

No. 613,162.

Patented Oct. 25, 1898.

J. LEEDE.  
ACETYLENE GAS GENERATOR.

(Application filed Feb. 18, 1898.)

(No Model.)

FIG. 2.

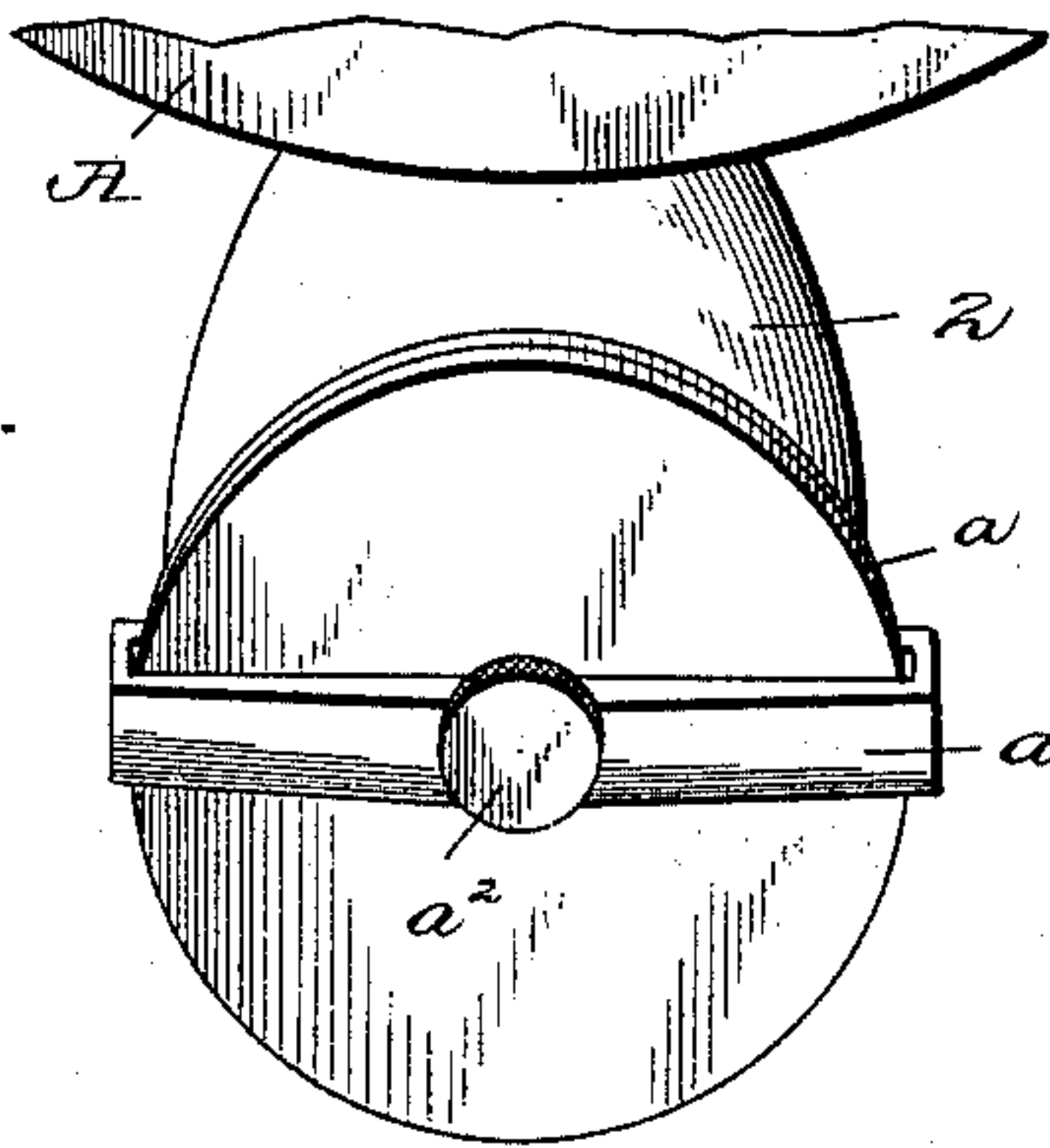
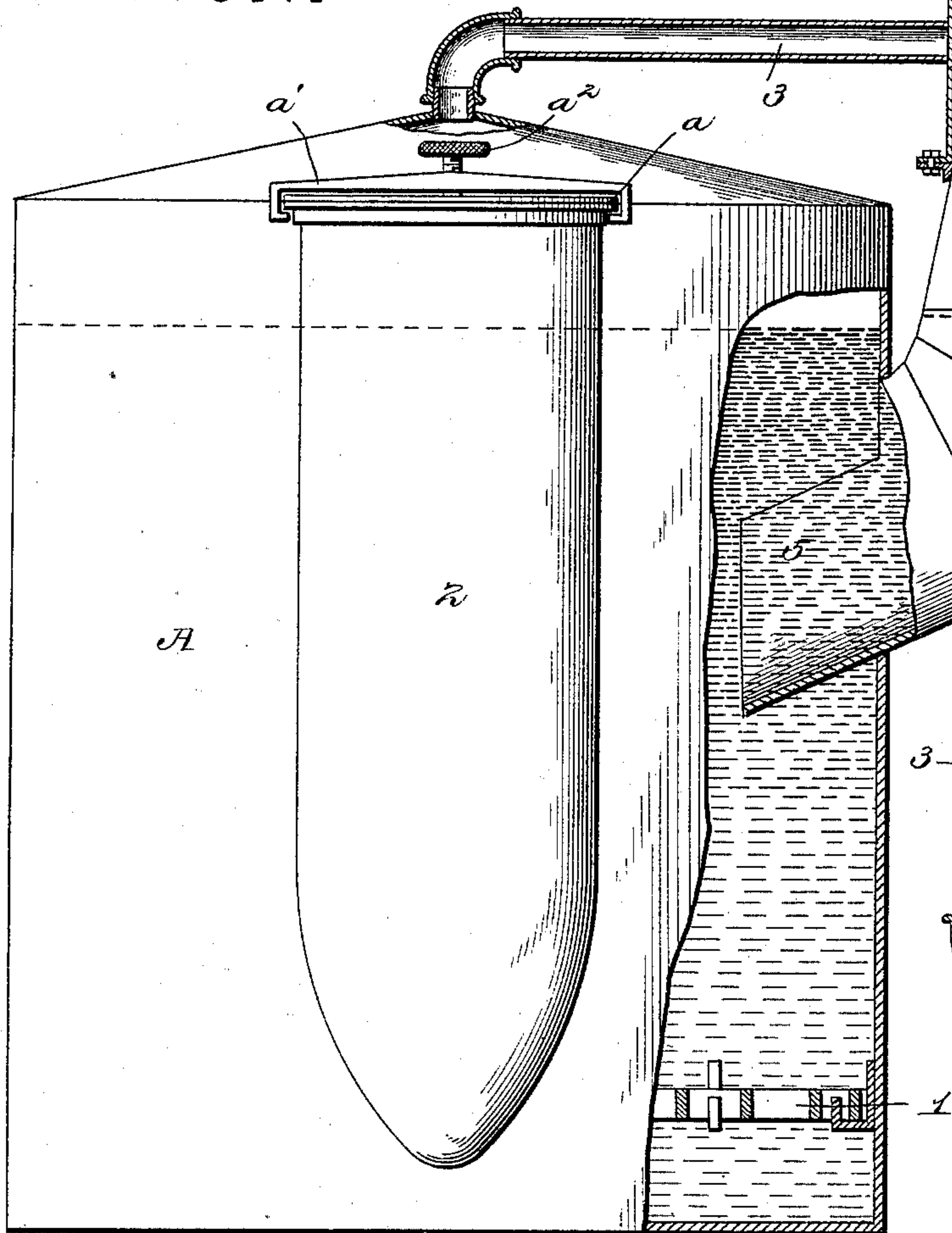


FIG. 1.



2 Sheets—Sheet 1.

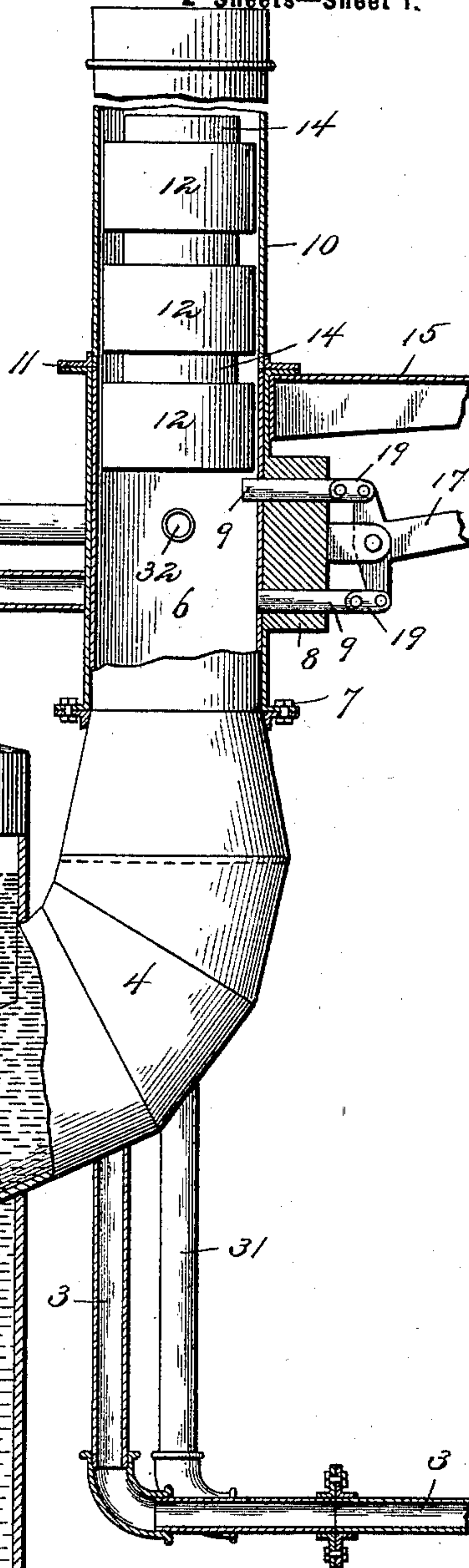
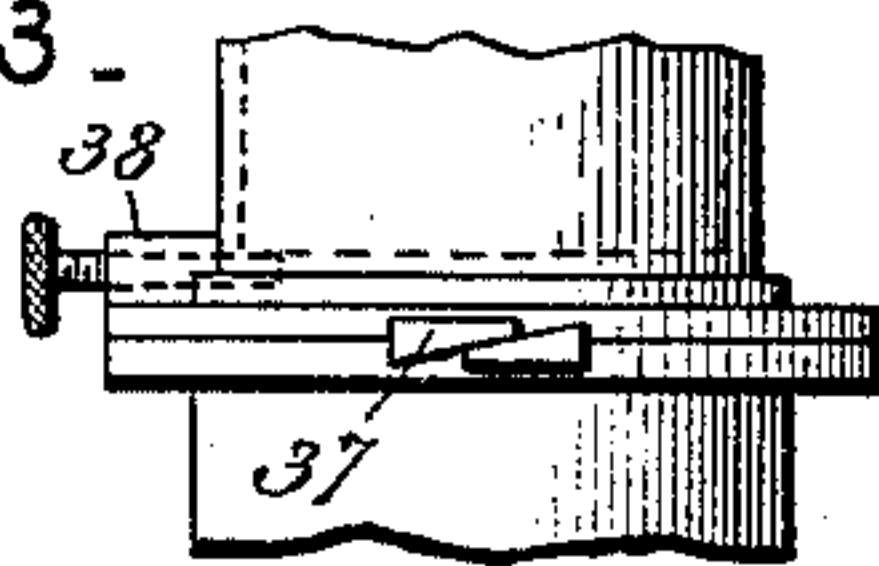


FIG. 3.



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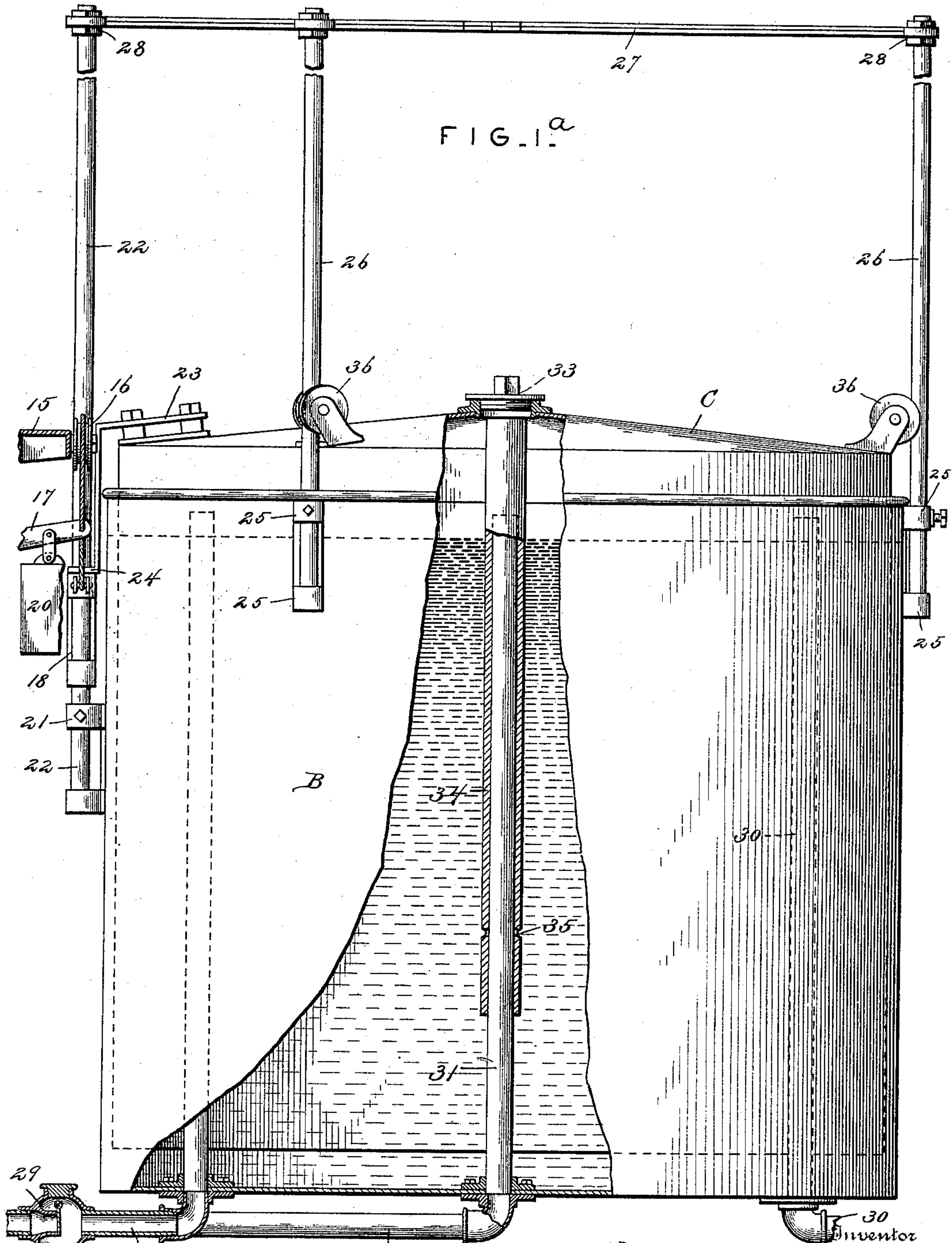
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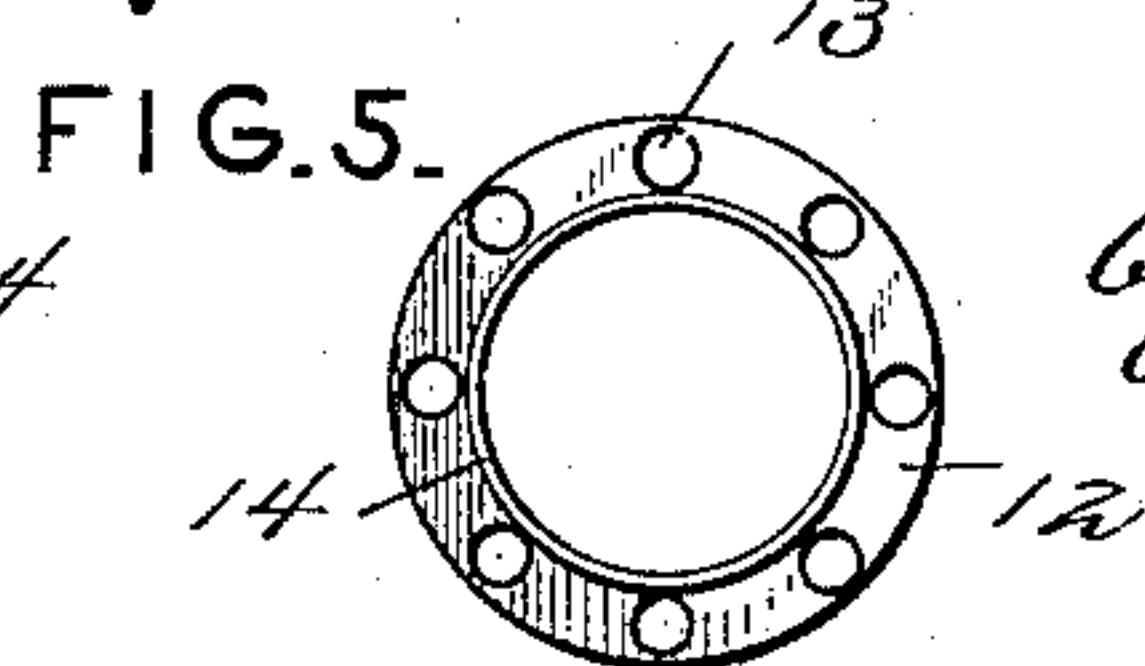
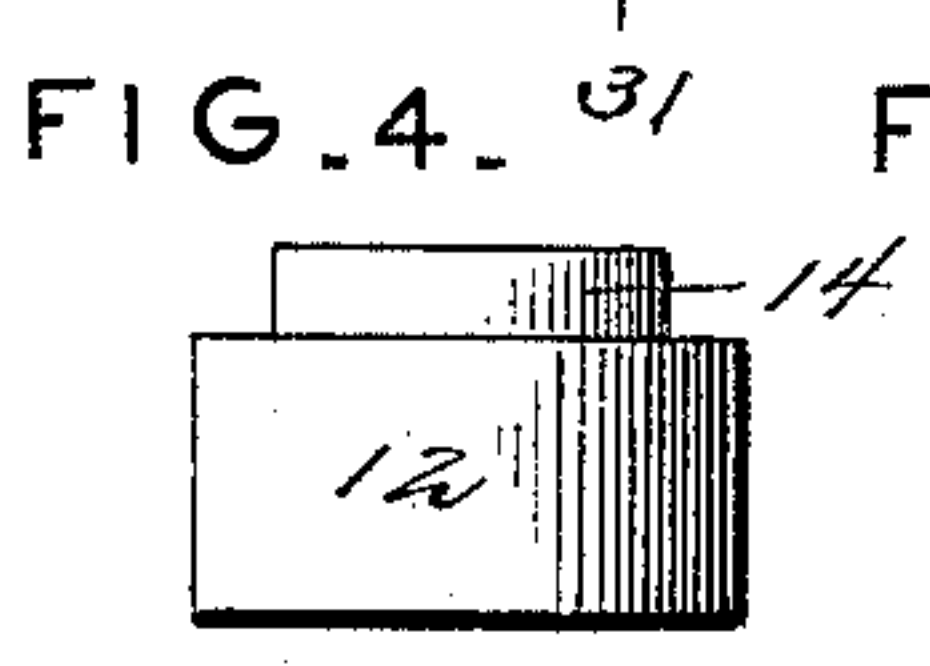
(No Model.)

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2 Sheets—Sheet 2.



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# UNITED STATES PATENT OFFICE.

JULIUS LEEDE, OF MINNEAPOLIS, MINNESOTA.

## ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 613,162, dated October 25, 1898.

Application filed February 18, 1898. Serial No. 670,840. (No model.)

*To all whom it may concern:*

Be it known that I, JULIUS LEEDE, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in 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 apparatus for generating acetylene gas.

The invention consists in improvements in that class of generators wherein the calcium carbide is automatically fed to the generating-chamber below the water-line in the generator in measured quantities and preferably in the form of cartridges.

In generators where water is intermittently fed to the body of carbide within the generator and where the carbide is fed upon the surface of the water a great deal of steam and vapor is generated as well as a great deal of heat produced, thereby interfering with the proper and efficient operation of the apparatus.

In the drawings forming a part of my specification, Figures 1 and 1<sup>a</sup>, shown on Sheets 1 and 2, represent an elevation, partly in section, of the generator and the gas-holder. Fig. 2 is a perspective view showing the arrangement of manhole for taking out empty cartridges. Fig. 3 shows the means for locking the magazine to the chamber carrying trip or dumping mechanism. Figs. 4 and 5 are views of a cartridge or case in elevation and in plan.

A is a generator or generating vessel or tank provided with a grate 1 near the bottom and with a manhole 2 leading through one side of the vessel. This vessel is also provided with a gas-discharge pipe 3 at the top, which communicates with the gas-holder. It also has entering into one side thereof a chute 4, having a trough-like discharge-lip 5, extending at an angle some distance within the generator-chamber.

6 is a trip or dumping chamber connected with the chute 4 by means of flanges and bolts, as shown at 7. This chamber is provided with a projection 8, carrying movable studs or pins 9, through the medium of which the cartridges

are supported and tripped to permit them to fall by gravity through the chute into the generator.

10 is a magazine for holding the cartridges. This magazine consists of a cylinder or tube coupled with the part 6, as shown at 11, and is of a diameter to freely admit the introduction of a plurality of cartridges one above another. This magazine may be of any desired length to hold the cartridges that may be desired.

12 12 are cartridges shown in elevation in the magazine and also shown at Figs. 4 and 5. These cartridges consist, by preference, of sheet-metal cases or canisters with solid bottom and sides, the cartridges being open at the top—that is, having, by preference, a series of openings 13 in an annular ledge surrounding a projecting flange 14. The manhole or hand-hole is provided with a flange *a*, a clamping-bar *a'*, and a hand-screw *a''* for the purpose of closing the mouth of the same. This cover or closure, however, is not necessarily required, because the water within the generator seals the opening and prevents the escape of gas through the manhole. The object of the grate at the bottom of the generator-chamber A is to support the cans or empty cartridges above the bottom of the generator.

B is a gas-holder, of conventional or suitable construction, having the usual rising and falling bell or inverted vessel. This gas-holder is arranged adjacent to the generator, as illustrated in the drawings, a bracket 15 extending from the trip-chamber into line with the side of the holder. This bracket is provided with a roller or pulley 16 at its extremity, over which a chain passes, connected with a lever 17 and with a slide 18. The lever 17 is provided with a cross-head and is connected with the studs or pins 9 by means of links 19, as clearly shown. A weight 20 is suspended on lever 17 to normally hold said lever in its lowest position.

21 is a support fastened to the gas-holder for rod 22, the support being provided with a set-screw for clamping and holding the rod.

23 is an arm secured to the inverted bell part of the gas-holder, the arm being provided at its lower end with a fork or annulus 24, surrounding the rod 22 and resting upon the slide 18.



Connected with the gas-holder are ledges or supports 25 for carrying guide-rods 26. One of each pair of these supports is provided with a set-screw for clamping and holding the guide-rods firmly in position. The guide-rods 22 and 26 carry at their upper ends a spider 27, the same being securely locked in position by means of lock-nuts 28, as shown.

3 is a gas-inlet pipe, the same being a continuation of the outlet from the generator. This inlet-pipe is secured to the bottom of the gas-holder by means of a flanged coupling in a well-known way and also with a swinging or other suitable check-valve 29. The parts of the conduit 3 from generator to holder are coupled together by means of flanges and bolts in the well-known way.

30 is a gas outlet or pipe leading to service. It is also secured to the bottom of the holder by means of an ordinary flanged coupling. This service-pipe leads from within the holder above the water-line.

31 is a gas-overflow pipe extending from the upper portion of the gas-holder downward through the bottom of said holder and is by preference connected with a vent 32, leading from trip-chamber 6 to the outside of the building within which the generator or holder may be. The inverted bell C of the gas-holder has securely fastened to and within it by means of a nut 33 a tube 34, open at its lower end and made to telescope the pipe 31. In the lower end of the tube are openings 35, which when the bell C has risen to a height such as to bring the openings in the tube above the water-line will permit the gas to escape through pipe 31 to the outside of the building. The bell is also provided with brackets carrying antifriction-rollers 36, which engage the guide-rods 26.

In Fig. 3 I have shown clutches 37 for locking the magazine in position on the trip-chamber 6. There is also shown in this figure a boss 38, carrying a thumb-screw extending through the wall of the magazine, and thereby affording a convenient means for holding the cartridge in place in the magazine while the same is being charged. After the magazine is charged the screw is withdrawn.

The operation of the generator is as follows: The generator and gas-holder having been filled with water, as indicated by the dotted lines in the drawings, and the magazine having been charged, a cartridge is dropped into the generator either through the manhole or by operating the tripping mechanism by hand. After a sufficient volume of gas has been generated—say enough to raise the bell of the gas-holder a few inches—the slide 18 is permitted to move upward, and consequently the lever 17 to move downward, through the operation of the weight 20, which operates to withdraw the upper stud 9, while simultaneously the lower stud 9 is projected into the chamber to receive and support a cartridge as it is released by the upper stud. When the gas in the holder is consumed, the

inverted bell will descend, and the fork end of arm 23 engages the slide and causes it to descend, thereby raising lever 17 through the medium of the chain and thus withdrawing the lower stud, thereby releasing the cartridge resting on said stud and simultaneously causing the upper stud to retain the column of cartridges in the magazine above it in position. This operation is automatically repeated as the inverted bell of the gas-holder rises and falls.

It will be observed that the water-line in the generator and in the chamber or chute 4 forms a water seal between the generator, trip-chamber, and magazine. The end 5 of the chute is trough-shaped, the upper side of the inwardly-projecting part being cut away. The object of this is to cause the cartridge in its descent to be projected away from the mouth of the chamber or chute, and thereby prevent the gas from rising through the water in close proximity to the mouth of the chamber or chute, where it passes through the wall of the generator. The cartridges having closed bottoms and sides pass quickly through the chute into the generator-chamber and fall on the grate 1, where the carbide is decomposed and the acetylene gas rises in bubbles upward through the body of water, and thence it is discharged through the conduit 3 to the gas-holder. During this process the gas is washed and cooled and is made ready for service.

By reason of my peculiar construction of generator and means by which the cartridge is introduced into the same beneath the surface of the water in the generator and through the water seal there is no escape of gas outward through the chute into the magazine. The empty cartridges are withdrawn from time to time from the generator through the manhole without interfering with the operation of the apparatus and without any escape of gas, the water seal in the manhole-duct preventing any lateral escape through said manhole.

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

1. In a gas-generator, the combination of a generating-chamber, a magazine for holding cartridges one above another arranged in proximity to said generator, a chute leading from the magazine through the side of the generator below the water-line, adapted to conduct cartridges to the generator, the bottom of the chute being arranged at an angle and extending some distance within the generator while the upper side thereof is open and means operated by the volume of the generated gas to feed the cartridges one at a time, substantially as described.

2. In a gas-generator of the character described, the combination of a generating-chamber, a magazine for holding cartridges one above another, means operated by the volume of the generated gas to feed the car-



tridges one at a time, a chute leading from the magazine to the generating-chamber below the water-line and terminating within the chamber in a spout or trough-like extension adapted to conduct cartridges or canisters to the generator, and a hand-hole for removing the cartridge-cases having a water seal, substantially as described.

3. In an acetylene-gas generator, the combination of a generating-chamber, a magazine for holding cartridges one above another, a chute leading from the magazine to the chamber below the water-line adapted to conduct cartridges to the generator, and tripping mechanism for intermittently feeding the cartridges through the chute to the generator, as the bell of the gas-holder rises and falls, substantially as described.

4. In an acetylene-gas generator, the combination of a generating-chamber, a magazine, a chute leading from magazine to generating-chamber, and a tripping mechanism consisting of reciprocating studs or pins, a lever provided with a cross-head, a weight connected with the outer extremity of the lever, a gas-holder having a reciprocating bell, and connections between the gas-holder and the lever for vibrating said lever as the bell rises and falls, substantially as described.

5. In an acetylene-gas generator, the com-

bination of a generator, a magazine, a chute leading from magazine to generator, a gas-holder having a reciprocating or rising-and-falling bell, reciprocating stops or studs and a magazine, a three-armed lever, a weight connected with the outer extremity of the lever for moving it in one direction, a chain or cord also connected with said lever leading around a guide-pulley, a slide connected with the opposite end of the chain, and a projection from the bell engaging the slide, whereby the lever is operated to disengage a cartridge from the magazine as the bell descends, substantially as described.

6. In an acetylene-gas generator, the combination of a magazine for holding cartridges one above another, a chute leading from magazine to generating-chamber below the water-line, and means for introducing the cartridges entirely within the generating-chamber below the water-line before the carbid and water come in contact with each other, substantially as described.

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

JULIUS LEEDE.

Witnesses:

ROSE FORSYTH,  
EDYTHE VINAL.