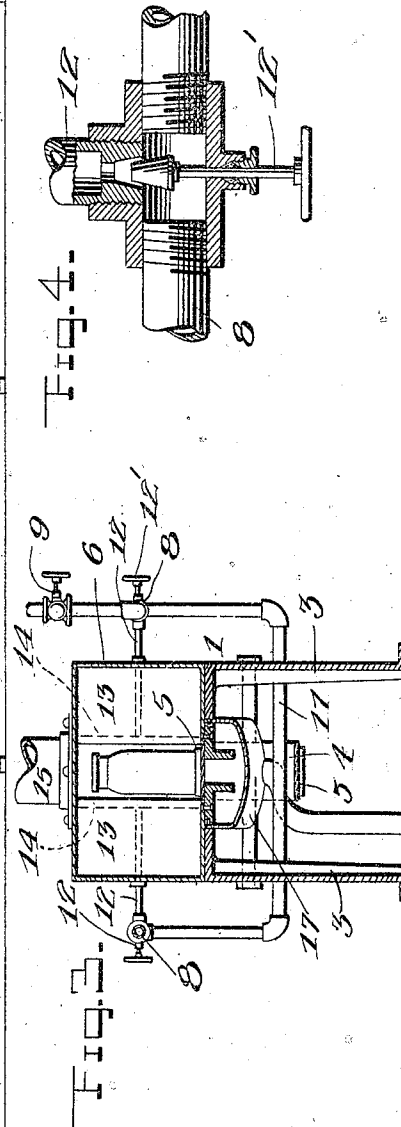
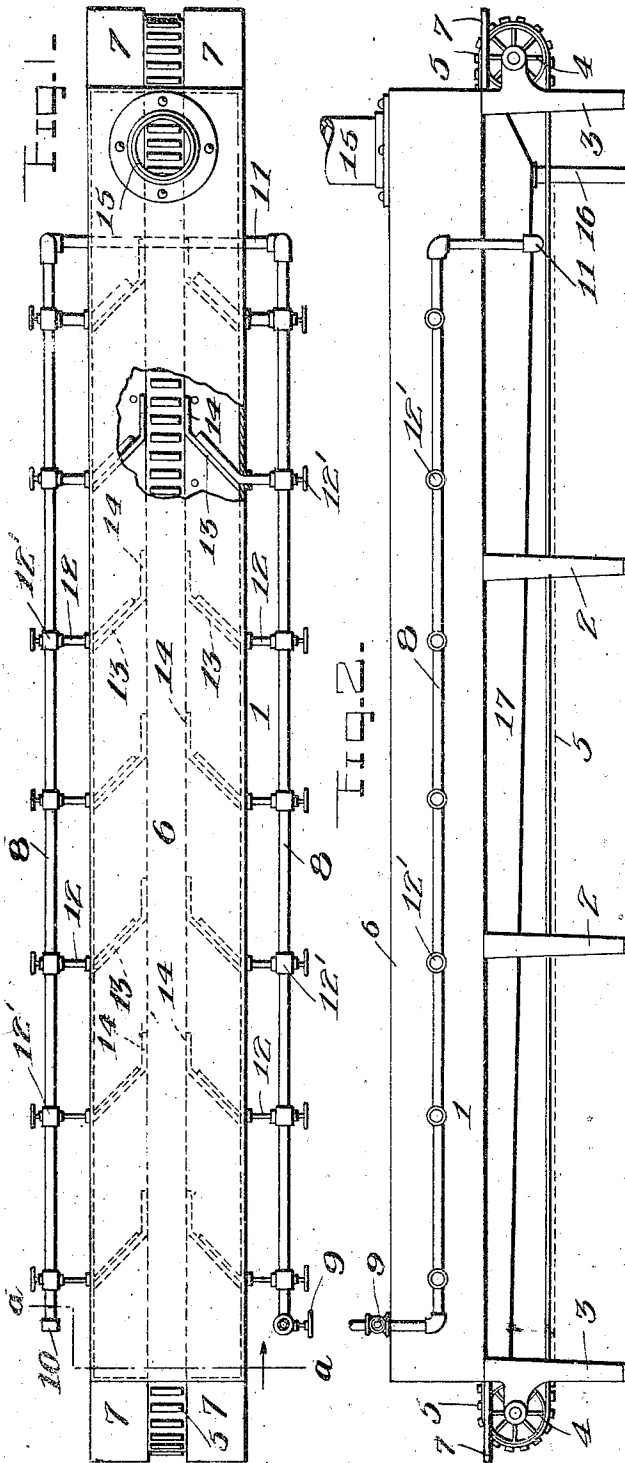


E. D. SCHMITT.
 APPARATUS FOR STERILIZING AND TEMPERING GLASS VESSELS.
 APPLICATION FILED NOV. 18, 1909.

976,001.

Patented Nov. 15, 1910.



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UNITED STATES PATENT OFFICE.

EDWARD D. SCHMITT, OF BALTIMORE, MARYLAND, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE PURE FOOD PROCESS COMPANY, OF BALTIMORE, MARYLAND, A CORPORATION OF MARYLAND.

APPARATUS FOR STERILIZING AND TEMPERING GLASS VESSELS.

976,001.

Specification of Letters Patent. Patented Nov. 15, 1910.

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To all whom it may concern:

Be it known that I, EDWARD D. SCHMITT, a citizen of the United States, residing at Baltimore city, State of Maryland, have invented certain new and useful Improvements in Apparatus for Sterilizing and Tempering Glass Vessels, of which the following is a specification.

The invention relates to improvements in apparatus for sterilizing glass vessels, and for tempering the same, so as to prepare or condition them to withstand, without cracking or breaking, the exceedingly high temperature required in processing food-products.

In packing food-products in glass vessels, it is necessary or advisable, from a sanitary standpoint, to sterilize the vessels, and also to temper them in order to eliminate the danger of cracking or breaking during the act of processing, hence the chief object of the invention is to provide an apparatus, whereby the vessels may be subjected to zones of gradually increasing degrees of heat, the passage through the first heat-zone being amply sufficient to thoroughly sterilize the vessels, while the passage through the remaining heat-zones will properly temper or condition said vessels, so that they will withstand, as before stated, the excessive heat incident to the processing or cooking step.

To this end the invention consists chiefly in arranging within a suitable jacket or casing, a number of specially constructed chambers forming heating-zones; a suitable carrier for conveying the vessels, to be treated, through the several chambers and zones, and means for supplying heat to the zones, the heat in the successive zones being gradually increased from a moderate to a high heat, so that in passing through the first zone, the vessels will be subjected to a certain degree of heat, and in passing through the remaining zones, they will be subjected to gradually-increasing degrees of heat, each succeeding zone being at a higher temperature than the preceding one, so that when the vessels have been subjected to the higher degree of heat in the last zone, they will be properly tempered or conditioned to withstand the excessive heat to which they will

be subjected in the processing step, without cracking or breaking.

In the drawing: Figure 1 is a top plan view of the apparatus, a portion of the casing or jacket being broken away, showing the arrangement of the heat-supply-pipes relative to the deflector-plates within the casing or jacket; Fig. 2, a side elevation; Fig. 3 a transverse section on line *a-a* of Fig. 1, and Fig. 4 a sectional detail showing one of the valves controlling the heat-supply-pipes.

Referring to the several views, the numeral 1 indicates a suitable base or table supported upon intermediate legs 2, 2 and end legs 3, 3. Suitably journaled in the respective end legs are wheels 4, around which is arranged to travel an endless conveyer-belt 5, adapted to support and convey the vessels lengthwise through the apparatus.

Mounted upon the table is a casing or jacket 6 which extends approximately the entire length of the table, leaving at each end a short platform 7, from which may be handled the vessels. A heat-supply-pipe 8, preferably steam, is arranged on each side of the casing or jacket, the two pipes being connected together by a transverse pipe 11. The end of one of the pipes 8 is adapted to be connected with a suitable source of steam or other heat-supply, and a valve 9 is provided for turning on and cutting off the supply of heat. The end of the other pipe 8 is closed by a plug 10. Leading from each supply-pipe 8 are a number of jet supply-pipes 12, which, projecting through the sides of the casing, have their inner ends inclined toward the outer or exit end of said casing. Each jet-pipe is provided with a needle-valve to control or regulate the inflow of heat, preferably steam.

The casing or jacket is divided into a plurality of chambers by deflector-plates 13, which are arranged adjacent to the jet-pipes, and extend from the top to the bottom of the casing. Each deflector-plate is provided with a longitudinal extension 14, against which the heating-fluid from the jet-pipes is projected, and prevented from coming into immediate, direct contact with the vessels.

The outer or rear end of the casing is pro-

vided with a suitable stack 15, through which the heating-fluid, after passing through the various chambers, is allowed to escape.

6 It will be observed that the first two jets on each side of the apparatus are of the same capacity or size, being adapted to admit the same amount of steam, and that the following two on each side are of the same capacity, while the others toward the end of the jacket increase in size, thus providing a quicker and more intense heat at the rear portion of the apparatus, than that which the jars must endure in traveling the first one-half of the distance through the jacket. 10 The arrangement of the deflectors within the jacket and the construction of the deflectors prevents the steam from coming into immediate direct contact with the jars, while 15 at the same time, it so directs it as to bring about a complete circulation and comparatively uniform temperature within each zone.

I prefer to employ the valves 12' in connection with each inlet pipe, so that the heat supplied at any particular part of the jacket, may be regulated to a great nicety.

Suitably connected to the frame of the apparatus is a drain trough 17 which extends the entire length of the jacket and through which the water of condensation passes to the drain pipe 16. It will be noted that this drain trough is inclined so that the water cannot accumulate in the trough.

35 Having thus fully described my invention, what I claim is:

1. An apparatus of the character described, comprising a suitable jacket having an inlet opening at one end and an exit opening at the other, and having a series of deflecting plates therein extending from the bottom to the top of said jacket and forming a plurality of chambers, an endless conveyer passing between said deflecting plates and adapted to convey the jars from one end of the jacket to the other, means for supplying heat to said chambers to which the jars are subjected in passing through the jacket.

2. An apparatus of the character described, comprising a suitable jacket having an entrance opening at one end and an exit opening at the other, a plurality of deflecting plates within the jacket and extending from the bottom to the top thereof and forming heat chambers, an endless conveyer passing between said deflecting plates and adapted to convey the jars through the jacket, means for supplying heat to said chambers in an increasing degree from the entrance opening of the jacket to the exit opening.

3. An apparatus of the character described, comprising a suitable jacket having an entrance opening at one end and an exit opening at the other, a series of deflecting

plates extending from the bottom to the top of said jacket, an endless conveyer passing between said plates, and adapted to convey the jars from the entrance to the exit end of said jacket, a steam pipe connected with said jacket and having a plurality of jet pipes extending into the jacket adjacent to the deflecting plates, whereby heat is supplied to the chambers within the jacket.

4. An apparatus of the character described, comprising a jacket having an entrance opening at one end and an exit opening at the other, a plurality of deflecting plates within the jacket and extending from the bottom to the top thereof and dividing the jacket into heat chambers, an endless conveyer passing between the deflecting plates and adapted to convey the jars from one end of the jacket to the other, a steam pipe on each side of the jacket having a plurality of jet pipes connected therewith and extending into the jacket adjacent to the deflecting plates, jet pipes increasing in size from the entrance opening to the exit opening whereby an increasing quantity of heating fluid is fed into the jacket from the entrance opening to the exit opening, thus providing a series of different heat zones, through which the jars pass.

5. An apparatus of the character described, comprising a suitable jacket having a plurality of deflecting plates, said deflector-plates converging toward each other and dividing the jacket into a number of chambers, a suitable conveyer passing through said jacket and adapted to convey the jars from one end of the jacket to the other, means for supplying heat in an increasing degree from one end of the jacket to the other, whereby the jars will be carried by the conveyer through different zones of heat increasing in intensity from one end of the jacket to the other, whereby the jars are sterilized and gradually heated or tempered, to condition them to receive the food products.

6. An apparatus of the character described, comprising a jacket having a plurality of deflector plates therein extending from the bottom to the top of said jacket and dividing the jacket into chambers, said deflector plates being inclined toward the exit opening of the jacket and provided with longitudinally-extending inner end portions, a suitable conveyer passing between said deflector plates and adapted to convey the jars from one end of the jacket to the other, a heat supply pipe having a plurality of jet pipes extending into the jacket adjacent to the deflecting plates, and discharging the heat against the longitudinal portions of the deflecting plate whereby the incoming hot fluid is kept out of immediate contact with the jars, said jet pipes increasing in capacity from the entrance to

the exit end of the jacket, whereby heat zones of varying intensity are produced, increasing from the entrance to the exit end of the jacket.

5 7. An apparatus of the character described, comprising a jacket having a plurality of deflector plates therein extending from the bottom to the top of said jacket and dividing the jacket into chambers, said
10 deflector plates being inclined toward the exit opening of the jacket and provided with longitudinally-extending inner end portions, a suitable conveyer passing between said deflector plates and adapted to convey the jars
15 from one end of the jacket to the other, a heat supply pipe having a plurality of jet pipes extending into the jacket adjacent to the deflecting plates, and discharging the hot fluid against the longitudinal portions of
20 the deflecting plate whereby the incoming hot fluid is kept out of immediate direct contact with the jars, each jet pipe being provided with a controlling valve, said jet
25 pipes increasing in capacity from the entrance to the exit end of the jacket, whereby heat zones of varying intensity are produced, increasing from the entrance to the exit end of the jacket.

8. An apparatus of the character described, comprising a suitable jacket divided
30 by oppositely-located, converging deflecting-plates into a plurality of successively-arranged chambers, a carrier arranged to pass between the deflector-plates, and means for
35 supplying heat to the several chambers.

9. An apparatus of the character described, comprising a suitable jacket divided
40 by deflector-plates into a plurality of successively-arranged chambers said deflector-plates having longitudinally-extending ends, a carrier for supporting vessels arranged to pass between the deflector-plates, and means for supplying heating
45 fluid to the several chambers and discharging the same against said longitudinal ends, said heated fluid so discharged, being prevented from coming into immediate, direct contact with the vessels.

10. An apparatus of the character described, comprising a suitable jacket divided
50 by oppositely-located, converging deflector-plates into a plurality of successively-arranged chambers forming zones of heat, a carrier arranged to travel between the deflector-plates, and means for supplying
55 heated fluid to the several zones, in increasing quantity from one end of the casing to the other.

heated fluid to the several zones, in increasing quantity from one end of the casing to the other.

11. An apparatus of the character described, comprising a suitable jacket divided
60 by deflector-plates into a plurality of successively-arranged chambers forming zones of heat, said deflector-plates having longitudinally-extending ends, a carrier, for supporting vessels, arranged to travel between the deflector-plates, and means for
65 supplying heated fluid to the several zones, in an increasing quantity from one end of the casing to the other, said hot fluid being discharged against the longitudinal ends and
70 by being so discharged being prevented from coming into immediate, direct contact with the vessels.

12. An apparatus of the character described, comprising a suitable jacket divided
75 by deflector-plates into a plurality of successively-arranged chambers forming zones of heat, said deflector-plates being arranged at opposite sides of the casing and provided with longitudinally-extended ends, a carrier for supporting vessels arranged to travel between said deflector-plates, and means for supplying heated fluid to the several zones and discharging the same against
80 the longitudinal ends of the deflector-plates, said heated fluid so discharged being prevented from coming into immediate, direct contact with the vessels.

13. An apparatus of the character described, comprising a suitable jacket divided
90 by deflector-plates into a plurality of successively arranged chambers, said deflector-plates being arranged at opposite sides of the casing and provided with longitudinally-extended ends, a carrier for supporting vessels, arranged to travel between said deflector-plates, and means for supplying heated fluid to the several chambers and discharging the same against the longitudinal
95 ends of said deflector-plates, said heated fluid so discharged being prevented from coming into immediate, direct contact with the vessels.

In testimony whereof I affix my signature in presence of two witnesses.

EDWARD D. SCHMITT.

Witnesses:

FRANCIS S. MAGUIRE,
FRANK G. BRERETON.