No. 749,547. PATENTED JAN. 12, 1904.

M. L. FESENMEIER.

METHOD OF PASTEURIZING.

APPLICATION FILED AUG. 3, 1903.

NO MODEL.

Fig. 2.

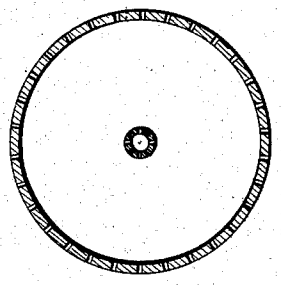


Fig. 3.

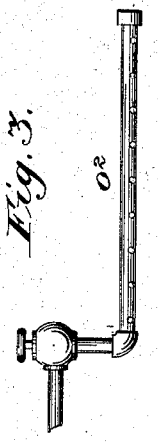
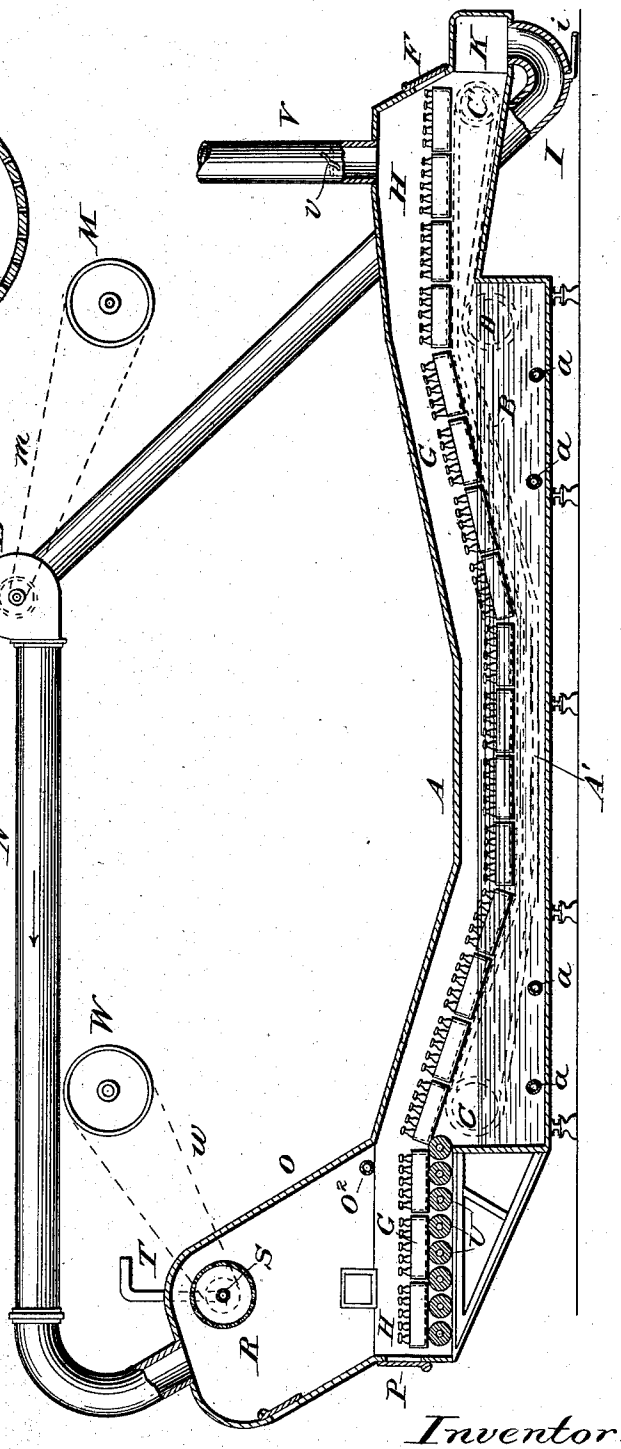


Fig. 1.



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by Connolly Bros. Attys

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 749,547. Patented January 12, 1904.

UNITED STATES PATENT OFFICE.

MICHAEL L. FESENMEIER, OF CUMBERLAND, MARYLAND.

METHOD OF PASTEURIZING.

SPECIFICATION forming part of Letters Patent No. 749,547, dated January 12, 1904.

Application filed August 3, 1903. Serial No. 168,116. (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 Allegany and State of Maryland, have invented new and useful Improvements in Methods of Pasteurizing, of which the following is a specification.

This invention has relation to methods of pasteurizing liquids, and has for its object the provision of a novel method whereby liquids in closed vessels will be rapidly and effectively pasteurized or sterilized with an economical consumption of fuel for heating purposes.

In carrying my invention into effect I utilize the heat which has been imparted to the vessels and their liquid contents in sterilizing or pasteurizing the latter to heat a vaporous matter, which is then conveyed to and brought into contact with cold vessels containing liquids about to be submitted to the pasteurizing process, to which it imparts its heat, thereby effecting a preliminary heating of the same, and is then conveyed back to the point where it again meets with and abstracts the heat from a fresh supply of vessels the contents of which have been pasteurized, thus operating through a cycle by which great economy in fuel expenditure is effected and loss through breakage reduced to a minimum.

In the accompanying drawings, in which I have shown an apparatus adapted to carry into effect my improved method, Figure 1 is a vertical longitudinal sectional view of the complete apparatus; Fig. 2, a detail sectional view of a water-spraying device used in connection therewith, shown on an enlarged scale. Fig. 3 is a side view of a perforated pipe for introducing live steam into the apparatus.

A designates a closed chamber or casing containing a hot-water tank A′, the water in which is heated by means of steam passing through pipes *a a*.

Within the chamber A is an endless conveyer B, which passes 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 in tank A′. A series of rollers U U at the end of the conveyer receive the boxes G G, in which the vessels H H, which contain the liquid to be treated, are contained, and deliver the boxes to an outlet-door P on the end of casing A. At the inlet end of the casing a door F is located through which the boxes containing the vessels 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 outside the hood, to which motion is imparted 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 let off from that end of the apparatus. A drain-pipe *i* at the bottom of the bend of pipe I serves to carry off water from said pipe I.

The operation of the above-described apparatus is as follows: The boxes G, which have perforated bottoms and which contain the vessels 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 onto the rollers U U. As the bottles emerge from the hot water in tank A′ into hood O they are in a heated condition and are cooled by being subjected to the watery vapor sprinkled into the hood by the revolving drum R, which receives a supply of water from the pipe T. The action of the revolving drum R is such that it breaks the water up into such small particles that it is suspended in the air in substantially the condition of a mist or vapor. At the same time the vessels are subjected to contact with the cooled mist or vapor which, as will be presently described, is brought from the other end of the apparatus through conduit N. After passing over and around the heated vessels and absorbing heat therefrom the watery vapor and air are drawn to the

other end of the apparatus by the suction created by fan L, where they pass over and around the incoming vessels, giving the same a preliminary heating, and thereby parting with the greater part of their heat, and are drawn into the extension K of casing A by the suction of the fan and thence up through conduit I and from the fan to the hood O through conduit N.

By properly regulating the supply of water to drum R and the escape of condensed water and vapor at the inlet end of the apparatus the air within the same can be kept charged with watery vapor to any desired extent.

The method which constitutes my present invention and which is performed by the apparatus above described and which it will be readily understood can be effected with other apparatus involves the imparting of heat from the vessels coming from the hot-water tank to a watery vapor, the conveying of the heated vapor to the incoming cool vessels, the imparting of heat from the watery vapor to such incoming cool vessels, and the transference of the cooled watery vapor to the starting-point. The supply of finely-divided water and the drawing off of condensed vapor, it is to be understood, are subsidiary features provided for the purpose of facilitating the carrying out of my improved method.

As an additional feature to the method hereinbefore described and in order to produce a better and stronger mist or watery vapor I propose to supply live steam to the apparatus and mingle it with the mist or watery vapor at a point where such mist or watery vapor after cooling the heated bottles or other vessels in which the material is contained is being transferred to the other end of the apparatus.

In the drawings I have shown at O^2 a perforated steam-pipe arranged transversely of the chamber A at the point where it joins the hood O. Steam is supplied to this pipe from a suitable source of supply and mingles with the mist or watery vapor after the latter has passed over and cooled the heated vessels on the rollers U U.

Having described my invention, I claim—

1. The method of pasteurizing or sterilizing material in closed vessels, consisting in passing the vessels through a heating medium, then subjecting them to contact with a cool vapor, then conveying the vapor to and bringing it in contact with cool vessels about to be heated, whereby the vessels are given a preliminary heating and the vapor is cooled, and then returning the cooled vapor to the starting-point.

2. The method of pasteurizing or sterilizing material consisting in passing vessels containing the material through a heating medium, then subjecting them to contact with a cool watery vapor, then conveying the heated vapor to and bringing it in direct contact with vessels about to be heated, then returning the cooled vapor to the starting-point, additional watery particles being added to the vapor and condensed water abstracted at suitable points to maintain the desired degree of saturation.

3. The method of pasteurizing or sterilizing material consisting in passing vessels containing the material through a heating medium, then subjecting them to contact with a cool vapor, then mingling live steam with such vapor then conveying the mingled vapor and steam to and bringing them in contact with cool vessels about to be heated, whereby the vessels are given a preliminary heating and then returning the cooled vapor to the starting-point.

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.