

No. 630,834.

Patented Aug. 8, 1899.

J. G. KERR.

ACETYLENE GAS GENERATOR.

(Application filed Nov. 1, 1897.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

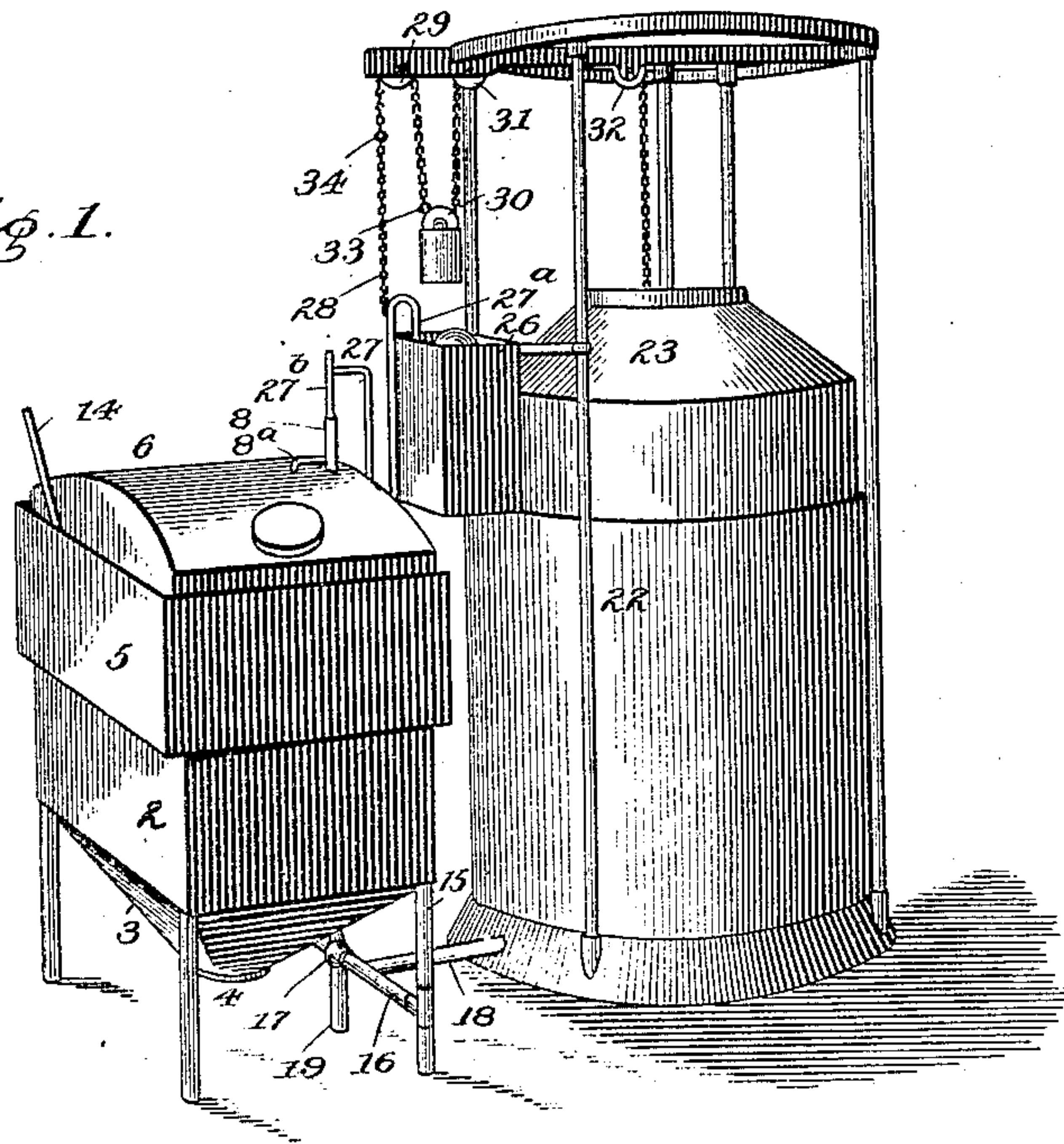


Fig. 3.

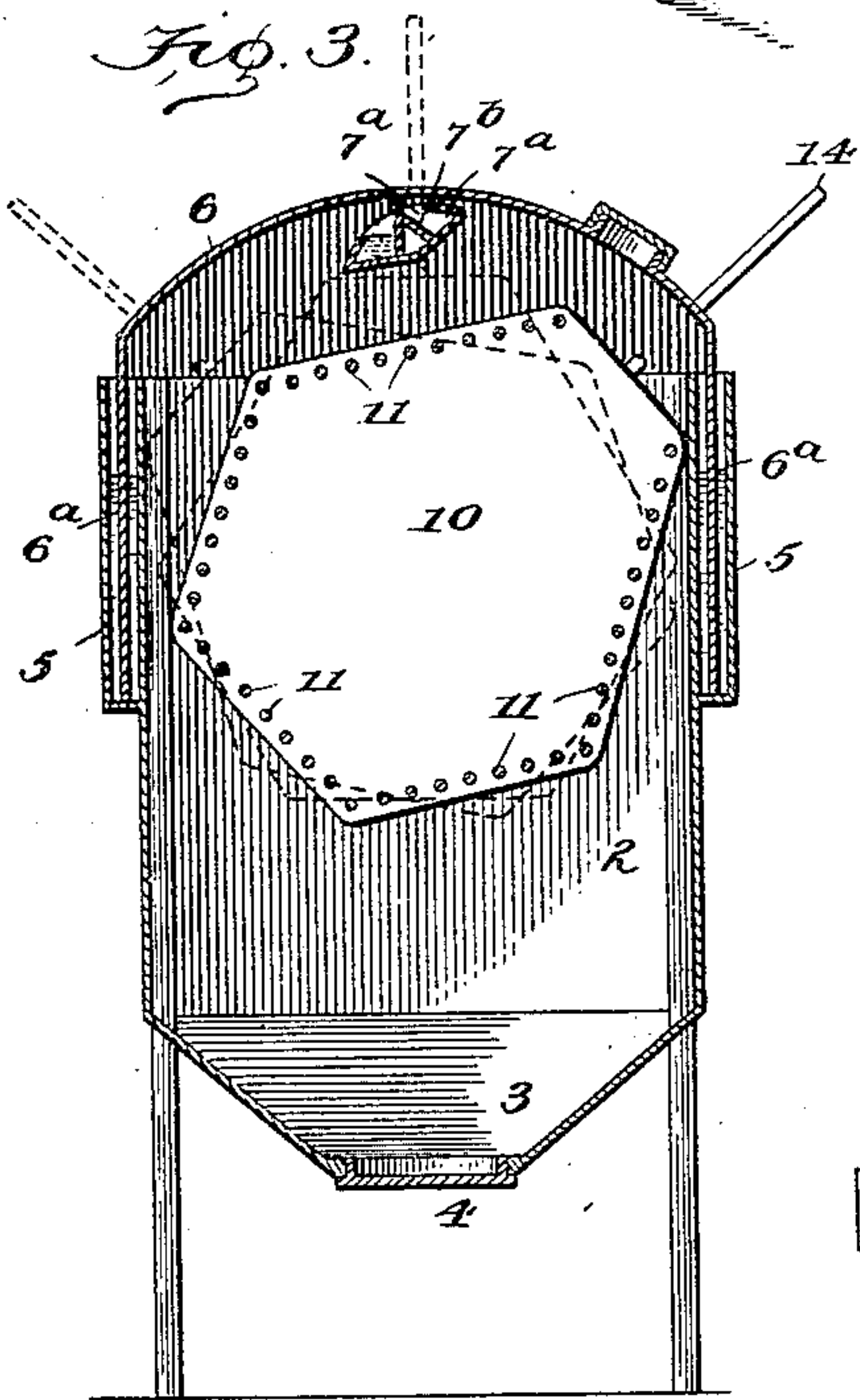


Fig. 4.

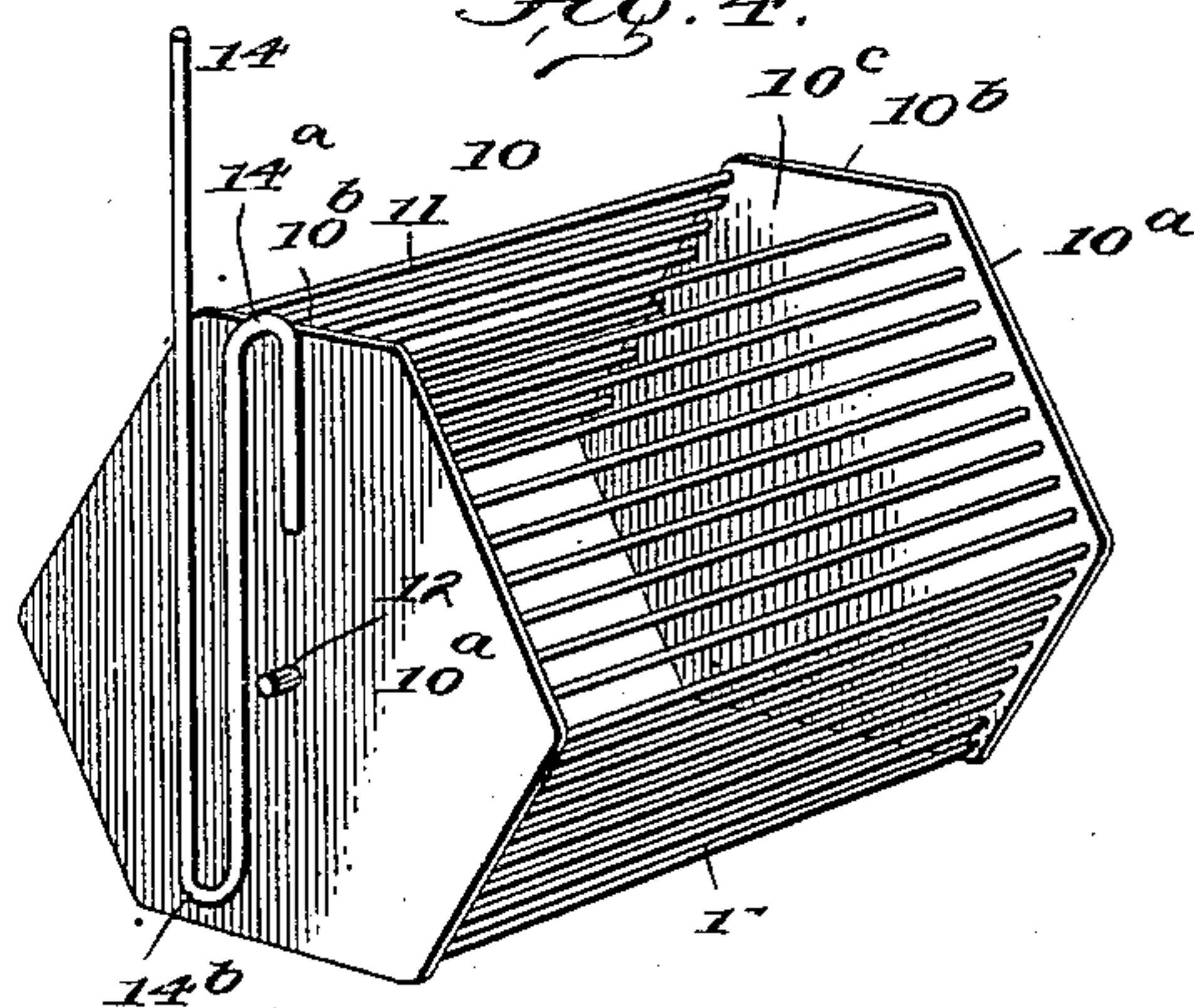
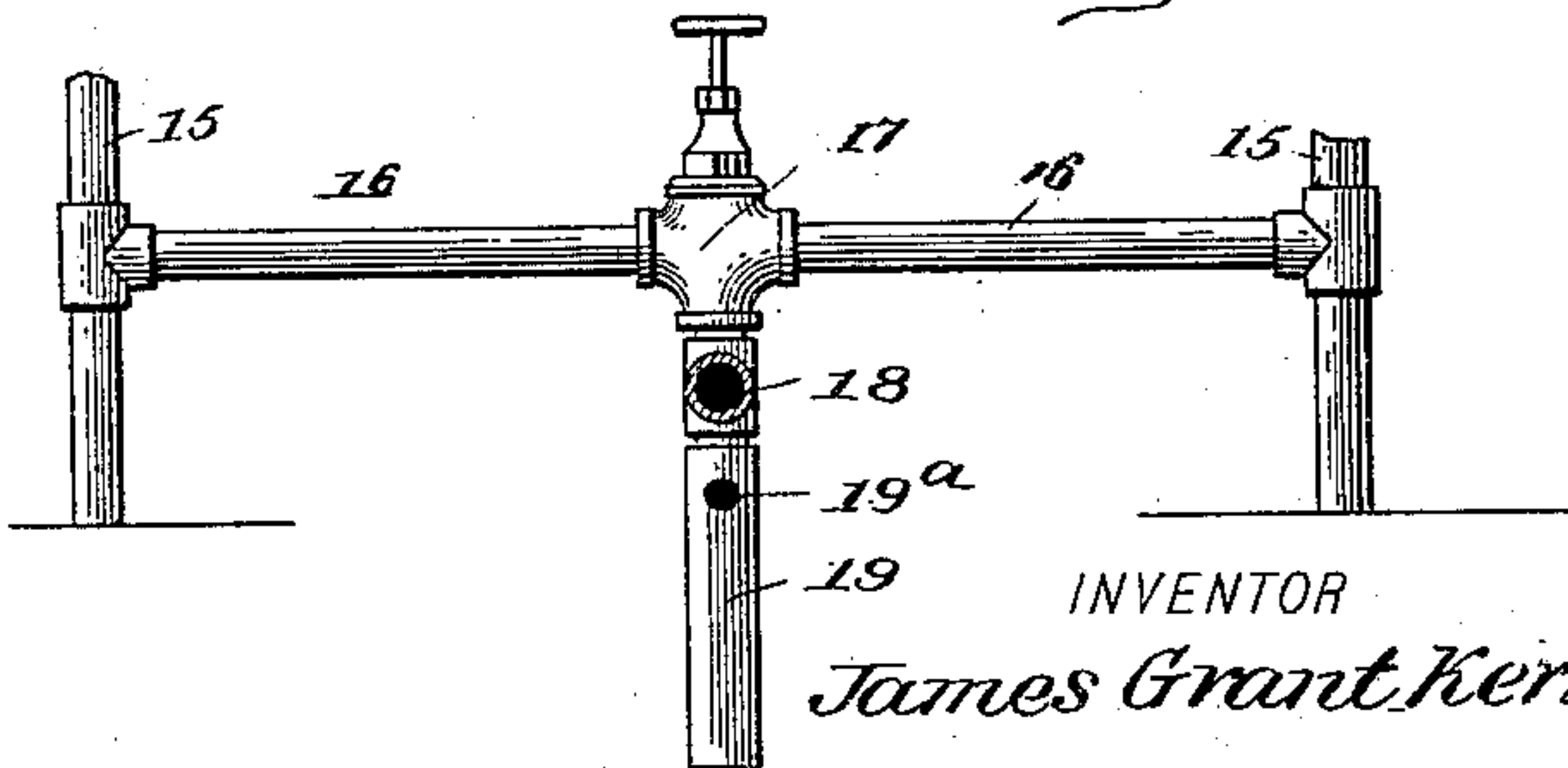


Fig. 5.



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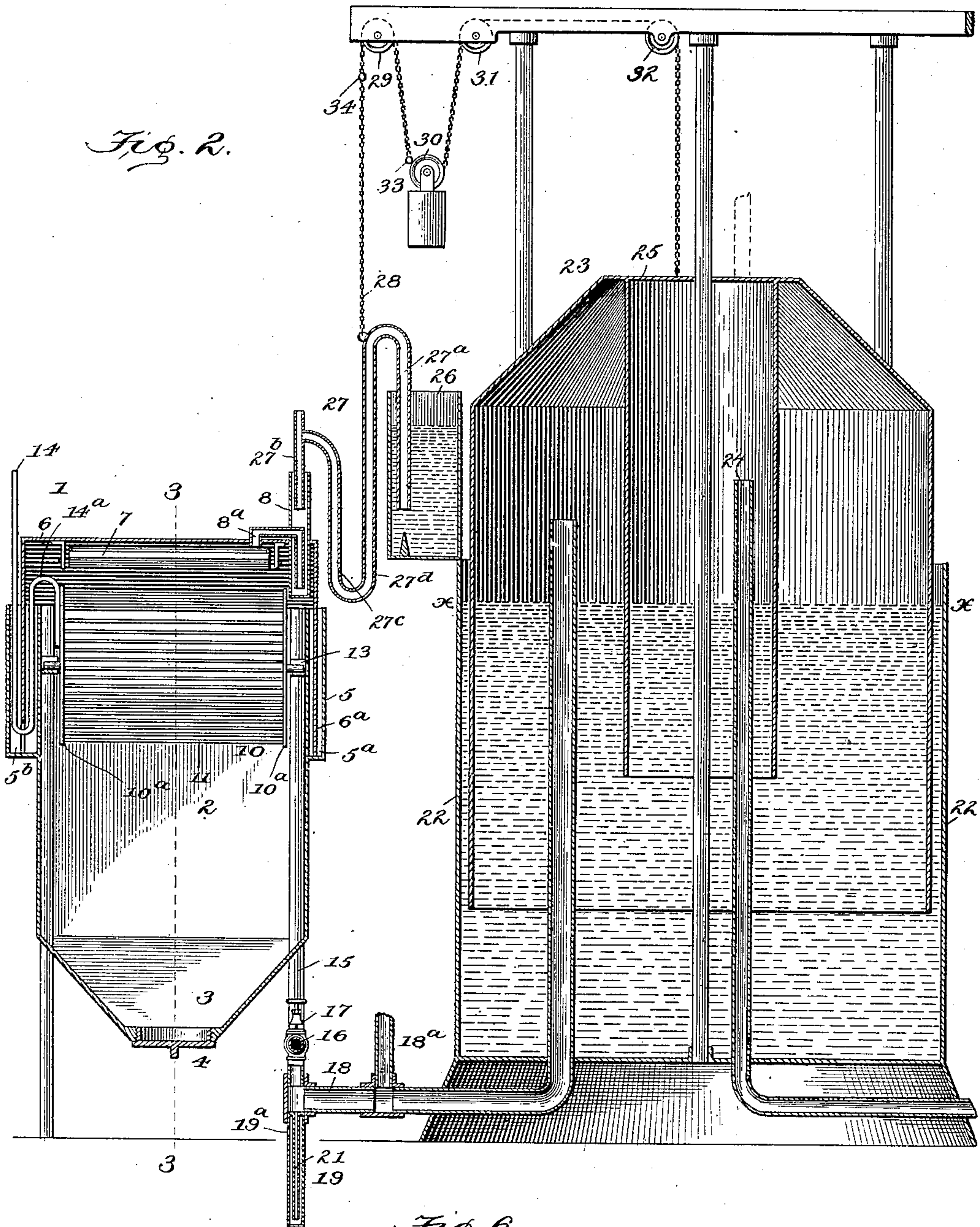
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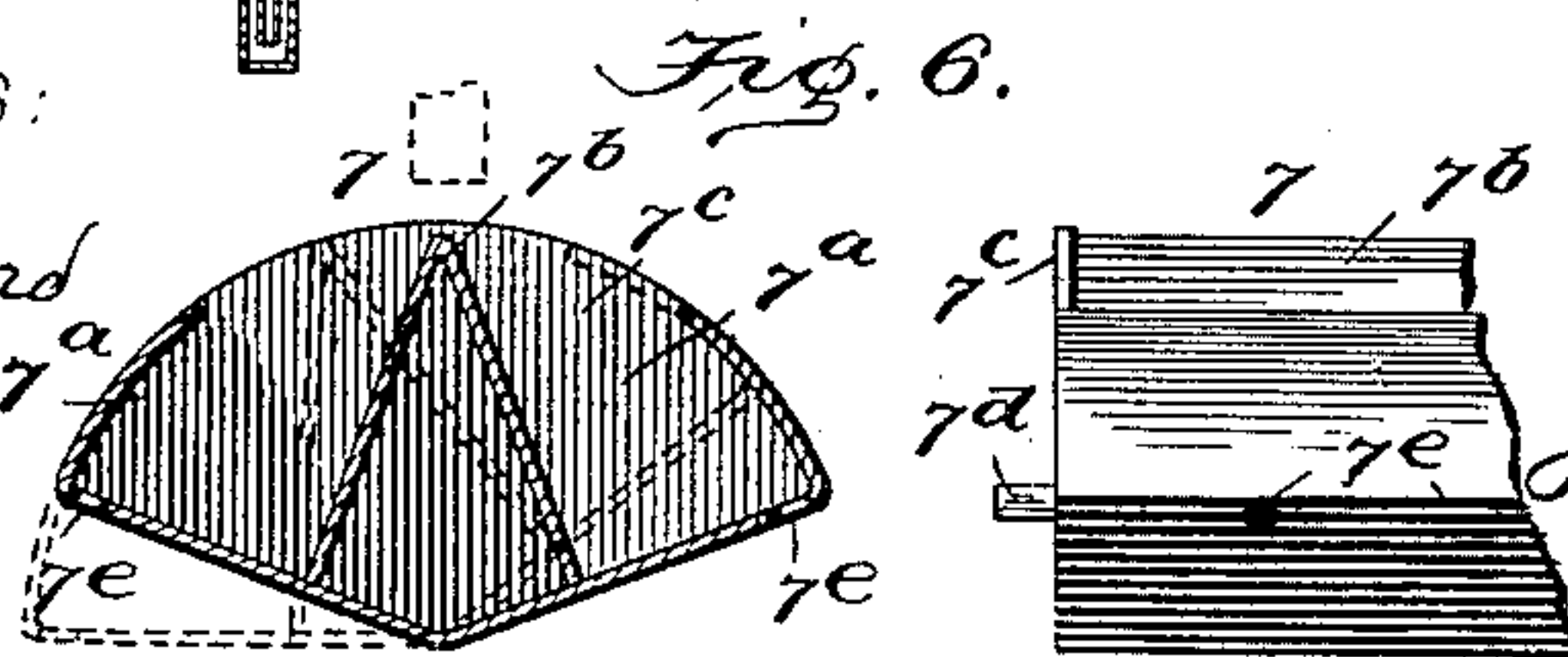
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2 Sheets—Sheet 2.



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# UNITED STATES PATENT OFFICE.

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## ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 630,834, dated August 8, 1899.

Application filed November 1, 1897. Serial No. 657,010. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES GRANT KERR, a resident of Niagara, county of Welland, Province of Ontario, Dominion of Canada, have  
5 invented a certain new and useful Acetylene-Gas Generator, of which the following is a specification.

This invention relates to improvements in the art of acetylene-gas-generating means; and it primarily has for its object to provide  
10 a generating apparatus having a carbid-holder capable of ready adjustment from without the casing or body, whereby such holder can be freely moved in such a manner as to admit  
15 of opposite sides thereof being alternately brought into position to receive the water from the sprayer, whereby that part of the holder which was uppermost can be turned  
20 down to permit of a free discharge of the carbid ash, while the other side with fresh carbid-surface is brought uppermost to receive the water-jets, such operation being effected without the escape of gas and without a stoppage of gas-generation.

25 This invention also comprehends a simple form of generator with some of the supporting members in the nature of gas feed or discharge pipes having connection with the gasometer-feed pipe.

30 Another object of this invention is to provide the feed or gasometer connecting supply pipe with a suitable drip-pipe and valve devices capable of ready adjustment for collecting and discharging the products of condensation in the gasometer-feed pipe, such  
35 invention also having in view a novel and simple arrangement of water-spray devices which will serve to provide a uniform discharge of water into the carbid-surface from  
40 end to end.

With other objects in view, which will hereinafter be referred to, the invention consists in a gas-generating means embodying the novel features of construction, combination,  
45 and arrangement of parts, such as will be first described in detail and then be specifically pointed out in the appended claims, reference being had to the accompanying drawings, in which

50 Figure 1 is a perspective view of my improved generating apparatus, showing the same in use with a gasometer and automatic

water supplying means. Fig. 2 is a vertical longitudinal section of the generator and the gasometer. Fig. 3 is a transverse section of  
55 the generator, taken on the line 3 3 of Fig. 2, the alternate position of the carbid-holder being indicated in dotted lines. Fig. 4 is a detail view of the carbid-holder detached. Fig. 5 is a detail view of the drip-pipe and the  
60 valve connection, hereinafter referred to, and Fig. 6 is a detail view of the spraying devices.

To fully illustrate the advantages and operation of my improvements, I have shown them as applied for use with a gasometer and  
65 automatic water feed devices, and while I shall describe such devices and construction of the gasometer in a general way said gasometer and water feed devices, *per se*, form no part of this invention.

Referring now to the accompanying drawings, in which like numerals indicate like parts in all the figures, 1 indicates the generator, which consists, essentially, of an upper carbid-holding and generating chamber 2 and  
75 a lower contracted (cone-like) ash-collecting chamber 3, the lower end of which terminates in an outlet 4 for the removal of the dry ashes when necessary. The upper chamber 2 has a surrounding jacket 5, forming  
80 spaces 5<sup>a</sup> 5<sup>b</sup>, to receive the pendent end and side members 6<sup>a</sup> of the removable top 6, which carries the spraying devices 7, the construction of which forms a special feature of this invention. The end space 5<sup>b</sup> is made of a  
85 greater width than the others for a purpose presently explained.

In practice the spaces 5<sup>a</sup> 5<sup>b</sup> are water-filled to form a water seal between the top and the body of the generator.

The generator-top has a water-feed pipe 8, into which the automatic siphon devices, hereinafter referred to, discharge and which in turn extends below the said top and has a discharge 8<sup>a</sup>, which discharges into the spray-  
95 ing device 7.

The spraying device 7 consists of a longitudinal trough having two compartments 7<sup>a</sup> 7<sup>b</sup>, divided by a central plate 7<sup>c</sup>. The ends 7<sup>d</sup> 7<sup>e</sup> of the trough have pintles 7<sup>d</sup> 7<sup>e</sup>, which en-  
100 gage the pendent brackets of the top, as shown in Fig. 2, and form rocker-bearings for such trough.

Referring now more particularly to Fig. 6, it



will be observed that the bottoms of the compartment 7<sup>a</sup> 7<sup>a</sup> are inclined downward toward the center and the outer edges are in the nature of <-shaped gutters having a series of perforations 7<sup>e</sup> in their apex end. By hanging the sprayer in the manner shown and dividing it into two longitudinal compartments it is obvious that as soon as sufficient water has entered into one compartment to cause it to tilt or dump the other compartment will come under the water-supply and fill while the other is discharging, and when it in turn becomes filled the weight of the water will tilt the sprayer to bring the emptied side up again under the feed, such spraying receiving, as it were, an intermittent rocking motion which serves to intermittently first discharge the spray to one side of the upper face of the carbide and then to the other, thereby creating a more constant and uniform generation of gas. Furthermore, by providing a trough having its discharges at a point above the bottom the discharge will be uniform the entire length of the sprayer and the danger of spraying more at one end of the trough than at the other incident to the ordinary forms of spray-pipes is entirely avoided.

10 indicates the carbide-holder, the peculiar construction of which and the means for adjusting the same from the outside of the generator-body without disconnecting any of the parts and without danger of gas leakage forms the essential feature of this invention. This holder consists of the end plates 10<sup>a</sup> 10<sup>a</sup>, of a substantially polygonal shape, connected by a series of transverse grate-bars 11, which join all parts of the ends except the upper ends 10<sup>b</sup>, which are of a reduced length, whereby a narrow carbide-receiving mouth 10<sup>c</sup> is provided. The ends 10<sup>a</sup> have pintles 12, adapted to rest in sockets 13 on the ends of the upper chamber 2, and such pintles are eccentrically arranged on the said ends 10<sup>a</sup>, whereby when the holder is turned with its mouth to one side the weight of the contents thereof will serve to hold the same to its turned position, the carbide-holder being supported by the sides of the chamber, as clearly shown in Fig. 3 of the accompanying drawings. To one of the ends 10<sup>a</sup> is secured a handle 14, which has a portion 14<sup>a</sup> bent up to clear the top of the chamber 2 of a downwardly-projected U-shaped portion 14<sup>b</sup>, adapted to dip down into the liquid in the space 5<sup>b</sup>, such U-shaped portion also forming a loop into which one end of the top projects, (see Fig. 1,) the lower end of which, however, is slightly dished out to admit of the sweep of the lower loop end of the handle during its movement from one side to the other. The end of the handle projects outside of the top, as clearly shown.

While I have shown a generator having but a single carbide-holder and sprayer, it is manifest that the same in practice may have a plurality of holders and sprayers without departing from the scope of this invention.

So far as described the manner in which my

improvements operate is best explained as follows: After the holder is filled with carbide, placed in position, the top closed down, and the spray devices opened up the handle is thrown to one side, which brings the holder in the position indicated in full lines in Fig. 3, one of the long sides of such holder being uppermost and the mouth in such position as to prevent the waste of the contents. As the gas is generated by the contact of water and carbide an ash is being accumulated on such part of the carbide as receives the direct water contact. Now by bringing the handle over to the opposite side it follows that which was the under side will now be brought uppermost, while the top side will become the under side, permitting the ash to fall freely from the carbide as a fresh carbide-surface is exposed to the action of the water from above. Thus the ash can be freely separated from the carbide without waste of gas or stoppage of generation thereby, and by thus separating the ash from the clean carbide I obtain the maximum generation in a quick and uniform manner. The gas thus generated in the chamber 2 passes off into the conveyers 15 15, which are in the nature of pipes which form two of the supporting-legs of the generator-frame. These pipes are connected by a union-pipe 16, in which is located a three-way valve 17, having its bottom escape-port in communication with the gasometer-feed pipe 18, which has a drip well or pipe 19, into which the pendent seal-pipe 21 is held. The drip-well has a discharge 19<sup>a</sup> near the upper end, as shown.

By providing a drip-well at the point indicated, the product of condensation in the generator vapor is readily collected and drawn off.

The feed-pipe 18 has an outlet 18<sup>a</sup> for burners and extends into the gas-holder, which consists of the water-tank 22 and the movable dome 23, such pipe 18 extending up above the water-level in the tank 22. The outlet 18<sup>a</sup> constitutes the regular gas-escape and extends to the points of consumption.

The dome has a pendent tubular extension which projects well down into the water within the tank 22 and receives a gas-escape pipe 24, extending from above the water-level through the bottom of the gasometer, so that in case more gas be generated and forced into the holder than can be accommodated the bottom of the tubular extension will rise above the water-line and the surplus gas will pass off through the pipe 24 to the open air and avoid damaging or smashing the apparatus. The dome has suitable guide and supporting rods, which serve to guide its rise and fall without use of rollers, &c., at the sides of the holder.

At one side, adjacent to the generator, the gasometer has a water-tank 26, in practice having a suitable water-supply controlled by a float.

27 indicates a siphon-pipe, the leg 27<sup>a</sup> of which reaches almost to the bottom of the tank 26, (see Fig. 2,) while the leg 27<sup>b</sup> extends



within the spray-supporting pipe 8. The intermediate legs 27<sup>c</sup> 27<sup>d</sup> form a U-shaped water seal, the upper end of the leg 27<sup>c</sup> being open to the air. The water-line in the tank 26 is above the point of connection of the legs 27<sup>b</sup> and the leg 27<sup>c</sup>. It will be manifest that once the siphon has been filled a continual flow is maintained into the spray-pipe and thence into the interior of the generator, it being understood that if the siphon be raised so its point of connection between the legs 27<sup>b</sup> 27<sup>c</sup> is above the water-line in tank 26 the flow through the siphon will cease. The siphon, which can readily be removed from the tank 26, and the pipe 8, can be readily primed, and it will continue running as long as there is any water in the tank above the upper end of the leg 27<sup>c</sup>, and after the water ceases to run it can be readily reprimed.

28 indicates a flexible support connected at one end to the siphon and at the other to the top of the gas-dome. This connection passes over a pulley 29, thence down under a weighted pulley 30, and then up over pulleys 31 32 down to the dome. The connection 28 has stops 33 34, so located that when the gas-holder is down the stop 33 will be jammed against the pulley 30, the weight of which is then taken by the gas-holder and the siphon permitted to sink to cause a flow of water to the generator.

As the gas-holder rises the weighted pulley 30 moves away from the stop 33, and as the weight on the pulley is greater than the weight of the siphon the latter rises in the tank 26, so as to decrease and finally stop the flow of water, the stop 34 preventing the siphon being drawn up too far by engaging the pulley 29, such construction of parts affording a simple and convenient method of regulating the water flow to suit the consumption of gas.

From the foregoing description, taken in connection with the accompanying drawings, it is thought the complete operation and advantages of my invention will readily appear. The same affords a very simple and effective apparatus for the generating of acetylene gas from calcium carbide in such a way as to get the full gaseous product from the carbide quickly and uniformly.

It will be readily apparent that the detailed construction and arrangement of the several parts constituting my improved generator may be modified and changed without departing from the scope of the appended claims.

To provide for supplying the carbide-holder with fresh carbide without removing the entire top 6, such top may have a feed-opening provided with a screw-cap, as clearly shown in Figs. 1 and 3. By providing such a feed-opening the holder can be replenished without allowing but very little gas to escape, as the valve between the generator and gasometer can be closed during such operation, which will retain the gas in the latter and take the pressure of the generator.

Having thus described my invention, what

I claim, and desire to secure by Letters Patent, is—

1. In an acetylene-gas generator, the combination with the carbide-holder, of a rocker spraying-trough having independent compartments, having discharges, said trough being supported substantially as shown, whereby one compartment will be filling from the water-feed as the other is discharging so that the carbide will be intermittently sprayed at different points of its water-receiving surface substantially as shown and described.

2. The combination with the carbide-holder and the water-feed, of a sprayer-trough having two longitudinal compartments having discharge-orifices at a point above the bottom, said trough being pivotally hung at the ends under the water-feed and adapted to automatically rock in reverse directions by the water-feed, whereby to deliver intermittently at different points of the carbide-surface held to the water-feed as set forth.

3. In a machine as described, the combination with the carbide-holder; of a water-supply held to discharge against the holder, said supply including a distributing-trough having a feed at one end and a V-shaped bottom, having discharges at the upper edges as specified.

4. In a machine of the class described, a gas-generator comprising a chamber, and removable cover having a water-supply and having a water-seal connection with the said chamber, a carbide-holder having a feed-opening at the top and oppositely-inclined grated sides arranged to be supported against the sides of the chamber, and means for rocking such holder to such sides alternately in line with the water-supply, whereby one side will discharge ash as the fresh side receives the water as specified.

5. In a machine as described, a generator comprising an open-top chamber having a surrounding water seal at the top, a cradle-like carbide-holder detachably held in such chamber, a detachable cover, fitting in the said water seal and having a water-spray, a feed for such spray, and a handle connected to the carbide-holder, extended above the upper edge of the generating-chamber, down through the water seal under the cover and up to the outside of the cover, substantially as shown and for the purposes described.

6. In a generating means substantially as described, a water-sprayer, consisting of a trough extending lengthwise of the carbide-holder, having a dished bottom and discharge-orifices at a point above the bottom and a feed-pipe all being arranged substantially as shown and described.

7. In a machine as described, the combination of a generator having hollow supporting members 15, communicating with its interior, the valved feed-pipe 16, connecting the supporting members 15, and the pipe 18, extending from the feed-pipe 16, and having a drip-well, substantially as described.



8. In a device of the class described, a generator having an oscillating carbid-holder adapted to swing back and forth to bring alternately its opposite sides in position to receive the spray, and supports arranged to receive the holder in each of its positions, substantially as described.

9. In a machine as described, a generator having an oscillating carbid-holder adapted to swing back and forth to bring alternately its opposite sides in position to receive the spray and arranged to rest against the sides of the generator, whereby it is supported in position to receive said spray, substantially as described.

10. In a machine of the class described, a generator having an oscillating carbid-holder

having an open top and arranged to swing back and forth to bring alternately its opposite faces in position to receive the spray, and means for limiting the swing of the holder and for supporting the same in each of its positions, substantially as described.

11. An acetylene-gas generator, comprising a casing, an oscillating carbid-holder arranged within the same and adapted to be supported by the walls thereof, and an automatically-oscillating sprayer arranged within the casing and located above the carbid-holder, substantially as described.

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Witnesses:

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