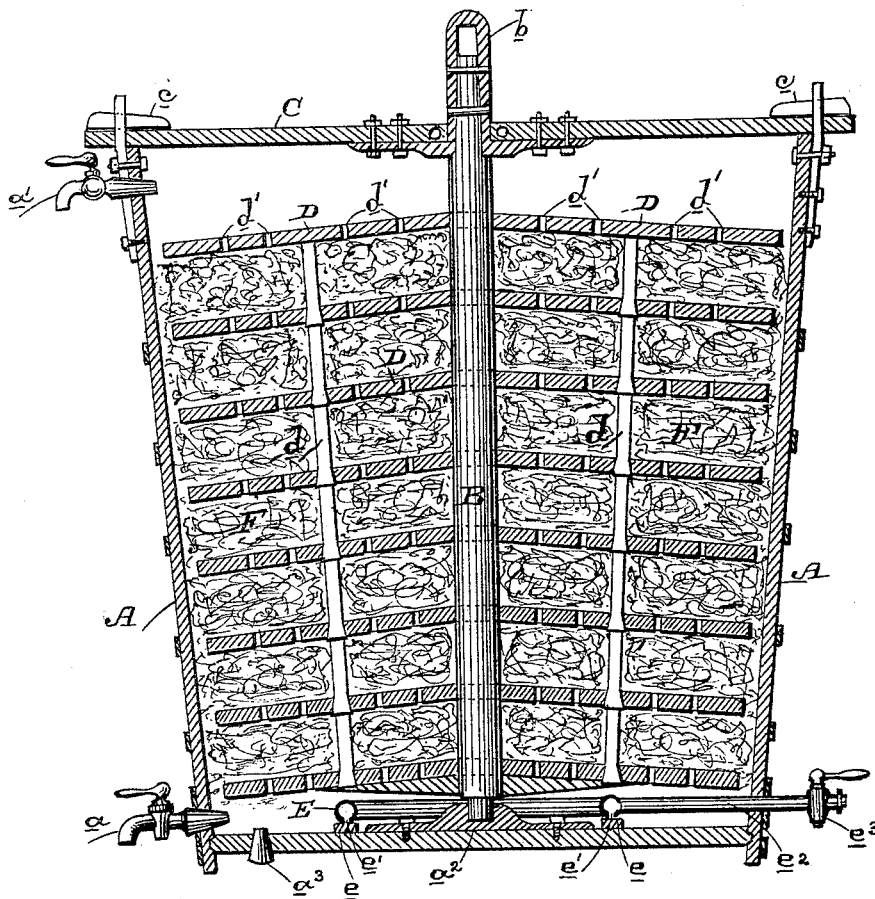


(No Model.)

U. BACHMANN.
FERMENTING VAT.

No. 454,586.

Patented June 23, 1891.



Witnesses,
Attest
H. C. Lee.

Inventor,
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attys

UNITED STATES PATENT OFFICE.

ULRICH BACHMANN, OF SAN FRANCISCO, CALIFORNIA.

FERMENTING-VAT.

SPECIFICATION forming part of Letters Patent No. 454,586, dated June 23, 1891.

Application filed September 12, 1890. Serial No. 364,797. (No model.)

To all whom it may concern:

Be it known that I, ULRICH BACHMANN, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Fermenting-Vats; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to the general class of apparatus for fermenting liquids; and its object is to thoroughly ferment a liquid which for some reason has ceased to ferment by the ordinary process before all the sugar in it has disappeared. The fermentation of liquid is a chemical process which is conducted by fermenting-germs. These convert the sugar in the liquid into alcohol, carbonic-acid gas, &c. Under unfavorable circumstances these germs cease to act before the fermenting process is complete, and consequently the sugar remains unfermented and the liquid will lose in value. The main thing to which attention is to be directed is to conduct the treatment in a way to make it as favorable as possible for the growth and progress of the fermenting-germs. There are, especially in wine-making, many causes for these germs gradually being destroyed. The only way to give this wine new life is to bring it in contact with new fermenting-germs.

My apparatus is designed to accomplish this result; and the invention consists in the novel construction and arrangement herein-after fully described, and specifically pointed out in the claim.

My invention may also be used for wine, beer, or any other sugar-containing liquid.

Referring to the accompanying drawing for a more complete explanation of my invention, the figure is a vertical section of my apparatus.

A is a tank or vessel having at its lower portion a drawing-off faucet *a* and at its upper portion an overflow-faucet *a'*. In the bottom of the tank is a step or bearing *a²*, in which the lower end of a vertical shaft B is mounted, the upper end of said shaft being guided in a cross-bar C, which is secured to the top of the tank in a suitable manner, as by the staples or hooks and the wedges *c*, as shown. The upper end of the shaft has a slotted bearing or hook *b*, by which all the inner parts may be lifted bodily out of the tank when neces-

sary, and which is also adapted to receive a lever, by which the shaft and its connected parts may be turned when desired.

In the bottom of the tank is a draw-off plug *a³*.

Secured to the shaft B is a vertical series of plates D, which are preferably made convex, as shown, said plates being held separated by means of intervening braces *d* and provided with a series of holes *d'*.

E is an annular hollow ring or pipe, which is placed within the bottom of the tank and rests upon suitable supports, such as the small blocks *e*. This hollow ring or pipe is provided with a series of holes *e'* in its under side, and it has extending outwardly from it and communicating with it a pipe *e²*, controlled by a cock *e³* outside of the tank. The entire interior space of the tank between the plates D is filled up with a porous or absorbent material or substance. (Represented by F.) This substance should be one odorless and tasteless—such, for example, as sponge, comminuted cork, &c. Grape-stems will answer the purpose.

The operation of the apparatus is as follows: The tank is filled with liquid, which starts fermenting. The fermenting-germs in this liquid will settle all over and into the pores of the porous substance F, and will grow and multiply much more rapidly than when they are floating freely in the liquid, and therefore the fermenting process progresses more swiftly and thoroughly. By this action the necessary fermenting-germs are transplanted into the porous substance, and consequently are contained in the machine, and if the proper temperature is maintained then as long as the albumen and sugar are present the fermentation will progress. When the liquid has fermented sufficiently and is drawn off, the germs will remain in the pores of the absorbent substance F. The apparatus can now be refilled with faulty liquid—that is to say, with a liquid in which for some reason the fermentation has stopped and will not proceed by any of the ordinary processes. Now if the proper temperature be kept up the germs will begin their work upon the faulty liquid, and said liquid can thus be carried to the proper stage of fermentation. This refilling and over-fermenting can be con-

tinued until so many impurities have settled
into the pores of the absorbent material that
they will hinder the multiplication and action
of the germs. These impurities can then be
5 removed by washing. The apparatus is filled
with water and the water is agitated by the
turning of the shaft B, and also by forcing
air through the pipe e^2 and the perforated
hollow ring E in the bottom of the tank.
10 This movement of the interior parts of the
apparatus and the forcing of air in through
the ring E may sometimes be used to advan-
tage in the fermentation process itself. In-
creasing or decreasing the temperature can
15 be done by pumping in cool or warm air.

The object of making the plates D conical
is that when the liquid (either the wine or the
washing-water) is being drawn off through
the outlet-faucet below the impurities which
20 it contains are directed outwardly to the sides
of the tank instead of flowing down through
the perforations in the plates and thereby
impregnating the porous substance, render-
ing it more difficult to be cleansed.

The object of the perforations d' is to allow 25
the air to pass up through them when it is
forced in through the hollow ring below, and
to thus equally distribute it.

Having thus described my invention, what
I claim as new, and desire to secure by Let- 30
ters Patent, is—

A fermenting apparatus consisting of the
tank or vessel in which the fermentation
takes place, the rotary shaft mounted there-
in, the vertical series of convex plates secured 35
to said shaft and having perforations, the in-
tervening mass of porous or absorbent sub-
stance for collecting and retaining the fer-
menting germs, and the perforated hollow ring
or pipe in the bottom of the vessel for supply- 40
ing air, substantially as herein described.

In witness whereof I have hereunto set my
hand.

ULRICH BACHMANN.

Witnesses:

S. H. NOURSE,

H. C. LEE.