

(No Model.)

2 Sheets—Sheet 1.

J. F. THEURER.

IMPREGNATING BEER WITH CARBONIC ACID.

No. 519,141.

Patented May 1, 1894.

Fig. 3.

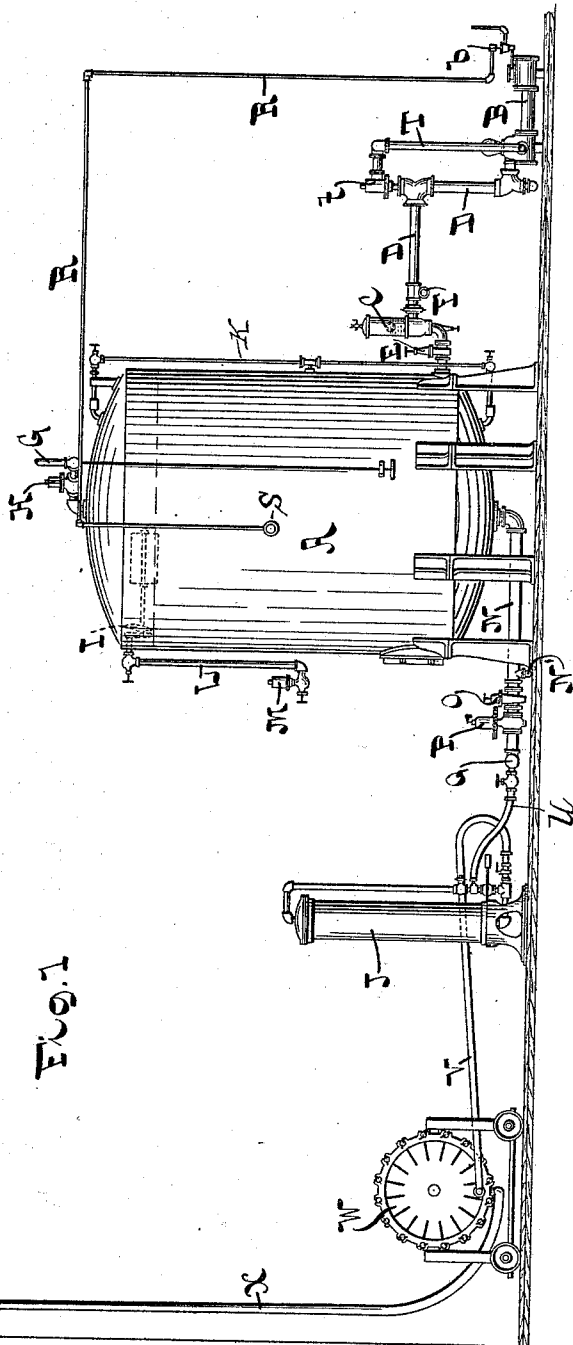
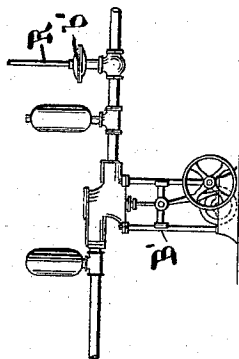


Fig. 1

WITNESSES:

Klas H. Reinholdt
Chas. W. Thomas

INVENTOR:

Jacob F. Theurer,

BY

Abraham D. Kuntz

ATTORNEY

(No Model.)

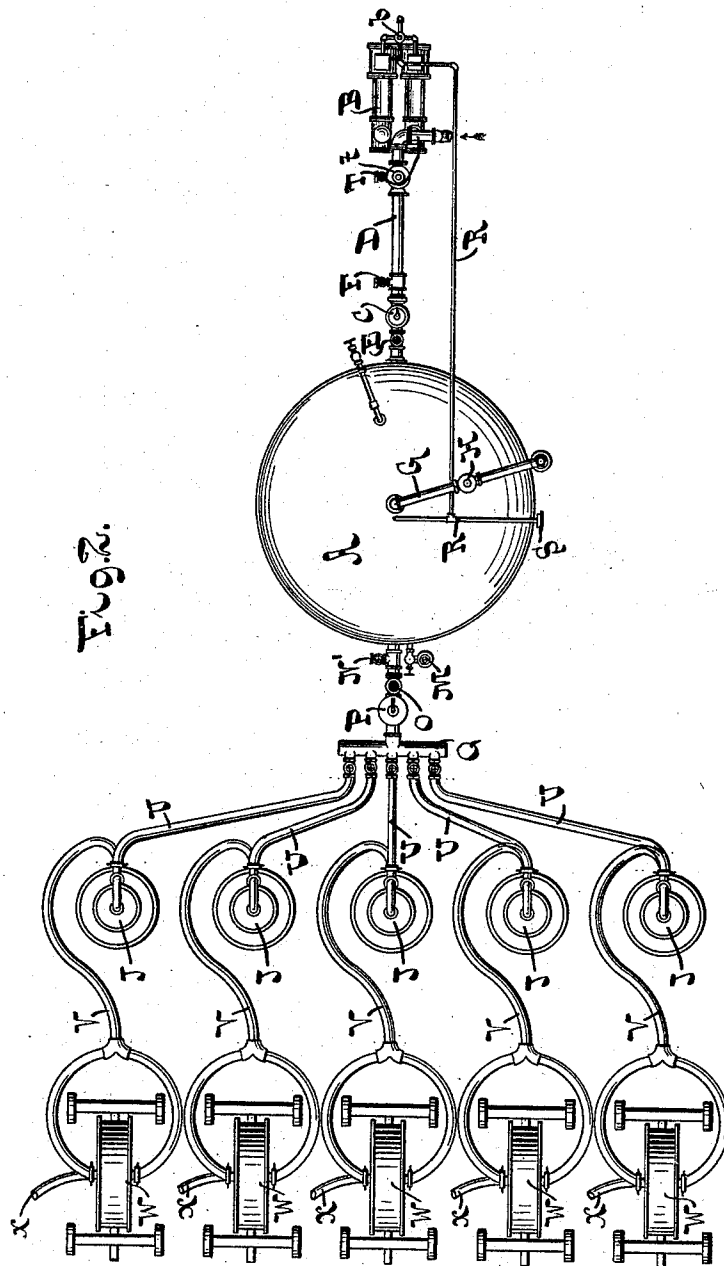
2 Sheets—Sheet 2.

J. F. THEURER.

IMPREGNATING BEER WITH CARBONIC ACID.

No. 519,141.

Patented May 1, 1894.



WITNESSES:

Klas A. Reinhardt
Chas. W. Thomas.

INVENTOR:

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UNITED STATES PATENT OFFICE.

JACOB F. THEURER, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO THE UNIVERSAL CARBONATING COMPANY, OF NEWARK, NEW JERSEY.

IMPREGNATING BEER WITH CARBONIC ACID.

SPECIFICATION forming part of Letters Patent No. 519,141, dated May 1, 1894.

Application filed February 5, 1894. Serial No. 499,142. (No model.)

To all whom it may concern:

Be it known that I, JACOB F. THEURER, a citizen of the United States of America, and a resident of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Impregnating Beer with Carbonic Acid, of which the following is a specification.

My invention relates to improvements in the method of and apparatus for carbonating beer referred to in United States Letters Patent No. 478,176, dated July 5, 1892, granted to John B. Stobaueus and Frederick C. Wackenhuth, assignors to the Universal Carbonating Company.

It consists in the method of forcing the beer to be charged against substantially constant pressure into a receiving tank, and then supplying it to the chargers at a reduced constant pressure. It further consists in apparatus employed for this purpose; all of which is more fully set forth in the following specification and illustrated in the annexed drawings, in which—

Figure 1 shows an elevation of the apparatus. Fig. 2 is a plan of the same. Fig. 3 is a modification of part of the apparatus.

Similar letters indicate corresponding parts throughout the several views.

In the annexed drawings the letter A designates a strong closed tank; B, a pump adapted to receive beer from the ordinary storage vessels and to supply it to the tank A.

J J are carbonic acid chargers; W, filters and Y, racking cocks.

The pump B delivers beer under pressure into the tank A, from which it passes under a reduced constant pressure to the carbonic acid chargers J, which may be of any suitable construction. From the chargers the impregnated beer passes through hose V to filters W, and thence through hose X to racking cocks Y to be filled into kegs Z.

For maintaining a substantially constant pressure in the receiving tank, I provide a pipe G connected to any suitable supply of compressed gas, by preference atmospheric air or carbonic acid gas; the pipe G is connected to an opening on the top of the tank

A and is provided with a reducing valve H, which I prefer to set to a pressure of eighteen pounds to the square inch. A pipe L with escape valve M set to, say twenty pounds pressure, allows gas to escape whenever this pressure is exceeded.

Within the tank A is placed a float valve I which closes communication with the pipe L when the level of the liquid rises too high. When the discharge opening is thus closed and beer pumped into the tank, the pressure within the tank will rise; the pump must then be stopped or its speed reduced. For this purpose I have provided a pneumatic diaphragm apparatus b on the steam supply pipe of the pump B. The chamber of this diaphragm apparatus is connected with the air space of the tank A by a pipe R, and operates the steam valve so as to reduce the opening when the air pressure rises above twenty pounds, to close it off at twenty-two pounds, and to increase the opening as the air pressure is again reduced.

K is a glass gage for showing the level of liquid in the tank, and S, a pressure gage connected to pipe R.

The discharge chamber of the pump B is connected to the tank A near its bottom by a pipe D provided with valve E, glass lantern C with an air cock at top, and a waste cock F. Within the lantern C I place by preference a rubber coated cork ball. When commencing to pump beer, the valve E is shut and the beer, which is mixed with air, carried off to a collecting vessel by a hose attached to cock F; gradually air is let out of the lantern C until the cork ball rises. When the air is all expelled the valve E is opened and the cock F shut.

To guard against accidents, in case the regulating apparatus for the pump should not operate properly, I have provided a by-pass T from the delivery pipe D to the suction chamber of the pump B, with a valve t which opens whenever an excessive pressure is reached.

From the bottom of the tank A a pipe N with valve O and reducing valve P leads to a manifold Q connected by hose U to carbonic acid charger J.

N' is a valve with hose connection used for washing out the tank A.

In commencing operations, the valve O being closed, the pump B fills the tank under a gas pressure of twenty pounds. As soon as the beer carries the float up and closes the float valve I the gas pressure in the tank increases, but cannot rise above twenty-two pounds. The reducing valve P is set at sixteen pounds, so that the pressure under which the beer is delivered to the chargers is constant and independent of the variations of the level of liquid in the charger. I do not, however, limit my invention to the pressures here given, as the same may be varied according to circumstances.

In place of a steam pump B such as shown in Figs. 1 and 2, any other suitable pump such as a power pump B' shown in Fig. 3, may be used, the regulating diaphragm apparatus b' being attached to the suction pipe of the pump.

It is readily seen that by the arrangement shown and described the supply of beer can readily be changed from one storage tank to another, without in the least interrupting the flow of beer from the receiving tank to the charger and to the racking cocks. It is further evident that by this arrangement I avoid the use of strongly built storage tanks, as I do not require any pressure within the tanks, which latter may be placed upon the same floor with the chargers and filters or even beneath the charging floors.

What I claim as new, and desire to secure by Letters Patent, is—

1. The within described method of supplying beer to carbonic acid chargers, which consists in forcing the beer against pressure into a receiving tank, maintaining a substantially constant pressure in said tank and supplying the beer to the charger at a reduced constant pressure, substantially as specified.

2. In a plant for impregnating beer with carbonic acid, the combination of a receiving tank, a pump adapted to receive beer from the ordinary storage vessels, pipe connections from the discharge opening of the pump to the receiving tank, means substantially as described for establishing a substantially constant gas pressure within the tank, connections with interposed reducing valve from the bottom of the receiving tank to one or more carbonic acid chargers, and connections from the latter to the racking cocks, substantially as shown and described.

3. In a plant for impregnating beer with carbonic acid, the combination of a receiving tank, a beer pump adapted to receive beer from the ordinary storage vessels, pipe connections from the discharge opening of the pump to the receiving tank, means, substantially as described, for maintaining a substantially constant gas pressure within the receiving tank, connections with interposed reducing valve from the bottom of the tank to one or more

carbonic acid chargers, thence to one or more filters and from there to the racking cocks, substantially as and for the purpose specified.

4. In a plant for impregnating beer with carbonic acid, the combination of a receiving tank, a beer pump adapted to receive beer from the ordinary storage vessels, pipe connections from the discharge opening of the pump to the lower part of the receiving tank with interposed lantern C, valve E and cock F; means, substantially as described, for maintaining a substantially constant gas pressure within the receiving tank, and connections, with interposed reducing valve, from the bottom of the receiving tank to one or more carbonic acid chargers and thence to the racking cocks, substantially as and for the purpose specified.

5. In a plant for impregnating beer with carbonic acid, the combination of a receiving tank, a beer pump adapted to receive beer from the ordinary storage vessels, pipe connections from the discharge opening of the pump to the receiving tank, means, substantially as described, for maintaining a substantially constant gas pressure within the receiving tank, a pneumatic regulating device on the steam pipe for the pump connected by a pipe with the upper part of the receiving tank, and connections, with interposed reducing valve, from the bottom of the receiving tank to one or more carbonic acid chargers and thence to the racking cocks, substantially as and for the purpose specified.

6. In a plant for impregnating beer with carbonic acid, a receiving tank, a beer pump adapted to receive beer from the ordinary storage vessels, pipe connections from the discharge opening of the pump to the tank, a by-pass in said connections leading back to the suction chamber of pump and provided with a valve, means, substantially as described, for establishing a constant pressure within the tank, one or more chargers, racking cocks, and connections with interposed reducing valve from the tank to the chargers and thence to the racking cocks, substantially as shown and described.

7. In a plant for impregnating beer with carbonic acid, the combination of a receiving tank, a pump adapted to receive beer from the ordinary storage vessels, connections from the discharge opening of the pump to the tank, a pipe and reducing valve adapted to supply gas under substantially constant pressure to the top of the tank, a gas discharge pipe L with escape valve M and a float valve I, and chargers, racking cocks and connections, substantially as described.

8. In a plant for impregnating beer with carbonic acid, the combination of beer pump B, receiving tank A, connections from the pump to the receiving tank, a pipe G for supplying compressed gas to the tank A, with interposed reducing valve H, a discharge pipe

L for the compressed gas with escape valve
M and float valve I, one or more carbonic
acid chargers connected to the tank,—the
connections being provided with a reducing
5 valve P,—one or more filters, racking cocks,
and connections from the chargers to the fil-
ters and from the filters to the racking cocks,
substantially as shown and described.

In testimony that I claim the foregoing as
my invention I have signed my name, in pres- 10
ence of two witnesses, this 26th day of Janu-
ary, 1894.

JACOB F. THEURER.

Witnesses:

EMIL BEST,

FRED. RUENZEL.