N. TROYER & F. C. FOX.

HINGED RETORT DOOR.

APPLICATION FILED AUG. 7, 1913.

1,167,322.

Patented Jan. 4, 1916.

2 SHEETS—SHEET 1.

Fig. 1.

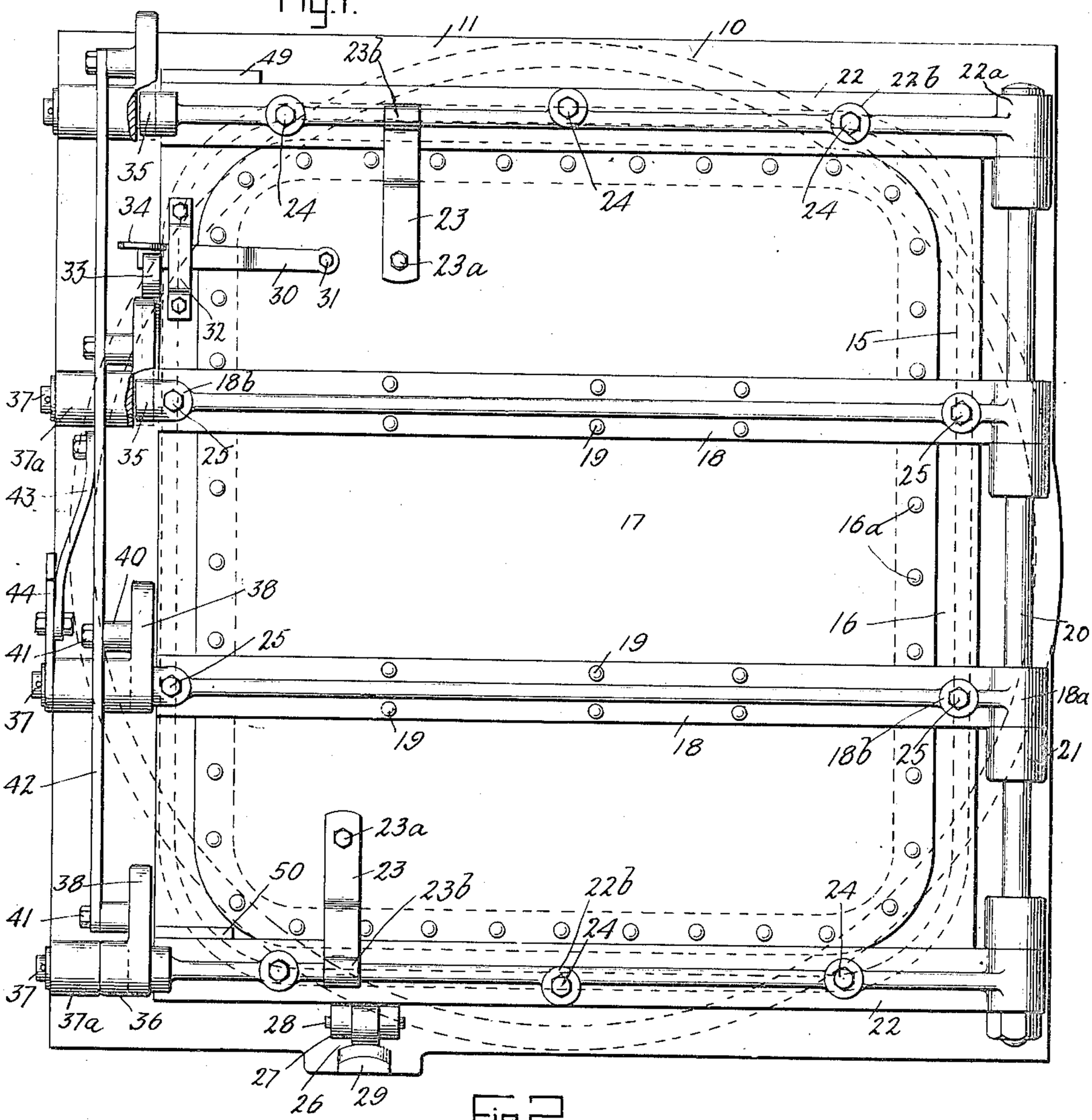
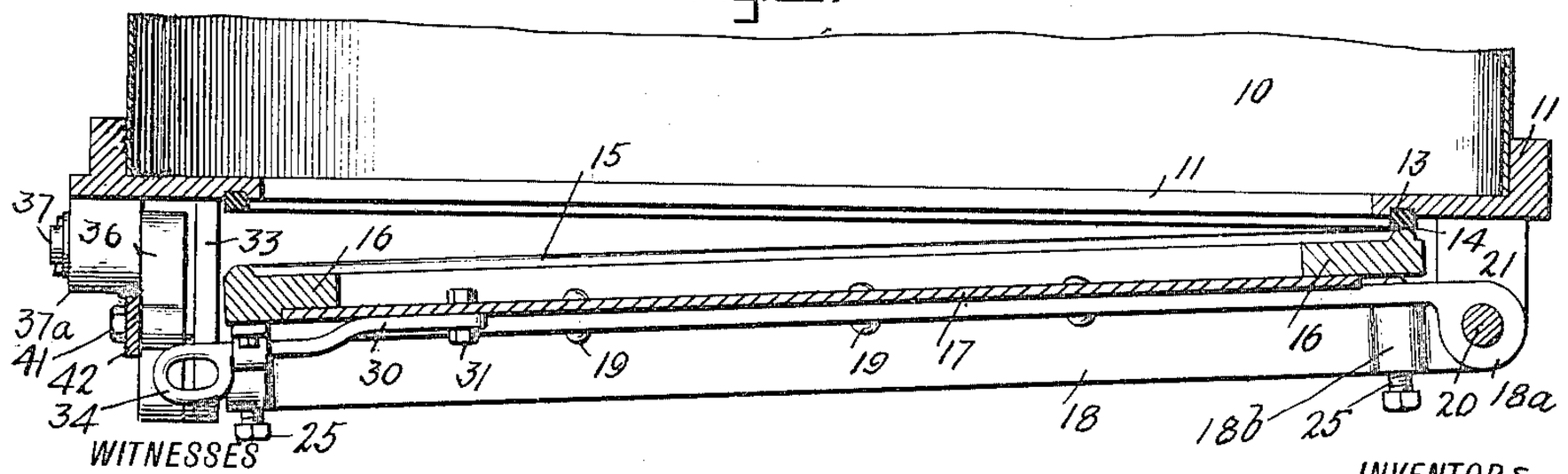


Fig. 2.



WITNESSES

E. K. Reichenbach.

J. L. McCuliff

INVENTORS

NELSON TROYER

FRANK C. FOX

BY Munn & Co.

ATTORNEYS

N. TROYER & F. C. FOX.

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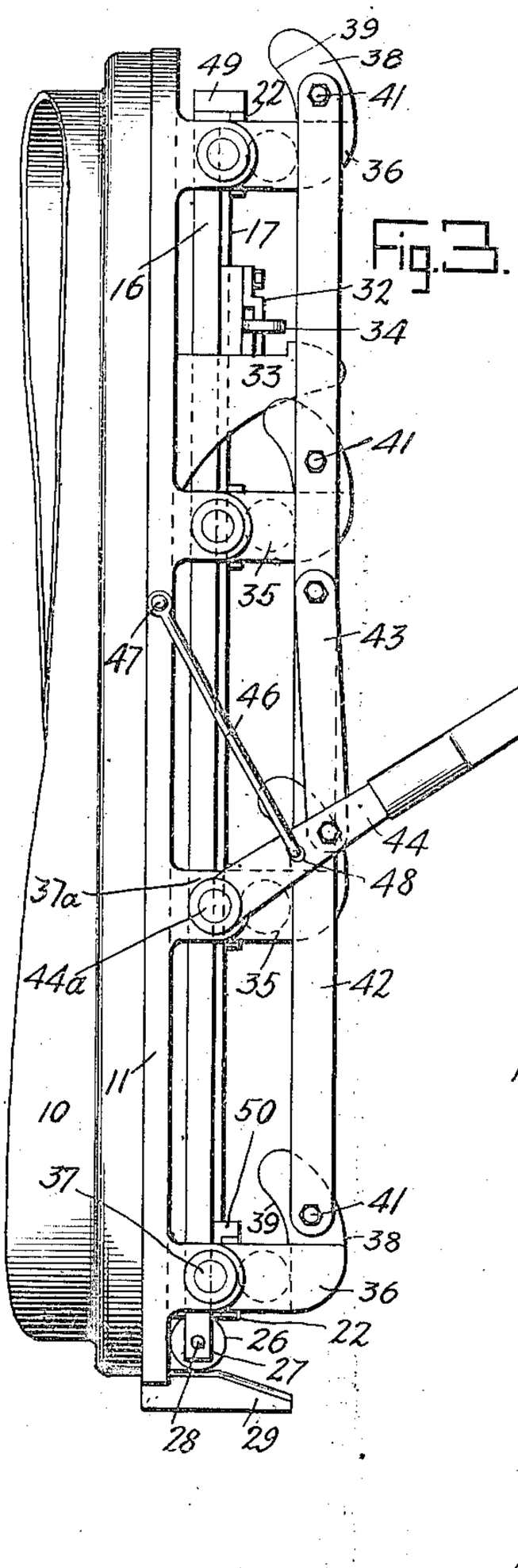

Fig. 3.

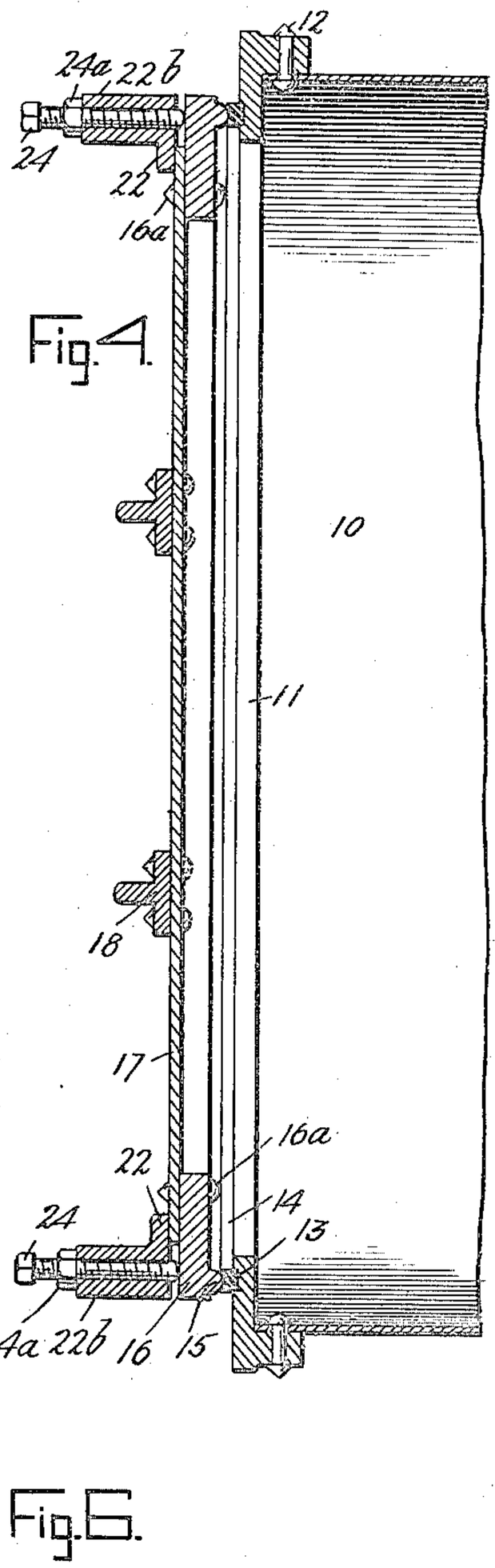

Fig. 4.

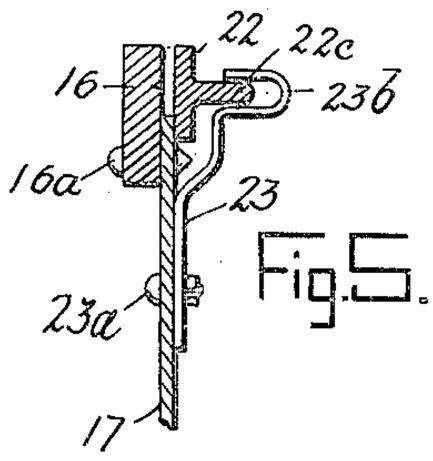

Fig. 5.

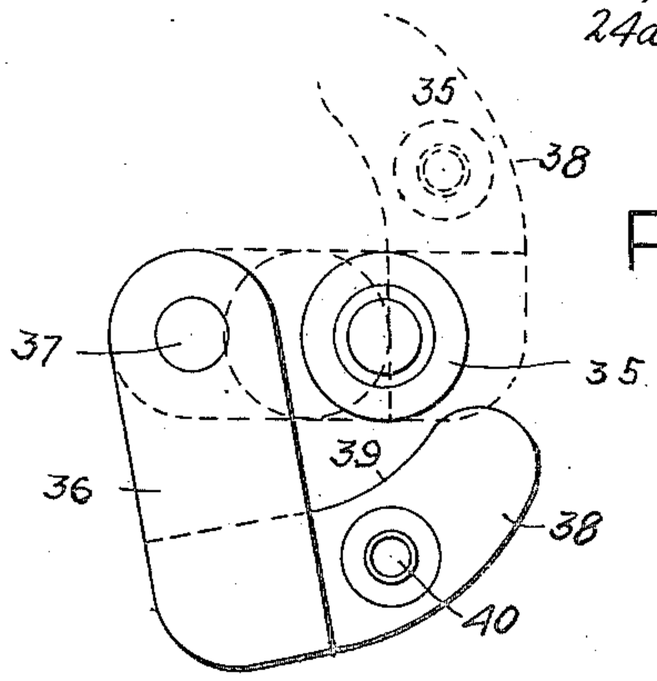

Fig. 6.

WITNESSES

E. K. Reichenbach.

J. L. McAuliffe

INVENTORS

NELSON TROYER

FRANK C. FOX

BY Munn & Co

ATTORNEYS

UNITED STATES PATENT OFFICE.

NELSON TROYER AND FRANK CHESTER FOX, OF ASTORIA, OREGON, ASSIGNORS TO ASTORIA IRON WORKS, OF ASTORIA, OREGON.

HINGED RETORT-DOOR.

1,167,322. Specification of Letters Patent. Patented Jan. 4, 1916.

Application filed August 7, 1913. Serial No. 783,494.

To all whom it may concern:

Be it known that we, NELSON TROYER and FRANK C. FOX, citizens of the United States, and residents of Astoria, in the county of Clatsop and State of Oregon, have invented a new and Improved Hinged Retort-Door, of which the following is a full, clear, and exact description.

Our invention has reference more particularly to a hinged door for use on a retort or receptacle used for cooking fish, fruits, vegetables and other food materials by steam, hot water or other artificial means, after the material has been placed in cans, glass jars, or other receptacles.

The general object of our invention is to provide a retort door capable of being operated very quickly and with facility, and which will effect a steam tight closure of the retort.

It is a design of our invention also to provide a door, the body of which will have a degree of flexibility on its hinged supporting members, whereby the door will be properly seated when closed.

The distinguishing features of the invention and the important structural elements characterizing the practical embodiment which is illustrated as an example, will be more particularly explained in the specific description following.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a front elevation of one example of our invention embodied in a retort door, showing the same applied; Fig. 2 is a horizontal section; Fig. 3 is a side elevation; Fig. 4 is a vertical section; Fig. 5 is a detail vertical section showing the manner of effecting an engagement between the door body and a hinged member forming part of the door; and Fig. 6 is a diagrammatic view showing in side elevation certain elements for forcing the door to a tightly closed position.

It is to be understood that our invention is applicable to retorts, round, square, or of other form in cross section, and is applicable to retorts disposed vertically or horizontally. In the illustration the retort is presumed to be horizontal.

In the drawings a portion of a retort is indicated by the numeral 10, and formed upon or secured thereto is a head 11, here shown as separate, as in the case of large retorts, said head extending around the retort opening. In the face of the head 11 a continuous groove 13 is produced, which receives a packing strip 14, the strip being adapted to be pressed against by a rib or bead 15 on the inner face of the door body. The door body is shown as comprising a frame 16, and a covering 17 secured by rivets 16^a or their equivalent, the separate forming of the frame and covering of the door body being preferred in practice in the case of large doors for which it is not so practical to make the door body all integral.

The door body is secured to a transverse bar or bars 18, as by rivets 19, the bars being preferably T-shaped in cross section, and said bars are hinged to the head 11 by a hinge pin 20, which passes through eyes 18^a on the bars 18, and through lugs 21 on said head. In addition to the hinged bars 18, transverse bars 22 are comprised in our improved door, at the top and bottom respectively of the door, and are hinged to the retort head by the hinge pin 20 which passes through eyes 22^a on the said bars 22.

It is to be noted that the hinged bars 22 are not fastened to the door body, but have the character of floating bars. There is a guided engagement only between the body and the floating hinge bars, so that there can be a bodily relative adjustment thereof. As one expedient for effecting the guided engagement between the floating hinged bars and body we have shown straps 23 secured by bolts 23^a or their equivalent to the door body, and each formed at the free end thereof with a U-bend 23^b, presenting an open side so that the bent ends of the straps fit loosely over the shanks 22^c of the floating bars which are T-shaped in cross section.

To provide for a bodily transverse adjustment between the door body and the floating hinged bars, we may employ adjusting screws 24 which take into bosses 22^b, on said bars, the forward ends of the screws bearing against the outer faces of the door and preferably against the frame 16 thereof. In the adjustment of the screws 24 the engaged portion of the float bars has sliding movement in the bent ends 23^b of the straps 23. Lock nuts 24^a are employed on the screws if desired.

In addition to the bodily relative adjustment between the floating hinged bars and the door body, we provide for a degree of adjustment and relative flexibility between the door body and the hinged bars 18 which are fastened to said body; thus it will be observed in Figs. 1 and 2, that the fastening elements 19 that secure the door body to the hinged bars 18 are inward from the ends of said bars, thereby leaving the door body free from the bars 18 along the hinge edge, and the free edge of the door, and to spring the free portions of the door body relatively to the hinged bars 18, adjusting means is provided, preferably in the form of adjusting screws 25, which take into bosses 18[b] on said bars, the forward ends of the screws bearing against the outer face of the door frame 16 directly over the bead 15 and packing 14.

As will be clear from the foregoing, the door will have a high degree of flexibility in that it has no rigid relation to the floating hinged bars 22, and that the vertical edge portions of the door are flexible with respect to the supporting hinged bars 18, the result being that the door body will have freedom to accommodate itself to the seat provided on the door head, thereby making it feasible to effect a close bearing of the door when closed against the retort head. Moreover, the adjusting screws serve to correct any inaccuracies in the assembling of the different parts and provide also for taking up wear.

In order to center the door to the retort opening and aline the packing strip 13 and bead 15, a roller 26 is mounted in the lower end of the door between dependent lugs 27 on the door frame 16, which form bearings for the pin 28 constituting the axle of the roller. The said roller contacts with a fixed incline 29 on the head 11. Thus, should the door sag by reason of wear on the hinges, or otherwise, it will nevertheless be properly centered.

A latch 30 is pivoted at one end, as at 31, to the door body, to swing in a keeper 32 and is adapted to engage over a catch 33 on the head 11, being provided with a loop 34 to constitute a handle. When the door is swung toward the retort, the latch will be engaged with the catch 33 so as to hold the door partially closed, the door still inclining slightly to the face of the head 11. In this position the hinged end of the door will, however be sufficiently close to the head 11 for the bead 15 to lie close against the adjacent portion of the packing strip 13.

We provide a novel means for forcing the door tightly to a bearing against the head 11, with the bead 15 pressing on the packing strip 14 throughout the whole length of the latter to effect a steam-tight closure of the retort. To effect the desired tight closure of the door we provide a series of cams to engage the several hinged bars and actuating means therefor. Thus on each bar 18 and 22 at the end opposite the hinge, a friction roller 35 is secured, and on the head 11 a corresponding series of cams (designated generally by the numeral 36,) is mounted, each cam having a pivot pin 37 journaled in a bearing lug 37[a] on the head 11, so that the cam may rock in a vertical plane. On the outer end of each element 36 an arm 38 is formed, which is adapted for hooked engagement with the adjacent roller 35 when the door is held in the partially closed position by the latch 30. At the inner side of the arm 38 and continuing across a line intersecting the pivot 37 is an internal cam surface 39, which contacts with the roller 35 when the cam is rocked in an upward direction, and the cam surface is such that the distance between said surface and the center of the pivot 37 is gradually less from the outer end of the arm 38, the result being that a forced contact of the cams against the rollers will carry the rollers and the hinged bars in the direction of the face of the retort, thus forcing the door body to a firm bearing against the head of the retort, and effecting a steam tight contact between the rib 15 and the packing 14.

In order to operate the cams simultaneously, each is pivotally connected as at 40, by bolts 41 or the like to a connecting rod 42, and the latter in turn is connected by a link 43 to a lever 44, which is fulcrumed as at 44[a] on the head 11, the arrangement being such that the rocking of the lever 44 in an upward direction will cause the arm 38 of each cam to have hooked engagement with the adjacent roller 35, and tightly close the door as described. The lever 44 may have its handle or outer portion 45 formed with a socket to be readily detachable where space is not available to leave it projecting. Also to hold the lever in the raised position to prevent its being accidentally thrown downward, a hook 46 may be pivoted, as at 47, to the head 11, in a position for its hooked end to engage in a hole 48 in the lever.

Since the action of the cams on the rollers 35 may tend to exert an upward thrust on the bars 22, we provide means to resist such thrust, the means consisting of fixed lugs or equivalent elements to be engaged by the bars or parts appurtenant thereto. As an example of means for the purpose we have shown lugs 49, 50, on the door, projecting forwardly therefrom sufficiently to overlie the floating hinged bars 22, and thereby receive and resist the upward thrust of the cams.

The floating bars, it will be seen, constitute hinged clamping bars independent of the door-supporting means to press the door to a tightly closed position under the influ-

ence of the cams or equivalent closure elements. It is to be noted also, that the variously positioned adjusting screws associated with the clamp bars make it possible to set up the door at various portions thereof, to insure its steam tight setting against the retort at all points around the head.

With our improved door and appurtenances it will be apparent that the door may be quickly opened and closed, and that a steam tight closure of the retort is insured regardless of minor irregularities in the form or adjustment of the parts.

Having thus described our invention, we claim as new and desire to secure by Letters Patent:

1. A door, comprising a hinge bar, a door body carried by the said bar and connected therewith between the ends of the bar, the side portions of the body being free from connection with the bar, and means for springing said side portions relatively to the bar.

2. A door comprising a hinge bar, a door body carried by the said bar and connected therewith between the ends of the bar, the side portions of the body being free from connection with the bar, and adjusting screws carried by the bar near the ends, to bear against the free side portions of the body for adjusting said portions relatively to the bar.

3. A door comprising a door body, a member carrying said body, means for adjusting edge portions of the body and fixedly secured to the body inward from the edge of the latter relatively to the said member, hinge means associated with said member for hinging the door, and latching means movably mounted adjacent to the door to be moved into engagement with said member to force the door to a closed position.

4. In a door, a door body, a hinge bar, a rigid connection between the bar and door body at points distant from the side edges of the door, the side edge portions of the door being free from the bar, means for adjusting the said free edge portions of the bar relatively to the central portion and relatively to said hinge bar, hinged floating bars above and below the hinge bars, and means for bodily adjusting the floating bars transversely relatively to the door body.

5. A door comprising a body, a hinge bar, means connecting said bar and door body and sustaining the body against bodily transverse movement relatively to the bar, a hinged floating bar ranging across the body and adapted to be pressed against the same, adjusting means associated with said floating bar and body to adjust the floating bar transversely relatively to the body, and latching means mounted on a relatively fixed support and movable into engagement with said bars to force the door to a tightly closed position.

6. A door comprising a body, a hinge bar, means connecting said bar and door body and sustaining the body, against bodily transverse movement relatively to the bar, a hinged floating bar ranging across the door and adapted to be pressed against the same, adjusting means associated with said floating bar and body to adjust the said floating bar transversely relatively to the body, and means mounted on a relatively fixed support and movable into engagement with said bars to force the door to a tightly closed position.

7. A door comprising a door body, a hinge bar serving to hingedly support the body, and rigidly secured to the latter at a distance from each side edge thereof, means for adjusting the side portions of the door relatively to the rigidly-held central portion and relatively to the end portions of said hinge bar, a floating hinge bar ranging across the door, and means to transversely adjust the door body and the first mentioned hinge bar thereof relatively to the floating bar.

8. A door comprising a door body, a hinge bar serving to hingedly support the body and fixedly secured to the latter at a distance from each side edge thereof, means for adjusting the side portions of the door relatively to the rigidly-held central portion and relatively to the end portions of said hinge bar, a floating hinge bar ranging across the door, means to transversely adjust the door body and the first mentioned hinge bar thereof relatively to the floating bar, and means adapted to engage said bars to force the door to a closed position.

9. In a door, a body, a transverse hinge bar associated with the body, a vertically disposed hooked cam rockable in the vertical plane across the path of movement of the said bars into engagement with the latter to force the door to a tightly closed position, and means for rocking said cam.

10. In a door of the character described, a door body, hinged floating bars movable transversely relative to the face of the door, near the top and bottom of the latter, means on the door affording guided engagement with the floating bars, an intermediate hinged door-supporting bar rigidly connected with the door body inward from the side edge portions of the body, said side edge portions being free from the said hinged supporting bar, and means associated with the supporting bar to adjust the said free edge portions of the door body relatively to said supporting bar.

11. In a door, a door body, a hinged floating bar ranging across the door body, a cam rockably mounted on a fixed support adjacent to the door, to rock upwardly, said cam

being adapted to engage said bar to force the door to a closed position, and a fixed resistance element overlying the bar when the door is in a closed position and opposing the upward thrust of the cam on the said bar.

12. The combination with a receptacle having a door opening and a head at said opening, of a hinged door body, members associated with said door body, a series of cam devices mounted to rock in a vertical plane and engage the said members to force the door to a tightly closed position against the receptacle head, a connecting bar connecting the several cam devices to rock them on their pivots, an operating lever, and a connection between said lever and the connecting bar.

13. The combination with a receptacle having an opening, of a hinged door closing said opening, movable means mounted on the receptacle, a member on the door engageable by said means to force the door to a tightly closed position, a latch on the door, and a catch on the receptacle adapted to engage said latch when the door is in a position for engagement of the mentioned member thereon and the said movable means.

14. In a door, a door body, hinge bars, means establishing a rigid connection between the central portion of the door body and the said bars to support the body, and independent clamp bars ranging across the door above and below the hinge bars, and means for pressing said bars against the door, to effect a tight closure thereof.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

NELSON TROYER.
FRANK CHESTER FOX.

Witnesses:
FRANK L. BISHOP,
WILLIAM PIERCE.