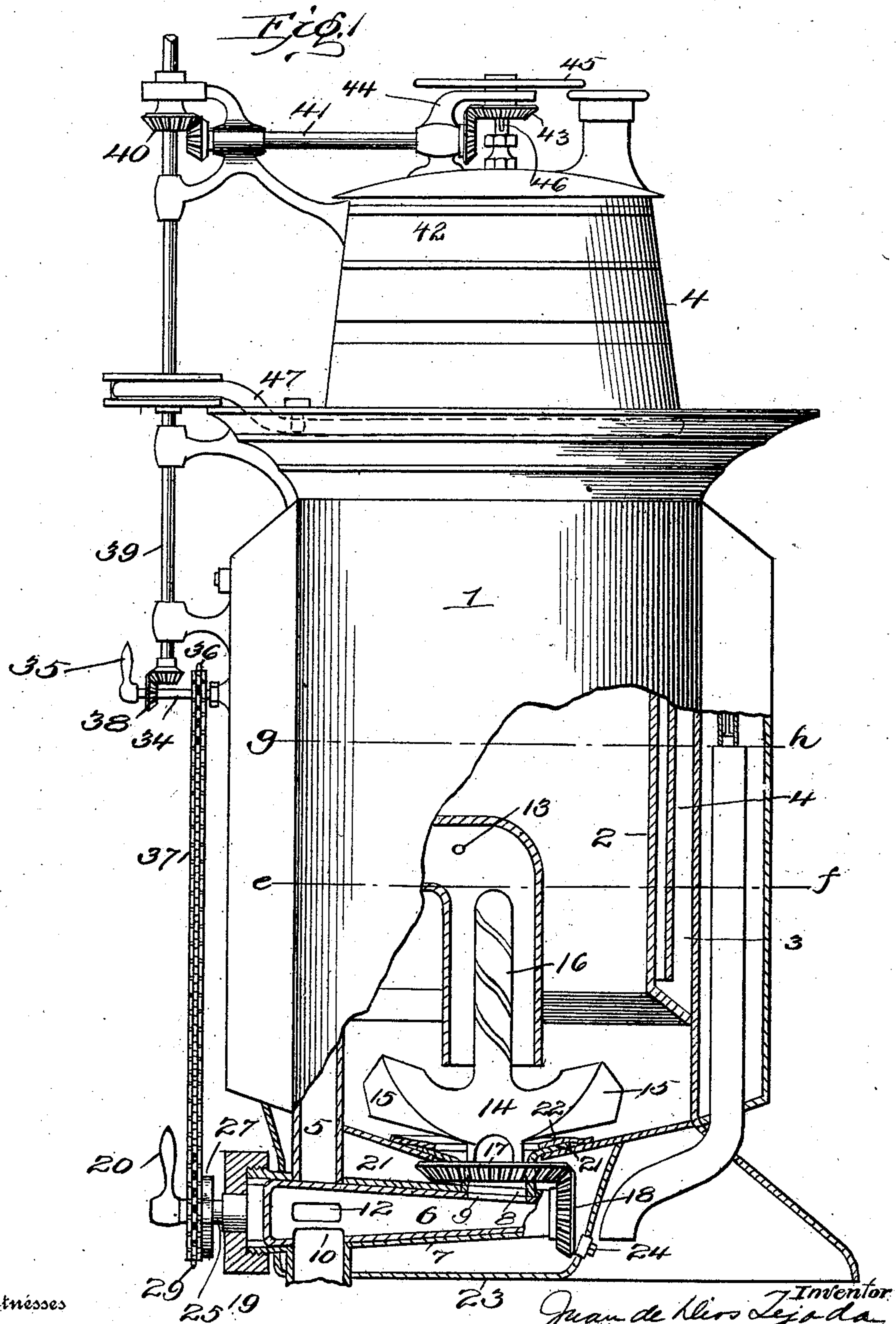
PATENTED JAN. 8, 1907.

J. DE D. TEJADA.

SLUDGE REMOVING MECHANISM FOR ACETYLENE GAS GENERATORS.

APPLICATION FILED JAN. 22, 1906

3 SHEETS—SHEET 1.



Witnesses

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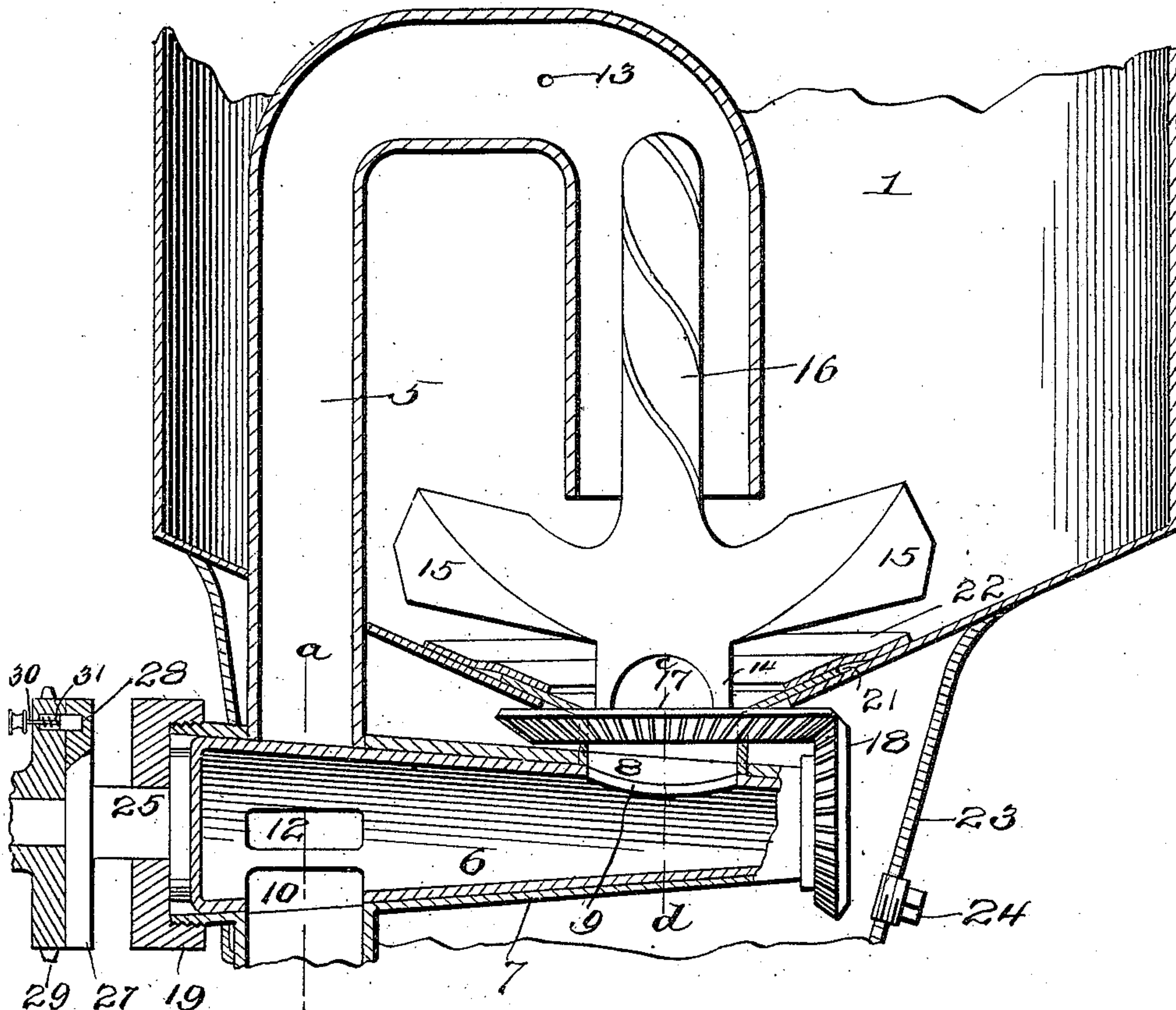
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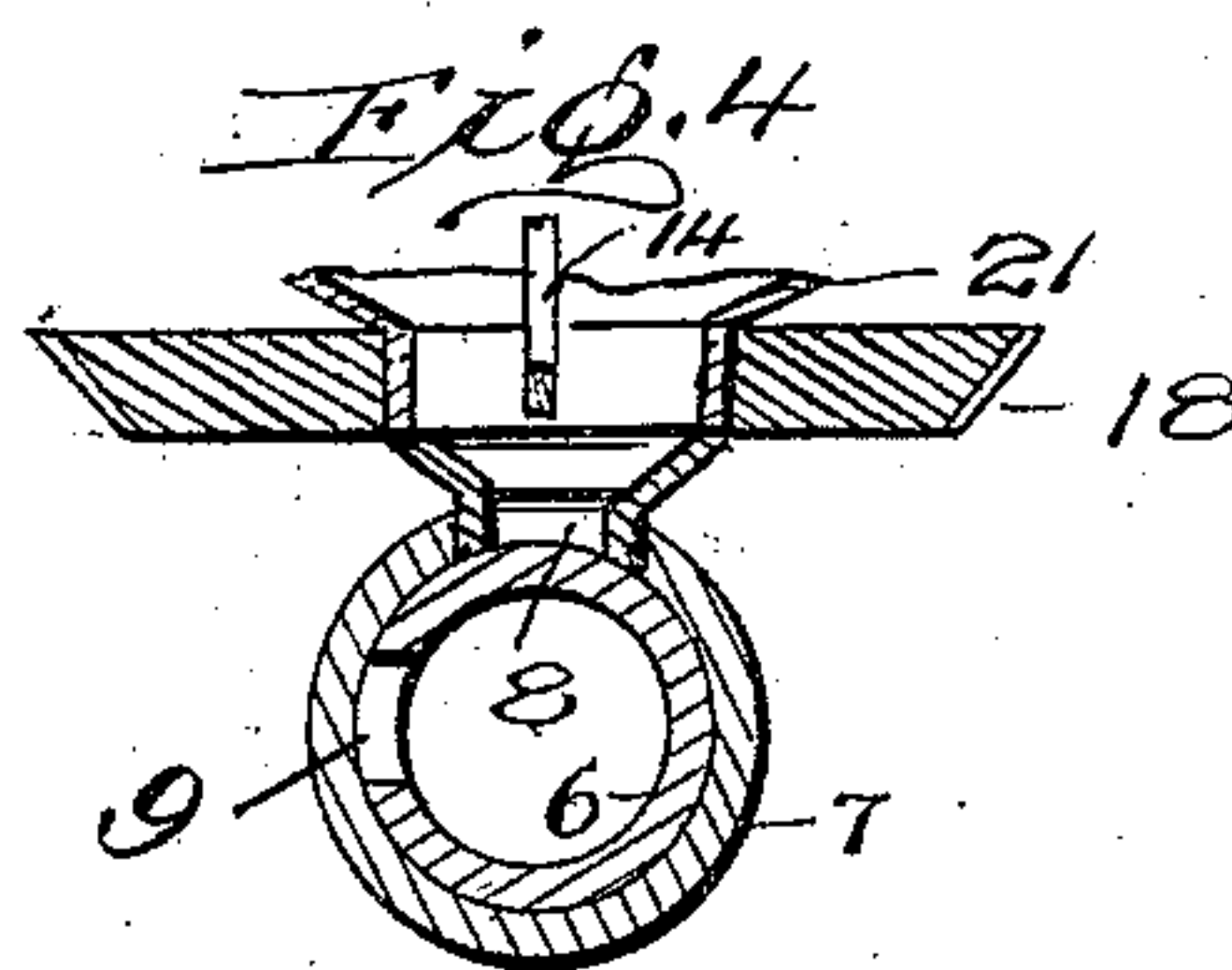
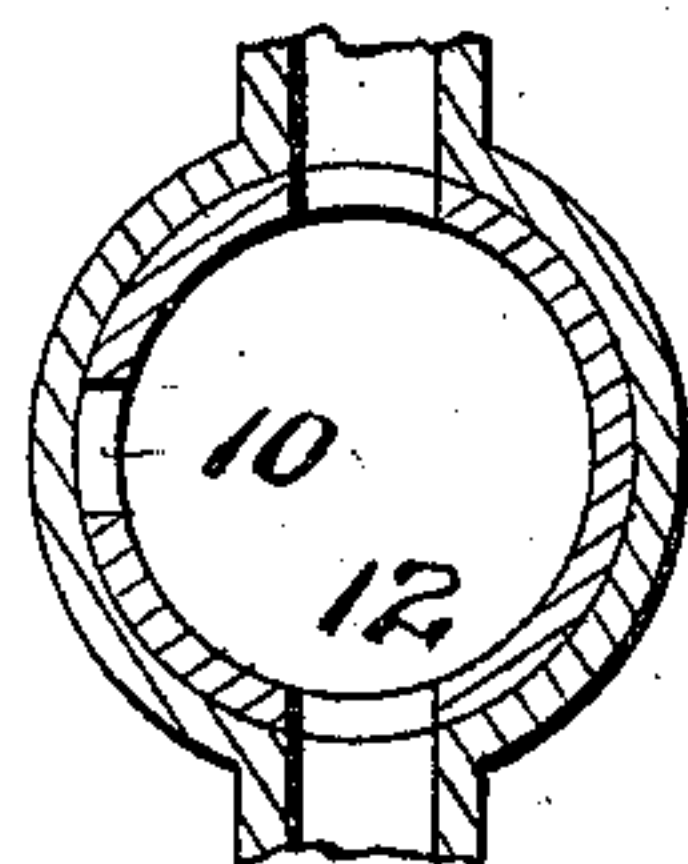
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3 SHEETS—SHEET 2.

*Fig. 2*



*Fig. 3.*



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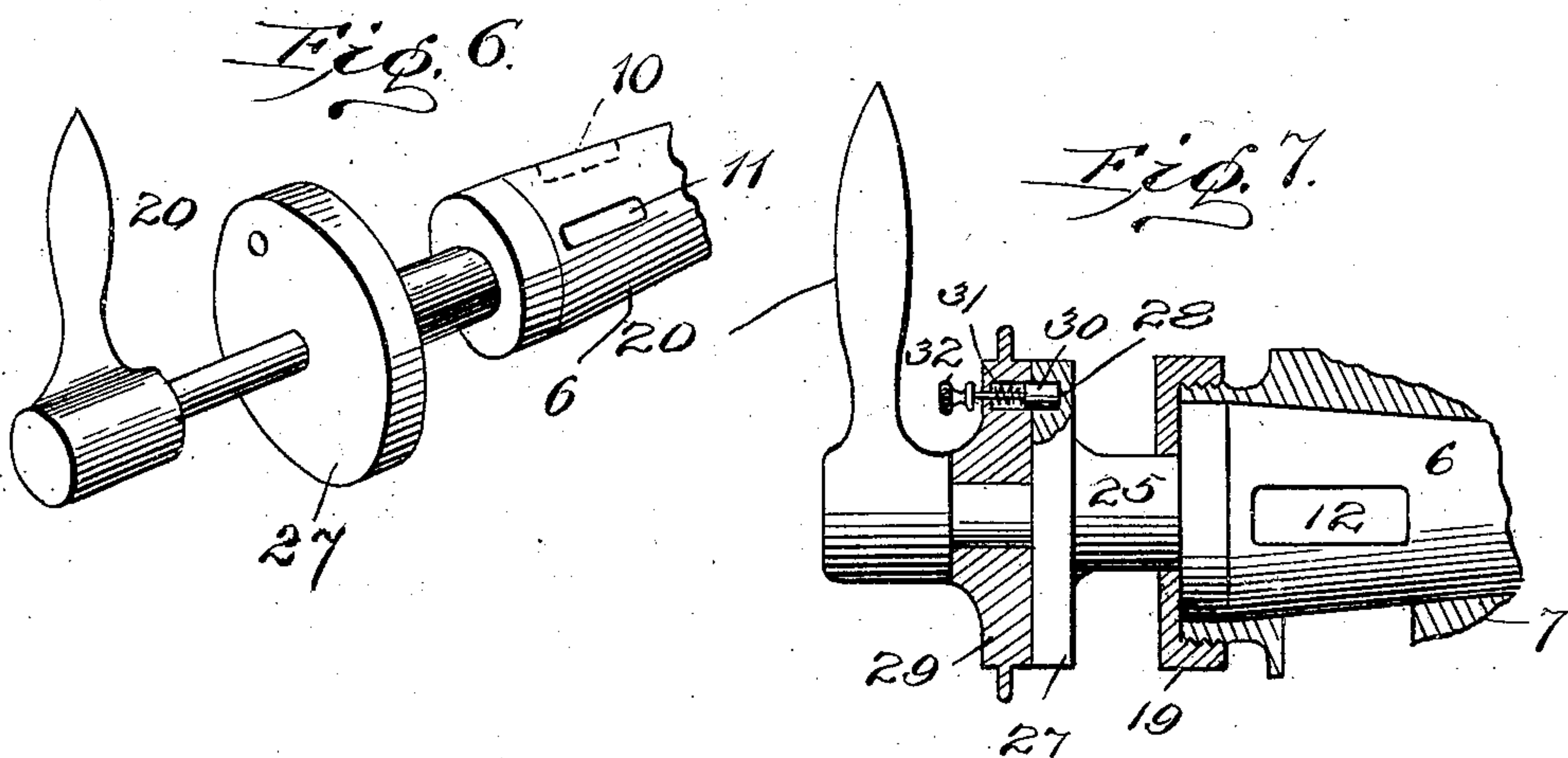
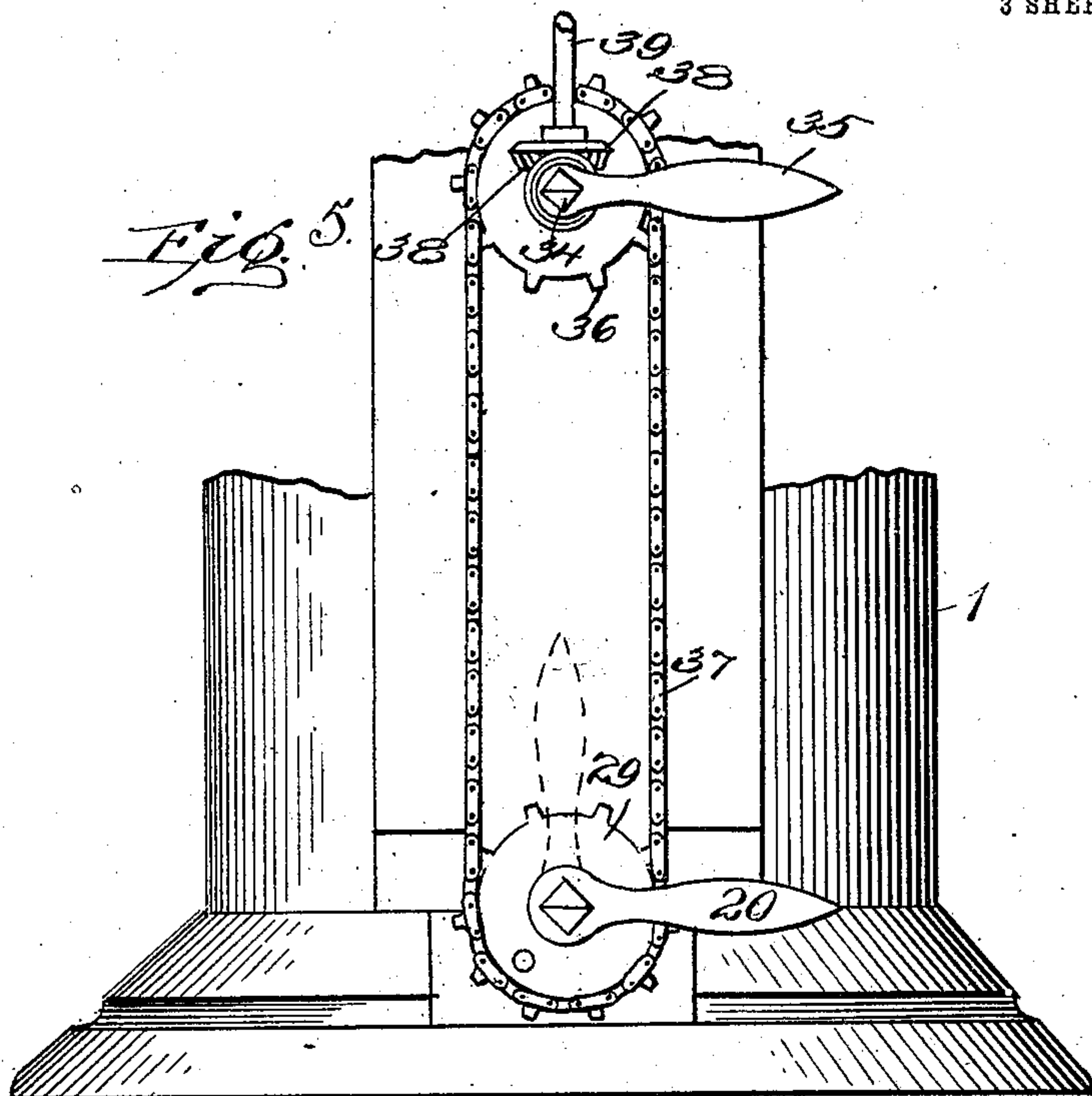
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3 SHEETS—SHEET 3.



Witnesses

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# UNITED STATES PATENT OFFICE.

JUAN DE DIOS TEJADA, OF NEW YORK, N. Y.

## SLUDGE-REMOVING MECHANISM FOR ACETYLENE-GAS GENERATORS.

No. 841,070.

Specification of Letters Patent.

Patented Jan. 8, 1907.

Application filed January 22, 1906. Serial No. 297,356.

*To all whom it may concern:*

Be it known that I, JUAN DE DIOS TEJADA, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Sludge-Removing Mechanism for 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.

This invention relates to improvements in acetylene-gas generators; and it relates more particularly to those portions of a gas-generating mechanism which are adapted for removing the sludge or residuum from the generating-chamber and for removing it in conjunction with the operation of the other portions of the mechanism, as when putting in new charges of calcium carbide.

It is the object of the invention to provide an acetylene-gas generator with a sludge-removing device which can be operated at any time without stopping the generation of gas and without permitting of the escape of gas from the generator by reason of the removal of the sludge and water.

It is a further object of the invention to provide a sludge-removing device which is capable of operation in conjunction with the carbide-charging mechanism of the generator.

With these and other objects in view the invention comprises certain other novel constructions, combinations, and arrangements of parts, as will be hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 is a view, partially in elevation and partially in section, of my improved acetylene-gas generator, showing the location of the sludge device and its connection with the carbide-feeding mechanism. Fig. 2 is an enlarged central sectional view through the sludge removing and stirring mechanism. Fig. 3 is a detail sectional view taken transversely through the sludge-outlet-controlling valve upon the line *a b* of Fig. 2. Fig. 4 is a detail sectional view of the said valve, taken upon the line *c d* of Fig. 2. Fig. 5 is a side elevation of the lower portion of the generator, showing the handle for operating the sludge-valve and the means for connecting it with the carbide-charging mechanism. Fig. 6 is a perspective view of a portion of the sludge-valve, showing the controlling-disk rigidly secured thereto and

the handle thus also rigidly fastened to the same. Fig. 7 is a detail view, partially in section and partially in elevation, of the same mechanism, but showing the adjacent parts of the apparatus in section.

The acetylene-gas generator forming the subject-matter of the present invention is of that type in which carbide is dropped into the water contained in the generating-chamber for generating the gas, and there is thus a continuous collection of residuum or sludge in the bottom of the water-chamber of the generator, which must be broken up and removed from time to time in order to permit of a suitable quantity of water being retained in the generator. There are certain requirements which must be met in making a successful acetylene-gas generator, and among these requirements it is demanded that the generator shall be capable of being cleared of sludge without stopping the generation of the gas or without interfering with its delivery through suitable piping for use, and, further, that the removal of the sludge shall not cause an escaping of the gas outside the generator, which is always an objectionable feature.

In the accompanying illustration I have set forth the preferable form of the generator and illustrated the manner in which the sludge-removing and other mechanisms are located in the generator. The machine is provided with a casing 1, within which an inner wall 2 is arranged, said wall forming, with the casing 1, a water seal 3, into which is thrust the lower end of a gas-holder 4.

The generator is provided with a discharge or clean-out pipe 5, the said pipe being approximately U-shaped and extending from a point above the central bottom portion of the generating-chamber to a point near the wall of said chamber. The outer end of the discharge-pipe passes through the bottom of the generator and is preferably connected with a sewer or other drain. The outlet end of the pipe 5 is controlled by means of a stop-cock or valve 6, the said valve extending across through the said pipe and fitting in a valve-casing 7. The valve-casing extends from the outer wall of the generator at the base to the central portion of the bottom of the generator, the said central portion being provided with a discharge-outlet, as at 8. The valve 6 is so fitted into the casing 7 that it is capable of controlling the outlet of materials through the pipe 5 and also through the outlet 8. For this purpose the said valve is



formed with a single port 9 at its inner end and with three ports 10, 11, and 12 near its outer end and opposite the pipe 5. The ports are so arranged that when material is discharged from the pipe 5 the aperture or discharge-opening 8 will be closed, and the ports 11 and 12 will lie directly opposite each other, so as to open the passage opposite the end of the pipe 5. When the valve is turned so that the discharge-opening 8 is uncovered, the port 9 being brought opposite the same, the port 10 will lie over the outlet-pipe, but the wall opposite thereto will close the discharge-pipe 5. In order to prevent a siphonic action in the pipe 5, a small hole or aperture 13 is formed in the looped or bent portion of the pipe 5. When the valve 6 is so turned that the water and residue in the bottom of the generating-chamber will flow out through the pipe 5 and through the ports 11 and 12 of the valve into the sewer or other drain pipe, the water will continue to flow out of said pipe until the level in the generating-chamber is brought to the low-water mark, (indicated by the line *e f.*) Enough water is thus permitted to force its way out through the clean-out pipe 5 to carry much of the residue which accumulates in the bottom of the generating-chamber with it. In the event of its being necessary to more completely discharge the materials from the generating-chamber the valve 6 is turned so as to open the central discharge-outlet 8. This will close the pipe 5; but the water and residue will drop from the central portion of the generating-chamber into the hollow valve 6 and travel through the same until it passes out through the port 10. As soon as the residue has been properly washed from the bottom of the generating-chamber valve 6 is closed, and the new water-supply which is fed to the generator will bring the water-level up to its normal position, as indicated by the dotted line *g h.*

It is well known that the residue which drops from the carbid after the gas has been generated usually hardens and cakes in the bottom of the generating-chamber, and it is generally needful to provide some stirring or agitating means to break up the residue, and thus facilitate its removal when washing out the generating-chamber. I have illustrated in the drawings a preferable form of such an agitator, the said agitator comprising a stirring member 14, having outwardly-extending arms 15, which project outwardly over the bottom of the generating-chamber, and a central screw-shaped projection 16, which extends upwardly a short distance into the end of the pipe 5. In order to be able to turn or move this agitating or stirring member 14, I secure to the same a bevel-gear 17, which is arranged outside the casing just below the bottom thereof and which meshes with a bevel-pinion 18, secured to the inner end of the

valve 6. The outer end of the valve 6 projects through a suitable packing-gland 19 and is so formed that an operating-handle 20 may be applied thereto for turning the valve. It will thus be seen that the operation of the valve may be made to operate the stirring or agitating member 14. Any caked material will thus be broken and loosened whenever the valve is operated for discharging and washing out the contents of the bottom of the generating-chamber. The inner end of the pipe 5 by reason of its enlarged diameter accommodates the agitating device 16. Since the agitating device must project through the bottom of the chamber, it is necessary to form a suitable water seal or water-tight means at this point, and for this purpose an annular flange 21 is provided and secured to the agitating member, the said annular flange fitting snugly between the floor of the generating-chamber and the overhanging flange 22, secured upon the inner surface of the said floor. Any suitable packing material may also be used at this point, if found needful; but a metal-to-metal joint when the members are well made is usually sufficient. To guard against any chances of leakage at this point and to collect such leakage, an inclosing housing or casing 23 is formed upon the bottom of the generator and arranged to inclose the valve-casing 7 and the gears 17 and 18. As the leakage is very small at any time, it is only necessary to examine the casing 23 at stated intervals, and a draw-off opening closed by a plug 24 is provided to facilitate the removal of any collections caught by the casing 23.

It will be observed that the valve 6 and the agitating device is easily operated at any time and that it can be operated from a point outside the generator and also that it can be operated without interrupting the gas generation within the machine.

In order to render the sludge-controlling valve 6 operable in conjunction with the operation of the generator, the outer end of the valve 6 is formed with a stem 25, which extends through a packing-gland 19 at the end of the valve and is clearly shown in Figs. 2 and 7. The stem is provided outside the packing-gland 19 with a flange 27, having a recess 28 formed therein. Loosely mounted upon the valve-stem and outside the flange 27 is a sprocket-wheel 29, which is movable with respect to the disk 27 except when connected therewith by locking means. In order to connect the sprocket-wheel with the disk 27, a spring-actuated pin 30 is mounted in a recess in the sprocket-wheel at such a distance from the axis of the stem that the said pin may be made to come opposite the recess 28, formed in the flange 27. A spring 31 tends normally to force the pin into said recess when it is brought opposite thereto. The outer end of the pin is provided with a handle 32.



dle 32, which may be grasped by the fingers of the operator for withdrawing the pin when it is desired to turn the valve 6 independently of the sprocket-wheel. For thus independently turning the said valve the handle 20 is rigidly secured to the outer end of the stem 25.

The sprocket-wheel forms a means by which the valve may be connected with the other operable parts of the generator and particularly with the carbid-charging mechanism and the valves which control the delivery of the gas from the generator. These parts are preferably provided with a shaft 34, mounted upon the side of the generator and having a handle 35, by which it may be turned, while a sprocket-wheel 36 is also rigidly connected with the shaft, and a sprocket chain 37 connects the said sprocket-wheel 36 with the sprocket-wheel 29 upon the stem of the sludge-valve 6. The carbid-feeding mechanism at the upper end of the generator is also operable from the shaft 34 by means of gearing 38, a shaft 39, gearing 40, a shaft 41, gears 42 and 43, and a shaft 46, which is adapted to operate the carbid-feeding mechanism and unlocks the charging-opening of the generator. It will thus be seen that when it is intended to recharge the carbid-holder of the generator with a fresh supply of carbid the sludge-removing mechanism will be operated at the same time through the agency of the sprocket-chain 37 for clearing the generating-chamber of the residuum which collects in the bottom thereof. Ordinarily the sludge-removing mechanism is always moved for cleaning the water-chamber of the generator; but in the event of it being necessary to operate the sludge-removing mechanism at a time when it is unnecessary to recharge the generator with carbid it is only necessary to grasp the handle 32 of the pin 30 and withdraw the same from the recess 28 to liberate the sludge-valve from the remainder of the mechanism and permit of its being operated by the handle 33. The releasing of the pin 30 will permit of the said pin engaging the recess 28 again when it is brought opposite the pin from the action of the spring 31. The sludge-removing valve will thus normally stand in readiness to be operated whenever the generator is charged with new carbid. The holding of the gas-holder at the top of the generator by a suitable clamp, as at 47, and the controlling of valves within the discharging and distributing chamber of the generator are also usually made dependent upon the operation of the actuating-shaft 34.

The upper end of the valve-operating rod 46 is also usually provided with a hand-wheel 45 for operating the said rod, and the operation of this wheel will of course affect the whole system of gears and shafting above described for operating all the parts of the mechanism.

The above description sets forth my improved sludge-removing device for gas-generators, showing it to be a simple and yet effective device for breaking up and discharging from the water-chamber of the generator the residuum which necessarily collects therein from the bringing of the carbid and water together in the generation of the gas.

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

1. A gas-generator comprising a casing having a gas-generating chamber formed therein, an inverted-U-shaped flushing-pipe extending into said generating-chamber, an opening near the bottom and a single valve mechanism capable of effecting the drainings of the generating-chamber through the outlet-pipe or directly through an aperture in the generating-chamber.

2. A gas-generator comprising a casing having a generating-chamber formed therein arranged to receive water and calcium carbid, a U-shaped outlet or flushing pipe having an enlarged inner end, the said inner end opening within the gas-chamber, and a stirring device mounted in the bottom of the generating-chamber and projecting into said enlarged end of the pipe.

3. A gas-generator comprising a casing having a water and carbid receiving compartment constituting a gas-generating chamber, a plurality of outlets formed in the base of said chamber, stirring means positioned in the bottom of said chamber and a single valve capable of controlling the discharge of materials from the generator through said outlets.

4. A gas-generator comprising a casing having a water and carbid receiving chamber for generating gas, the said chamber having an outlet in the central portion of the bottom, a flushing-pipe for conducting the material out of the chamber at another point, and a single valve operable exteriorly of the casing for controlling both outlets.

5. A gas-generator comprising a casing having a generating-chamber for receiving water and carbid, said chamber having a discharge-outlet and a curved discharge-pipe in the base, a hollow valve for controlling the passage of materials through the said curved pipe, and the outlet, the said valve being capable of closing either discharge means and opening either as it may be desired to clear the chamber of its residue.

6. A gas-generator comprising a casing having a water and carbid receiving chamber for forming gas, a plurality of means for forming a plurality of discharging-outlets at the bottom thereof, a valve-casing extending from one outlet to the other, a valve mounted in said casing and having ports arranged opposite each outlet, and means extending exteriorly of the casing for turning the valve,



the discharge being permitted through one or the other outlet in accordance with the position of the valve.

7. A gas-generator comprising a casing and a water and carbid receiving chamber for generating gas, the said chamber being provided with a plurality of outlets, a valve controlling both outlets, a pipe leading to one outlet and having an enlarged inner end opening within the gas-generating chamber, an agitator operable within the generating-chamber and having an agitating portion extending into the end of said pipe, and means extending exteriorly of the generator for operating said agitator.

8. A gas-generator comprising a casing having a chamber therein for receiving water and carbid for generating the gas, a discharge-outlet being formed centrally in the bottom of said chamber, a valve extending across said outlet, a stirring device within the chamber and above said outlet, and gearing connecting the stirring device with the said valve, the operation of the valve for opening the discharge-outlet causing the turning of the stirring device.

9. A gas-generator comprising a casing having a gas-generating chamber therein for receiving water and carbid, the said chamber having a plurality of discharge-openings at the bottom thereof, a single means for opening and closing said openings, a revoluble member positioned at the bottom of said chamber, a gear for turning said revoluble member, a stirring device extending into the gas-chamber and secured to said gear, and means outside the casing for actuating said gear.

10. A gas-generator comprising a casing formed with a gas-generating chamber having outlets at the base, a hollow valve extending across the outlets and having ports opposite each, the material from one outlet passing directly through the valve, while the material from the other outlet passes longitudinally of the valve and then out through its ports, and a packing-gland for holding said valve in position and preventing leakage therefrom.

11. A gas-generator comprising a casing having a generating-chamber in the lower portion thereof provided with a plurality of outlets, a stirring device in the lower portion of said chamber, a valve controlling said outlets and capable of operating said stirring device, and an auxiliary casing surrounding said valve to collect any drippings or leakage.

12. A gas-generator having a generating-chamber formed therein which is provided with outlets at the bottom, a stirrer mounted in the bottom of the generating-chamber having a hollow gear connected therewith, an annular flange carried by said gear and

extending into an annular recess for sealing the movable joint formed between the parts, and a valve capable of controlling the outlet of materials from the generating-chamber and carrying a gear which meshes with the said hollow gear for operating the agitator.

13. A gas-generator comprising a generating-chamber, formed with a plurality of passage-ways for discharging matter therefrom, a screw-propeller-shaped stirrer positioned in the bottom of said chamber, means for rotating said stirrer and means for permitting the stirred material to be discharged through either of the discharge-passages of said generator.

14. A gas-generator, comprising a generating-chamber formed with a discharge-opening centrally of the bottom thereof, a stirrer provided with a plurality of arms positioned at the bottom of said chamber, a set of gearings adapted to operate said stirrer, a valve for closing and regulating the discharge from the opening of said chamber, the operation of said valve operating said stirrer, and a plurality of means for operating said valve.

15. A gas-generator having a generating-chamber, an inverted-U-shaped flushing-pipe arranged in the bottom portion of the generating-chamber, and an agitator extending partially into the flushing-pipe and partially into the generating-chamber for breaking up deposits.

16. A gas-generator comprising a casing having a generating-chamber formed therein, an inverted-U-shaped flushing-pipe for said generating-chamber, an inclined bottom formed with a centrally-positioned aperture therein and a single valve for controlling the passage of the materials in the said generating-chamber through the opening in the inclined bottom and through the flushing-pipe.

17. In a gas-generator, a sludge-controlling valve having a valve-stem projecting beyond the casing of the generator, the said stem being formed with an annular flange having a recess in its face, a sprocket-wheel loosely mounted on the stem adjacent to the flange, a spring-actuated detent capable of engaging the recess in the flange for locking the parts together, a sprocket-chain engaging the sprocket-wheel and an actuated sprocket also engaging said sprocket-chain for turning the sludge-valve, the withdrawal of the detent operating to permit a movement of the sludge-valve irrespective of the sprocket-wheel.

In testimony whereof I affix my signature in presence of two witnesses.

JUAN DE DIOS TEJADA.

Witnesses:

HENRY JACOBS,  
MARK HOLT.