

No. 610,055.

Patented Aug. 30, 1898.

T. HOLLIDAY.

APPARATUS FOR PRODUCING ACETYLENE GAS.

(Application filed Nov. 18, 1896.)

(No Model.)

Fig. 1.

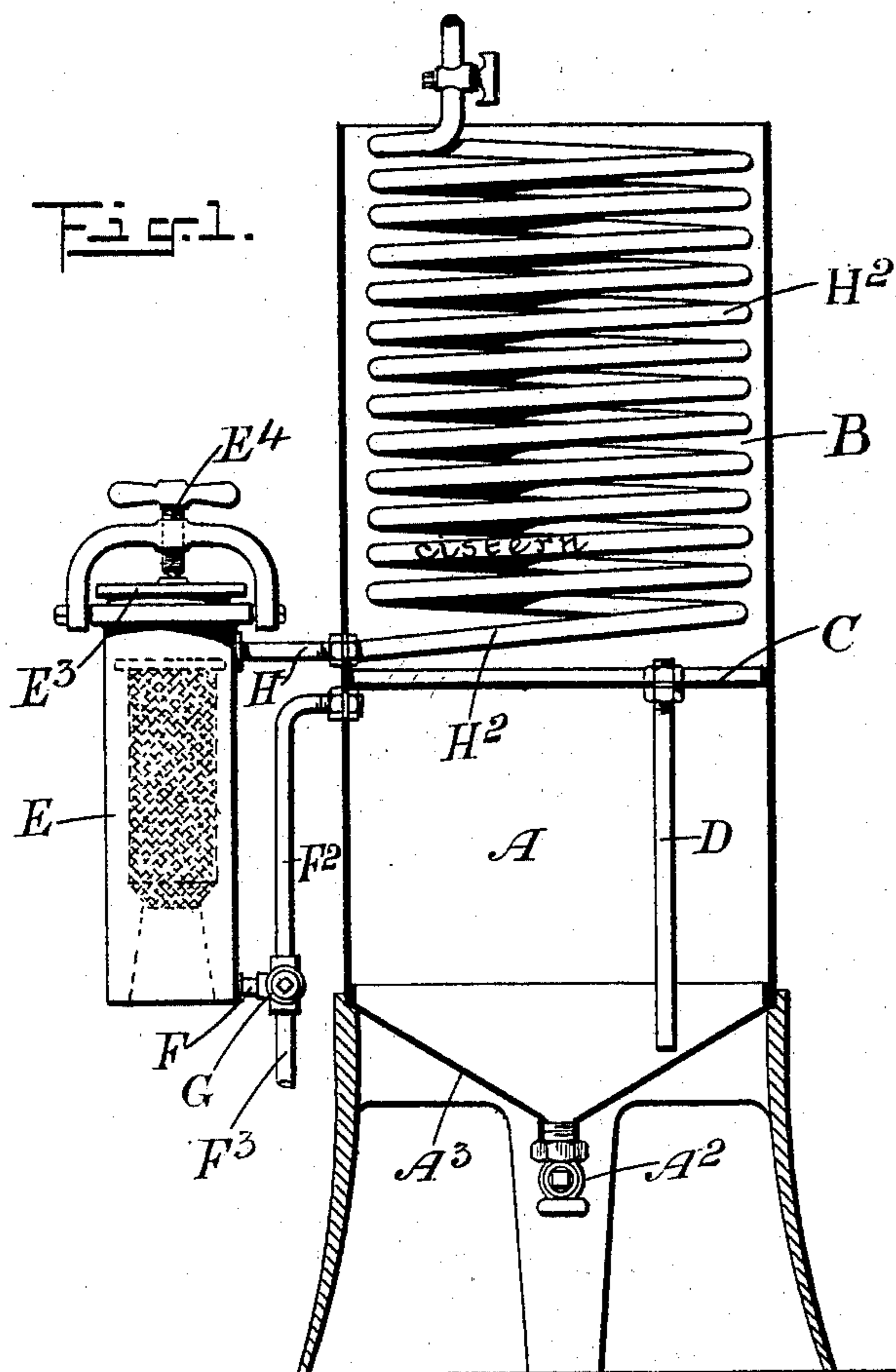


Fig. 3.

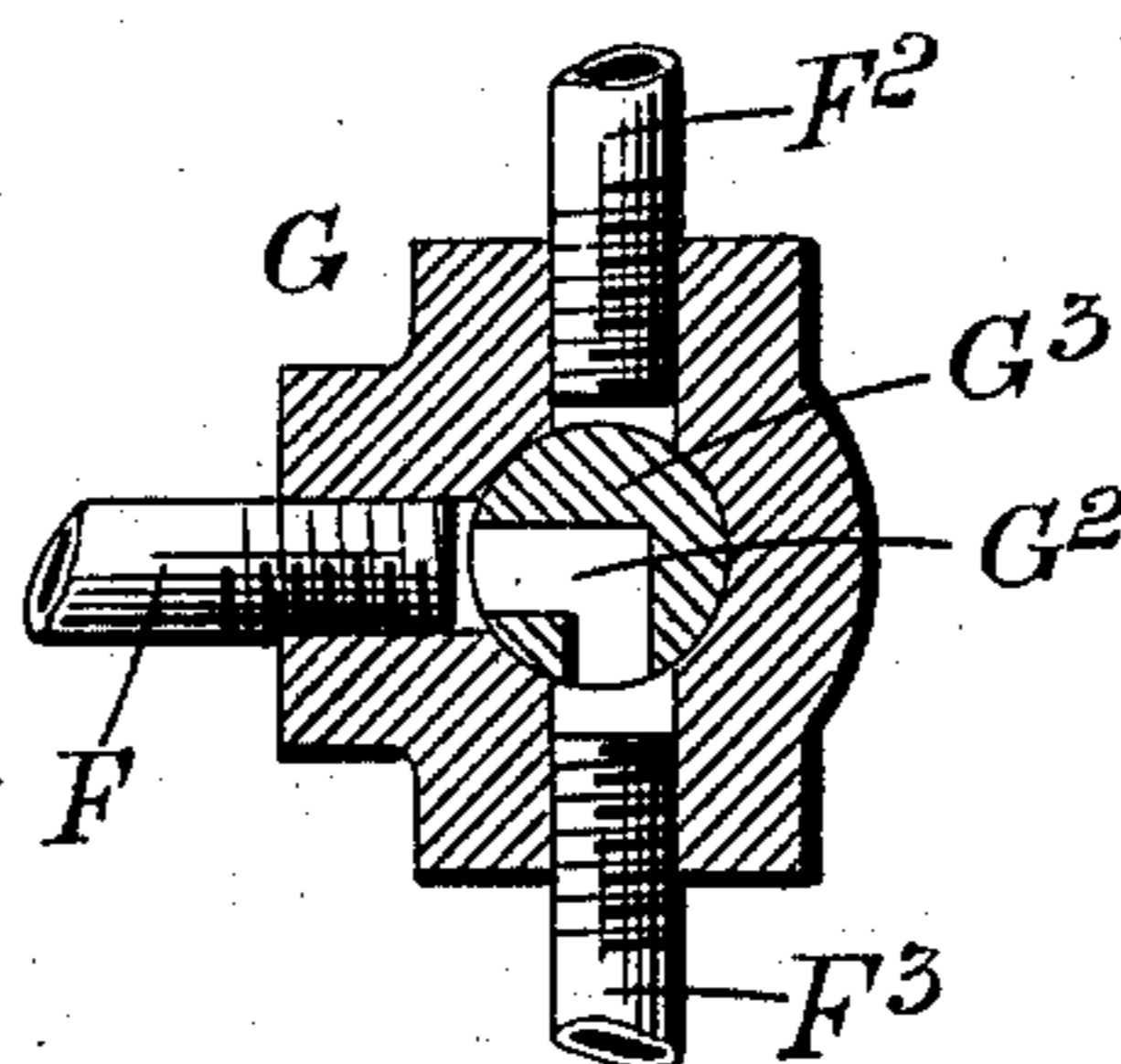


Fig. 4.

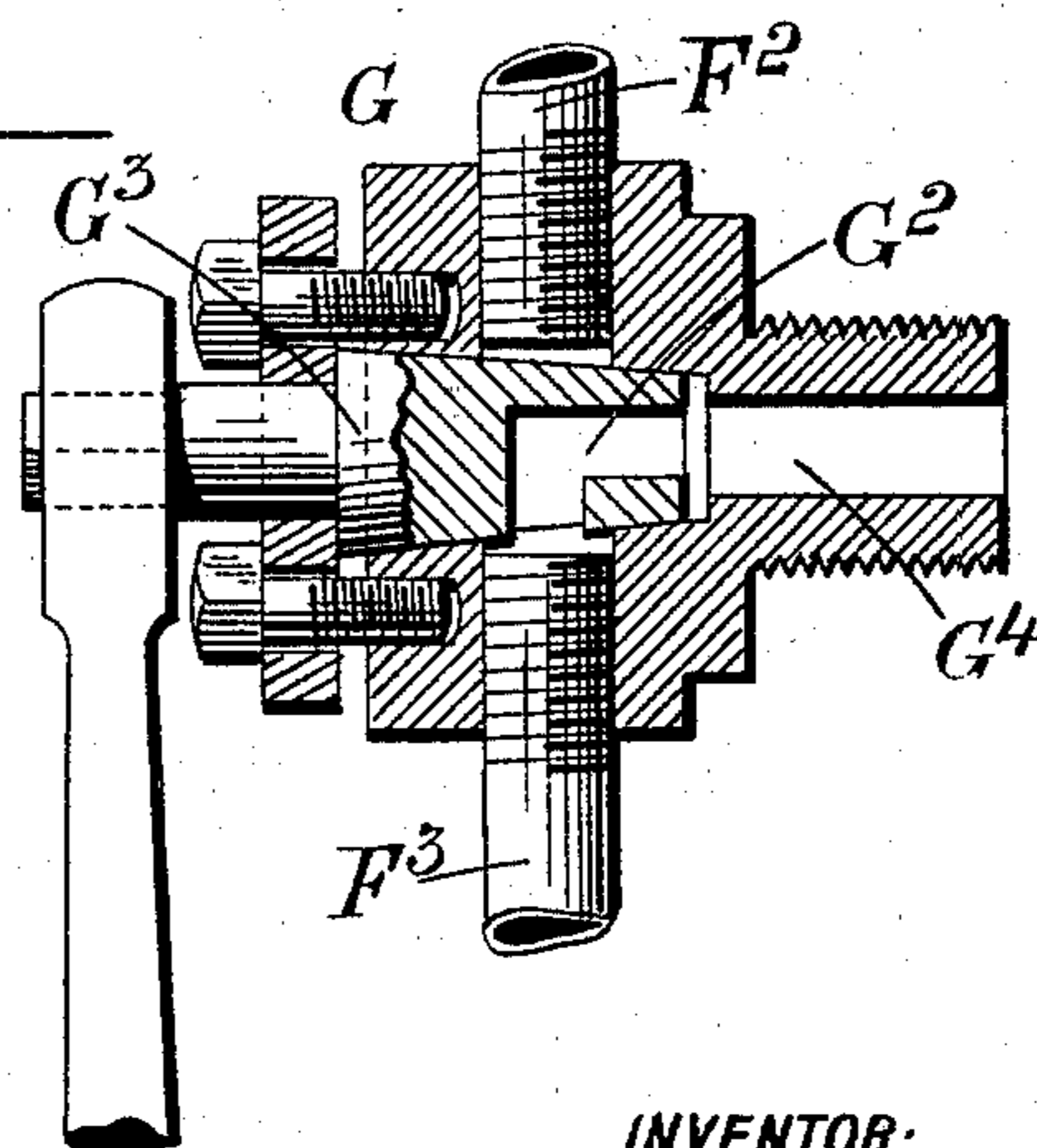
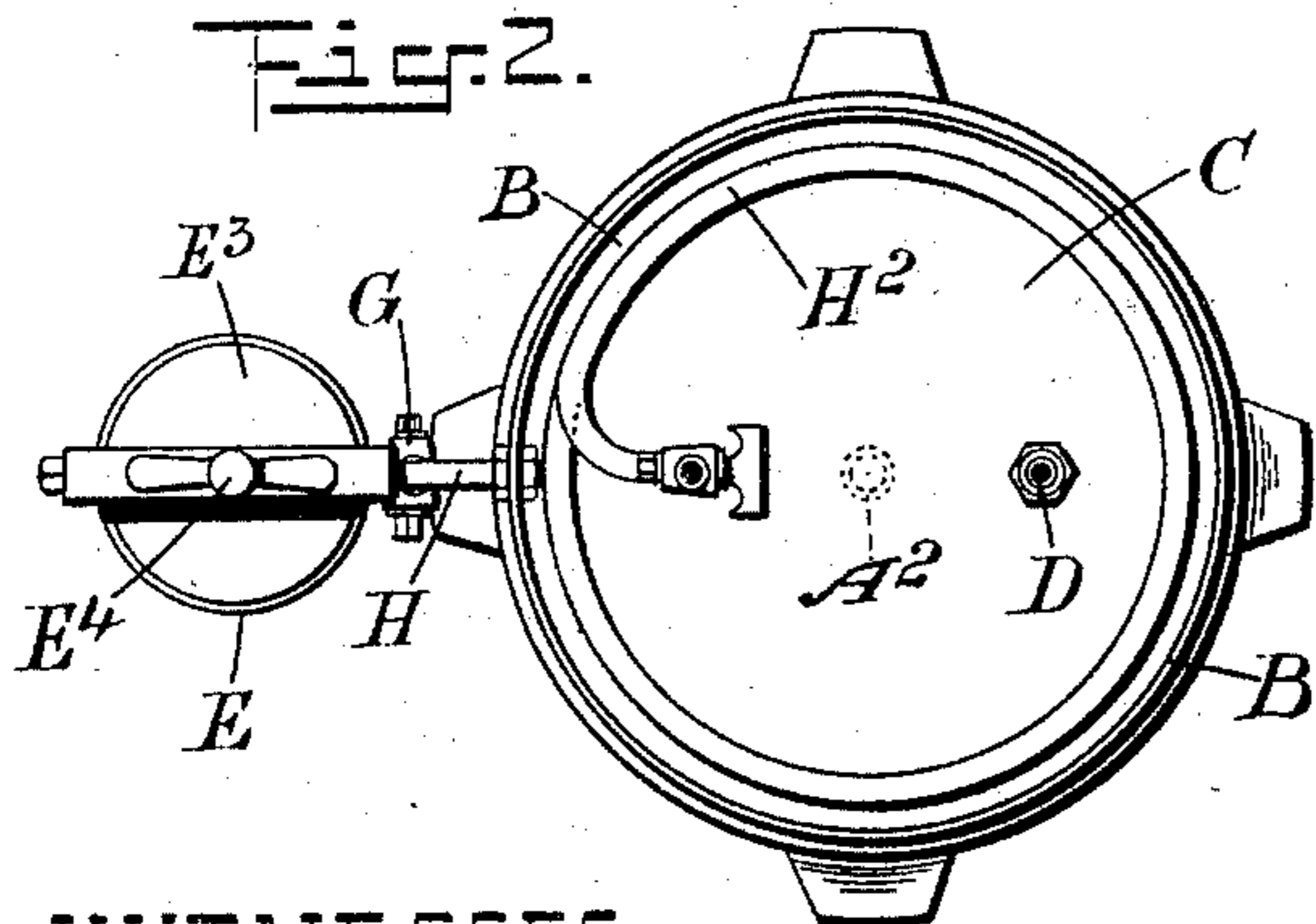


Fig. 2.



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THOMAS HOLLIDAY, OF HUDDERSFIELD, ENGLAND.

APPARATUS FOR PRODUCING ACETYLENE GAS.

SPECIFICATION forming part of Letters Patent No. 610,055, dated August 30, 1898.

Application filed November 18, 1896. Serial No. 612,590. (No model.) Patented in England March 16, 1896, No. 5,813, and January 12, 1897, No. 885; in France June 11, 1896, No. 275,168; in Belgium June 16, 1896, No. 121,931; in Cape Colony November 26, 1896, No. 1,256; in Transvaal December 9, 1896, No. 1,276; in Natal December 31, 1896, No. 12; in Switzerland January 21, 1897, No. 13,621; in Hungary January 21, 1897, No. 23,311; in Austria January 21, 1897, No. 47/1,018; in India February 17, 1897, No. 66; in Victoria February 18, 1897, No. 13,949; in South Australia February 19, 1897, No. 3,557; in New South Wales February 20, 1897, No. 7,279; in Portugal February 21, 1897, No. 2,409; in Tasmania February 22, 1897, No. 1,831; in Queensland February 22, 1897, No. 3,761; in Spain February 23, 1897, No. 20,274; in New Zealand February 27, 1897, No. 9,308; in West Australia March 2, 1897, No. 1,538, and in Italy April 28, 1897, LXXXVI, 76.

To all whom it may concern:

Be it known that I, THOMAS HOLLIDAY, a subject of the Queen of Great Britain, residing at Huddersfield, in the county of York, England, have invented certain new and useful Improvements in Apparatus for Producing and Storing Acetylene Gas, (which has been patented in England, No. 5,813, dated March 16, 1896, and No. 885, dated January 12, 1897; in France, No. 275,168, dated June 11, 1896; in Belgium, No. 121,931, dated June 16, 1896; in Switzerland, No. 13,621, dated January 21, 1897; in Italy, No. LXXXVI, 76, dated April 28, 1897; in Spain, No. 20,274, dated February 23, 1897; in Portugal, No. 2,409, dated February 21, 1897; in Hungary, No. 23,311, dated January 21, 1897; in Austria, No. 47/1,018, dated January 21, 1897; in India, No. 66, dated February 17, 1897; in Cape Colony, No. 1,256, dated November 26, 1896; in Natal, No. 12, dated December 31, 1896; in Transvaal, No. 1,276, dated December 9, 1896; in West Australia, No. 1,538, dated March 2, 1897; in South Australia, No. 3,557, dated February 19, 1897; in Victoria, No. 13,949, dated February 18, 1897; in New South Wales, No. 7,279, dated February 20, 1897; in Tasmania, No. 1,831, dated February 22, 1897; in Queensland, No. 3,761, dated February 22, 1897, and in New Zealand, No. 9,308, dated February 27, 1897;) 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 apparatus for producing or generating acetylene gas produced from the carbids of the alkali metals by the action of water.

The invention consists of certain parts and details and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification,

in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a vertical section, part being in elevation, of an acetylene-gas apparatus having my improvements applied. Fig. 2 is a plan of same. Fig. 3 is an enlarged transverse section of the three-way valve for controlling communication between the generator and holder. Fig. 4 is a longitudinal section of a modified construction of three-way valve.

The same letters of reference indicate corresponding parts throughout.

Referring to the drawings, letter A represents a cylindrical holder having a water-cistern B above it, but separated therefrom by the diaphragm or horizontal partition C. A pipe D, passing through the diaphragm and extending down below the minimum level of the water in the holder, connects the cistern B with the holder. A drain-cock A² is fitted in the bottom A³ of the holder, and the bottom is preferably made conical, so as to incline toward this cock.

The generator E is fitted with a lid E³, fixed in position by the screw E⁴, and carbide of calcium is placed in a removable perforated cage contained in this generator. The lower end of this generator is connected to approximately the highest point of the holder by the pipes F and F², and a three-way valve G is placed between the two pipes. Fig. 3 represents a sectional view of this valve at right angles to the axis of the plug, showing the passage G² through the plug G³. The plug G³ may be turned to connect the pipes F and F² or to stop the passage between them, as required, and it may also be turned to the position shown in the figure, so as to connect the pipe F with the waste-pipe F³ when it is required to empty the generator.

In the modified construction of plug shown at Fig. 4 the passage G² through the plug is formed from the side to the end thereof and the end opening of the passage is permanently open to the passage G⁴, coupled to the gener-

ator or pipe F, while the side opening of the passage through the plug may be turned toward either of the pipes F² F³ for the purpose of placing either of them in communication
5 with the generator.

A gas-delivery pipe H is connected to the top of the generator and is preferably coupled to the cooling-coil H², located in the cistern B.

To put the apparatus into operation, the
10 holder A is filled with water, and a little water is also placed in the cistern B. The generator may be now charged with calcic carbid, preferably placed in a basket-cage so that it can be lifted in and out, and after the lid E³
15 is secured the valve G is turned so as to connect the pipes and F F². Then the water from the holder flows into the generator and the generation of gas commences. In case the gas is generated faster than it is required it
20 first accumulates in the generator and drives the water therefrom back into the holder. After that any gas generated in excess of what is immediately required also passes by the pipes F and F² into the holder, thus dis-
25 placing the water therein and forcing it up by the pipe D into the cistern B. This gas remains in the holder until the consumption of gas exceeds the speed of generation, when such gas passes from the holder through the
30 generator to the pipe H. As the pipe F is coupled to the holder at its highest point, water is not again admitted to the generator until the gas accumulated in the holder is practically exhausted.

35 To recharge the generator, the tap G is turned to open communication between the pipes F and F³ and the lid E³ opened, the residue and water in the generator thereupon escaping through the pipe F³. The generator is then recharged with carbid, the lid
40 E³ closed and secured again, and the tap G turned to reopen communication between

pipes F and F², when the apparatus is again ready to produce gas when gas is withdrawn
45 from it.

In all cases the pipes F F² and tap G should be so arranged that there shall be no dip or place for the lodgment of water sufficient to seal the same, and the pipe H should be inclined to the generator.
50

Having now described my invention, I declare that what I consider new, and desire to secure by Letters Patent, is—

1. An acetylene-gas apparatus, comprising a cistern, a holder below the cistern and into
55 which a pipe from the cistern extends nearly to the bottom thereof, a coil of pipe in the cistern and adapted to be connected with the service-pipe, a gas-generator connected directly with the said coil, and a pipe leading
60 from the lower end of the generator into the upper end of the holder and provided with a three-way cock, substantially as described.

2. An acetylene-gas apparatus consisting of a water-holder having a drain-pipe in its
65 bottom, a cistern above the holder and separated therefrom by a horizontal partition, a pipe leading from the partition down to within a short distance of the bottom of the holder, a coil of pipe in the cistern and adapted to
70 be connected with a service-pipe, a generator having its upper end connected with the said coil, said generator being outside of the holder and on about a level therewith, a pipe leading from the upper end of the holder to
75 the lower end of the generator, and a three-way cock in said pipe, substantially as herein shown and described.

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

THOMAS HOLLIDAY.

Witnesses:

ARCHIBALD H. I. FLETCHER,
THOMAS H. BARRON.