Aug. 21, 1923. 1,465,906

LE ROY P. HOLLOWAY

RETORT DOOR

Filed Oct. 11, 1921. 2 Sheets-Sheet 1

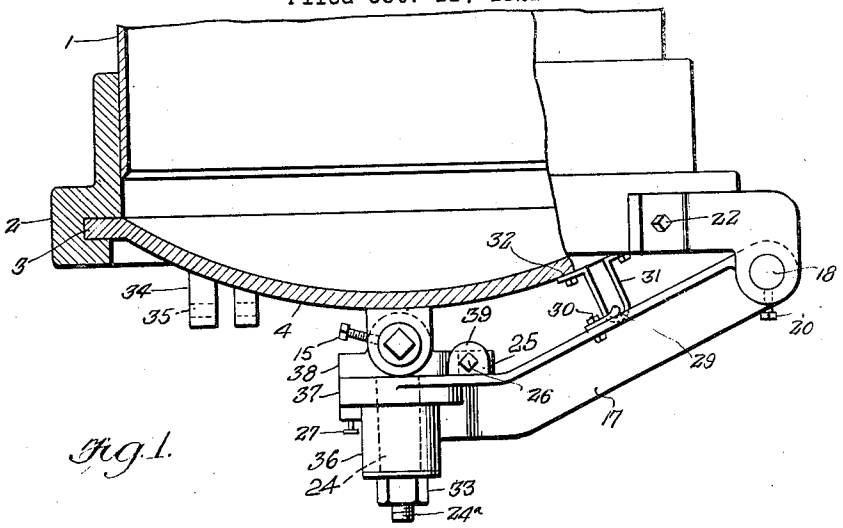


Fig. 1.

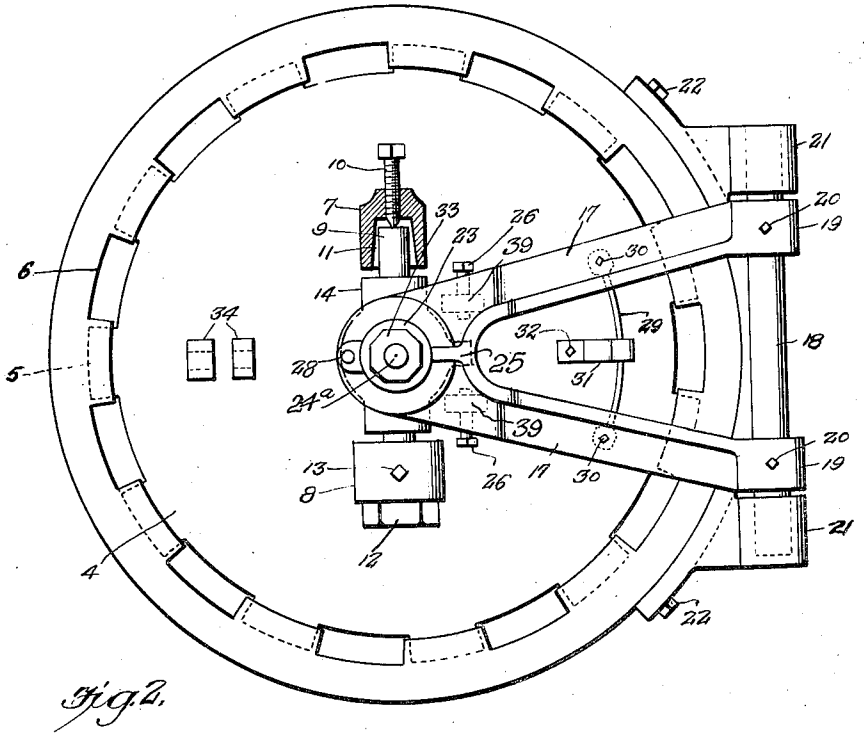


Fig. 2.

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Fig. 3.

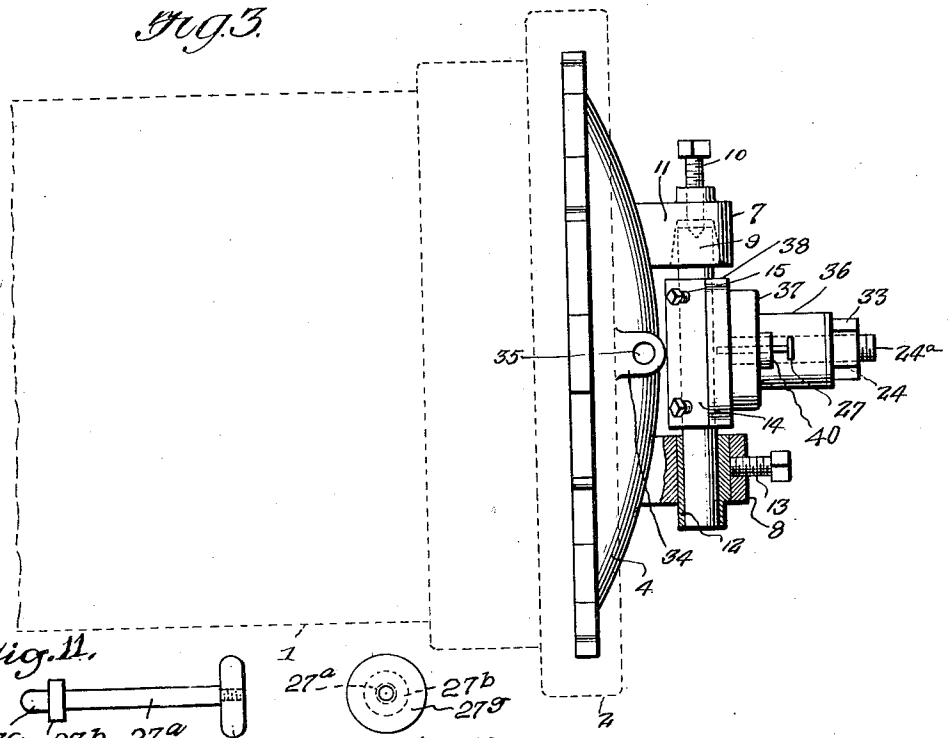


Fig. 11.

Fig. 12.

Fig. 8.



Fig. 10.

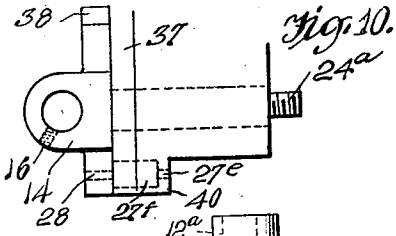
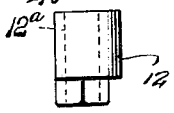


Fig. 7.



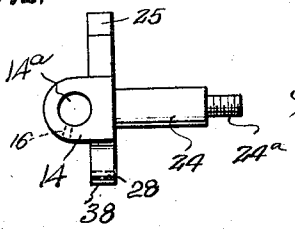
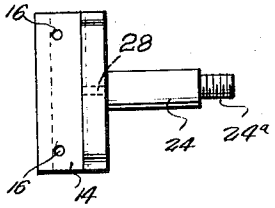


Fig. 6.

Fig. 4.



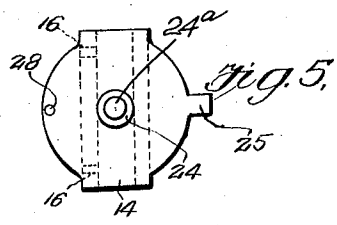
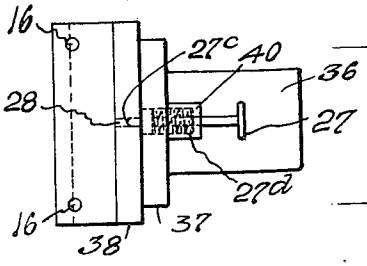


Fig. 5.

Fig. 9.



Le Roy P. Holloway INVENTOR.

BY

Ivan P. Yashof ATTORNEY.

Patented Aug. 21, 1923. 1,465,906

UNITED STATES PATENT OFFICE.

LE ROY PARK HOLLOWAY, OF AKRON, OHIO, ASSIGNOR TO THE BIGGS BOILER WORKS COMPANY, OF AKRON, OHIO, A CORPORATION OF OHIO.

RETORT DOOR.

Application filed October 11, 1921. Serial No. 506,941.

To all whom it may concern:

Be it known that I, LE ROY P. HOLLOWAY, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Retort Doors, of which the following is a specification.

My invention relates to retort-doors, especially those of the type adapted for use on cylindrical heaters, cookers, sterilizers, vulcanizers and similar equipment.

It is one of the objects of my invention to provide a door which is rotatably and revolubly mounted, which can be quickly opened and closed, is universal in its adaptability to fit evenly at all points in its closed position and permits proper adjustments to take care of wear.

My invention has as a further object the provision of adjustable stops which will allow the door only the movement necessary for its proper opening and closing. Another object of my invention is the provision of a safety stop which will lock automatically when the door is closed and permit its reopening only by manual operation. An additional object of my invention is the provision of an attachment whereby the door may be held in such a position as to facilitate its closing.

In its broadest aspect, my invention provides a door pivotally connected to the retort-body, the door having journalled thereon a horizontal member about which the door revolves, the horizontal member having mounted thereon a second horizontal member, provided with a projecting vertical member about which the the door rotates. Means are provided for limiting a movement of the door around the horizontal member and the rotation of the door around the vertical member. Means are also provided for automatically locking the door in a closed position after rotation. Attached to the horizontal member are means adapted on operation to force the door into tight connection with the retort-body. In addition, means are provided for taking care of the wear incidental to the operation of the device.

The invention accordingly consists in the features of construction, combination of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth and the scope of the application of which will be indicated in the following claims.

The invention is illustrated, in its preferred embodiment, in the accompanying drawing wherein:—

Fig. 1 is a side view partly in section of the door attached to a retort-body; Fig. 2 is a plan view thereof partly in section; Fig. 3 is a side view thereof partly in section; Figs. 4, 5 and 6 are details of the trunnion, trunnion body and trunnion shaft on which the door rotates and the trunnion body in side, plan and end views respectively; Figs. 7 and 8 are plan and end views of the eccentric bushing by means of which the door may be forced into tight connection with the retort-body. Fig. 9, is a detailed side view of the spring key mechanism, Fig. 10, is a detailed end view of the same. Figs 11 and 12 are details of the key itself.

Referring to the drawing, the retort-shell 1 which may be made of any suitable material has attached thereto a ring 2 circumferentially curved at 3 to receive the door 4. The retort shell and ring are hereinafter designated the "retort-body." The door 4 is provided with the usual locking arrangement comprising projections 5 which slide under complementary projections 6 when the door is moved to its closed position. Secured to the door are lugs 7 and 8 which form the bearings for shaft 9 hereinafter designated the horizontal member, upon which the door is free to rotate. The shaft 9 pivots on a screw 10 which allows for the adjutsment of the door up or down as it is turned in or out. The lug 7 has a conical shaped aperture 11 which provides clearance for adjustment of the shaft 9 when the eccentric bushing 12 having the aperture 12^a which is revolubly mounted on shaft 9 is operated to tilt the door either in or out depending on which way the eccentric is turned. After the door has been adjusted to an even bearing around its circumferential face, the set screw 13 is tightened holding the eccentric bushing 12 in place, thus providing that the door will bite tightly on all points when closed.

Mounted upon the shaft 9 is a second horizontal member preferably in the shape of the trunnion body 14 having an aperture 14^a and provided with apertures 16 the walls of which are threaded to receive set screws 15 for fastening the trunnion to the shaft

9. The lower portion of the trunnion body 14 which is circular in shape as shown in Fig. 6 terminates in a flange 38 which provides a bearing surface for the complementary flange 37, integral with hinge-arms 17. The flange 38 has projecting therefrom on one side a lug 25 and the approximately diametrically opposite portion is provided with an aperture 28 to receive the spring key 27 when the door is in the closed position. The hinge-arms 17 are secured to the hinge-shaft 18 by sleeves 19 which are held in place by set screws 20. The shaft 18 is rotatably journalled in lugs 21 which are secured to ring 2 by bolts 22. The hinge-arms 17 unite at their forward termination in which is formed a circular aperture 23, the wall 36 of which provides a bearing surface for the trunnion shaft 24 which extends from the trunnion flange 38, the aperture 23 being adapted to receive the vertical member, the trunnion shaft 24, thereby enabling the door to rotate about with the trunnion shaft 24 as an axis. The trunnion shaft 24 has at its uppermost portion a threaded shank 24^a to receive the nut 33 after the trunnion-shaft is inserted in the aperture 23. In order to limit the rotation of the door 4 on the trunnion shaft 24 and prevent the same from swinging beyond the proper opening and closing points, the trunnion flange 38 is provided with lug 25 which is adapted to engage adjusting screws 26. The adjusting screws 26 are carried by the threaded lugs 39 attached to the under portion of both hinge-arms 17. The lug 25 turns with the door and adjusting screws 26 are so set that projections 5 on door can swing just far enough to be fully registered with slots 6 on ring 2 to allow disengagement of the cover. This adjustment is obtained by either turning screws 26 in or out.

Attached to the forward portion of the hinge-arms 17, is a spring key 27 adapted to engage aperture 28 in the trunnion flange 38 when the door is closed, thereby locking the door in its closed position. The wall 36, has projecting therefrom a boss 40 as shown in Figs. 9 and 10. Through the face of the boss 40 is located a small aperture 27^e, the lower portion of which is adjacent to the enlarged aperture 27^f which is continuous with aperture 28 of the trunnion flange 38. The enlarged aperture 27^f partially extends through the boss 40 and completely through the flange 37. The aperture 27^f contains a spring 27^d which is held therein by the collar 27^b of the key 27. The rounded tip 27^c slides in the aperture 28 when the door is in its locked position. The spring key which is identified as a whole by the numeral 27 comprises the shaft 27^a, the collar 27^b, the shaft tip 27^c and the key handle 27^g. There being only one hole in the face of trunnion flange 38 it will be understood that when the latch key is pulled out and the door is turned the tip 27^c will ride around on face of trunnion flange 38. It is quite desirable that movement of the door around the horizontal member 9 be limited so that the door can not move to a position which will prevent it being easily and conveniently closed. This may be accomplished by attaching a bar 29 by means of bolts 30 to the hinge-arms 17. The U-shaped straps 31, secured to the door 4 by cap screws 32, straddles the bar 29 and holds the door in approximately the same position throughout its full open swing so that it may be easily and conveniently closed.

The door has secured thereto lugs 34 provided with apertures 35 adapted to receive a bar to facilitate turning of the door.

I claim:

1. In combination with a retort-body, a door pivotally connected thereto adapted to rotate in a horizontal plane about a vertical axis and revolve about a horizontal axis, means for limiting its movement around the horizontal axis, means for limiting its rotation in a horizontal plane, and means for locking the door in its closed position after rotation.

2. In combination with a retort-body, a door, hinge-connections therebetween, a horizontal member journaled on said door about which the door revolves, a vertical member mounted on said horizontal member about which the door rotates, means for limiting the movement of the door around the horizontal member, means for limiting the rotation around the vertical member, and means for locking the door in a closed position after rotation.

3. In combination with a retort-body, a door, hinge-connections therebetween, a horizontal member journaled on said door about which the door revolves, means attached to said horizontal member adapted on operation to force the door into tight connection with the retort-body, a vertical member mounted on said horizontal member about which the door rotates, means for limiting the movement of the door about the horizontal member, means for limiting the rotation around the vertical member, and means for locking the door in a closed position after rotation.

4. In combination with a retort-body, a door, hinge-connections therebetween, a horizontal member adjustably journaled on said door about which the door revolves, means attached to said horizontal member adapted on operation to force the door into tight connection with the retort-body, a vertical member mounted on said horizontal member about which the door rotates, means for limiting the movement of the door about the horizontal member, means for limiting the rotation around the vertical member and

means for locking the door in a closed position after rotation.

5. In a combination with a retort-body, a door, hinge-connections therebetween, a horizontal member about which the door revolves journaled in bearings mounted on said door, one of the bearings being provided with a conical bearing surface and a movable pin to furnish clearance for the adjustment of said horizontal member when the door is moved, means secured to said horizontal member adapted on operation to force the door into tight connection with the retort-body, a vertical member mounted on said horizontal member about which the door rotates, means for limiting the movement of the door around the horizontal member, means for limiting the rotation around the vertical member and means for locking the door in a closed position after rotation.

6. In combination with a retort-body, a door, a hinge member apertured at one end connecting the retort-body with the door, a horizontal shaft about which the door revolves journalled in bearings mounted on said door, an eccentric attached to said shaft adapted on operation to force the door into tight connection with the retort-body, a trunnion secured to said shaft provided with a trunnion-shaft for engaging the apertured hinge member, a strap secured to the door straddling a bar attached to the hinge member whereby the movement of the door around the horizontal member is limited, a projecting lug on the trunnion adapted to engage pins mounted on the hinge member whereby the rotation of the door around the vertical member is limited and a spring-operated key on the hinge member for engaging an aperture on the trunnion to lock the door in a closed position after rotation.

7. In combination with a retort-body, a door, a hinge member apertured at one end connecting the retort body with the door, a horizontal shaft about which the door revolves journalled in bearings mounted on said door, an eccentric attached to said shaft adapted on operation to force the door into tight connection with the retort-body, a trunnion secured to said shaft provided with a trunnion-shaft for engaging the apertured hinge member, a strap secured to the door straddling a bar attached to the hinge member whereby the movement of the door around the horizontal member is limited, a projecting lug on the trunnion adapted to engage adjustable pins mounted on the hinge member whereby the rotation of the door around the vertical member is limited, and a spring-operated key on the hinge member for engaging an aperature on the trunnion to lock the door in a closed position after rotation.

8. In combination with a retort-body, a door, a hinge member apertured at one end connecting the retort-body with the door, a horizontal shaft about which the door revolves journalled in bearings mounted on said door, one of said bearings being provided with a conical bearing surface and a movable pin to furnish clearance for the adjustment of said horizontal shaft, an eccentric attached to said shaft adapted on operation to force the door into tight connection with the retort-body, a trunnion secured to said shaft provided with a trunnion shaft for engaging the apertured hinge member, a strap secured to the door straddling a bar attached to the hinge member whereby the movement of the door around the horizontal member is limited, a projecting lug on the trunnion adapted to engage pins mounted on the hinge member whereby the rotation of the door around the vertical member is limited and a spring-operated key on the hinge member for engaging an aperture on the trunnion to lock the door in a closed position after rotation.

In testimony whereof I hereunto affix my signature.

LE ROY PARK HOLLOWAY.