

L. D. CARROLL.
WATER GAS APPARATUS.
APPLICATION FILED JUNE 25, 1907.

922,389.

Patented May 18, 1909.

3 SHEETS—SHEET 1.

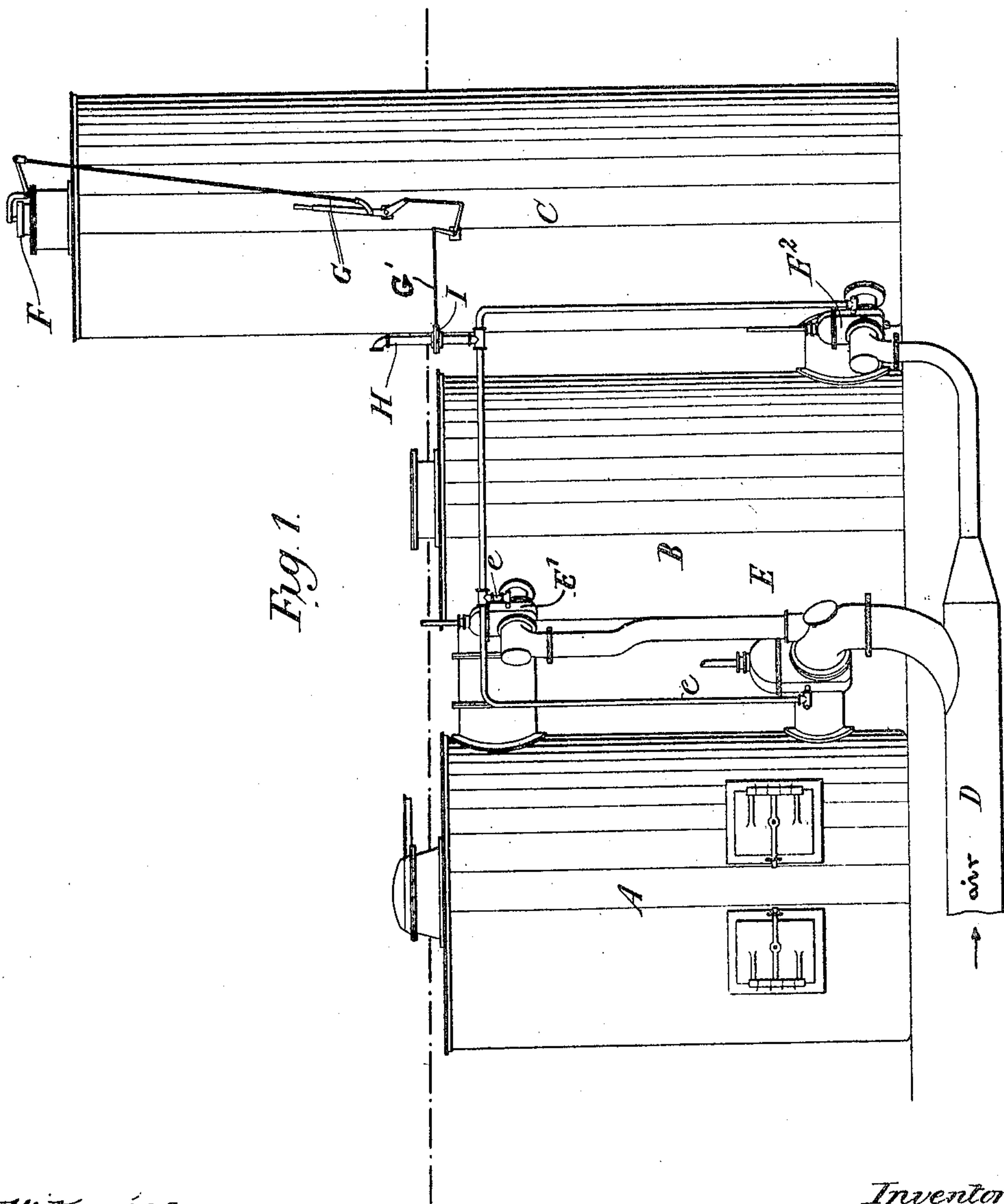


Fig. 1.

Witnesses.

Arthur M. Moseley

Chas. E. Brongham

Inventor.

L. D. Carroll

By *A. S. Pattison*,

Attorney.

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3 SHEETS—SHEET 2.

Fig. 2.

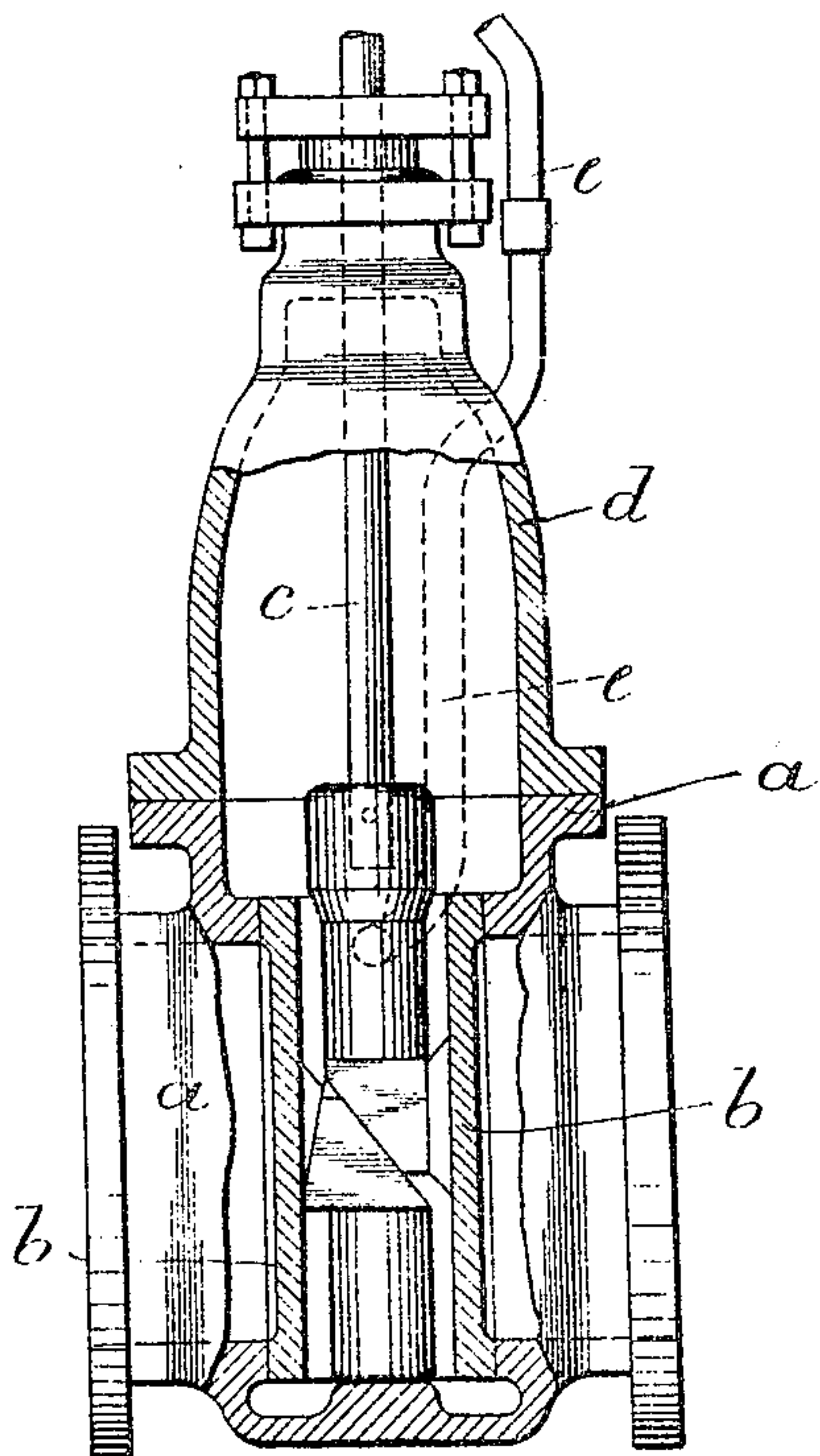
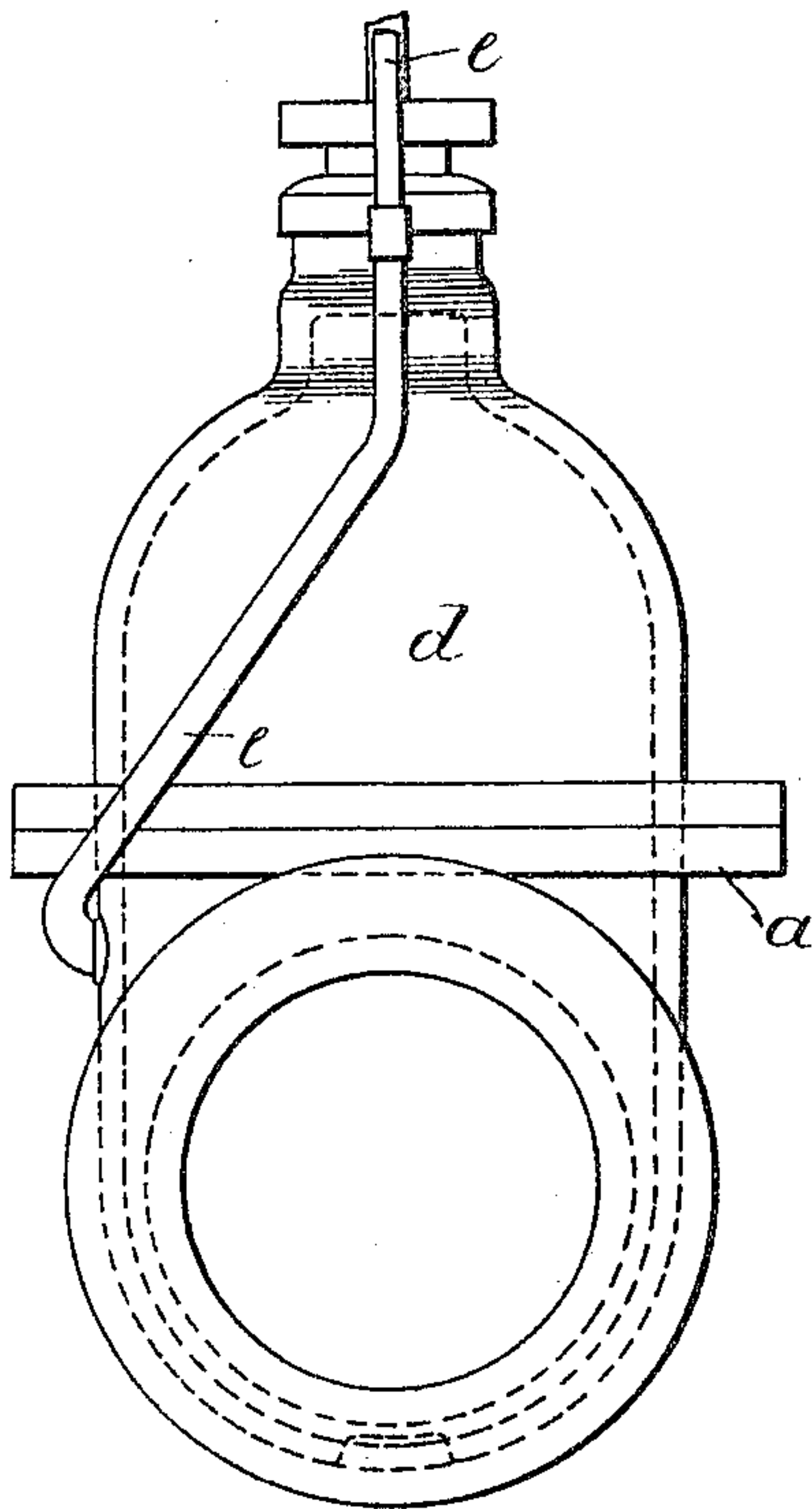


Fig. 3.



Witnesses

Arthur Moorman
Chas. E. Brougham.

Inventor

L. D. Carroll
By A. S. Patterson
Attorney.

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3 SHEETS—SHEET 3.

Fig. 6.

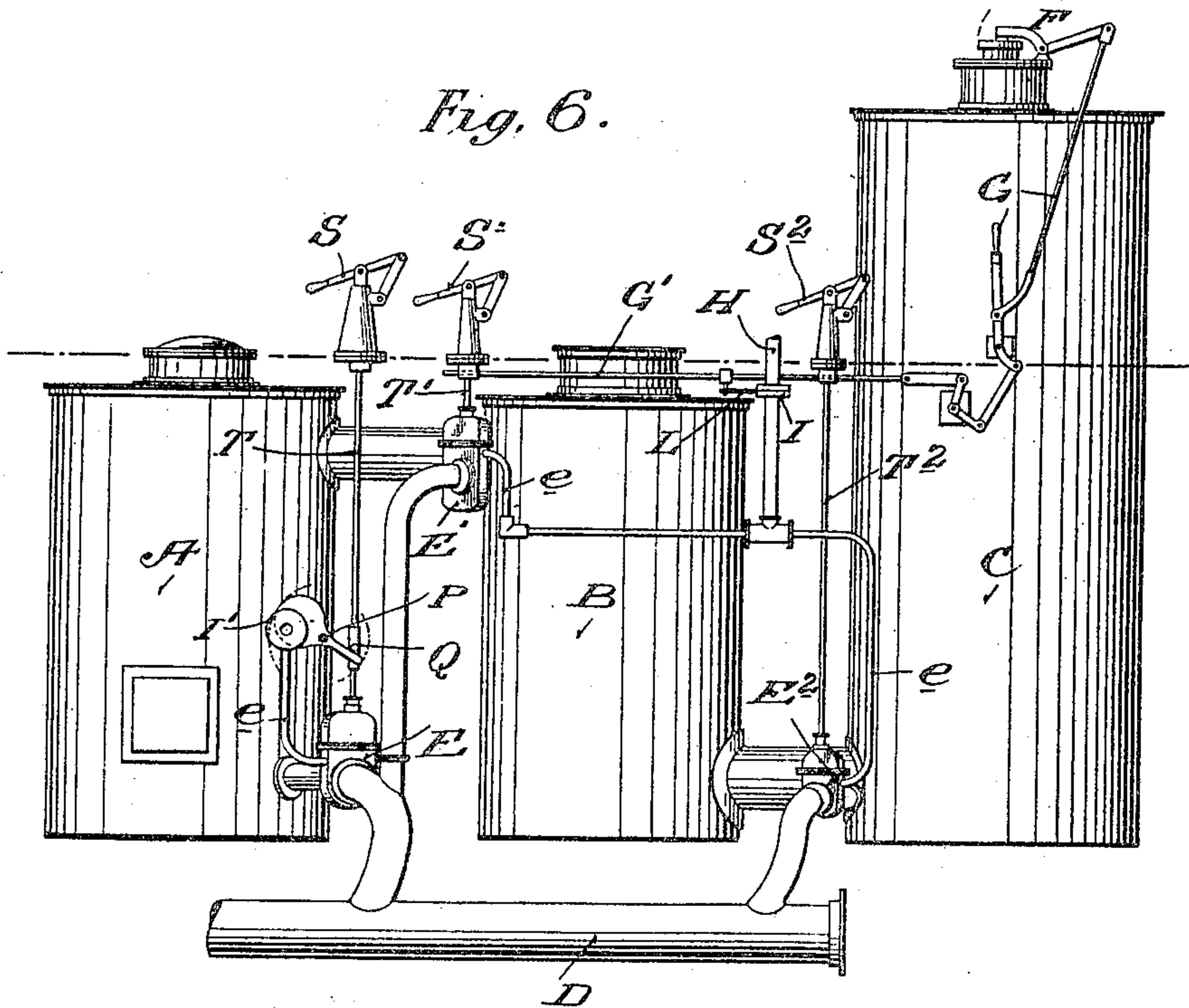


Fig. 4.

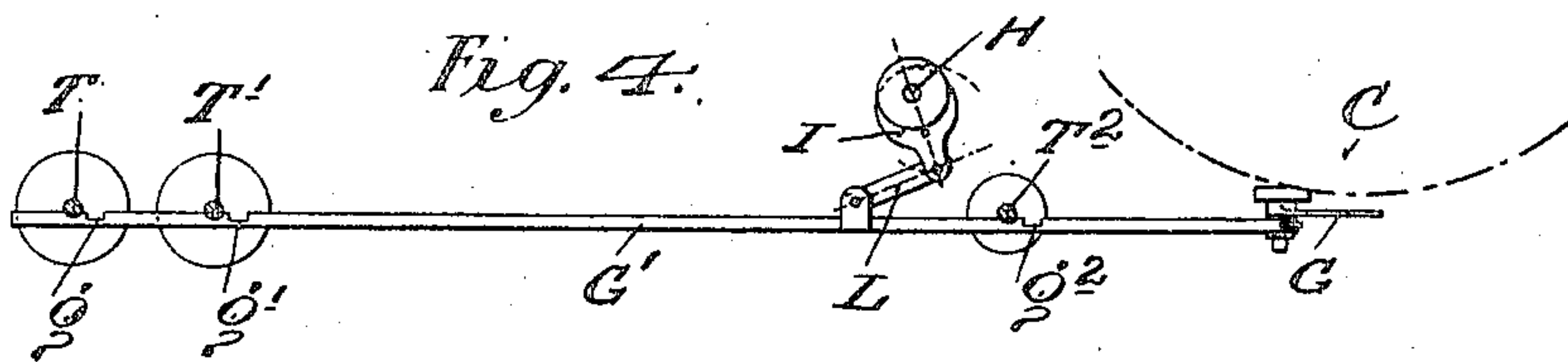
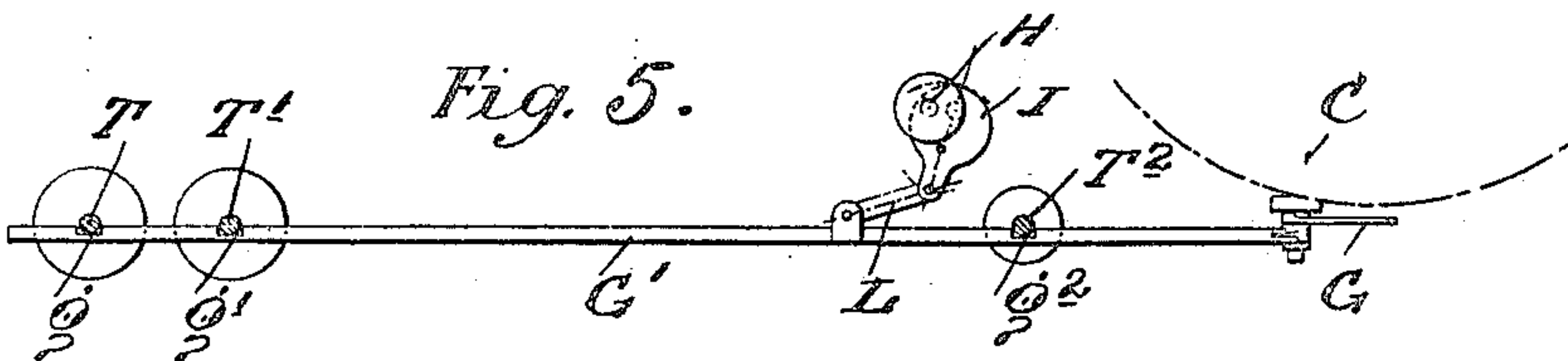


Fig. 5.



Witnesses:-

W. A. Williams,
C. P. Wright, Jr.

Inventor.

L. D. Carroll

by,

A. J. Patterson
his, Attorney.

UNITED STATES PATENT OFFICE.

LAFAYETTE DALY CARROLL, OF WESTMINSTER, ENGLAND, ASSIGNOR TO HUMPHREYS AND GLASGOW, OF WESTMINSTER, ENGLAND, A FIRM.

WATER-GAS APPARATUS.

No. 922,389.

Specification of Letters Patent.

Patented May 18, 1909.

Application filed June 25, 1907. Serial No. 380,774.

To all whom it may concern:

Be it known that I, LAFAYETTE DALY CARROLL, a citizen of the United States of America, residing at Westminster, England, have invented Improvements in Water-Gas Apparatus, of which the following is a specification.

The object of this invention is to prevent gas or air leaking past the air blast valves of water gas apparatus and mixing with air in the air main or gas in the passages or chambers of the apparatus. Such leakage may cause explosions and thus result in damage to the apparatus or to workmen. For this purpose each air blast valve, which comprises two disks or the like adapted to be closed against suitably arranged seats, is provided with an atmospheric (or low pressure) vent from the space between the disks adapted to be closed when the disks are open but to be open when the two disks are closed, so that leakage of the gas or air past either disk is harmlessly discharged from the intermediate space before it can acquire sufficient pressure to leak past the other disk and possibly cause an explosion. It is advantageous to operate the vent closing device as part of a general interlocking system of the water gas apparatus rather than by the independent movement of the air blast valve itself.

Referring to the accompanying drawing, Figure 1 illustrates diagrammatically water gas plant in which according to this invention means are provided for preventing explosive mixtures of air and gas being formed by leakage past an air blast valve. Fig. 2 is a section through the blast valve with a controlled vent. Fig. 3 is an elevation at right angles to Fig. 2. Fig. 4 shows in plan the interlocking rod and the parts it controls in the positions they occupy when the stack valve is closed. Fig. 5 is a similar view to Fig. 4 the parts being in the positions they occupy when the stack valve is open. Fig. 6 illustrates a modification.

In Fig. 1 A is the generator, B the carbureter, C the superheater and D the air blast main. Communication between the air blast main and the generator, carbureter and superheater is controlled by air blast valves E, E¹ and E².

F is the stack valve and G the stack valve actuating mechanism, which is interlocked by means of the rod G¹ with the actuating mechanism of the valves E, E¹ and E². Suitable

means of interlocking the stack valve and the air blast valve are described in the specification of Patent No. 646,608, 3 April 1900. Each of the valves E, E¹ and E² is constructed as shown in Figs. 2 and 3 in which *a* represents the valve casing, *b b* the valve disks, *c* the valve spindle and *d* the cover into which the valve disks are withdrawn to open the passage-way.

e is the vent pipe communicating with the space between the two valve disks *b, b*. The pipes *e* of the valves E, E¹, E² may be connected with a common discharge pipe H which may discharge into the atmosphere above the operating floor of the apparatus.

I is a valve or the like controlling the passage through the discharge pipe H. The valve I is connected to the rod G, which is coupled to the stack valve actuating mechanism G, in such manner that when the stack valve is opened the vent discharge will be closed and vice versa.

S, S¹ and S² indicate the levers for actuating the valves E, E¹ and E² respectively through vertically sliding bars T, T¹ and T² respectively. The bars T, T¹ and T² are notched, the notches being all in line with the rod G¹ when the valves E, E¹ and E² are closed. The rod G¹ is also notched at *g*; *g*¹ and *g*², the notches being in line with the bars T, T¹ and T² only when the stack valve F is open. The valve I is connected to the rod G¹ by a link L as shown. By this arrangement the stack valve F can only be moved when the blast valves E, E¹ and E² are closed; the vent valve I must therefore move, or remain open or closed according as the stack valve moves, or remains closed or open. In Fig. 4 the stack valve F is closed (the blast valves E, E¹ and E², having of necessity been previously closed) and the vent valve I open. In Fig. 5 the reverse position is shown, the stack valve F being open and the vent valve I closed. The blast valves E, E¹ and E² can now be also opened, the opening of any one of which locks the stack valve F and the vent valve I in their respective desired positions.

The vent pipes *e* of the several valves may discharge separately instead of into a common pipe.

Fig. 6 illustrates an arrangement in which a separate vent valve I¹ is provided for the blast valve E. This vent valve is so spring pressed or weighted that it will turn about

the pivot P and close as soon as it is released by the raising of the pin Q attached to the actuating bar T of the valve E and it remains closed as long as the valve E remains open. On the other hand the closing of the blast valve E causes the pin Q to descend and open the vent valve I¹ by bearing upon its handle or lever, as shown, and the vent valve I¹ is thus locked open as long as the blast valve E remains closed.

What I claim is:—

1. In a water gas generating apparatus, the combination with a chamber, an air main in communication with the chamber, a double disk valve in said air main and having a space between its disks and the surrounding portion of the valve casing into which space fluid leaking past either disk can pass, said valve having a vent outlet from said space which is adapted to be closed when the disks are open and to be open when the disks are closed.

2. In a water gas generating apparatus, the combination with a chamber, an air main in communication with the chamber, a double disk valve in said air main and having a space between its disks and the surrounding portion of the valve casing into which space fluid leaking past either disk can pass, said valve having a vent outlet from said space, means whereby the vent may be opened

when the double valve is closed, and means whereby the double valve may be opened when the vent is closed.

3. In a water gas generating apparatus, the combination with a chamber, an air main in communication with the chamber, a double disk valve in said air main and having a vent communicating with the space between the disks, valve actuating means, a pipe leading from said vent, means controlling said pipe, and means interlocking said pipe controlling means with the valve actuating means.

4. In water gas generating apparatus, the combination with a connection between the air main and a gas chamber of a double disk valve, a vent communicating with the space between the disks, a pipe leading from said vent, means controlling said vent, a stack valve, means for actuating same and means connecting said vent controlling means and the stack valve actuating means so that the vent shall be open when the stack valve is closed and the vent closed when the stack valve is open.

Signed at 46 Lincolns Inn Fields London W. C. this fifteenth day of June 1907.

LAFAYETTE DALY CARROLL.

Witnesses:

ARTHUR WOOSNAM,
CHARLES ERNEST BROUGHAM.