

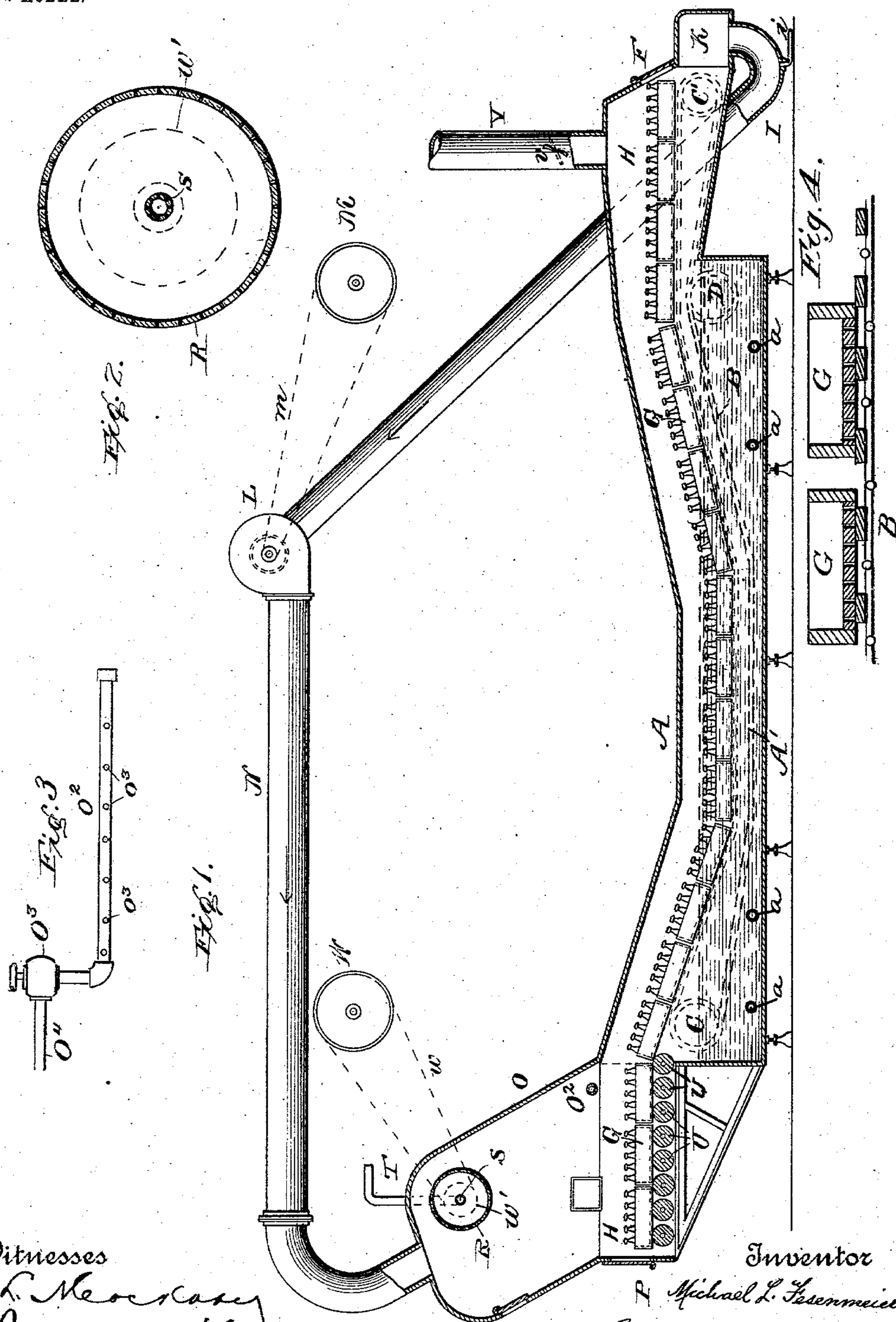
No. 740,837.

PATENTED OCT. 6, 1903.

M. L. FESENMEIER.
APPARATUS FOR PASTEURIZING BEER.

APPLICATION FILED JUNE 20, 1903.

NO MODEL.



Witnesses
J. H. McKeown
James Orril

Inventor
P. Michael L. Fesenmeier
by Connolly Bros.
Attorneys

UNITED STATES PATENT OFFICE.

MICHAEL L. FESENMEIER, OF CUMBERLAND, MARYLAND.

APPARATUS FOR PASTEURIZING BEER.

SPECIFICATION forming part of Letters Patent No. 740,837, dated October 6, 1903.

Application filed June 20, 1903. Serial No. 162,387. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL L. FESENMEIER, a citizen of the United States, residing at Cumberland, in the county of Allegheny and State of Maryland, have invented new and useful Improvements in Apparatus for Pasteurizing Beer, of which the following is a specification.

This invention has relation to apparatus for pasteurizing beer, and has for its object the provision of novel means whereby the bottled beer coming from the hot-water tank will be rapidly cooled and the heat therefrom transferred to the inlet end of the apparatus and utilized to give the bottles a preliminary heating prior to their immersion in the hot-water tank, whereby a large amount of heat is utilized that has heretofore been wasted and the breakage of bottles greatly reduced.

In apparatus for pasteurizing beer as heretofore commonly constructed the bottles have been carried on a conveyer through a tank of water maintained at a high temperature and on emerging from the tank have been suddenly cooled by a stream of cold water thrown directly on the bottles, which at this time are exposed to the air. The result has been that the heat which the bottles have acquired from the hot water in the tank has been dissipated in the open air and wasted, and the subjection of the hot bottles to the sudden impact of a large quantity of cold water has involved considerable loss in the breakage of bottles and the loss of their contents.

In carrying my invention into effect I cool the bottles as they come from the hot-water tank and while they are within a closed chamber or hood arranged at the outlet end of the hot-water tank by means of water in such a finely-divided condition as to be in the form of a mist or vapor, and after the heat of the bottles has been transferred to and absorbed by the watery vapor or mist I draw the latter to the inlet end of the apparatus by suction and bring it into contact with cold incoming bottles, which are thereby heated prior to their immersion in the hot water of the tank. After the mist or watery vapor has parted with its heat to the incoming bottles I convey it back to the outlet end of the apparatus and into the hood before

mentioned, and having added to it an additional quantity of watery vapor I pass it through the apparatus as before, thus maintaining a cycle of operations which results in the rapid and economical pasteurizing of the beer with a minimum amount of breakage of bottles and with comparatively little consumption of fuel.

My invention consists in the novel construction, combination, and arrangement of parts hereinafter described and claimed.

In the accompanying drawings, illustrating my invention, Figure 1 is a vertical longitudinal sectional view of the complete apparatus; Fig. 2, a detail sectional view of the water spraying or separating devices. Fig. 3 is a side view of a perforated pipe for introducing live steam into the apparatus, and Fig. 4 a sectional view of a part of a conveyer and boxes for carrying bottles through the apparatus.

A designates a closed chamber or casing containing a hot-water tank A', the water in which is heated by steam-pipes *aa*. Within the chamber A is an endless conveyer B, which runs around drums C C' and over a drum D and hangs slack between the drums C and D, so as to dip into the hot-water tank A'. A series of rollers U U at the end of the conveyer serve to receive the boxes G G, in which the bottles H H are carried, and deliver them to the outlet-door P on the end of casing A. At the inlet end of the casing a door F is located, through which the bottles are placed on the conveyer. A large pipe or conduit I leads from the bottom of an extension K of the chamber or casing A to a fan L, which is driven from a pulley M by a belt *m*, and from the fan L a pipe or conduit N leads to a hood O, which is arranged at the outlet end of the apparatus, a door P being provided through which the bottles are removed from time to time and after they have been sufficiently cooled. Within the hood O is arranged a perforated drum R, which turns on a hollow perforated shaft S, to which water is supplied through a pipe T, and the drum is revolved by means of a pulley *w'* (shown in dotted lines in Fig. 1) outside the hood, to which motion is communicated by a belt *w* from a pulley W. At the inlet end of the apparatus a chimney V is located, and a

damper *v* within the chimney serves to regulate the escape of heated air and vapor which it may be desired to draw off from that end of the apparatus. A drain-pipe *i* at the bottom of the bend of pipe I serves to carry off condensed water from said pipe I.

Operation: The boxes G, which have perforated bottoms and which contain the bottles H, are placed on the conveyer at the inlet end of the chamber or casing A and are carried through the hot water in tank A', from which they emerge into the hood O on the rollers U. As the bottles come into the hood they are in a heated condition and are cooled by being subjected to the action of the water coming into the hood through pipe T, which is broken up into such small particles by the revolving perforated drum R as to be in substantially the condition of a mist or watery vapor. The bottles are also subjected to the action of the cooled mist or vapor coming into the hood through pipe or conduit N. After passing over and around the bottles and cooling the same the watery vapor or mist from drum R and pipe N is drawn through the apparatus over the water in tank A' to the inlet end, where it passes over the incoming cold bottles and is drawn into the extension K by the suction of the fan L and then up to the fan through pipe or conduit I and from thence back to the hood O. The incoming cold bottles are heated by contact with the mist or watery vapor, and the latter passes to the fan in a cooled condition, and any condensed water resulting from the cooling of the watery vapor will lodge in the bend of pipe I and can be drawn off through waste-pipe *i*.

From the foregoing description it will be seen that the watery vapor is circulated within the apparatus, being heated by contact with the hot bottles coming from the tank and then cooled by the cold bottles at the inlet end of the apparatus, and that the watery vapor or mist cools the heated bottles and heats the cold bottles, and that in this manner a cycle of operations is effected within the apparatus which results in the rapid and effectual pasteurizing of the beer with a minimum consumption of fuel and a very small percentage of loss by breakage of bottles.

In order to produce a denser, better, and stronger mist, I propose to use in connection with the apparatus hereinbefore described means for supplying live steam, which is added to the mist or watery vapor produced as before described at a point where such mist or watery vapor after cooling the bottles is being transferred to the other end of the apparatus.

In the drawings I have shown at O² a perforated steam-pipe, through which live steam is conveyed into the apparatus, where it mingles with the mist or watery vapor and serves to increase the density and strength of such mist or watery vapor. This pipe is shown in side elevation in the detail view, Fig. 3, on

an enlarged scale, and it is provided with a supply-pipe O⁴, a stop-cock O³, by means of which the supply of steam may be regulated, and with holes o³ o³ for the passage of the live steam into the apparatus.

Having described my invention, I claim—

1. In an apparatus for pasteurizing beer, the combination of a closed chamber, comprising a tank and a conveyer within said chamber, with a hood at the outlet end of said chamber, a pipe connecting the inlet end of the chamber with said hood and a fan adapted to force vapor through said pipe, substantially as described.

2. In an apparatus for pasteurizing beer, the combination of a closed chamber or casing, comprising a tank and a conveyer within said chamber adapted to transport bottles through said tank, with a hood at the outlet end of said chamber or casing, a water-distributing device in said hood and a pipe leading from the inlet end of the chamber or casing to the said hood and adapted to convey vapors to said hood from the inlet end of the apparatus, substantially as described.

3. In an apparatus for pasteurizing beer, the combination of a closed casing, comprising a tank, a conveyer extending through the casing and dipping into said tank and a hood at the outlet end of the casing, with a pipe connected to the casing below the conveyer at the inlet end and leading to said hood and means for forcing vapor through said pipe, substantially as described.

4. In apparatus for pasteurizing beer, the combination with a chamber comprising a tank for hot water, a conveyer within said chamber and a hood at the outlet end of the chamber, of a pipe or conduit for conveying vapor from the inlet end of the chamber to said hood and a chimney for the escape of surplus vapor, substantially as described.

5. In apparatus for pasteurizing beer, the combination with a chamber or casing, comprising a hot-water tank and a conveyer within said chamber or casing, of a water distributing or spraying device arranged at the outlet end of said chamber and consisting of a perforated shaft and a perforated revolving drum surrounding said shaft, substantially as described.

6. In an apparatus for pasteurizing beer, the combination of a closed casing, comprising a tank, a conveyer extending through the casing and dipping into said tank and a hood at the outlet end of the casing, with means for supplying watery vapor within said hood and means for adding live steam to such watery vapor, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MICHAEL L. FESENMEIER.

Witnesses:

CHARLES E. METZ,
R. E. TAYLOR.