No. 698,160. Patented Apr. 22, 1902.

G. P. WASHBURN.

ACETYLENE GAS GENERATOR.

(Application filed Sept. 4, 1901.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 2

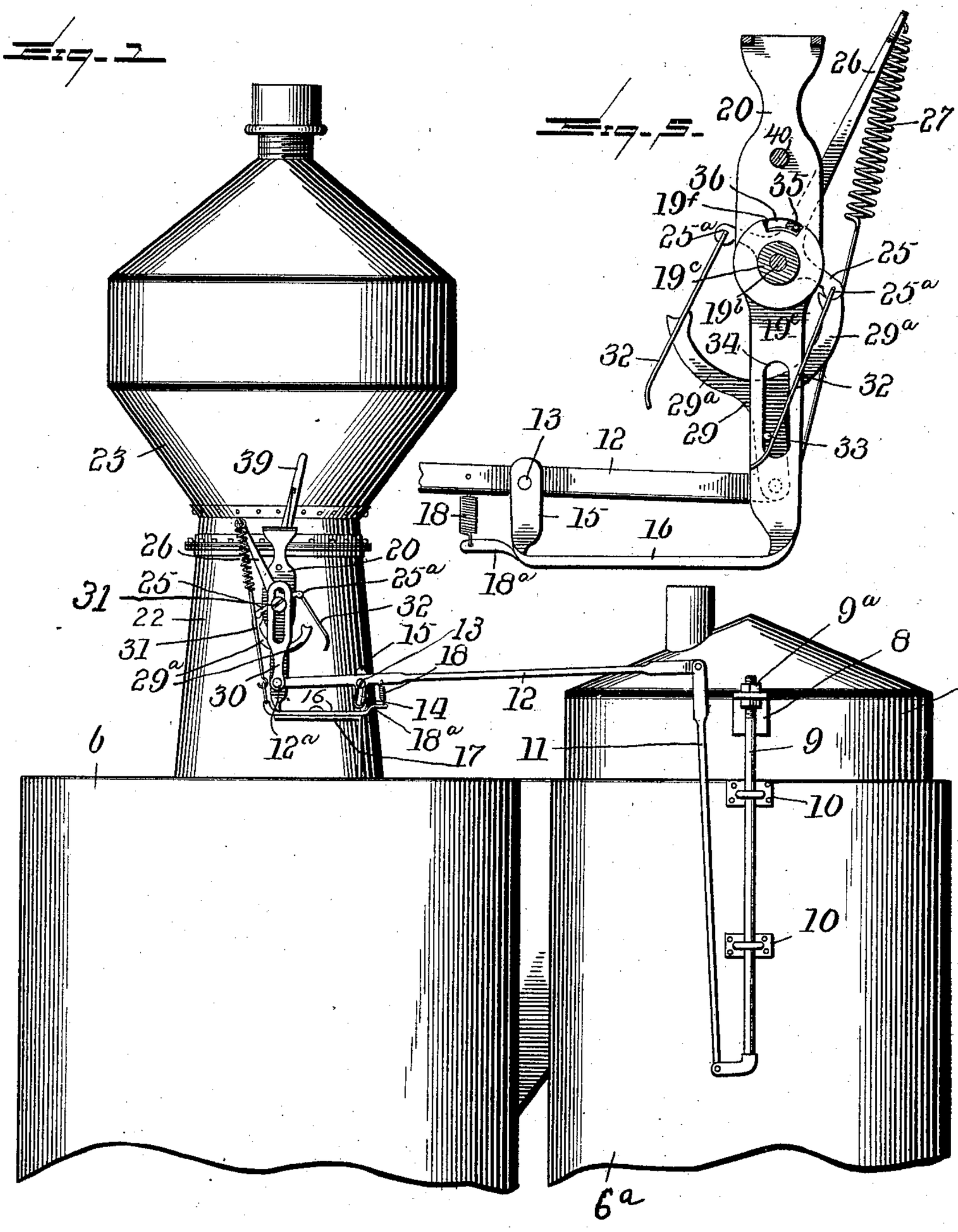

Fig. 3

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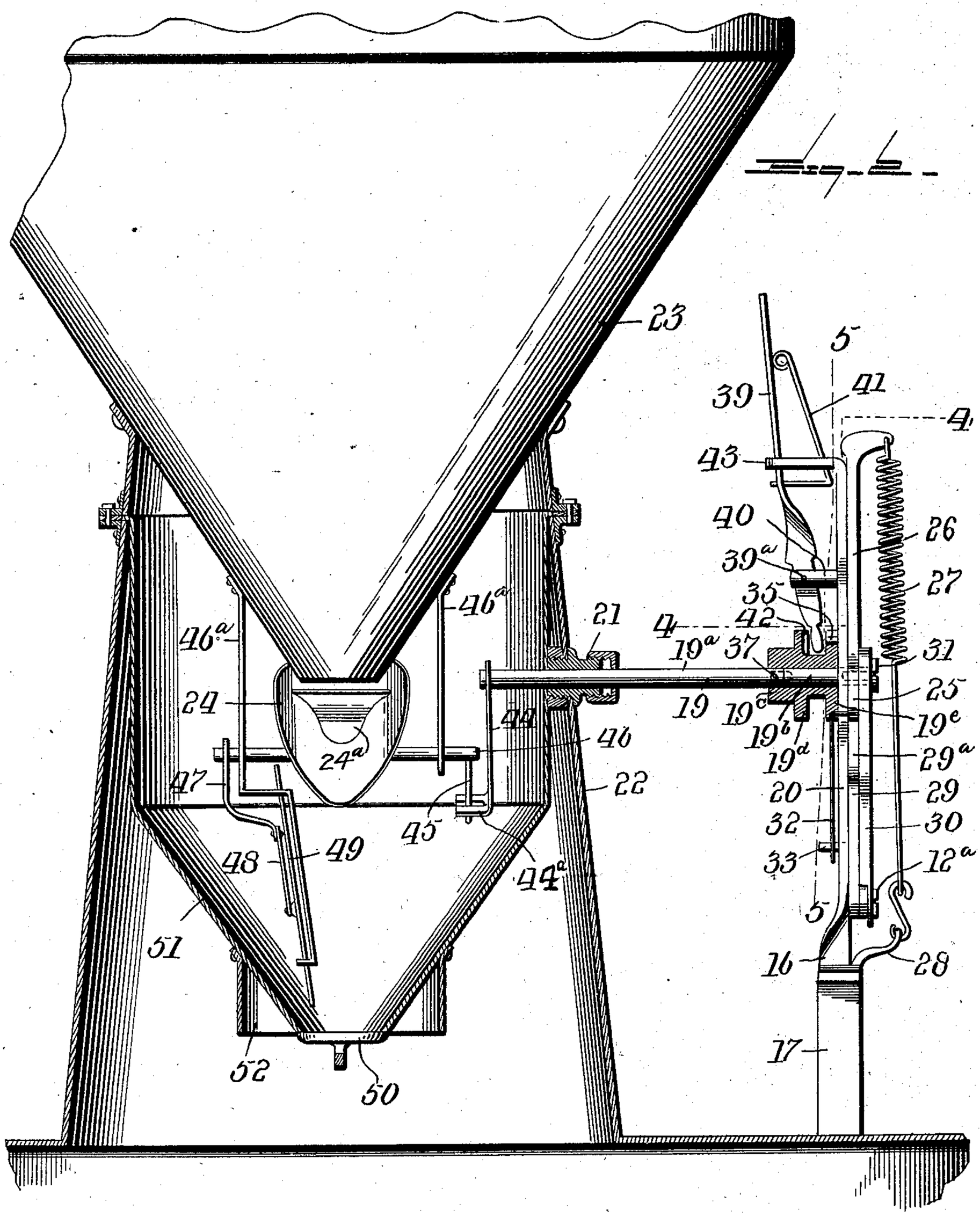

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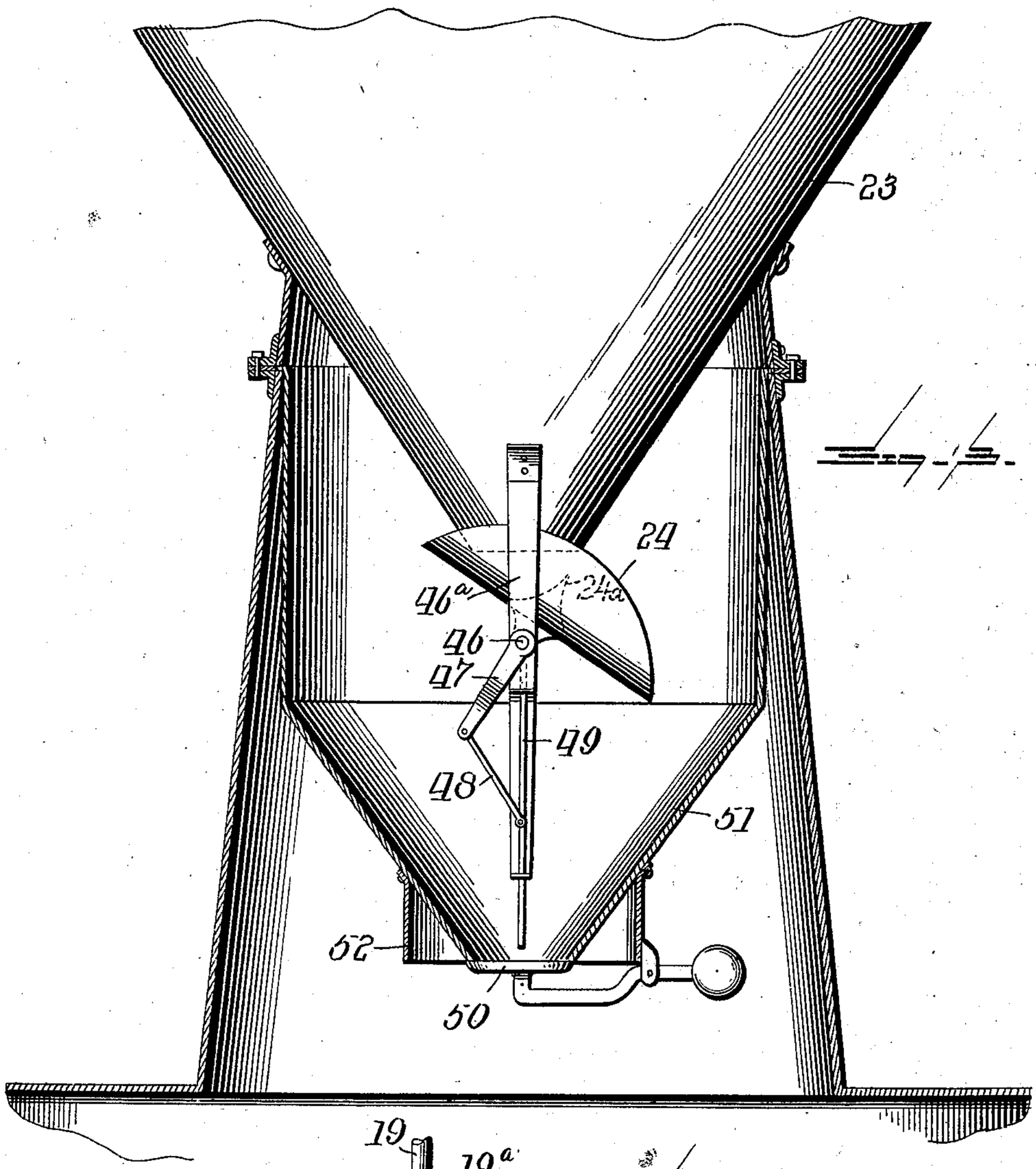

FIG. 5.

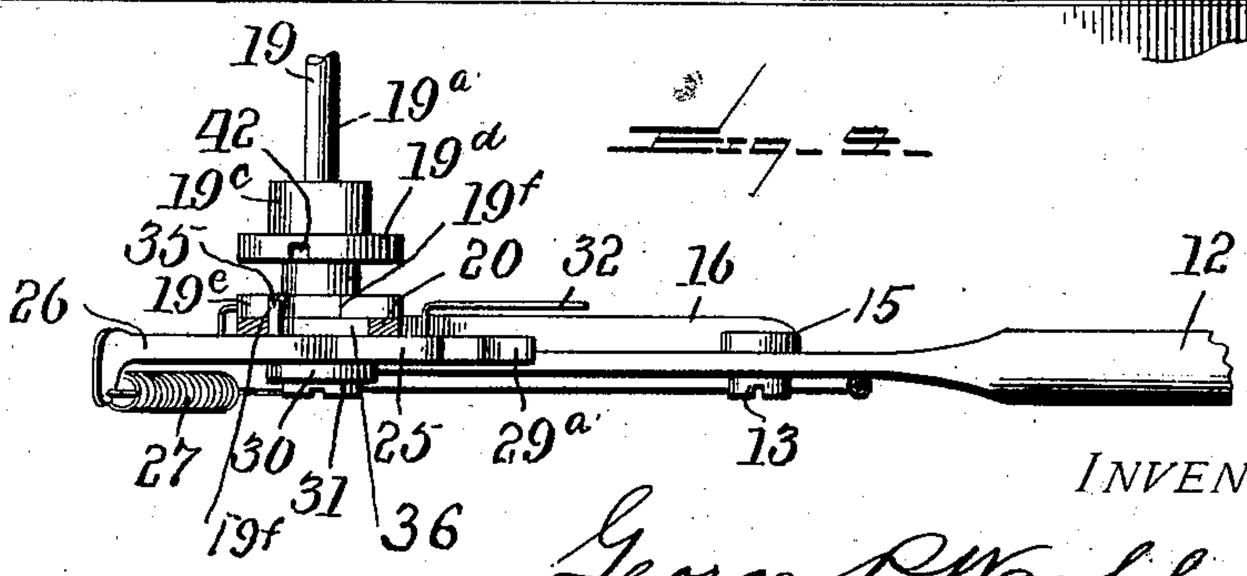

FIG. 7.

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UNITED STATES PATENT OFFICE.

GEORGE P. WASHBURN, OF CHADRON, NEBRASKA.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 698,160, dated April 22, 1902.

Application filed September 4, 1901. Serial No. 74,276. (No model.)

To all whom it may concern:

Be it known that I, GEORGE P. WASHBURN, a citizen of the United States, residing at Chadron, in the county of Dawes and State of Nebraska, 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in acetylene-gas generators, and particularly to the mechanism by which carbid is fed to the generator. It is intended to provide an automatic carbid-dropper operated by the rise and fall of the gasometer-bell, the dropper comprising a rocking cup or shovel adapted to receive carbid from the supply funnel or receptacle and to throw the same into the water in the generator.

A further object is to provide means for sealing the generating-chamber, so as to prevent the rise of gas or moisture into the carbid-supply.

A further object is to provide means for forcing open the sealing means.

A further object is to provide a carbid-dropper which may be operated by hand to start the generator in the beginning or at times when the carbid-supply may have been inadvertently allowed to become exhausted.

With these and other objects in view the invention is hereinafter described and is illustrated in the drawings.

It is to be understood that I do not limit the scope of my invention to the precise mechanism illustrated and described.

In the drawings, Figure 1 is an elevation of the apparatus, the lower parts of the tank and generator being broken away. Fig. 2 is an elevation, partly in section, of the dropping apparatus. Fig. 3 is an elevation, also partly in section, of the dropping-cup and sealing-valve and connected parts as viewed from the left of Fig. 2. Fig. 4 is a detail view in section on the line 4 4 of Fig. 2 looking down. Fig. 5 is a detail view in section on the line 5 5 of Fig. 2.

Referring more particularly to the drawings, the generator is indicated at 6, the gasometer-tank at 6^a, and the gasometer-bell at 7, the latter being of the usual rising-and-falling kind. At the top of the bell is secured a laterally-extending bracket 8, from which depends a rod 9, passing through guide-brackets 10 on the gasometer-tank. This rod moves vertically with the bell and is joined by a connecting-rod 11 to the outer end of a lever 12, which operates the dropper. The connection between bell and the lever may be made adjustable in a variety of ways, so as to operate the lever at a predetermined point of fall of the bell. I have shown for this purpose the upper end of the rod 9 as screw-threaded for a distance, with two jam-nuts 9^a thereon, between which the bracket 8 is held. The lever is fulcrumed on a screw-pin 13, which passes loosely through a slot 14, formed in the lever, and is screwed into the arm 15 of the bracket 16, which is supported upon a bracket 17, projecting from the generator. The fulcrum of the lever is formed in a slot to allow for the rise of the lever due to the rise of the bell. When the bell falls, the pin strikes the upper end of the slot and the lever operates the dropping device now to be described. A small spiral spring 18, secured at one end to an arm 18^a, projecting from the bracket and at the other end to the lever, serves to bring the lever down upon the pin, so that it will not operate before the pin reaches the upper end of the slot.

Referring now to the dropping device, a rock-shaft 19 is formed in two sections 19^a and 19^b, joined by a loose sleeve-coupling 19^c, extending over the adjacent ends of the sections. The section 19^b is supported in a bearing in the standard 20, which rises from the bracket 16. To the outer end of this section is fixedly secured a yoke comprising two lateral arms 25 and a vertical crank-arm 26. The lateral arms terminate in contact-heads 25^a. A coiled spring 27 is attached in tension between the upper end of the arm 26 and a projection 28 on the bracket 16. This spring serves to rock the shaft with a sudden motion first in one direction and then the other after the yoke attached to the section 19^b shall have been lifted by the lever on one side until its vertical arm 26 is beyond the perpendicular. To

the inner end of the lever 12 is pivoted by a pin 12^a the upright bar 29, which divides into two upwardly and outwardly extending branches 29^a, the ends of which are concave and adapted to strike and lift alternately the heads 25^a of the yoke-arms 25. The distance between the heads 25^a is less than between the ends of the branches 29^a, so that when the head on one side is engaged on the upward stroke of the lever the head on the other side passes downwardly within the disengaged branch of the bar 29. It is obvious that if the heads were both caught in the upward stroke the device would not operate. A slotted guide-link 30 is pivoted at its lower end to the lever 12 by the pin 12^a and is retained by the head of a screw 31, inserted through the slot into the end of the shaft-section 19^b, the link serving to guide the motion of the lever and prevent any lateral play thereof. The bar 29 is caused to tilt, so that one and not both of its branches will strike the (lowest) head 25^a of the yoke-arms by guide rods or wires 32, which extend inwardly and downwardly from the heads 25^a into position to engage alternately a pin 33 on the bar 29, which pin works within a vertical slot 34 in the standard. The slot is wider than the pin, so that a limited lateral motion is permitted as well as the vertical motion. When the inner end of the lever descends, owing to the rise of the bell, the pin 33 contacts with the guide-wire 32, attached to the lower of the heads 25^a, throwing the pin and bar 29 laterally, so that one of the branches of the bar will be directly below and in a position to lift the lower yoke-arm at the next rise of the lever. By this means the shaft is rocked in opposite directions alternately. The rocking movement of the shaft is limited by a stop-pin 35, extending from the crank-arm 26 into a curved slot 36 in the standard 20, the slot being concentric with the shaft. The section 19^a of the rock-shaft is journaled in a gas-tight bearing 21 in the wall 22 of the neck of the generator. The sleeve-coupling 19^c has two annular flanges 19^d and 19^e and has a limited longitudinal sliding movement upon the shaft. A portion of the flange 19^e is cut away circumferentially to form shoulders 19^f, against which the pin 35 strikes when the section 19^b of the shaft is rocked, the coupling being loose upon that section of the shaft. The end of the section 19^a within the coupling has pins 37, engaging in axial slots in the coupling. It will be seen that when the section 19^b is rocked by means of the lever 12, as heretofore described, no motion of the section 19^a occurs until the pin 35 strikes the shoulder 19^f. Then in consequence of the spring 27, which then becomes operative, both sections of the shaft are given a sudden throw or jerk which is communicated to the dropping-cup 24. The object of this is to cause all the carbid to be discharged at once cleanly by the jar of the sudden jerk and stop.

To rock the shaft by hand, or rather the section 19^a thereof, a lever 39 is employed. This lever is pivoted above the coupling by a pin 39^a to a block 40, which is pivotally mounted upon the standard 20. The lever 39 is thus movable both longitudinally and laterally relative to the shaft. The lower end of the lever 39 extends between the flanges 19^d and 19^e, and by reason of a spring 41 between the upper end of the lever and the standard 20 the coupling 19^c is normally retained in position to be automatically operated, as hereinbefore described. In the flange 19^d, in line with the end of the lever, is a notch 42. To work the shaft by hand, the coupling 19^c is shifted by the lever, the lower end of which enters the notch 42 until the shoulders 19^f are out of engagement with the pin 35. Then the lever is moved laterally upon the pivot of the block 40 and the section 19^a of the shaft rocked as desired without transmitting any motion to the section 19^b and the normal actuating means hereinbefore described. A retaining-frame 43 at the top of the standard serves to guide and limit the motion of the lever.

At the inner end of the rock-shaft 19 is a crank-arm 44, formed at its ends into prongs 44^a, between which is engaged the crank 45 of the crank-shaft 46, which is supported by brackets 46^a, depending from the carbid-funnel. Upon this crank-shaft the dropping cup or shovel 24 is fixed directly below the mouth of the carbid-funnel 23. To the other end of the crank-shaft is secured a crank 47, which is connected by a link-rod 48 to a vertically-movable rod 49. The joints of the connecting-rod are pivot-joints, as will be understood. The rod 49 passes through perforations in one of the brackets 46^a and is worked by the motion of the crank-shaft, so as to strike and open the weighted valve 50 at the mouth of the funnel 51. This funnel is within the neck of the generator below the carbid-funnel and its upper edge forms a gas-tight junction therewith, and the object of the rod 49 in striking the valve is to prevent the valve sticking to its seat. It is also intended that the weight of the carbid dropped upon the valve shall be sufficient to open the valve and allow the carbid to fall into the water in the generator below. The purpose of the funnel 51 and the weighted valve is to prevent the moisture and gas in the generator from ascending into the carbid-chamber and corroding the parts thereof. It has also been found that the moisture created by the heat of the water is apt to condense on the iron of the cup 24 and surrounding parts and cause clogging thereof by carbid-dust sticking thereto. The rim 52 is to prevent moisture condensed on the outside of the funnel from running down onto valve-seat. This rim surrounds the valve-seat.

The dropping-cup 24 is divided into two parts by a partition 24^a, as shown, so that one part fills when the other empties, and the carbid is dumped from each side alternately.

When the shaft is rocked, the cup is suddenly tilted and the carbid is discharged from one side thereof. It will be seen that the cup does not move until the proper time, so that no carbid is discharged until needed.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In a carbid-feeding apparatus for acetylene-gas generators, in combination, a carbid-receptacle above the generator, an opening therein through which the carbid is adapted to fall, a tilting cup below the opening discharging from each side alternately into the generator, and means connected with the bell of the gasometer to cause the cup to tilt according to the rise and fall of the bell.

2. In an acetylene-gas apparatus, in combination, a generator, a gasometer, a carbid-supply receptacle above the generator, an opening therein through which the carbid is adapted to fall, a tilting cup below the opening having two compartments one of which is adapted to discharge carbid into the generator when the cup is tilted in one direction and the other when tilted in the other direction, and means connected with the bell of the gasometer to cause the cup to tilt according to the rise and fall of the bell.

3. In an acetylene-gas apparatus, in combination, a generator, a gasometer, a carbid-supply receptacle, an opening therein through which carbid is adapted to fall, a tilting cup below the opening having two compartments discharging alternately into the generator, a rock-shaft adapted to cause the cup to tilt, and means connected with the bell of the gasometer to rock the shaft.

4. In an acetylene-gas apparatus, in combination, a generator, a carbid-supply receptacle, an intermittent feeding device therefor from which carbid is adapted to be delivered into the generator, a normally closed valve between the feeding device and the generator and means to automatically open the valve simultaneously with the delivery of the carbid.

5. In an acetylene-gas apparatus, in combination, a generator, a gasometer, a carbid-supply receptacle having an opening through which carbid is adapted to be discharged, a tilting cup below the opening, a funnel below the tilting cup adapted to receive the carbid discharged therefrom, a normally closed valve at the lower end of the funnel, means to automatically open the valve at the fall of the carbid, and means connected with the bell of the gasometer to operate the tilting cup.

6. In an acetylene-gas apparatus, in combination, a generator, a gasometer, a carbid-supply receptacle, a feed-opening therein, a spring-actuated tilting cup below the opening, having a plurality of compartments each alternately filling from the supply-receptacle and discharging into the generator, and means connected to the bell of the gasometer to cause the spring to tilt the cup according to the rise and fall of the gasometer-bell.

7. In an acetylene-gas apparatus, in combination, a generator, a gasometer, a carbid-supply receptacle, an opening therein through which carbid is adapted to fall, a tilting cup below the opening adapted to discharge carbid into the generator, a rock-shaft adapted to cause the cup to tilt, means connected to the rock-shaft to operate the same by the rise and fall of the gasometer-bell, and means to disconnect the rock-shaft from said means and to operate the rock-shaft otherwise.

8. In an acetylene-gas apparatus, in combination, a generator, a gasometer, a carbid-supply receptacle, a feeding device therefor, a funnel below the feeding device through which the carbid is adapted to fall into the generator, a valve at the mouth of the funnel, a rock-shaft extending into the funnel, means to rock the shaft according to the rise and fall of the gasometer-bell, and means connected with the shaft to operate the valve.

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

GEORGE P. WASHBURN.

Witnesses:
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A. WEBER.