April 22, 1924. 1,491,214

W. B. UNDERWOOD

CLOSURE FASTENER FOR STERILIZERS

Filed June 30, 1920 3 Sheets-Sheet 1

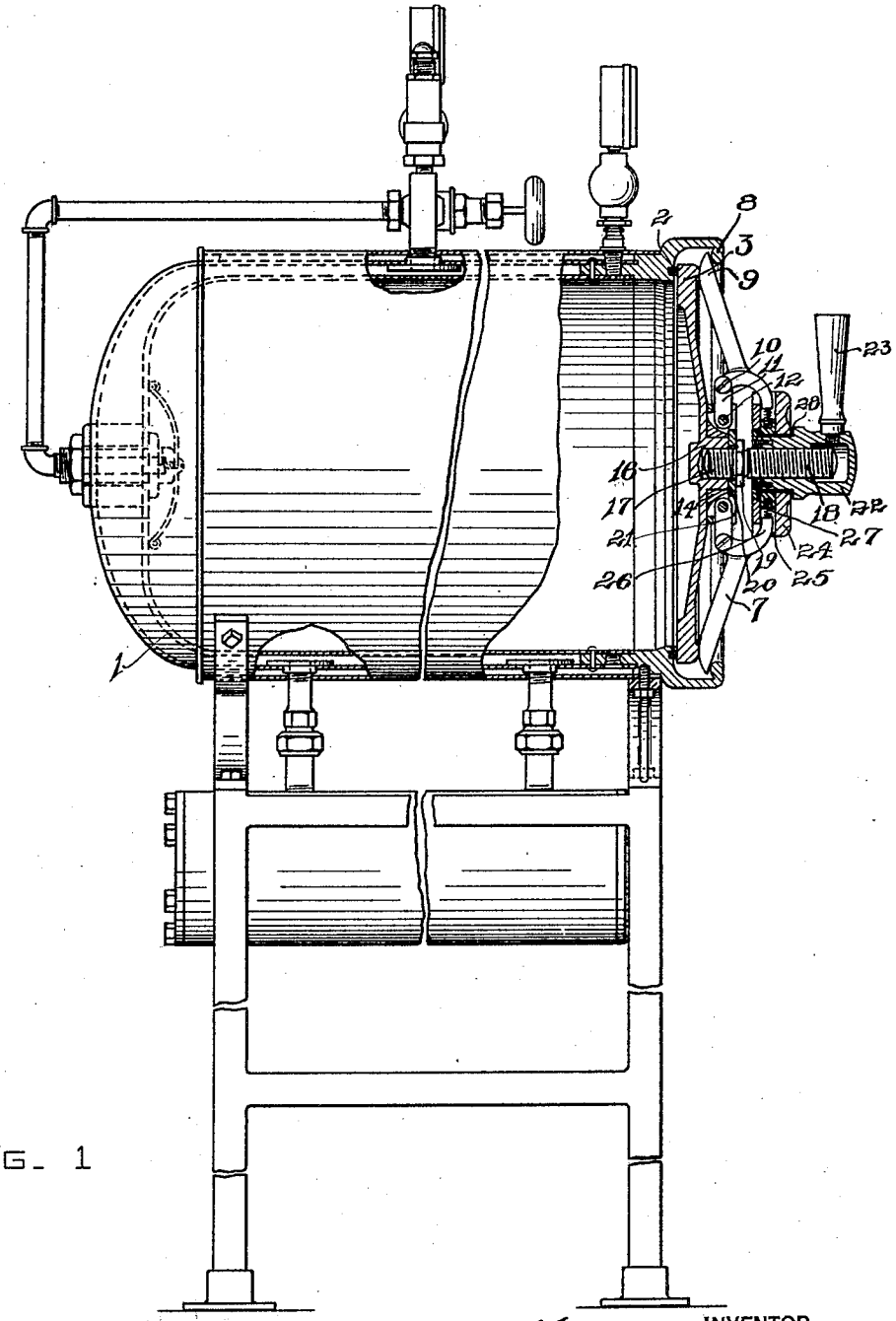


FIG. 1

INVENTOR
Weden B Underwood
BY
Davis & Amiss
his ATTORNEYS

April 22, 1924. 1,491,214

W. B. UNDERWOOD

CLOSURE FASTENER FOR STERILIZERS

Filed June 30, 1920 3 Sheets-Sheet 2

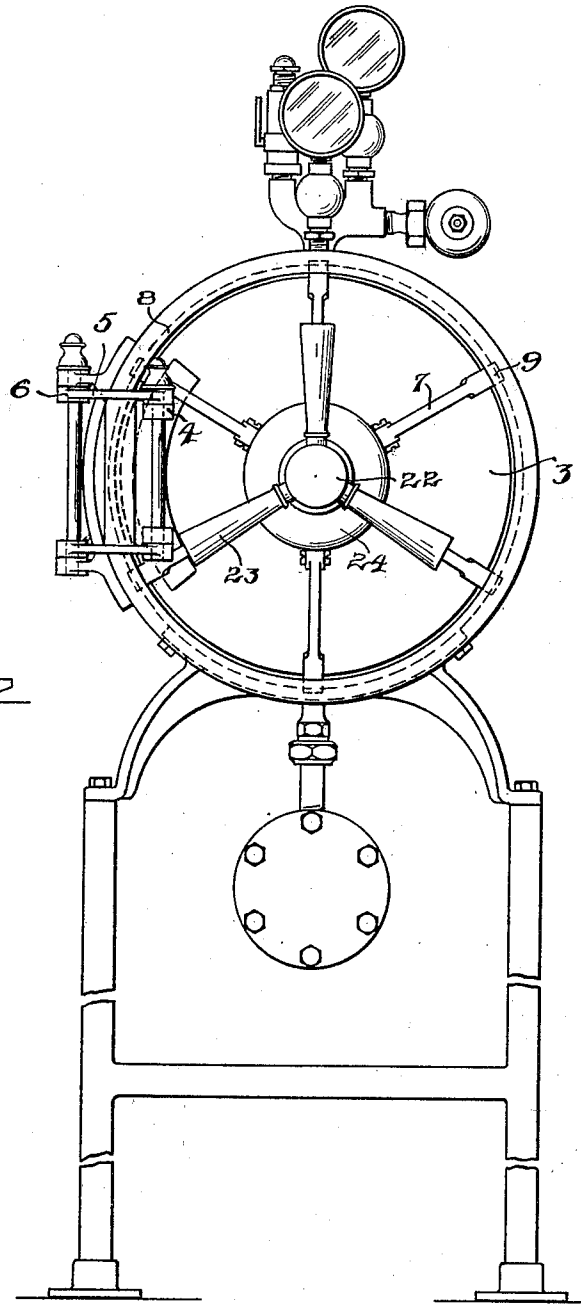


FIG. 2

INVENTOR
Weeden B. Underwood
BY
Davis & Davis
ATTORNEYS

April 22, 1924. 1,491,214

W. B. UNDERWOOD

CLOSURE FASTENER FOR STERILIZERS

Filed June 30, 1920 3 Sheets-Sheet 3

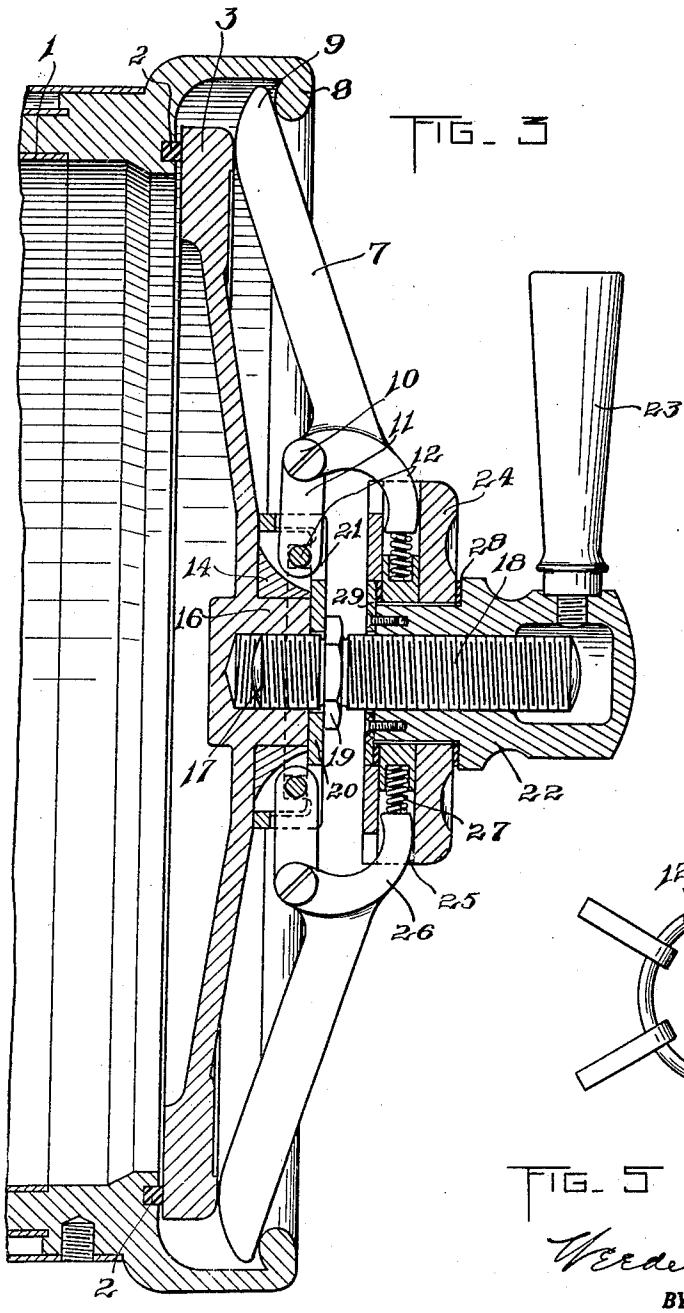


FIG. 3

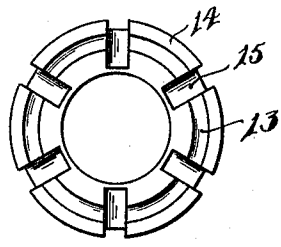


FIG. 4

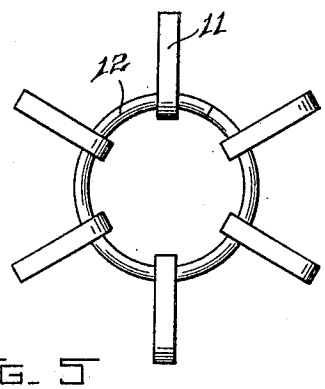


FIG. 5

INVENTOR.
Weeden B Underwood
BY
Davis & Simmons
ATTORNEYS.

Patented Apr. 22, 1924. 1,491,214

UNITED STATES PATENT OFFICE.

WEEDEN B. UNDERWOOD, OF ROCHESTER, NEW YORK, ASSIGNOR TO WILMOT CASTLE COMPANY, OF ROCHESTER, NEW YORK, A CORPORATION OF NEW YORK.

CLOSURE FASTENER FOR STERILIZERS.

Application filed June 30, 1920. Serial No. 393,135.

To all whom it may concern:

Be it known that I, WEEDEN B. UNDERWOOD, a citizen of the United States, and resident of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Closure Fasteners for Sterilizers, of which the following is a specification.

The present invention relates to sterilizers and more particularly to the closures thereof, an object of this invention being to provide an improved and effective locking means for the door or closure which will permit a slight opening of the latter before it is released so that the user of the sterilizer is prevented from suddenly opening the door and being injured by the steam or by the door under the action of the steam, the slight opening permitting the steam to escape gradually until all danger of an accident is overcome.

To this and other ends, the invention consists of certain parts and combinations of parts all of which will be hereinafter described, the novel features being pointed out in the appended claims.

In the drawings:

Fig. 1 is a view in side elevation of a sterilizer constructed in accordance with this invention;

Fig. 2 is a view in elevation of the sterilizer from the door end;

Fig. 3 is an enlarged axial section through the door;

Fig. 4 is a detail view of the link anchoring ring; and

Fig. 5 is a detail view of the links and the pivot ring on which they are supported.

The form of the sterilizer compartment is immaterial. In this instance, a double wall structure 1 is provided in which the material to be sterilized is placed. This structure opens at one end and is provided with a seat 2 preferably of annular formation for engagement by a door or closure 3, the latter preferably being of circular form to cooperate with the seat. The door is preferably hinged at 4 to a bracket 5, in turn hinged at 6 to the sterilizer compartment.

The locking mechanism for the door preferably embodies means on the casing with which locking bars 7 engage. This means, in this instance, is in the form of an annular keeper 8 projected from the sterilizer compartment beyond the seat 2 and adapted to have the door 3 passed therethrough to engage the seat. The locking bars 7 have tapered ends 9 which have each a curved surface to cooperate with the door or closure 3 adjacent the perimeter of such door or closure and a flat surface to cooperate with the annular keeper. The locking bars move radially toward and from locking position and owing to their tapered ends hold the door against release during the first part of the unlocking movement, while at the same time permit the slight opening of the door in order that the steam may escape between the door and its seat, thus preventing the pressure in the sterilizing chamber from forcing the door open suddenly and injuring the operator.

The support of the locking bars is obtained preferably by pivoting the locking bars at 10 on links 11, each link in turn being pivoted upon a common pivot ring 12 which lies in an annular groove 13 formed in a ring 14, this ring 14 being provided with radial notches or recesses 15 in which the links 11 operate. The ring 14 is preferably supported about a socketed boss 16 formed on the outer face of the door 3, the socket of this boss receiving the inner screw threaded end 17 of a screw 18 which projects centrally from the door. The screw 18 carries a surrounding shoulder or abutment 19 which in turn cooperates with a cap 20 covering the boss and the ring 14, said cap having slots 21 opposite the recesses 15 through which the links 11 project.

The operating means for the locking bars preferably embodies a nut 22 provided with handles 23 and operable upon the screw 18. This nut carries a controller 24 which is provided with pockets 25 in which curved extensions or projections 26 on the locking bars 7 operate, each projection being engaged by a coil spring 27 arranged in said pocket. The controller 24 moves axially with the nut, but does not turn therewith, it being mounted about the nut and held to the latter by the shoulder 28 on the nut and a securing plate 29 on the nut.

The operation of the invention will be

understood from the foregoing, but it may be summarized as follows:

Assuming the parts to be in the positions shown in Fig. 3 and it is desired to open the door after sterilizing operation, the handles 23 are turned in a direction to carry the nut toward the outer end of the screw 18, thus moving the controlling ring 24 outwardly so that said ring will carry the inner ends of the locking bars outwardly, causing the links 11 to swing on their pivots and at the same time moving the tapered ends 9 of the locking bars inwardly. Owing to the tapered formation of the locking bars the door 3 will also slightly open before the locking bars disengage with the keeper ring 8 and in this way the steam is permitted to escape from the sterilizing compartment about the edge of the door before the door is released by the locking mechanism. Later the tapered ends are withdrawn out of complete engagement with the door through the springs 27. After such disengagement of the locking bars 7 with the keeper 8, the door may be opened to permit access to the sterilizing compartment. Of course, upon the closing of the door the opposite action of the locking bars takes place and the tapered ends, especially the curved faces which engage the door surface, produce a pressure on the door as well as the locking of the latter after the keeper ring 8 is engaged. The locking bars 7 with the links 11 form locking toggles and the control of these toggles is effected through the movement of their knuckles or pivotal connections 10 toward and from the door, thus producing a movement of the outer ends of the outer members of the toggles.

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

1. The combination with a compartment having a door opening, and a door for closing said opening, of a locking mechanism carried by said door and comprising a plurality of locking toggles each formed by two members, one pivoted to the other, the inner members of said toggles having their pivots in a fixed relation to the door and the outer members having ends adapted to cooperate with portions on the compartment for locking the door and also with the door.

2. The combination with a compartment having a door opening, and a door for closing said opening, of a locking mechanism carried by the door and comprising a plurality of locking toggles each formed by two members, one pivoted to the other, the inner members of which have their pivots fixed relatively to the door and the outer members of which are adapted to cooperate with the door and the compartment, and a common controller for said locking toggles connected to the latter adjacent the knuckles of such toggles.

3. The combination with a compartment having a door opening, and a door for closing said opening, of a locking mechanism carried by the door and comprising a plurality of radially arranged toggles each formed by two members, one pivoted to the other, the inner members of which have their pivots fixed relatively to the door and the outer members of which cooperate with the door and the compartment, and a non-rotating controlling member connected to the toggles adjacent their knuckles and movable toward and from the door for effecting radial movement of the outer ends of the toggles.

4. The combination with a compartment having a door opening, and a door for closing said opening, of a locking mechanism carried by the door and comprising a plurality of locking toggles each formed by two members, one pivoted to the other, the inner members of the toggles being pivoted to the door and the outer members being adapted to cooperate with the door and the compartment, a nut mounted on the door to move toward and from the same, and a controller carried by the nut and having the nut turning relatively thereto, said controller cooperating with the toggles adjacent their knuckles for effecting the radial movement of the outer ends of the toggles.

5. The combination with a compartment having a circular door opening, and a door for closing said opening, of a keeper surrounding said door, and a locking mechanism carried by the door and comprising a plurality of radially arranged locking toggles each formed by two members, one pivoted to the other, the inner members of said toggles being pivoted to the door and the outer members being adapted to cooperate with the door and the keeper, a screw projecting from the door, a nut operable on said non-rotatable screw, and a controller carried by the nut and having the latter turning therein, said controller connecting with the inner ends of the outer members of the toggles to effect the radial movement of the toggles.

6. The combination with a compartment having a door opening, and a door for closing said opening, of a central boss on said door, a screw projecting from said boss, a slotted ring surrounding the boss and provided with an annular groove, a pivot ring arranged in said groove, a slotted cover held over said rings, links pivoted to said pivot ring and extending through the slotted cover, locking bars pivoted to said links and adapted to cooperate with the door and portions on the compartment, and means for

cooperating with portions on the inner ends of said locking bars for effecting the radial movement of said locking bars.

7. The combination with a compartment having a circular door opening, and a door for closing said opening, of an annular keeper surrounding said door, and locking bars having tapered ends arranged to cooperate with the keeper and with the door, the portions of said ends which cooperate with the door being curved, and means for supporting said locking bars so that the bars move radially while at the same time the inner ends move toward and from the door.

WEEDEN B. UNDERWOOD.