

(No Model.)

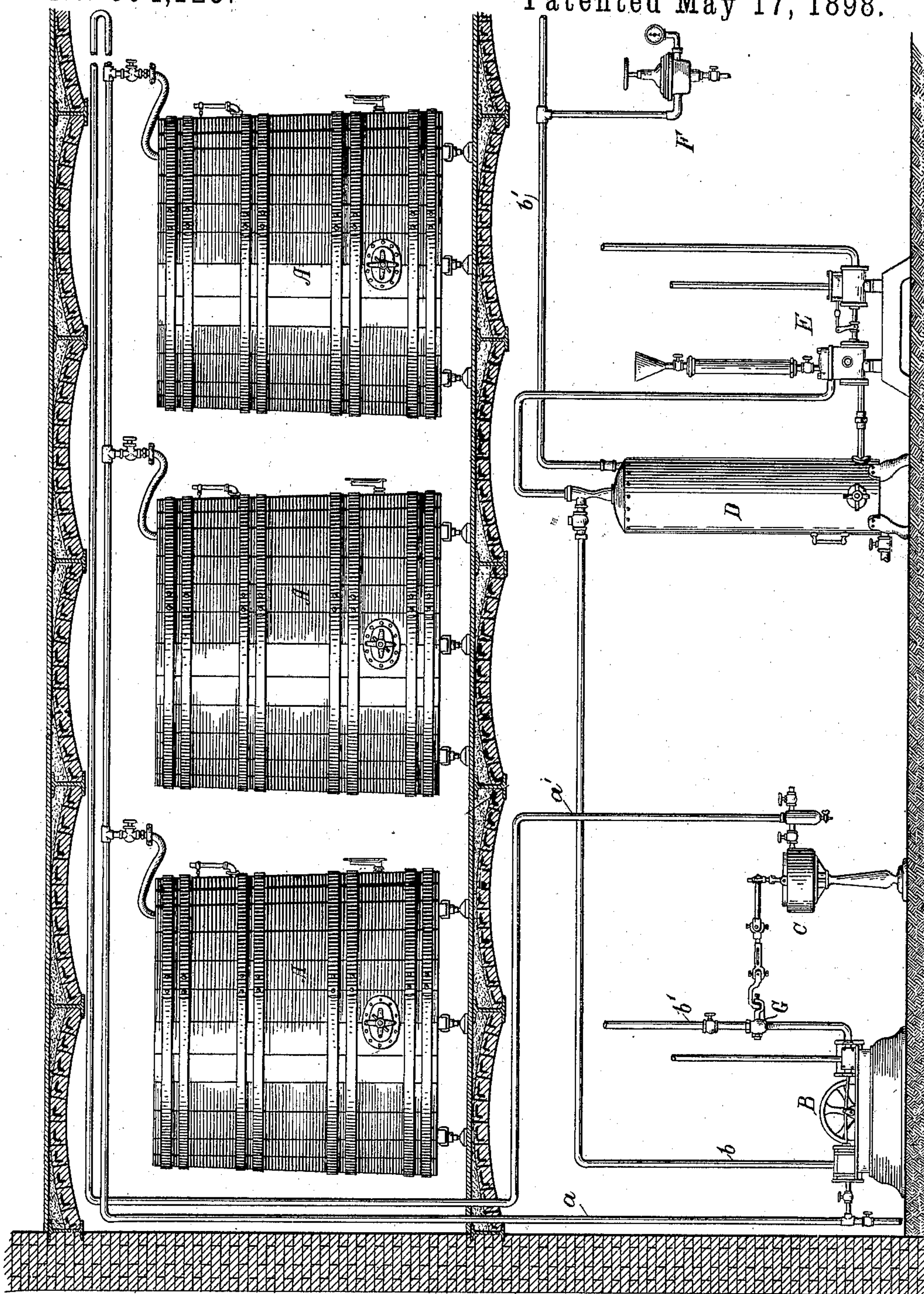
3 Sheets—Sheet 1.

J. SCHNEIBLE.

COLLECTING GAS FROM FERMENTING LIQUORS.

No. 604,125.

Patented May 17, 1898.



Witnesses
Geo. W. Taylor
E. M. Taylor.

Fig. 1.

Inventor
Joseph Schneible
By *Redding, Kiddell & Peller*
Attorneys

(No Model.)

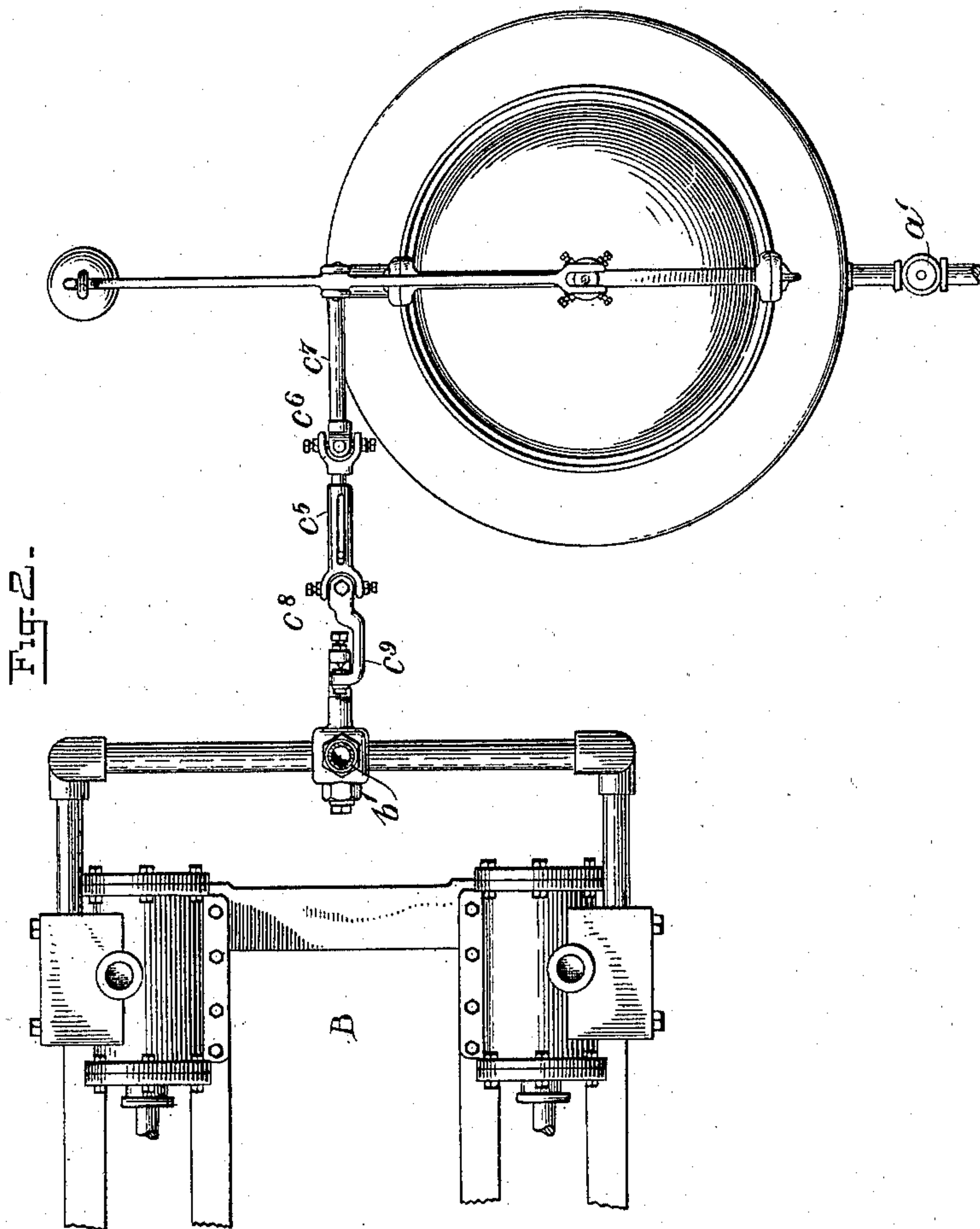
3 Sheets—Sheet 2.

J. SCHNEIBLE.

COLLECTING GAS FROM FERMENTING LIQUORS.

No. 604,125.

Patented May 17, 1898.



Witnesses
Geo. W. Taylor.
E. M. Taylor.

Inventor
Joseph Schneible
By his Attorneys
Redding, Kiddle & Peck.

(No Model.)

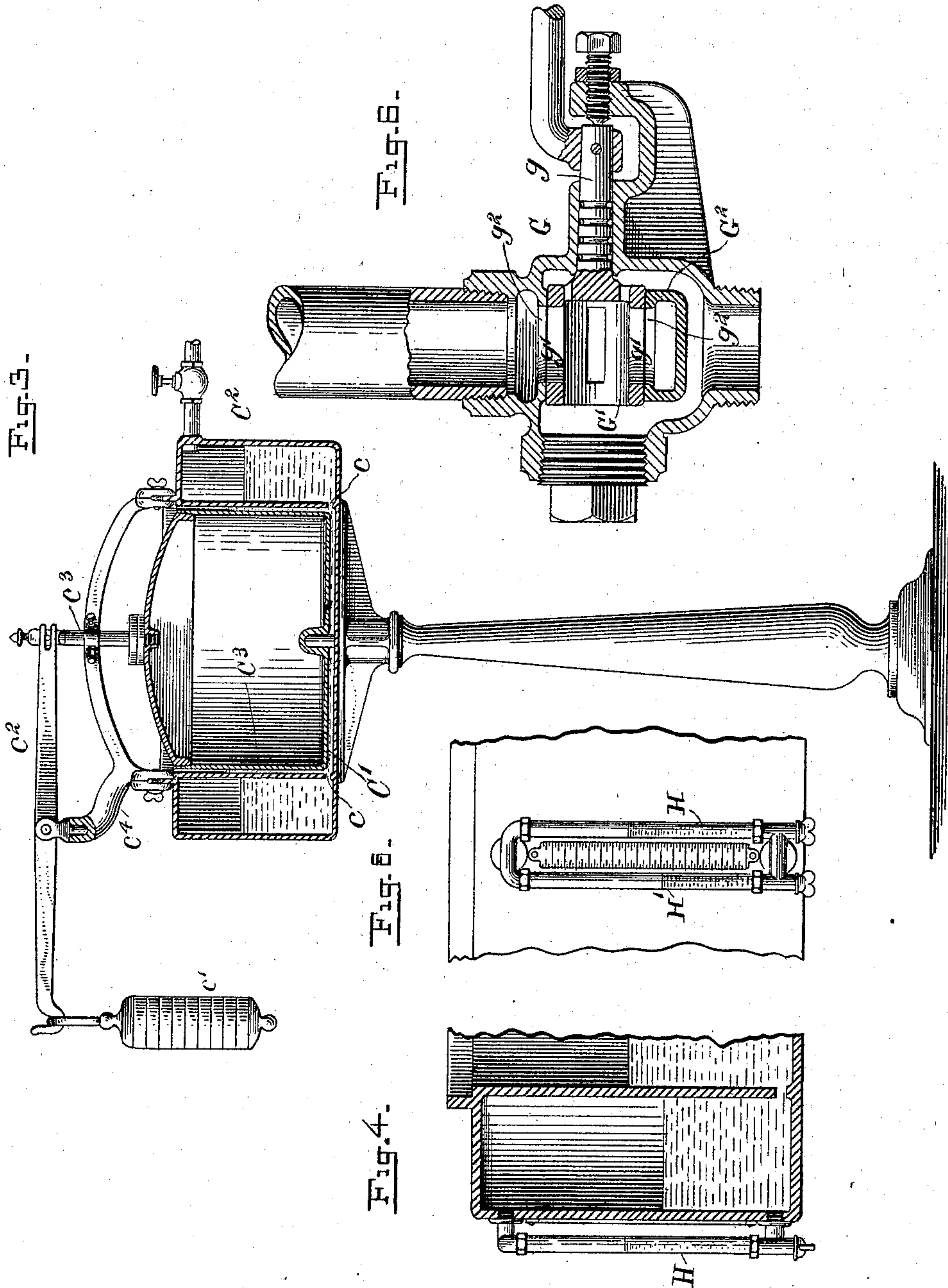
3 Sheets—Sheet 3.

J. SCHNEIBLE.

COLLECTING GAS FROM FERMENTING LIQUORS.

No. 604,125.

Patented May 17, 1898.



Witnesses
Geo. W. Taylor.
E. M. Taylor.

Inventor
Joseph Schneible
By his Attorneys,
Redding, Kiddle & Peck

UNITED STATES PATENT OFFICE.

JOSEPH SCHNEIBLE, OF NEW YORK, N. Y.

COLLECTING GAS FROM FERMENTING LIQUORS.

SPECIFICATION forming part of Letters Patent No. 604,125, dated May 17, 1898.

Application filed September 2, 1897. Serial No. 650,337. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH SCHNEIBLE, a citizen of the United States, and a resident of the city, county, and State of New York, have invented certain new and useful Improvements in the Collection of the Gas of Fermenting Liquors, of which the following is a full, clear, and exact specification, reference being had to the accompanying drawings, which form a part thereof.

This invention relates to the collection of carbonic-acid gas as the same is given off or generated during the fermentation of liquids, such as malt liquors, with a view to the use of the gas subsequently, either in the further treatment of the liquors or for other purposes.

The objects in view have been particularly to avoid the necessity of using a gasometer, through which the entire volume of the gas collected ordinarily passes; to avoid the necessity of provision for storage of the gas, either compressed or uncompressed; to make the requisite apparatus as simple and inexpensive as possible and to render its operation automatic, and at the same time to avoid any interference with the conditions, particularly as to the pressure thereon, which have been predetermined for the fermentation of the liquid in question.

In the practice of the invention the desired results are made possible largely by delivering the gas from the fermenting vessels directly to a compressor and by causing the pressure on the supply of gas (whether the same is above or below the atmospheric pressure) to regulate the compressor automatically, so that the compression of the gas keeps pace exactly with the generation. From the compressor the gas may be conducted directly to the place of use or may be introduced into suitable receptacles for shipment, or may be otherwise handled or disposed of, as may be required or preferred.

For purposes of explanation of the nature of the invention a convenient and practical form of apparatus has been chosen for illustration in the drawings of one embodiment of the invention.

In said drawings, Figure 1 is a general view showing fermenting vessels in connection with the compressor and regulating devices, other devices for the further treatment

of the gas being also indicated. Fig. 2 is a detailed plan view of the governor or regulator and a portion of the compressor. Fig. 3 is a detailed view of the governor or regulator, partly in elevation and partly in vertical section. Figs. 4 and 5 are detailed views showing parts of the governor or regulator. Fig. 6 is a detailed view in section of a valve for controlling the action of the compressor.

In the embodiment of the invention represented in the drawings closed fermenting vats or vessels of ordinary construction are represented at A A, a compressor, also of ordinary construction and needing no detailed description herein, at B, and a governor at C, the latter being preferably constructed to operate in substantially the manner more fully described hereinafter. A collector for the gas generated in each fermenting vessel is formed conveniently by the closed top of such vessel, and the collector or several collectors are connected directly to the compressor B by a suitable pipe-line, (indicated at *a*.) A branch pipe *a'* from any convenient point serves to transmit the pressure of the supply—that is to say, of the gas as it is generated—to the governor, the last-mentioned pipe being preferably connected to the main pipe and the system of collectors at the remote end in order to provide a convenient means for steaming out the pipe system whenever required.

The compressor represented in the drawings is an ordinary direct-acting steam-compressor, the gas being delivered to the compression-cylinders by the pipe *a* and conducted therefrom by a pipe *b*, while the steam is delivered to the steam-cylinders by a supply-pipe *b'*. The pipe *b* delivers the gas wherever required, and there is shown in the drawings as interposed in this pipe a washer D, the latter being operated by a suitable pump E. A pressure-regulator F is also represented as connected to the pipe *b*.

The governor shown in the drawings is so constructed as to be readily responsive to variations in the pressure of the gas-supply, whether such pressure be above or below the atmospheric pressure, and is also operatively related to the compressor, so as to control the latter and to make the compression of the gas keep pace exactly with the supply, thereby

avoiding variations of pressure on the fermenting liquors. The compressor illustrated comprises a tank C' , having a supplemental chamber C^2 , with which it is connected at the bottom by relatively small apertures c . The tank and the supplemental chamber are filled with any suitable liquid, and in the tank is placed a float C^3 , which is so connected with the valve G , which controls the admission of steam to the steam-cylinders of the compressor, as to open or close the same more or less, according to the quantity of gas generated, the branch or pressure-transmitting pipe a' being connected to the upper part of the closed supplemental chamber C^2 to transmit the pressure of the gas-supply to the surface of the liquid therein, and thereby to cause the float C^3 to rise or fall as the pressure increases or diminishes. It is obvious that the connection between the float C^3 and the movable part of the valve G may be arranged in many different ways to accomplish the desired purpose. In the construction represented in the drawings the valve-plug G' is mounted to rotate in its seat G^2 and is provided with ports g' to register with corresponding ports g^2 in the seat, the plug being hollow to permit the passage of the steam to the steam-cylinders. The plug is further provided with a suitable stem g , which projects through a suitable packing-box in the valve-casing. The float is represented as counterbalanced by means of a weight c' and weight-beam c^2 , to one end of which the float is connected by a suitable stem c^3 . The beam is pivoted upon a suitable support c^4 and is connected to the valve-plug G' , so as to cause the latter to oscillate as the float rises and falls. To facilitate the setting of the parts, a simple expansion-joint c^5 may be connected by a universal joint c^6 at one end to a rod c^7 , which is secured to the beam c^2 , in line with the pivotal axis thereof, and by a universal joint c^8 at the other end to a dog c^9 , which is secured to the stem g of the valve-plug G' .

In order that the variations of pressure of the gas-supply may be observable at all times, a double-sight tube is connected to the governor, one member H being connected at its lower end to the supplemental chamber C^2 and at its upper end to the atmosphere, so that the liquid therein will stand at the same level as the liquid in the main tank, while the other member H' is connected at its lower end to the supplemental chamber and at its upper end also to said supplemental chamber, so that the liquid therein shall stand at the same level as the liquid in the supplemental chamber, which is subjected to the pressure of the gas-supply, whereby the difference in height

of the two columns of liquid will represent the pressure of the gas-supply.

It is obvious that various changes may be made in the mechanical details of the apparatus employed without departing from the invention, which contemplates the delivery of the gas as generated directly to a compressor and the automatic regulation of such compressor by the pressure of the gas-supply, so that the compression shall proceed at the same rate as the generation of the gas. Therefore it is to be understood that the invention is not limited to the precise construction and arrangement of parts shown and described herein.

I claim as my invention—

1. An apparatus for collecting the gas of fermentation comprising a collector, a compressor connected directly to the collector, a governor subject to the varying pressure of the gas-supply and means actuated by said governor to control the compressor.

2. An apparatus for collecting the gas of fermentation comprising a collector, a compressor, a pipe to deliver gas from the collector to the compressor, a governor, subject to the varying pressure of the gas-supply and connected with the collector by a branch pipe and means actuated by said governor to control the compressor.

3. An apparatus for collecting the gas of fermentation comprising a collector, a compressor connected directly to the collector, a governor comprising a closed chamber and a float, a pipe connection between said closed chamber and the collector and means actuated by said float to control the compressor.

4. An apparatus for collecting the gas of fermentation comprising a collector, a compressor, a pipe to deliver gas from the collector to the compressor, a valve to control the compressor and a governor, subject to the varying pressure of the gas-supply and operatively connected to said valve.

5. An apparatus for collecting the gas of fermentation comprising a collector, a compressor connected directly to the collector, a governor comprising a tank, a supplemental chamber closed and connected at the bottom to said tank and a float in said tank, a connection between said closed chamber and the collector and means actuated by said float to control the compressor.

This specification signed and witnessed this 27th day of August, A. D. 1897.

JOSEPH SCHNEIBLE.

In presence of:

ALFRED W. KIDDLE,
W. B. GREELEY.

Disclaimers in Letters Patent No. 604,125.

DISCLAIMER.

604,125.—*Joseph Schneible*, New York, N. Y. COLLECTING GAS FROM FERMENTING LIQUORS. Patent dated May 17, 1898. Disclaimer filed March 9, 1907, by the patentee and assignee.

Enter their disclaimer—

“To that part of the claim in said specification which is in the following words, to wit:

“1. An apparatus for collecting the gas of fermentation comprising a collector, a compressor connected directly to the collector, a governor subject to the varying pressure of the gas-supply and means actuated by said governor to control the compressor.

“4. An apparatus for collecting the gas of fermentation comprising a collector, a compressor, a pipe to deliver gas from the collector to the compressor, a valve to control the compressor and a governor, subject to the varying pressure of the gas-supply and operatively connected to said valve.” [*Official Gazette, March 19, 1907.*]