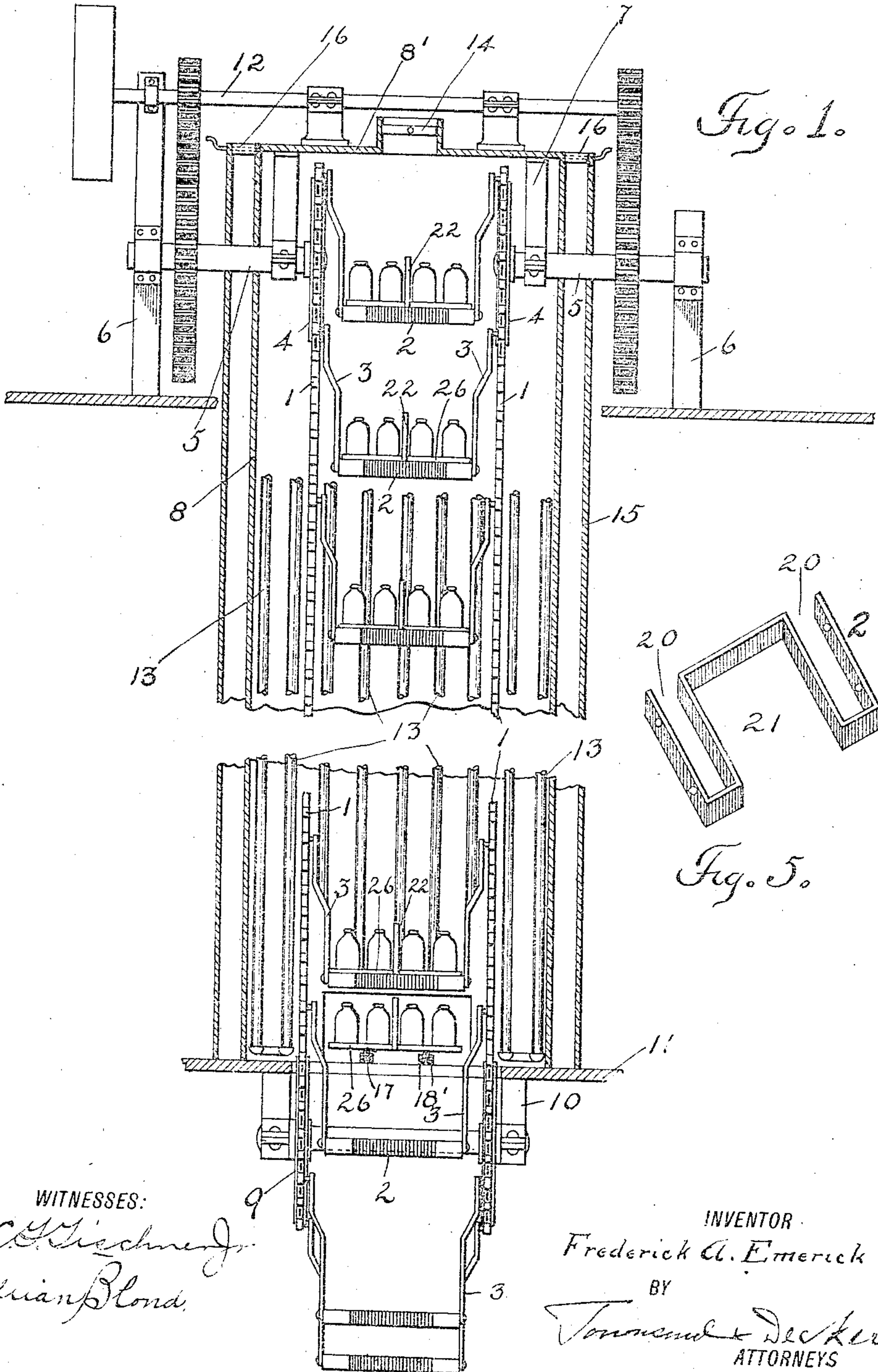


No. 862,623.

PATENTED AUG. 6, 1907.

F. A. EMERICK.
STERILIZING APPARATUS.
APPLICATION FILED NOV. 9, 1905.

3 SHEETS—SHEET 1.



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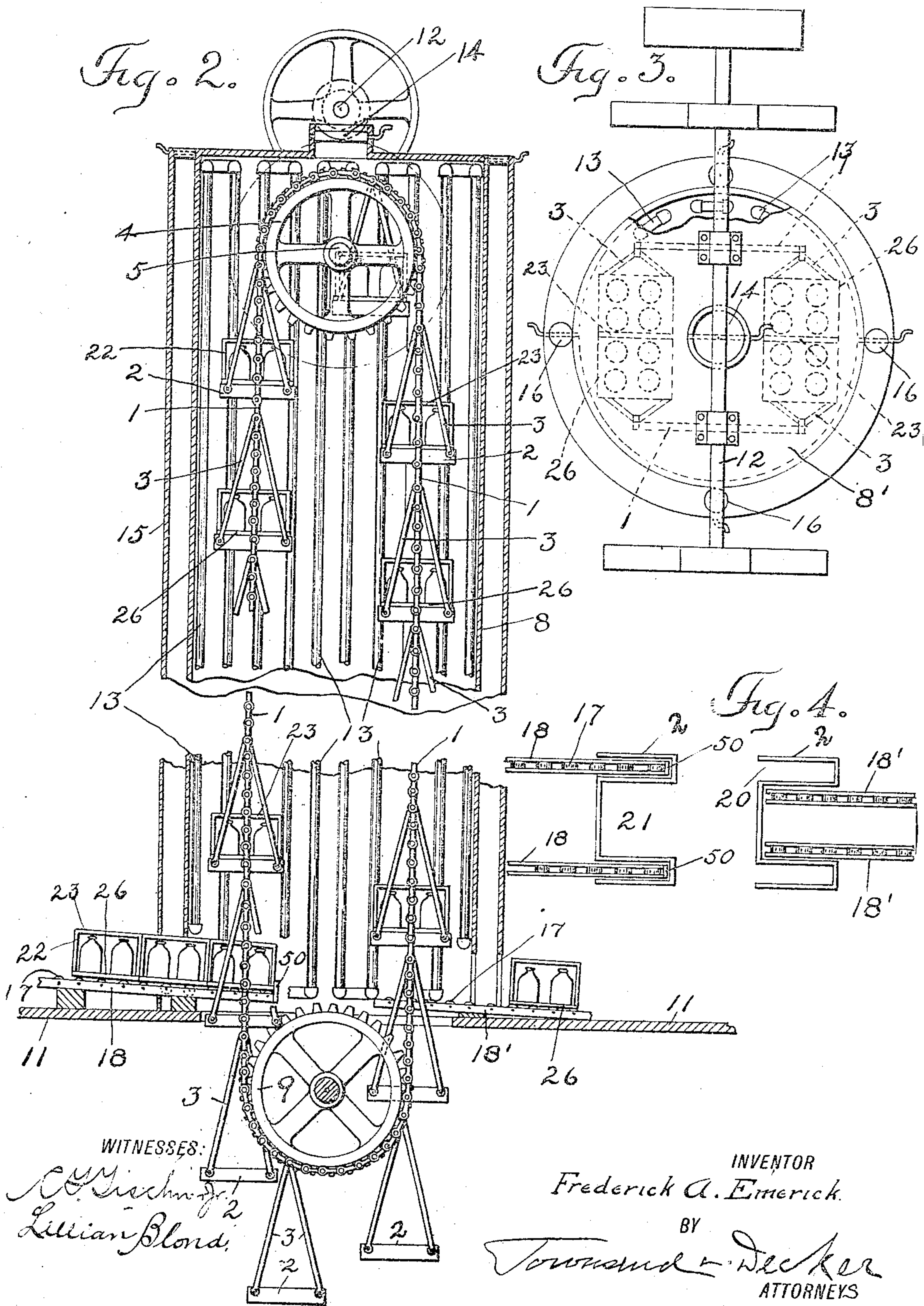
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Fig. 2.

Fig. 3.



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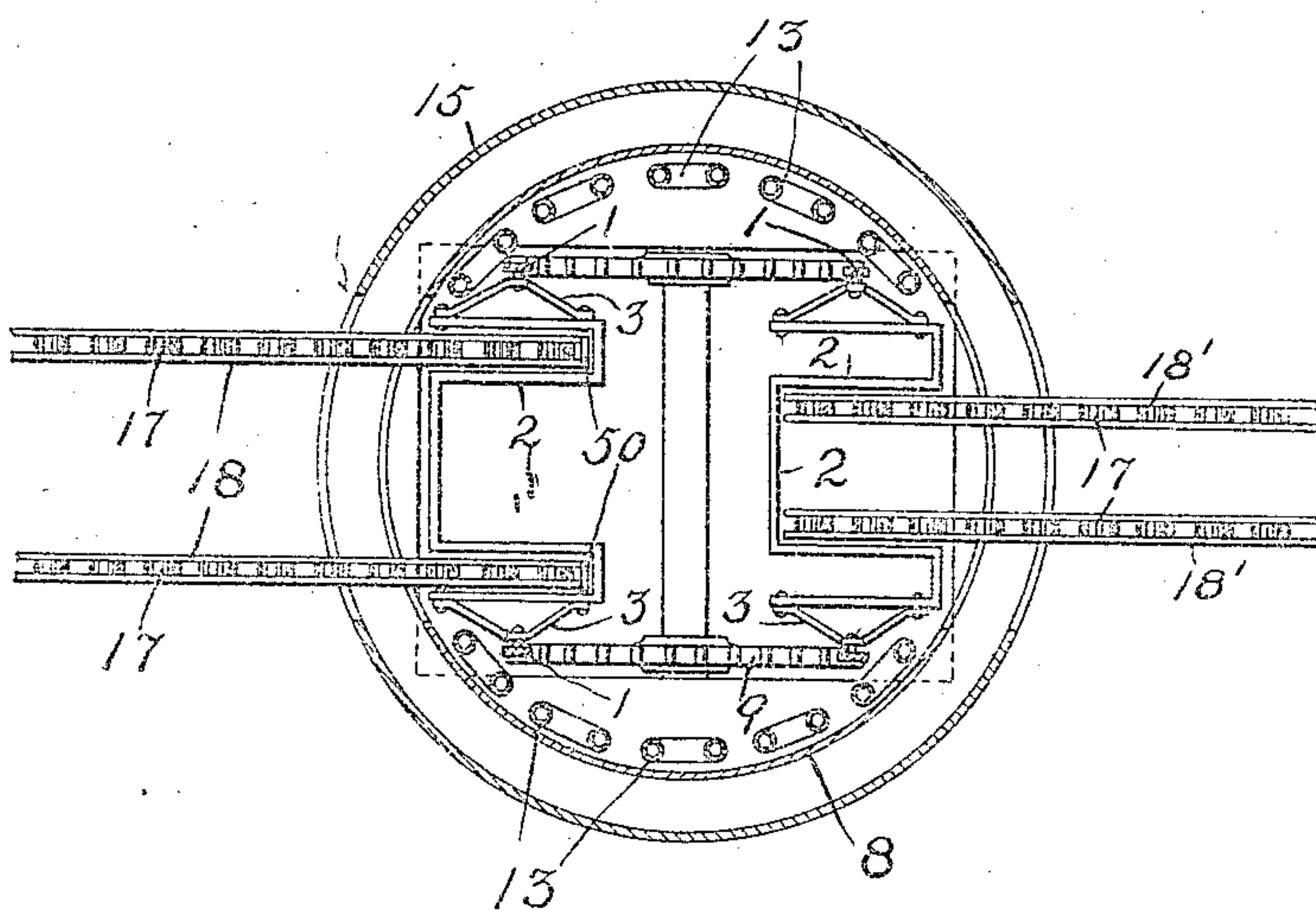
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Fig. 6.



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UNITED STATES PATENT OFFICE.

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STERILIZING APPARATUS.

No. 862,623.

Specification of Letters Patent.

Patented Aug. 6, 1907.

Application filed November 9, 1905. Serial No. 286,469.

To all whom it may concern:

Be it known that I, FREDERICK A. EMERICK, a citizen of the United States, and a resident of Oswego, in the county of Oswego and State of New York, (with
5 post-office address Oswego, New York,) have invented certain new and useful Improvements in Sterilizing Apparatus, of which the following is a specification.

My invention relates to apparatus for heating bottles
10 or other containers either empty or filled and is especially useful for sterilizing milk bottles or milk bottles and their contents. It may, however, be used for other articles which require to be subjected to heat for drying or for other purposes.

15 To this end my invention consists in the combination with a vertical chimney or tower, the interior of which is heated by any suitable means, of an endless conveyer or carrier, preferably of the chain type, pendulous trays hung from said carrier each constructed
20 with two vertical openings or sets of openings extending respectively from opposite edges or sides of the tray entirely across the line of suspension of said trays and feed and discharge tracks or conveyers arranged as hereinafter described with the feed tracks or conveyers located at a point near the bottom of the heating
25 tower but in line with one of the sets of vertical openings extending across the line of suspension of the trays and on the side of the endless conveyer which is ascending, while the said discharged tracks or conveyers are arranged on the down side in line with the other
30 set of openings and extend entirely across the line of suspension of the said trays.

My invention consists further in the special combinations of devices and details of construction as more
35 particularly hereinafter described and then specified in the claims.

In the accompanying drawings, Figure 1 is a vertical section through the tower showing the endless carrier in elevation together with its driving mechanism.
40 Fig. 2 is a section of the tower with the endless carrier in side elevation and showing the feed and discharge ways or conveyers for feeding the pallets and receiving and carrying away the pallets after heating. Fig. 3 is a plan of the tower. Fig. 4 shows the relative location of the feed and delivery ways of the tracks to the
45 trays at the point where the said trays pass the tracks for the purpose of picking up and dropping the pallets carrying the bottles. Fig. 5 is a perspective view of the preferred form of skeleton tray which I employ.
50 Fig. 6 is a horizontal sectional view through the apparatus taken above the tracks and showing the carriers in operative position with respect thereto, the objects forming the load being omitted.

1 indicates the chains or belts of an endless carrier
55 from which the trays 2 are suspended by a pivotal sus-

pension or connection of the hangers 3 connected to the trays at their opposite sides and edges as shown better in Fig. 2, and pivotally connected with the belts or chains 1 of the endless carrier. Said belts pass over
suitable drive wheels 4 which are carried by shafts 5. 60 The journal bearings of said shafts are provided with posts 6 sustained by the floor of a building or by other means and by journal bearings carried by hangers 7 supported in any suitable manner. At the bottom of the tower the endless belts or chains pass around other
65 wheels 9 as well understood in the art which may be mounted on shafts sustained by hangers 10 on a lower floor 11 of the building. Said floor 11 has suitable openings to permit the passage of the trays and endless belts as indicated more fully in Fig. 2. A counter
70 shaft 12 driven in any suitable manner and geared to the shafts 5 operates the endless carrier. The up and down sides of the carrier both travel in the tower or vertical heating chamber 8, the interior of which may be heated
75 by steam pipes 13 or by other means to secure the desired degree of temperature within the same necessary for sterilizing or for other result.

The top of the tower is closed in by the cover 8' which is provided with an opening or escape controlled by the
damper 14, whereby the temperature may be more
80 readily regulated. The tower 8 has preferably a heat insulating jacket formed, preferably, by an exterior casing 15 separated from the chamber 8 by an air space to form an air jacket which prevents radiation of heat
85 from the heating chamber. At the top of the air jacket a number of dampers 16 may be used to carry away any radiated heat should it be desirable to permit the escape of the same in order to prevent communication of
90 the heat from the heating chamber to the room or apartment in which the tower is located. With this construction or arrangement of heating tower and endless
95 carrier, it will be obvious that any bottles or other objects or containers placed upon the trays at or near the bottom of the up side of the carrier will be heated moderately and gradually in their ascent on the up side
100 until they reach the more intense heat at the top of the chamber or chimney, while on their return on the down side they will be gradually cooled. Conveyers, tracks or ways are also provided for delivering the articles or
105 pallets or boards carrying the same into position where they will be taken up by the upwardly traveling trays and for receiving said articles, pallets or boards from the downwardly traveling trays as they reach the bottom of the tower on their downward travel. These
110 tracks, ways or conveyers may be of any suitable construction, but are preferably of such character and so built as to permit the articles to be fed and discharged or carried away by gravity.

Assuming that the apparatus is used for the sterilization or drying of bottles assembled upon pallets or

boards 26, it is preferable to employ tracks or ways having anti-friction rollers 17; said tracks having a slight inclination, preferably, on both the feed and delivery sides. Said tracks or ways for the feed or delivery side are indicated at 18 and for the discharge side at 18'. Referring to the drawings, it will be seen that these tracks or ways on both sides of the tower extend into the path of the traveling trays and entirely across their line of suspension, so as in the case of the feed side, to bring the sustaining board or pallet 26 fully into position where it will be properly picked up by the tray, or in other words, will be fully under the center of suspension of said tray which will, therefore, not be in danger of canting or tilting and with consequent danger of the tray dropping the board or pallet or spilling the articles supported by it. In the same manner on the delivery side the tracks or ways extend back across practically the whole space or path embraced by the descending tray and entirely across their line of suspension so as to fully receive the descending pallet with its supported bottles or other articles.

In order to permit the trays to pass the tracks or ways or other conveying device, and to fully receive and properly deposit their load consisting of the pallets or other objects, I construct said trays with vertical openings which extend from their opposite sides across the line of suspension as more fully indicated in Figs. 4 and 5. In these figures, these openings, which permit the tray to pass the feed tracks or ways 18, are indicated at 20. The opening which extends across the tray in the opposite direction to permit it to pass the delivery tracks 18' is indicated at 21. It is obvious that the shape of the tray to provide openings for this purpose may be greatly varied. I prefer, however, to make the tray in the form of a skeleton tray of metal as shown, proper provision being made at the sides for attachment of the hangers 3 as indicated. The pallets 26 with the bottles assembled thereon are fed by gravity or in any other suitable way to position for being picked up by the ascending trays as indicated in Fig. 2. A suitable stop 50 brings them to rest in position for being picked up. When a pallet is picked up by the ascending tray, it frees the next one which is then fed into position to be picked up by the next ascending tray. Suitable provision is preferably made to prevent the bottles on the pallet, which is about to feed into position for being lifted from engaging with the edge of the board or pallet which has just been lifted. Such provision consists of uprights 22 at the front and back of each pallet connected if desired by a cross piece or brace 23. These uprights 22 which rise to at least the height of the bottle act as stops to prevent the pallet from being fed forward into position for being lifted until it has been cleared by the pallet which has just been picked up. On the descending side each pallet is re-

ceived by the delivery ways or tracks 18' and immediately passes away by gravity from position where it will interfere with the load on the descending tray above.

In the operation of this apparatus, it will be seen that the labor is confined to simply placing the pallets in line upon the feed tracks 18 and to disposing of the pallets and their load as they are fed away from the delivery opening in the side of the tower on the tracks 18'. It will also be seen that inasmuch as the ascending and descending trays with their loads will balance one another, the power required for feeding the articles to be heated for sterilization or other purpose will be a minimum.

What I claim as my invention is:

1. The combination of a heating tower or chimney, an endless carrier arranged with its up and down sides traveling in said tower, pendulous trays having vertical openings extending respectively from opposite sides or edges of the tray across the line of suspension, feed tracks or conveyers extending into the path of the trays near the bottom of the tower and entirely across the line of suspension of the trays but in line with the vertical openings extending from one edge or side thereof, and discharge or delivery tracks or conveyers extending into the path of the trays on the down side but entirely across the line of suspension of the trays and in line with vertical openings extending from the opposite edge or side of said trays, as and for the purpose described.
2. In an apparatus for sterilizing bottles or other containers, the combination of an air jacketed heating tower having an endless carrier mounted to travel in a vertical direction within it, heating pipes on the inner walls of the tower, dampers at the top of the tower adapted to control the escape of air in the air jacket, pendulous skeleton trays hung from said carrier and having vertical openings extending from opposite edges of the tray across their line of suspension and feed and delivery tracks both extending across the line of suspension but with the feed tracks in line with the vertical openings extending from one edge of the trays and the delivery tracks in line with the openings extending from the opposite edge of the trays.
3. In an apparatus for heating bottles or other containers, the combination of a heating tower, an endless carrier mounted with up and down sides traveling in the tower, pendulous trays hung from the carrier and traveling therewith on its up and down sides, each said carrier being of skeleton form and having openings extending vertically through it and from its opposite edges across the line of suspension in different vertical planes and conveyer tracks or ways adapted to feed load sustaining devices into and out of the path of the trays, said conveyer tracks or ways extending across the line of suspension of the trays and being arranged on the up side in line with one set of vertical openings in said trays and on the down side in line with other vertical openings in said trays, as and for the purpose described.

Signed at Oswego, in the county of Oswego and State of New York, this second day of November, A. D. 1905,

FREDERICK A. EMERICK.

Witnesses:

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E. J. GREENE.