No. 659,795. Patented Oct. 16, 1900.

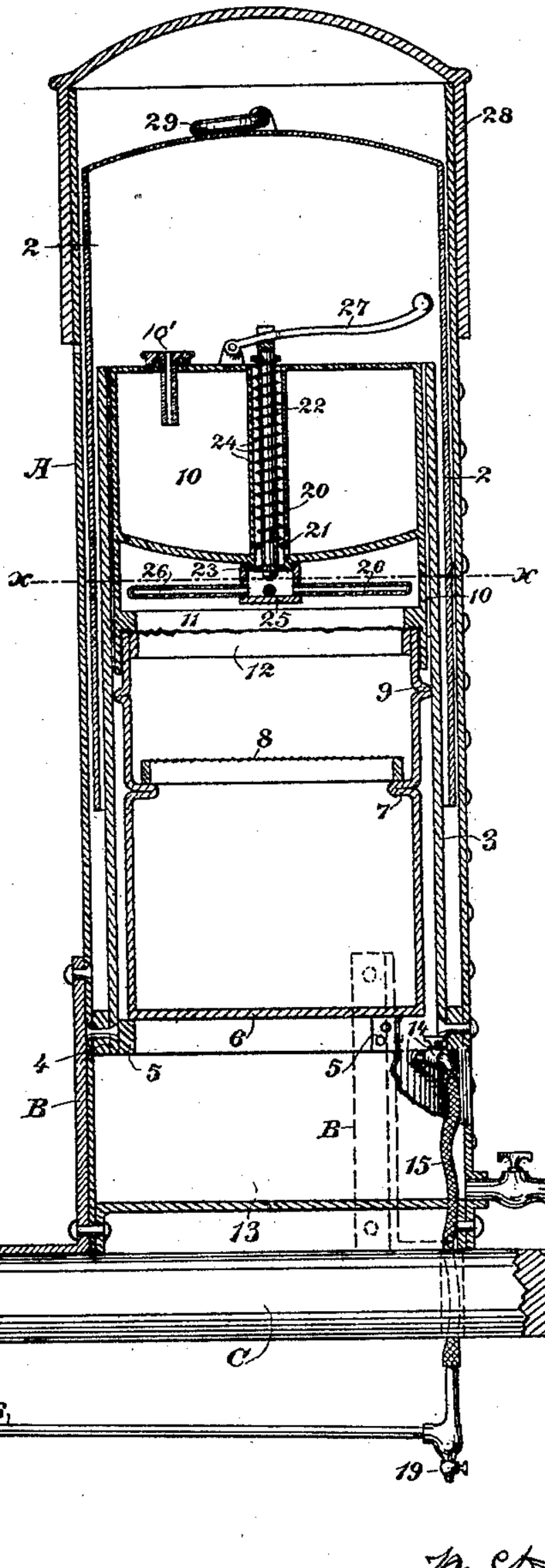
McDONALD ELLIOTT.

ACETYLENE GAS APPARATUS.

(Application filed July 12, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.



Witnesses,
J. F. Dowse
F. F. Ascheck

Inventor
McDonald Elliott
By Dewey & Thorngate
Atty

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 659,795. Patented Oct. 16, 1900.

McDONALD ELLIOTT.

ACETYLENE GAS APPARATUS.

(Application filed July 12, 1900.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 2.

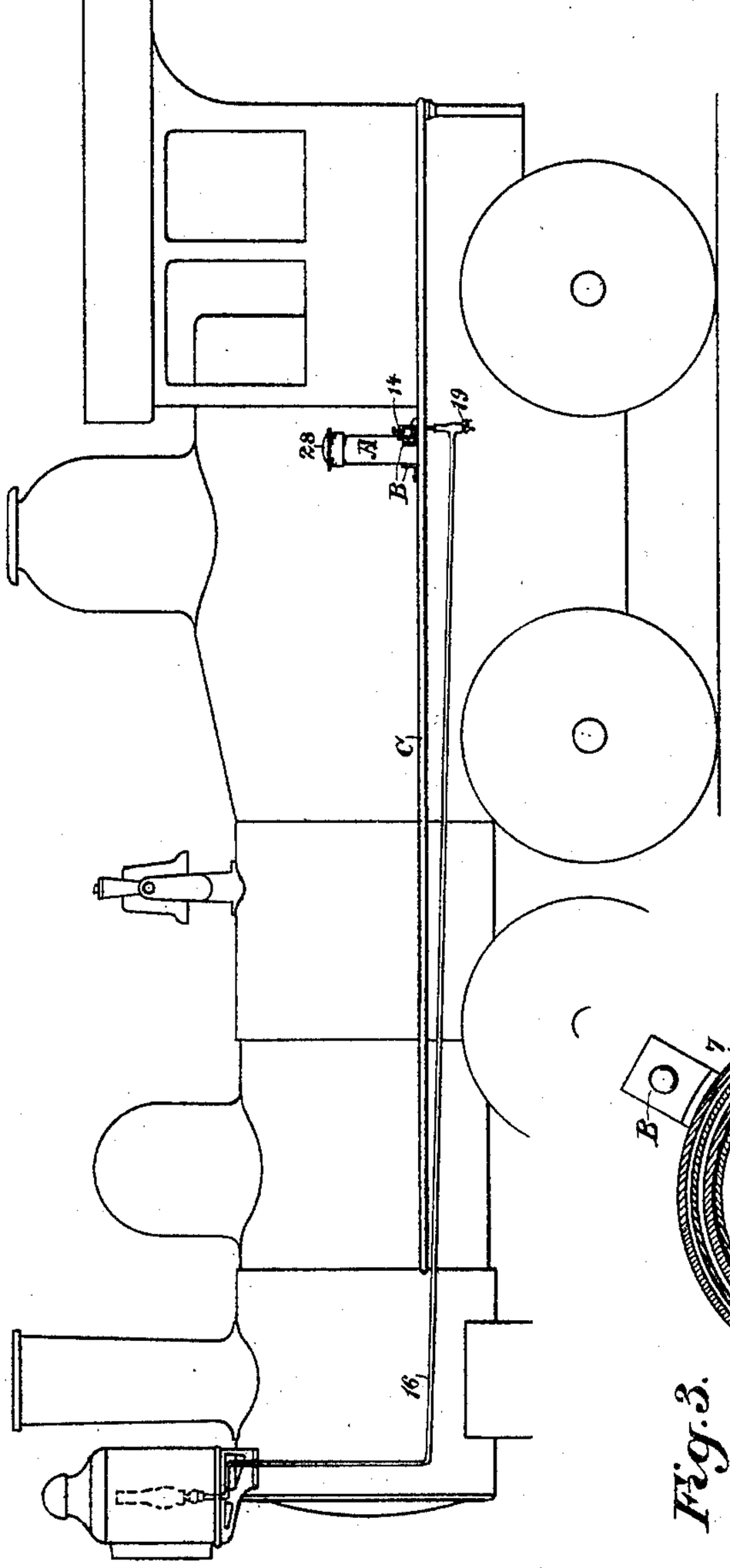
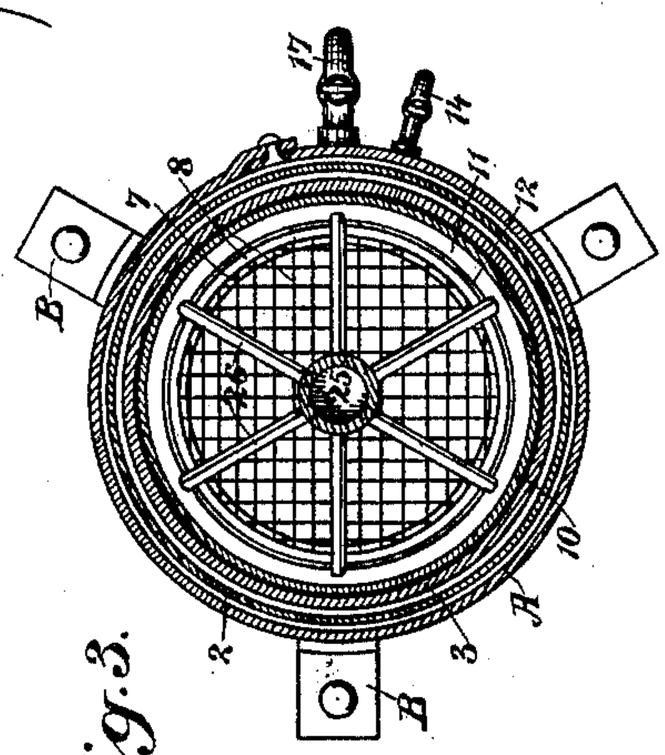


Fig. 3.



Witnesses,
J. A. Jones
F. F. Ascheck

Inventor,
McDonald Elliott
By Dewey & Thought Co.
Attys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

McDONALD ELLIOTT, OF SANTA ROSA, CALIFORNIA.

ACETYLENE-GAS APPARATUS.

SPECIFICATION forming part of Letters Patent No. 659,795, dated October 16, 1900.

Application filed July 12, 1900. Serial No. 23,346. (No model.)

To all whom it may concern:

Be it known that I, McDONALD ELLIOTT, a citizen of the United States, residing at Santa Rosa, county of Sonoma, State of California, have invented an Improvement in Acetylene-Gas Apparatus; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to an apparatus for the production of acetylene gas from calcium carbid and its transmission to a point where it is to be used.

It consists in details of construction comprising a gasometer, an exterior casing therefor, a carbid-basket, valve-controlled water-supply, and ash-receiver contained within the gasometer, means for regulating the supply of water to the carbid-basket, and means for delivering the gas and conducting it to the point where it is to be used.

It also comprises details of construction, which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a vertical section of the apparatus. Fig. 2 is an outline view of a locomotive, showing the apparatus and connection between it and the headlight. Fig. 3 is a section taken through *x x* of Fig. 1.

The object of my invention is to provide an apparatus for the production of acetylene gas under such conditions that when the generator is subjected to violent shocks and oscillations the water contained therein is prevented from splashing about under violent movements. Gas is manufactured in only sufficient quantities to supply the single light for which it is designed. Means are provided for steadying the flow of gas under the conditions above named and means for automatically regulating the supply of water to the carbid and disposing of any water of condensation, so as to keep it away from the carbid.

The outer casing A has a base B, to which it is bolted or riveted, and this base is adapted to be fixed upon what is known as the "running-board" C of an engine; but it may also be transferred to a point within the cab in case of cold weather or conditions which make such transfer desirable.

The apparatus is designed to be only of sufficient size to supply the headlight of a locomotive and is approximately about eight inches in exterior diameter by two feet (more or less) in height. This provides a sufficient length, so that the gasometer-bell 2 can rise and fall to accommodate the amount of gas received within it without any exterior or supplemental guides of any description.

Within the outer casing A is a tubular cylinder 3, the exterior diameter of which is sufficiently smaller than the interior of the casing A to admit the walls of the gasometer 2 sliding between the cylinder 3 and the casing A. At the bottom this cylinder is surrounded by a ring 4, which just fits within the casing A, and both parts are bolted thereto, so that the ring forms a bottom to the space between the casing A and the cylinder 3. Within the annular chamber thus formed a sufficient amount of water is placed to form a seal in which the open bottom of the gasometer dips, and within this water the gasometer rises and falls. It fits so snugly between these two walls and is of such a length in proportion to its diameter that it is properly guided in its rise and fall and prevented from tilting to one side or the other. The amount of surface of the water surrounding the bell and contained within the channel is so small that the most violent oscillations and shaking will fail to splash it about or essentially move it in the chamber. Around the bottom of the cylinder 3 and interior to it are lugs, as at 5, which serve to support the cylindrical chamber 6, which chamber fits closely within the inner cylinder 3, and its lower part forms an ash-receiver. This chamber 6 has an inwardly-folded bead, as at 7, which serves to receive and support the perforated or screen bottomed basket 8, containing the calcium carbid. An outwardly-turned bead or fold at 9 serves to make a sufficiently-close fit between this part and the inner surface of the cylinder 3 to prevent the basket and ash-receiver from being shaken or moved about, while at the same time sufficient space is allowed for the gas to filter through from the carbid-chamber. Above the chamber 6 and the carbid-basket is a water-chamber 10, which fits with sufficient closeness within the cylinder 3, and it has a downward extension below the bottom with

an interior rim or flange 11, so that this flange rests upon the top of the chamber 6, the annular extension below the ring surrounding the exterior of the chamber 6, and thus holding the chamber 10 steadily in position. Water may be admitted to said chamber 10 through a suitable filling tube or opening at 10′ or in any other suitable manner. The ring 12 also surrounds the interior of the upper part of the chamber 6 and forms a sufficiently-rigid support for the ring 11. The meeting surfaces of the rings 11 and 12 are left in a rough or unfinished condition and do not make a perfectly-tight joint with each other. This allows the gas formed within the upper part of the chamber 6 and above the basket 8 to pass out between these two rings, thence into the thin annular channel between the cylinder 3 and the water-chamber 10, and also between this cylinder and the chamber 6, so that the gas as produced may pass upwardly through this annular channel into the gasometer 2 and also pass downwardly around the chamber 6 and into the chamber 13 in the bottom of the apparatus, and from which it is drawn by means of a cock 14 in the upper part of this lower chamber. By means of a flexible tube or hose 15 the gas is conveyed into the pipe 16, which conducts it to the headlight-burner on the front of the engine. The cock 14 has a small passage through it, the area of which is much less than that of the pipes 15 and 16, and the latter thus form a sort of reservoir or regulator between the cock 14 and the burner, which serves to prevent vibration and variation in the steadiness of the light.

17 is a cock by which water of condensation may be drawn from time to time from the chamber 13, and a passage or opening 18 is made through the footboard or other point of support for its discharge.

19 is a cock connected with the pipe 16 or the elbow or joint, so that any water of condensation within this pipe can also be withdrawn. In order to supply water from time to time to moisten the calcium carbid, the chamber 10 is constructed with a central tube 20, having perforations, as at 21, through which water may pass from the chamber into the interior of the tube. Within this tube is a stem 22, and beneath the concaved bottom of the chamber is a slight extension, which forms a seat for a valve 23. This valve is normally closed by a spring 24, surrounding the stem 22, and when opened it delivers into a central space 25, having radially-perforated arms 26, through which the water is carried outwardly and sprinkled over the carbid in the basket 8 below. The spring 24 normally closes the valve 23, and the upper end of the valve-stem 22, projecting above the chamber 10, is slotted to receive a lever 27, which is so fulcrumed that the outer free end is in the line of travel of the top of the gasometer-bell 2, so that when the latter sinks to a sufficient distance it will form contact with the end of the lever and depress it and the stem 22 sufficiently to open the valve 23 and allow water to flow from the chamber 10 and be discharged upon the carbid. As soon as sufficient gas has been generated to again raise the gasometer it will move out of contact with the lever 27, and the spring 24 will close the valve.

28 is a slidable cap fitting over the outside of the casing A and having sufficient length to allow of considerable movement upon the casing without disengaging. The upper part of this cap is made convex, as shown, corresponding with the top of the gasometer 2, so that if the latter rises within the cap the cap may yield and move upwardly in unison with the movements of the gasometer without being detached from its place.

The gasometer is here shown with the ring or other attachment, as at 29, so that when the cap has been removed the gasometer can be lifted out and all the other parts successively removed from the interior.

The whole device is thus made very compact and easy of access. The gas being generated by moistening of the carbid within the basket will escape between the roughened rings 11 and 12 and, passing into the narrower annular channel surrounding the basket and the water-chamber, (the production of which is always attended with some heat,) will be cooled by contact with the surrounding inner wall of the water-chamber in which the gasometer floats, and this causes condensation within this channel, and this water of condensation will flow downwardly into the chamber 13 and can in no manner enter the carbid-containing chamber. This enables me to keep the carbid from any dampness except what occurs from the discharge of water upon it from time to time, and at intermediate times the carbid will become dried and will not generate gas except whenever the gas is being used.

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

1. The combination in an acetylene-gas generator, of an exterior casing, a cylinder interior to the same, an annular water-containing chamber interior to the cylinder and separated from the inner walls thereof to form a gas-passage, means for admitting gas to said passage, an open-bottomed gasometer-bell movably fitted in the space between the outer casing and said cylinder, and a gas-generating mechanism within said cylinder in line with the water-containing chamber.

2. The combination in an acetylene-gas apparatus of an exterior casing, a cylinder of smaller diameter interior thereto having a ring interposed between the two around the bottom of the interior chamber and forming a bottom to the annular channel thus produced whereby said channel is adapted to contain a limited amount of water, an open-bottomed gasometer-bell, fitting said chan-

nel and submerged in the water therein, the walls of the channel serving as a guide for the rise and fall of the bell, a water-containing chamber within the cylinder and separated from the walls thereof to form a gas-passage, a gas-generating mechanism, means for admitting gas to said passage, and a cap slidable upon the top of the casing and adapted to move in unison with the rising of the bell without disengagement from the casing.

3. The combination in an acetylene-gas generator of an exterior casing, an interior cylinder of smaller diameter having a closed bottom adapted to contain water, an open-bottomed gasometer-bell fitting and movable in said annular chamber, a chamber movably fitted to the interior of the inner cylinder, lugs upon which it is supported, said chamber having an outwardly-turned bead to guide it within the cylinder, an inwardly-turned bead to form a support for the carbid-basket, and means for supplying water to the carbid.

4. The combination in an acetylene-gas generator of the exterior casing, an interior cylinder of smaller diameter forming an annular water-chamber between the two, a gasometer-bell guided and movable within said annular chamber, a beaded close-bottomed chamber fitting within the inner cylinder, a carbid-basket supported therein and a removable water-chamber slidable within the interior cylinder, and having a rib or lugs by which it rests upon the top of the carbid-containing chamber.

5. The combination in an acetylene-gas apparatus of an exterior casing, an annular water-chamber interior thereto, a gasometer-bell guided and adapted to rise and fall within said annular space, a chamber interior to the cylinder which forms the inner wall of the gasometer-well, the lower part of said chamber serving as an ash-receiver, a carbid-basket removably supported within said chamber, a water-chamber and means for supporting it upon the top of the carbid-chamber, a spring-closed valve and a controlling-lever by which the valve is automatically opened when the gasometer sinks, and closed when it rises.

6. The combination in an acetylene-gas apparatus of an exterior casing, an annular water-chamber, and a rising and falling gasometer interior thereto, a carbid-containing and ash chamber and a water-tank within the gasometer, a spring-closed valve controlling the flow of water, and distributers through which the water is delivered upon the carbid below, a lever fulcrumed and connected with the valve-stem with its free end in the line of movement of the gasometer whereby the sinking of the latter depresses the lever and opens the valve and the rising of the gasometer allows it to close.

7. The combination in an acetylene-gas generator of an exterior casing with an internal water seal and rising and falling gasometer, a carbid-containing and ash chamber removably located within the gasometer having a roughened rim at the top, a water-chamber having extensions and a correspondingly-roughened interior rib resting upon the top of the carbid-chamber, said roughened surfaces providing for the passage of the gas between them and into the annular space surrounding the carbid and water chambers whereby the gas is brought into contact with the surrounding water seal of the gasometer and condensation takes place in said exterior annular channel.

In witness whereof I have hereunto set my hand.

McDONALD ELLIOTT.

Witnesses:
E. E. Morrow,
D. H. Leppe.