

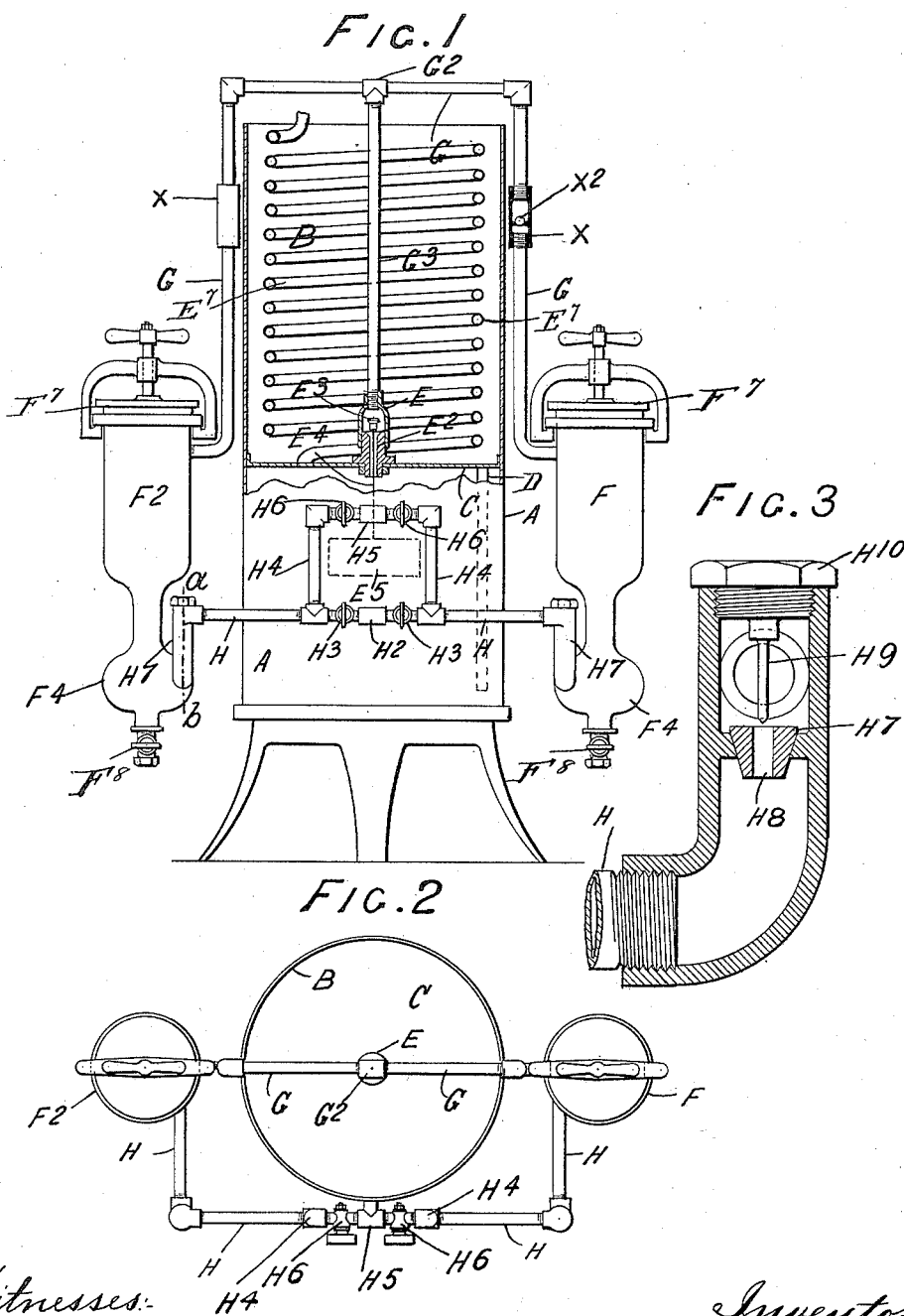
(No Model.)

J. H. EXLEY.

APPARATUS FOR MANUFACTURING ACETYLENE GAS.

No. 584,339.

Patented June 15, 1897.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

JOHN HENRY EXLEY, OF BRADFORD, ENGLAND.

## APPARATUS FOR MANUFACTURING ACETYLENE GAS.

SPECIFICATION forming part of Letters Patent No. 584,339, dated June 15, 1897.

[Application filed December 13, 1895. Serial No. 572,048. (No model.)]

*To all whom it may concern:*

Be it known that I, JOHN HENRY EXLEY, a subject of the Queen of England, residing at Bradford, England, have invented certain new and useful Improvements in Apparatus for Manufacturing Acetylene Gas, of which the following is a specification.

This invention relates to improvements in that type of apparatus for generating acetylene gas in which the water required for the generation of gas is automatically admitted to the generator from the holder or receiver, and particularly to that type of apparatus in which two or more generators are connected to one holder.

In the accompanying drawings, forming a part of this specification, Figure 1 represents an elevation, partly in section, of an acetylene-gas-producing apparatus with my improvements applied thereto. Fig. 2 represents a plan view of the same. Fig. 3 represents a view on a larger scale of a detail hereinafter referred to.

The generators F and F<sup>2</sup> are fixed on opposite sides of the holder A, and a water-cistern B is formed above the diaphragm or top of the holder C.

F<sup>7</sup> are covers for closing the generators and adapted to be clamped or secured in position by suitable means, as shown, and F<sup>8</sup> are draw-off cocks for said generators.

The lower ends F<sup>4</sup> of the generators are connected by the pipes H H to the T-pipe H<sup>2</sup>, connected to the holder for the purpose of allowing water to flow from the holder to the generators when it rises in the holder above the T-pipe H<sup>2</sup>. Stop-taps H<sup>3</sup> are fitted in the pipes H H, so that the connection between the holder and either or both of the generators may be closed when required.

In order to bring either of the generators automatically into operation as soon as the contents of the other generator are exhausted, I connect a branch pipe H<sup>4</sup> to each of the pipes H, and I couple them to a T-piece H<sup>5</sup>, connected to the holder A a suitable distance above the connection H<sup>2</sup>. Stop-taps H<sup>6</sup> are provided in the pipes H<sup>4</sup>.

D is a pipe leading from the bottom of the water-cistern to a point adjacent to the bottom of the holder A and adapted to permit water to be forced up into the cistern and to

conduct water back from said cistern into the holder.

E<sup>7</sup> is a pipe, preferably in the shape of a coil, adapted to conduct gas from the holder, said gas being cooled as it passes through the coil.

In operation when both the generators are charged the tap H<sup>3</sup> of one of the passages is opened, and then as soon as sufficient gas is generated to lower the level of the water in the holder below the level of the connection H<sup>5</sup> the tap H<sup>6</sup> in the passage H<sup>4</sup> to the other generator may be opened, and this generator is then ready to be automatically brought into operation as soon as the first generator is practically exhausted and the consumption of gas allows the water in the holder to rise high enough to flow by the passage H<sup>2</sup> into the second generator.

For the purpose of gradually admitting the water to the generators by the passage H, but at the same time allowing it perfectly free egress, I introduce a valve H<sup>7</sup>. (Shown on a larger scale by the vertical section, Fig. 3, of a portion of the passage H on the broken line a b, Fig. 1.) This valve is provided with a passage H<sup>8</sup>, through which the water is always free to pass in either direction, and when the volume of water flowing from the generator is greater than this passage will carry the valve H<sup>7</sup> is lifted and the water-passage is proportionately enlarged. To retain the valve in a position adapting it to fall back into its seat when the pressure of water subsides, I provide a projection H<sup>9</sup> on the under side of the valve-cover H<sup>10</sup>, immediately over the passage H<sup>8</sup>. Consequently when the valve is lifted it engages this projection and lateral displacement is prevented.

To automatically stop the gas-passages G G from the generators to the holder, I carry these pipes up over the top of the cistern B and connect them to the T-piece G<sup>2</sup>, connected by the pipe G<sup>3</sup> to the casing E of an automatic stop-valve fixed above the diaphragm. The top of the passage E<sup>2</sup>, from the interior of the casing E through the diaphragm to the holder A, is fitted with a valve E<sup>3</sup>, connected by the rod E<sup>4</sup> to the float E<sup>5</sup>, placed in the holder A. It will be readily understood that as soon as the water in the holder falls to a certain point (as, for instance, when the wa-

ter is forced down to the level of the T-piece H<sup>2</sup>) the float falling with it will close the passage E<sup>2</sup> by means of the valve E, and will keep it closed until the water in the holder again rises above that point.

The valve-boxes X are fixed in the pipes G G and are fitted with balls X<sup>2</sup> or other valves, adapted to prevent gas passing from one generator to the other or from the holder to the generators.

To put the apparatus in operation, the receiver or holder is filled with water and the calcic carbide placed within the generators, the covers of which are then firmly secured in place. Assuming that the generator F is first used, the cock H<sup>3</sup> is opened to permit the water to flow by gravity into the said generator and the generation of gas at once commences and flows through pipes G G<sup>3</sup> and passage E<sup>2</sup> into the holder A. The gas thus admitted displaces the water in the holder, which is forced up into the cistern B through pipe D until the water in the holder falls below the level of the connection H<sup>2</sup>.

As soon as the generator F is exhausted and the consumption of gas allows the water to again rise in holder A to a level sufficiently high to flow by passage H<sup>4</sup> into generator F<sup>2</sup> the cock H<sup>6</sup> in passage H<sup>4</sup> leading to generator F<sup>2</sup> may be opened, which latter will then be put in operation similarly to generator F. I would state that the valve E<sup>3</sup> has no valve-face on its upper side nor has the pipe G<sup>3</sup> a valve-seat at its bottom or lower end. Consequently the valve cannot close the end of pipe G<sup>3</sup>, although it might obstruct it to some extent, and if objectionably so suitable means may be provided to prevent the valve rising too high or to so construct the end of pipe G<sup>3</sup> that the valve cannot close it.

I claim—

1. In apparatus for manufacturing acetylene gas, the combination with a holder, a generator, and a water-passage connecting the two, of a valve removably seated within said passage and having a port or passage of less area than that of the passage formed by the valve-seat, said valve being adapted to be

raised from its seat when the volume of water flowing from the generator is greater than the port in the valve will carry, and to be again seated to permit water to flow only through its port when the volume of the water subsides, as specified.

2. In apparatus for manufacturing acetylene gas, the combination with a holder, and a water-cistern arranged above the holder, of a generator a gas-passage extending from the upper portion of the generator down through the cistern and discharging into the holder, a water-pipe leading from the cistern and discharging at a point adjacent to the bottom of the holder, a water-pipe connecting the holder with the lower portion of the generator, a valve arranged in the gas-passage, and a float arranged in the holder and adapted to raise and lower the valve as described to cause the latter to control the passage of gas into the holder.

3. In apparatus for manufacturing acetylene gas, the combination with a holder, and a water-cistern arranged above it, of generators, a gas-passage G leading from the upper portion of each generator, a gas-passage extending down within the cistern and leading into the holder and with the upper portion of which latter passage, the gas-passages G connect, a water-passage leading from the lower portion of each generator and into the holder, branch water-passage connecting with the first water-passages and with the holder at a higher level than do the said first water-passages, suitable cocks for the various water-passages, a valve arranged in the gas-passage which is within the cistern, and a float arranged in the holder and adapted to raise and lower the said valve as described to cause the latter to control the passage of gas into the holder.

In testimony whereof I have hereunto set my hand in the presence of the two subscribing witnesses.

JOHN HENRY EXLEY.

Witnesses:

SAMUEL A. DRACUP,  
DAVID NOWELL.