No. 812,974. PATENTED FEB. 20, 1906.

T. C. BATES.

APPARATUS FOR STERILIZING AND CLEANSING BOTTLES.

APPLICATION FILED OCT. 16, 1903.

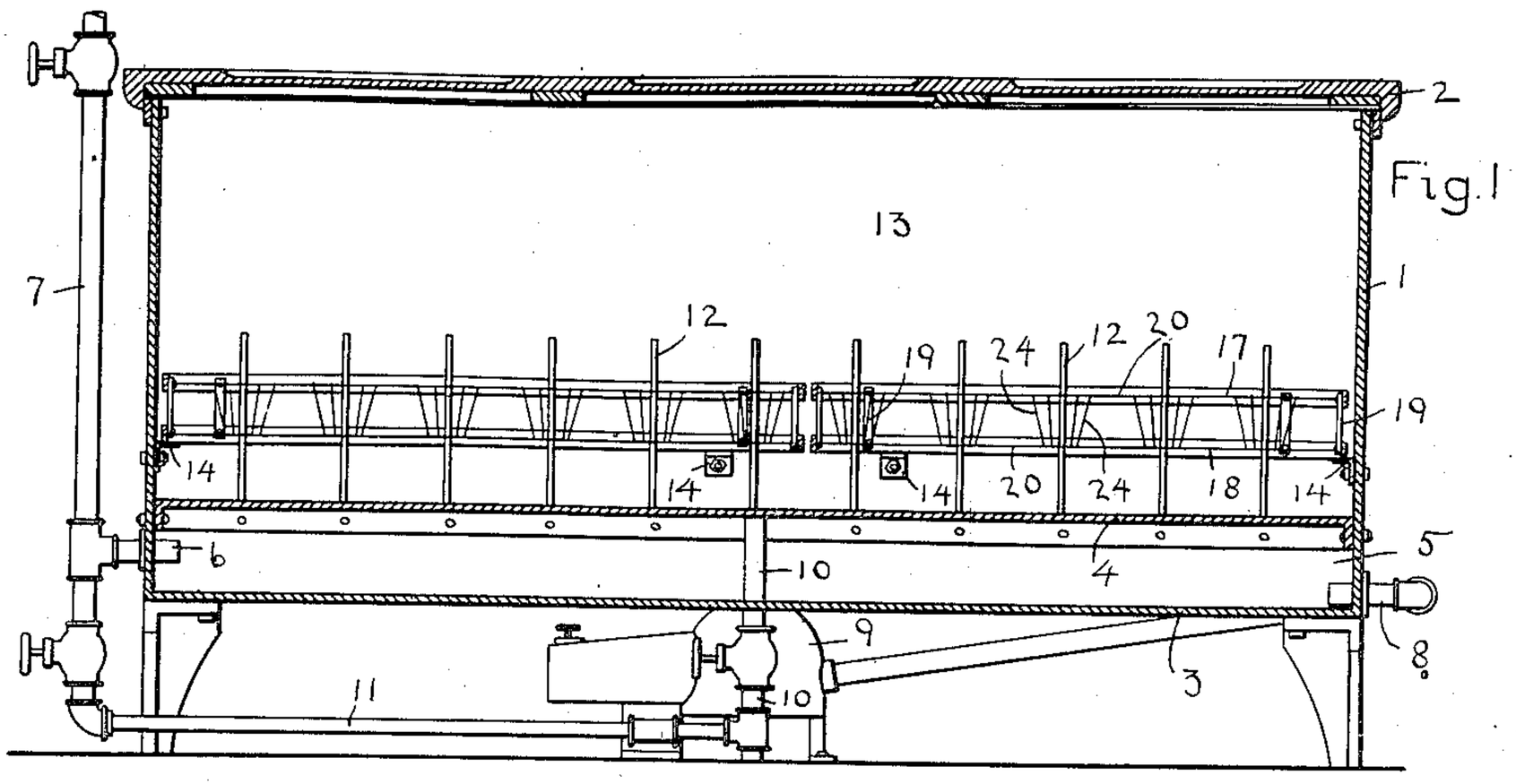

Fig. 1

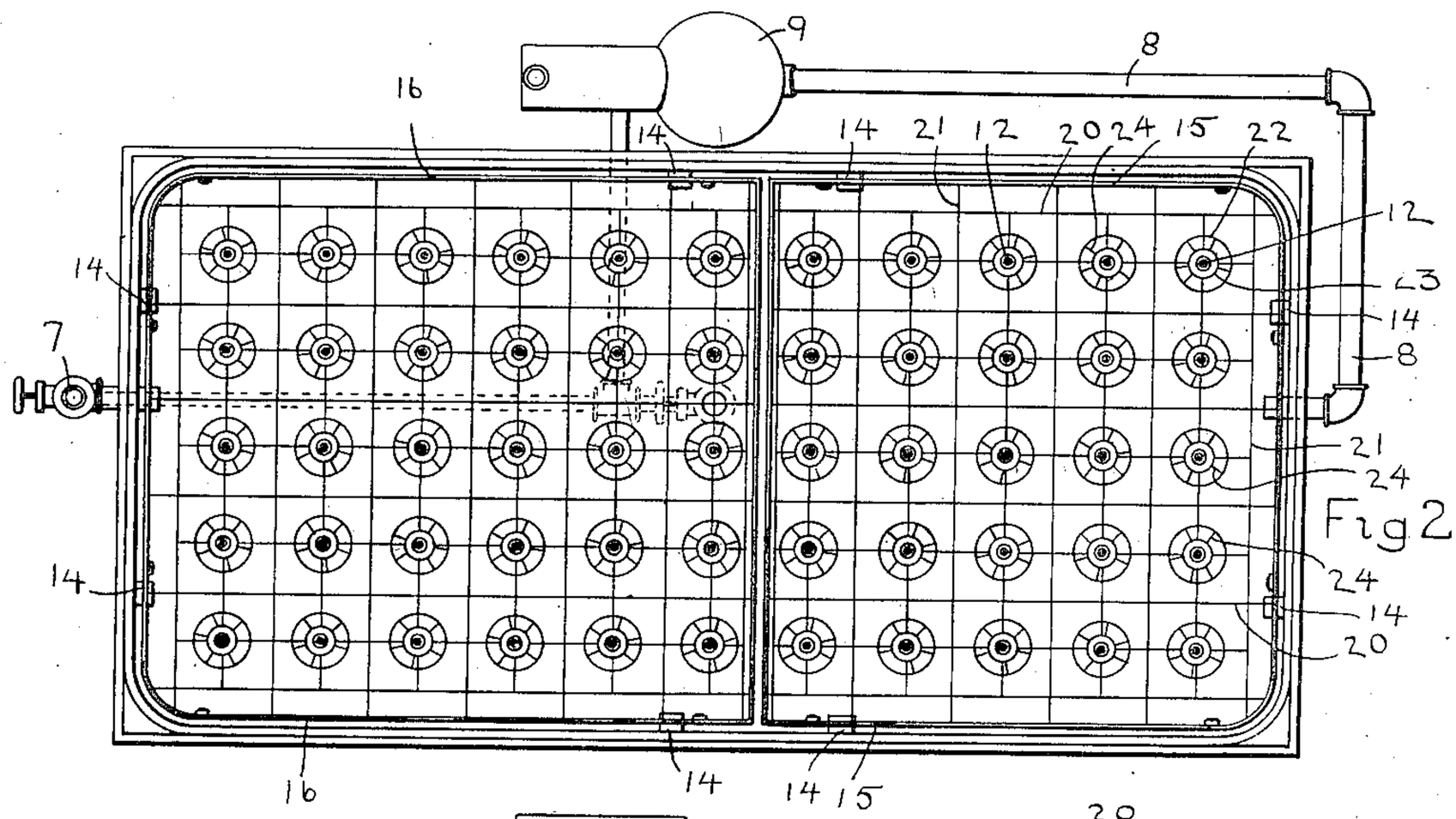

Fig. 2

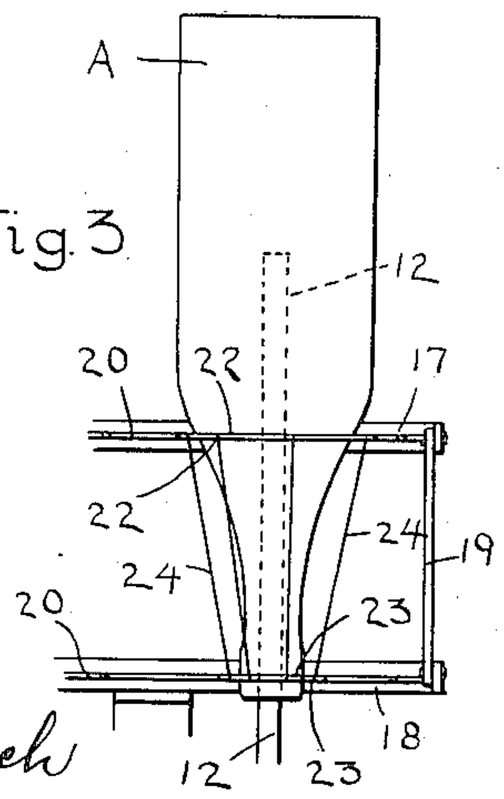

Fig. 3

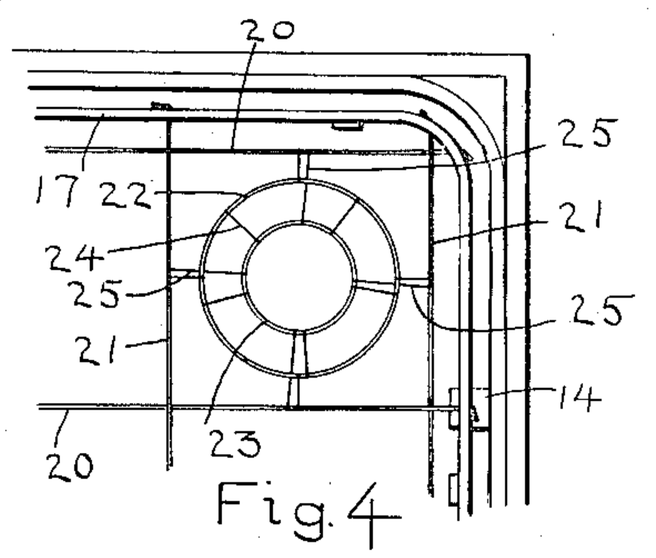

Fig. 4

Witnesses

Roy D. Tolman

Penelope Comberbach

Inventor

Theodore C. Bates.

By Rufus B. Fowler

Attorney

UNITED STATES PATENT OFFICE.

THEODORE C. BATES, OF WORCESTER, MASSACHUSETTS.

APPARATUS FOR STERILIZING AND CLEANSING BOTTLES.

No. 812,974. Specification of Letters Patent. Patented Feb. 20, 1906.

Application filed October 16, 1903. Serial No. 177,270.

To all whom it may concern:

Be it known that I, THEODORE C. BATES, a citizen of the United States, residing at Worcester, in the county of Worcester and Commonwealth of Massachusetts, have invented a new and useful Improvement in Apparatus for Sterilizing and Cleansing Bottles, of which the following is a specification accompanied by drawings forming a part of the same, in which—

Figure 1 represents a central vertical sectional view of an apparatus embodying my invention. Fig. 2 is a plan view of the apparatus with the cover removed. Fig. 3 is a detached view, on a larger scale, of one of the cages for supporting a bottle during the operation of cleansing; and Fig. 4 is a top view of the same.

Similar reference letters and figures refer to similar parts in the different views.

My present invention relates to an apparatus for sterilizing and cleansing bottles, carboys, and like vessels by which all objectionable germs are killed and all impurities are removed from the inside and from the outside of the bottles for holding and conveying any matter, but more especially for bottled spring-water, ginger-ale, beer, wine, or other beverages, by the agency of heat, moisture, and mechanical agitation under sanitary conditions, which reduce the handling of the bottles and their contact with the outer air to a minimum; and it consists in the construction and arrangement of parts, as hereinafter described, and pointed out in the annexed claims.

Referring to the accompanying drawings, 1 denotes a box or receptacle preferably constructed of boiler-plate iron and having an open top closed by a cover 2. A few inches from the bottom 3 of the box I insert a false bottom 4, the space between the bottom and false bottom constituting a steam chest or chamber 5, into which steam is admitted at one end under pressure from a pipe 6, communicating with a pipe 7, leading to a boiler or other source of steam-supply. The opposite end of the steam-chamber 5 communicates by an exhaust-pipe 8 with a steam-trap 9, which may be of any known form of construction and is not shown in detail. Passing through the bottom 3 and false bottom 4 is a waste-pipe 10 for removing the water of condensation from the box 1 above the false bottom 4. The steam-strap 9 also communicates with the waste-pipe 10, and the pipe 7 is connected with the waste-pipe 10 by a drip-pipe 11. Inserted in the false bottom 4 and communicating with the steam-chamber 5 are a series of small pipes 12, through which steam may pass in small jets from the steam-chamber 5 into the cleansing-chamber 13. Attached to the sides of the box 1 are brackets or angle-plates 14, upon which rest the removable baskets 15 and 16, in which the vessels to be cleansed are supported. Each of the baskets 15 and 16 consists of a pair of parallel frames 17 and 18, constructed of band-iron and connected together at intervals by braces 19. Strung across the frames 17 and 18 at regular intervals and at right angles to each other are a series of wires 20 21, attached at their ends to the frames of band-iron, with the wires 20 running in one direction interlacing the wires 21 running at right angles thereto.

Supported in each of the squares formed by the crossed wires 20 and 21 are cages adapted to receive the neck of a bottle or vessel to be cleansed in the position represented in Fig. 3. These cages consist of an annular wire 22 in the plane of the upper frame 17 of sufficient diameter to receive the enlarged portion of the neck where it joins the body of the bottle and an annular wire 23 in the plane of the frame 18, adapted to receive the mouth of the bottle when the bottle is inserted therein in an inverted position, as shown at A in Fig. 3.

The annular wires 22 and 23 are joined by connecting-wires 24, and they are supported in position by stay-wires 25, by which the annular wires 22 and 23 are connected with the interlaced wires 20 21. The annular wires 22 and 23, with their connected stay-wires, form a funnel-shaped cage for the reception of the neck of the bottle in an inverted position, a series of these cages being supported by each of the baskets 15 and 16. The cages are arranged in the frames so as to bring the bottles supported therein concentric with the steam-pipes 12, so that when a bottle is placed in position the free and open end of the steam-pipe 12 will pass through the neck into the body of the bottle, as represented by broken lines in Fig. 3.

The operation of my apparatus is as follows: The baskets 15 and 16 are placed in position on their supporting-brackets 14. The box is closed and steam admitted to the chamber 5 through the pipes 12 to the chamber 13 until the entire structure is thoroughly heat-

ed. The cages are then filled with bottles, with one of the steam-pipes 12 entering the body of the bottle. The box is then closed and steam is admitted to the steam-chamber 5 at any desired pressure, but usually at a steam-pressure of about fifteen pounds, as that produces about two hundred and fifty (250°) degrees of heat; but any pressure may be obtained, and thus give a higher temperature up to 300° or more, if desired, to kill any germs that may be in the bottles thus being sterilized. As the steam is prevented from flowing through the exhaust-pipe 8 by means of the steam-trap 9, it will be caused to flow in powerful jets through the vertical pipes 12 and impinge against the bottom and inner surfaces of the bottles, killing any germ life therein or thereon by excessive heat and loosening any impurities that may be attached thereto by mechanical agitation and flowing in streams of condensed water from the mouths of the bottles, and the operation is continued until the bottles are thoroughly sterilized and cleansed.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a bottle-cleansing apparatus, the combination of a chamber having an open top, a cover for hermetically sealing said top, a false bottom dividing said chamber and forming a steam-chest, means for admitting steam under pressure to said steam-chest, a series of open pipes extending upwardly from said false bottom and communicating with said steam-chest, a frame vertically removable through the open top of said chamber and comprising a series of cages in alinement with said open steam-pipes, said cages having openings at their top to support the body of the bottle and an opening at the bottom to receive the neck of the bottle and hold the bottle in an inverted upright position, and means for supporting said frame above said false bottom.

2. In a bottle-cleansing apparatus, the combination of a chamber having an open top, a cover for hermetically sealing said top, a false bottom dividing said chamber and forming a steam-chest, means for admitting steam under pressure to said steam-chest, a series of open pipes extending upwardly from said false bottom and communicating with said steam-chest, and a bottle-supporting frame vertically removable through the open top of said chamber.

3. In an apparatus for cleansing bottles, a basket for holding the bottles to be cleansed, consisting of a series of interlaced wires in an upper and a lower plane, wire cages held by said interlaced wires having openings at their top to support the body of the bottle and an opening at the bottom to receive the neck of the bottle and hold the bottle in an inverted position.

Dated this 13th day of October, 1903.

THEODORE C. BATES.

Witnesses:
ERNEST S. BOTHWELL,
WILLIAM H. TYLEE.