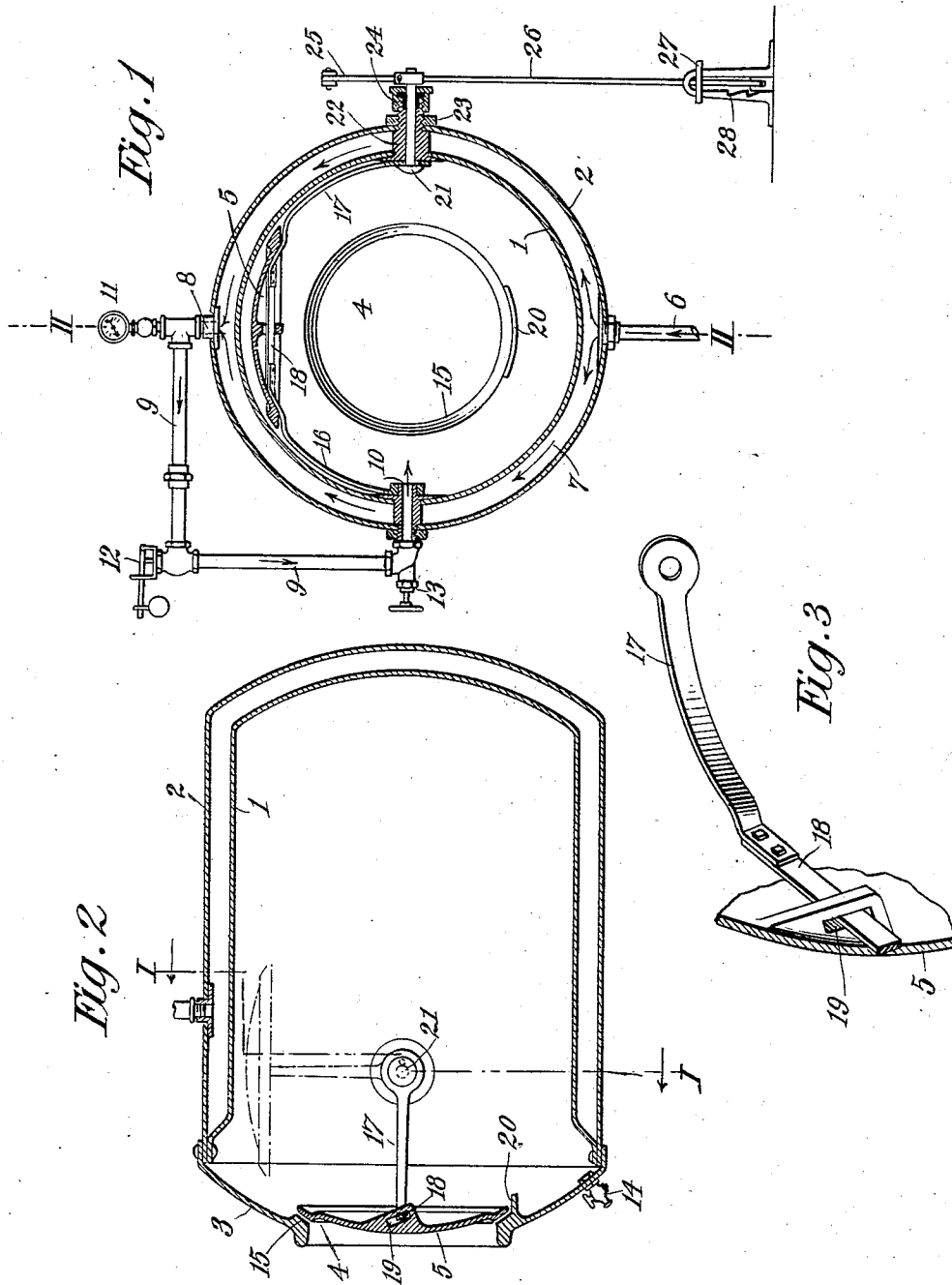


C. W. SHIELDS.
 INSIDE CLOSURE FOR AIR, STEAM, OR WATER TIGHT VESSELS.
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1,015,847.

Patented Jan. 30, 1912.



Witnesses:
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UNITED STATES PATENT OFFICE.

CURTIS W. SHIELDS, OF NEW YORK, N. Y.

INSIDE CLOSURE FOR AIR, STEAM, OR WATER TIGHT VESSELS.

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Specification of Letters Patent.

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Application filed September 14, 1910. Serial No. 581,954.

To all whom it may concern:

Be it known that I, CURTIS W. SHIELDS, a citizen of the United States, residing in the city of New York, county of Kings, and State of New York, have invented certain new and useful Improvements in Inside Closures for Air, Steam, or Water Tight Vessels, of which the following is a specification.

My invention relates to an inside closure or door for vessels or containers which are intended to be air, steam or water tight, and it is particularly well adapted for use in cooking, steaming or sterilizing apparatus. The object of my invention is to provide a door of this character which will be assisted in tight closing by the pressure within the vessel and which may be opened and closed without touching the door itself, as by a foot treadle or a handle outside of the vessel operating a shaft passing through the side of the vessel.

In the accompanying drawings, Figure 1 is a vertical transverse section through the broken line I—I of Fig. 2 presuming the closure to be swung as there shown in broken lines and viewed in the direction of the arrow. Fig. 2 is a vertical longitudinal section through the line II—II of Fig. 1. Fig. 3 is a detail of the locking means.

In these drawings I have shown a cylindrical vessel having a dome front and a spherical door, but the vessel may be of any desired shape and the door may be spherical or flat, circular or rectangular.

My closure is adapted to withstand internal pressure, and is specially constructed for such purpose. I have therefore illustrated it in connection with a vessel of such a type, wherein the parts of the vessel and closure are specially designed to show a practical and simple embodiment of my invention. The vessel will, however, only be sufficiently described to facilitate a clearer understanding of such embodiment. The vessel is shown as having the double walls 1 and 2, and the front wall 3, provided with an opening 4 intended to be closed when desired by the door 5. The internal steam pressure in the vessel that is exerted against my closure comes from the source of supply (not shown) through the pipe 6, and passes through the space 7 between the double walls 1 and 2, through the outlet 8 and piping 9 suitably provided with gage 11, safety valve 12 and regulating valve 13. From

here it enters the vessel through the inlet 10, the direction of travel of the steam being shown by the arrows, and a drain cock 14 being provided to take care of the condensation in the vessel. By such a construction as here described I am enabled to use the inlet 10 as a bearing for the operating mechanism as will later be described.

5 is the inside door or closure adapted to be pushed forward against a ground or otherwise constructed seat 15 in the opening 4. It will be observed that to open the door it must first be drawn back off of and free from its seat, after which it may be moved in any desired direction, but preferably swung up to the top of the vessel out of the way. To accomplish this movement I provide two cranks 16, 17 at the sides of the vessel connected together by a flat bar 18, which passes through a diagonal or inclined slot 19 on the back of the door. The slot 19 is made longer than the width of the bar 18 so that the first upward movement of the bar pulls the door away from its seat without lifting it, as may be seen in Fig. 3. When the bar 18 reaches the upper end of the slot 19, the door is clear, and as the bar swings on up it carries the door with it. On the return movement the door is swung down until its lower edge strikes the stop 20, after which the bar 18 slides in the diagonal slot 19 and presses the door home to its seat.

A convenient arrangement for operating the door by the cranks is to have the crank 16 loosely pivoted on the steam inlet 10 while the crank 17 is fixed to a pin 21 which passes through both walls of the vessel in a bearing 22. A lock nut 23 and a stuffing box 24 serve to prevent the leakage of steam. On the end of this pin 21 there may be a crank and handle, or, as shown in the drawing, a crank 25 and rod 26 connected to a foot treadle 27, by which means the door may be operated while the hands are free to manipulate the contents of the vessel. Catches 28 allow the treadle to be locked in certain positions.

The operation of my invention is as follows: To close the door the treadle is released from the catch 28 and raised, thereby rotating the pin 21 through the medium of the rod 26 and the crank 25. The pin turns the cranks 16, 17 downward, swinging the bar 18 and the door downward until the lower end of the door strikes the stop 20,

when the door is seated. In this operation the door need not be driven home to an absolutely tight seat, because when steam is admitted to the interior of the vessel it will
5 serve to press the door home.

It will be apparent that my improved door will be useful in many kinds of apparatus for various uses, and I do not wish to be understood as limiting myself to the particular apparatus herein shown and described.
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Having described my invention, what I claim is:

1. The combination of a vessel adapted
15 to withstand internal pressure and having an opening provided with a seat, an internal closure therefor, a stop to arrest said closure when brought to register with said opening, and means for operating said closure from
20 the pressure side to move it to and from said stop and to and from said seat and to lock it when brought to its seat in pressed engagement therewith.

2. The combination of a vessel adapted to
25 withstand internal pressure and having an opening provided with a seat, an internal closure therefor, a stop to arrest said closure when brought to register with said opening, and means for operating said closure from
30 the pressure side so as to swing it from said stop to completely clear the said opening and to said stop in registering position with said seat, to advance it to said seat in pressed locked position and to withdraw it
35 from said seat.

3. The combination of a vessel adapted to withstand internal pressure and having an opening provided with a seat, an internal closure therefor, a stop to arrest said closure
40 when brought to register with said opening, and means passing through the wall of the vessel for operating said closure from the pressure side to move it to and from said stop and to and from said seat and to lock
45 it when brought to its seat in pressed engagement therewith.

4. The combination of a vessel adapted to withstand internal pressure and having an opening provided with a seat, an internal
50 closure therefor, means within said vessel for controlling the movements of said closure to carry it to a sidewise position to completely clear the opening and to return it to the said opening and lock it in closed position,
55 other means without said vessel for

operating the said first means, and a third means extending through the wall of said vessel for operatively connecting said first and second means.

5. The combination of a vessel adapted to
60 withstand internal pressure and having an opening provided with a seat, an internal closure therefor, a stop to arrest said closure when brought to register with said opening, means for operating said closure from the
65 pressure side by swinging it to and from said opening about an axis parallel to said closure and advancing it to and withdrawing it from said opening, and means partly extending within said vessel to operate said
70 first means from the outside.

6. The combination of a vessel adapted to withstand internal pressure and having an opening provided with a seat, an internal closure therefor, a stop to arrest said closure
75 when brought to register with said opening, a swinging member operable to swing said closure in unison therewith to and from said stop, and to move said closure relative thereto when at said stop to bring said clo-
80 sure to and from its seat.

7. The combination of a vessel adapted to withstand internal pressure and having an opening provided with a seat, an internal closure therefor, a stop to arrest said closure
85 when brought to register with said opening, a swinging member operable to swing said closure in unison therewith about an axis parallel to said closure to and from said stop and to move said closure relative
90 thereto when at said stop to bring said closure to and from its seat.

8. The combination of a vessel adapted to withstand internal pressure and having an opening provided with a seat, an internal
95 closure therefor, a stop to arrest said closure when brought to register with said opening, a crank rotatably mounted within said vessel in the side thereof having its outer part bent for engaging the said closure through
100 an elongated inclined slot, and means outside said vessel for swinging said crank to move said closure to and from its seat.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

CURTIS W. SHIELDS.

Witnesses:

W. F. WRIGHT,
JOS. A. ALBER.