

Aug. 11, 1925.

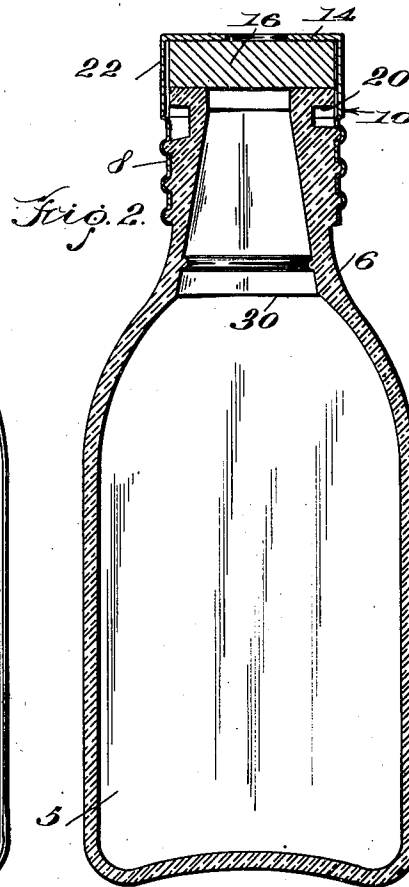
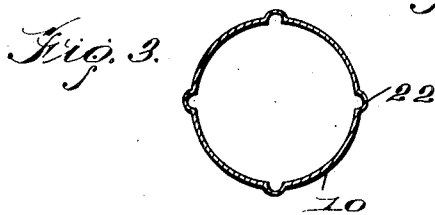
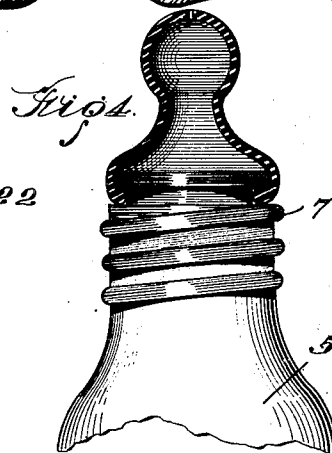
1,548,899

S. OYAMA

STERILIZING DEVICE

Filed Sept. 4, 1923

2 Sheets-Sheet 1



WITNESSES
M. Fowler

L. L. Quesada

INVENTOR
Senzo Oyama

BY
Munroe Hoo
ATTORNEYS

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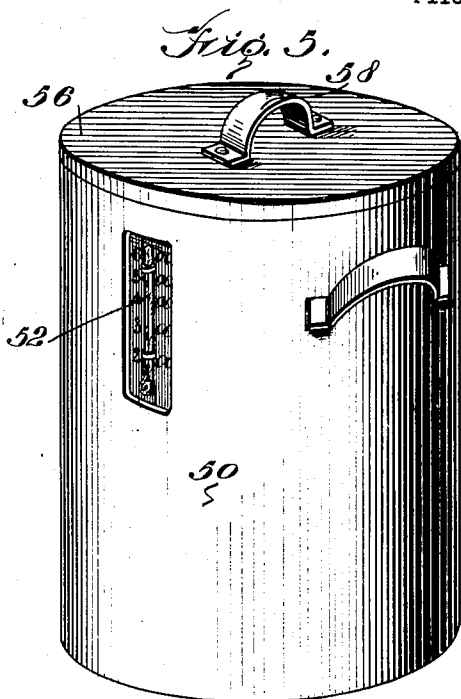
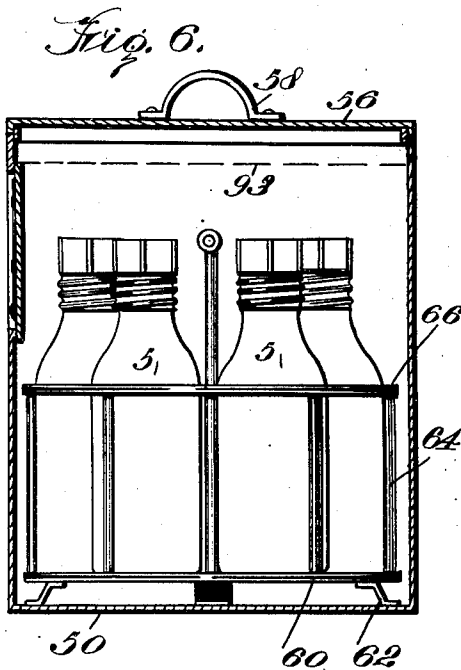
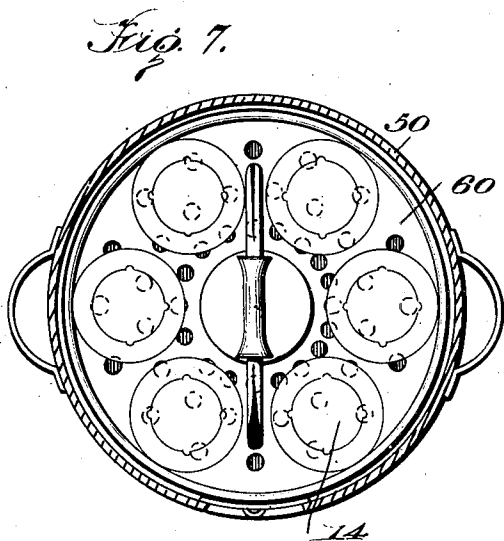
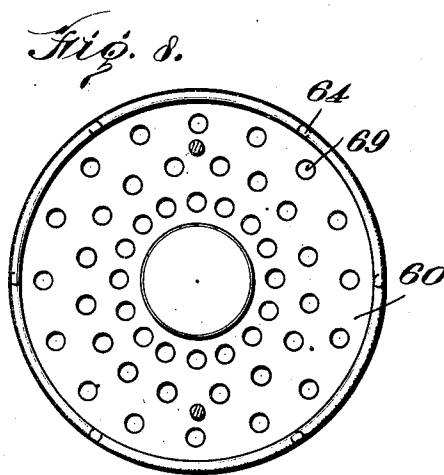
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STERILIZING DEVICE

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2 Sheets-Sheet 2



WITNESSES
M. Fowler

L. G. Quesada

INVENTOR
Senzo Oyama

BY *Munro Hoo.*
ATTORNEYS

Patented Aug. 11, 1925.

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UNITED STATES PATENT OFFICE.

SENZO OYAMA, OF HILO, TERRITORY OF HAWAII.

STERILIZING DEVICE.

Application filed September 4, 1923. Serial No. 660,793.

To all whom it may concern:

Be it known that I, SENZO OYAMA, a subject of the Emperor of Japan, and a resident of Hilo, in the county of Hawaii and Territory of Hawaii, have invented certain new and useful Improvements in Sterilizing Devices, of which the following is a specification.

This invention relates to liquid containing bottles and a sterilizer therefor.

An important object of the invention is to provide a liquid containing bottle having novel means whereby gases formed as the result of heating the liquid may conveniently escape.

A further object is to provide a novel form of bottle and cap provided with simple means whereby the admission of air or water exteriorly of the bottle is prevented from entering the bottle and possibly contaminating the contents of the same.

Further, the invention forming the subject matter of this application aims to provide a sterilizer capable of use when sterilizing bottles and the contents of the same, and which is provided with simple means to indicate the temperature within the sterilizer so that an accurate check on the sterilization process may be maintained.

Other objects and advantages will be apparent during the course of the following description.

In the accompanying drawings forming a part of this application and in which like numerals are employed to designate like parts throughout the same—

Figure 1 is a side elevation of a bottle and cap therefor constructed in accordance with this invention;

Figure 2 is a vertical sectional view through the cap and bottle;

Figure 3 is a horizontal sectional view through the cap;

Figure 4 is a fragmentary side elevation of the bottle equipped with a nipple;

Figure 5 is a perspective view of the improved sterilizer;

Figure 6 is a central vertical sectional view through the same;

Figure 7 is a horizontal sectional view through the sterilizer;

Figure 8 is a horizontal sectional view illustrating a rack embodied in the invention.

In the drawings the numeral 5 designates a bottle adapted for the reception of milk or

other liquid, and, as shown in the drawing, the upper portion of the bottle is provided with a neck 6 formed with external threads 7 for threaded engagement with the tubular attaching portion 8 of a cap 10. The cap 10 is provided with an inwardly projecting annular flange 14 which acts as a retaining means for a cork 16, the characteristics of which will be pointed out.

Previous to using the cork the same is softened by a machine press or otherwise, and when the contents of the bottle is heated to approximately 180 degrees the cork will be softened so that any gas formed may escape between the cork and the top 20 of the bottle. It will be seen that the cap is provided with a series of longitudinal, outwardly projecting ribs 22 which form internal channels or vents by means of which the gas may escape, and also these vents allow for expansion of the liquid when heated. That is to say, the liquid extends only up as far as the line 30 in the bottle and the air above the line 30 may escape so far as is necessary by way of the vents within the ribs 22.

It will be seen that the upper end 20 has its outer edge substantially in gas tight contact with the inner wall of the cap 10 and thus the necessity for the internal vent defined by the longitudinally extending ribs 22.

It is important to note, however, that this arrangement does not allow germ-laden air or liquid from the outside to enter the bottle and possibly contaminate the contents of the same. Subsequent to the discharge of the gas or air from the bottle somewhat of a vacuum is formed in the neck of the bottle.

Attention is invited to the fact that the ribs 22 not only define internal vents but also constitute gripping devices by means of which the cap may be tightly fastened or conveniently removed. Also the ribs 22 serve a third function in that they strengthen and reinforce the cap so that the same is not easily mutilated.

In other words when the pressure of the gas within the bottle exceeds a predetermined point it will exert a pressure on the compressible element 16 so that this compressible element moves out of gas-tight contact with the neck of the bottle and thereby permits the gas to escape to the atmosphere by way of the internal passages formed by the ribs 22.

The sterilizer is designated by the nu-

meral 50 and is formed of aluminum or other suitable material and is provided with a thermometer 52 visible from the exterior of the receptacle so that the temperature of the contents of the receptacle may be readily ascertained. The receptacle may be provided with a cover 56 having a handle 58 by means of which the cover may be detached.

In carrying out the invention a rack 60 is located within the receptacle and is arranged in spaced relation to the bottom of the receptacle by means of lugs or spacing devices 62. The rack is provided with stems 64 to which a bottle retaining frame 66 is connected, and of course the frame 66 may be provided with a series of openings for the several bottles, all of which is believed to be readily understood.

Figures 7 and 8 illustrate that the bottom of the rack 60 is provided with openings 69 by means of which the heat from the fire may readily pass up through the receptacle. The source of heat may be an ordinary cook stove, a coal oil stove or an electric heater or any other convenient form of heat.

In operation, the bottles carried by the rack are introduced into the receptacle and water is supplied until the water level reaches the dotted line 93. Heat is now applied so that the contents of the receptacle will reach 180 degrees by the thermometer. This temperature is maintained for about thirty minutes and then cool water is introduced into the receptacle so as to gradually cool the contents of the same to 100 degrees within fifteen minutes. After the contents of the receptacle is cool the bottles are removed and the caps are allowed to remain in place so as to exclude dust-laden air.

With reference to the foregoing description taken in connection with the accom-

panying drawing, it will be observed that the invention forming the subject matter of this application is possessed of a number of sanitary features, all of which meet a definite need in the art.

Having thus described my invention, what is claimed is:

1. The combination of a bottle adapted for the reception of a liquid and having a neck exteriorly screw threaded, a cap threaded on said neck and having substantially air-tight contact with the upper portion of the same, and a cork mounted on the top of the bottle and confined within said cap, said cap being provided with a series of outwardly projecting ribs defining internal passages for the escape of gas and constituting gripping devices by means of which the cap may be turned, said ribs also acting as strengthening and reinforcing means for the cap.

2. The combination of a bottle adapted for the reception of a liquid and having a neck exteriorly screw threaded, a cap having substantially gas tight contact with the upper portion of said neck and a threaded attaching portion adapted to engage the threads on said neck, and a cork mounted on the top of the bottle and confined within said cap, said cap being provided with a series of outwardly projecting ribs defining internal vents or passages and constituting gripping devices by means of which the cap may be turned, said ribs also acting as strengthening and reinforcing means for the cap, said cork being compressible under the influence of the gas in said bottle whereby the cork may move out of gas-tight engagement with the neck.

SENZO OYAMA.