

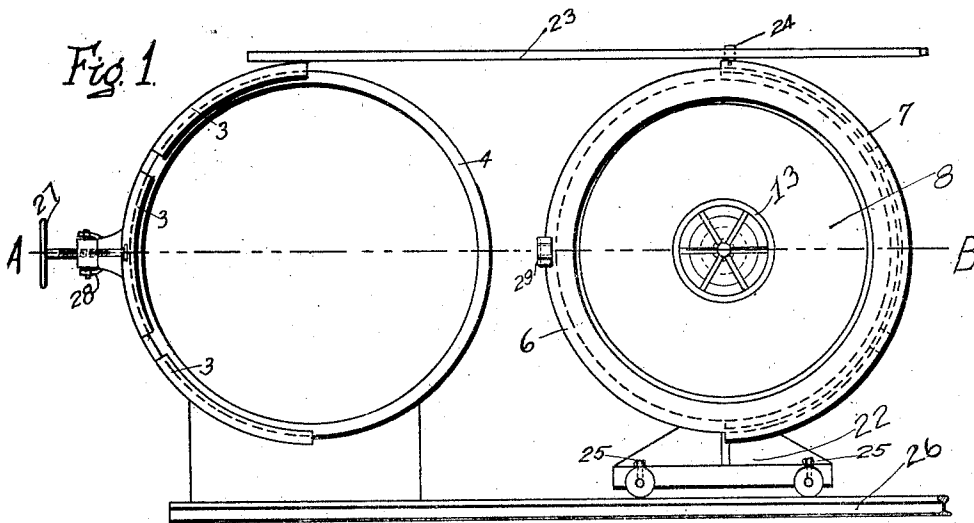
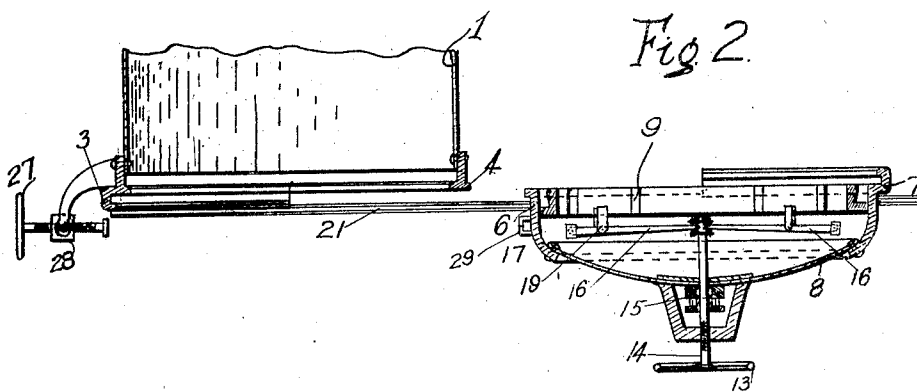
D. B. BANKS.
DOOR.

APPLICATION FILED JULY 6, 1917.

1,381,958.

Patented June 21, 1921.

2 SHEETS—SHEET 1.



WITNESSES.

Friedrich J. Sendelbach
Wm. H. Varney

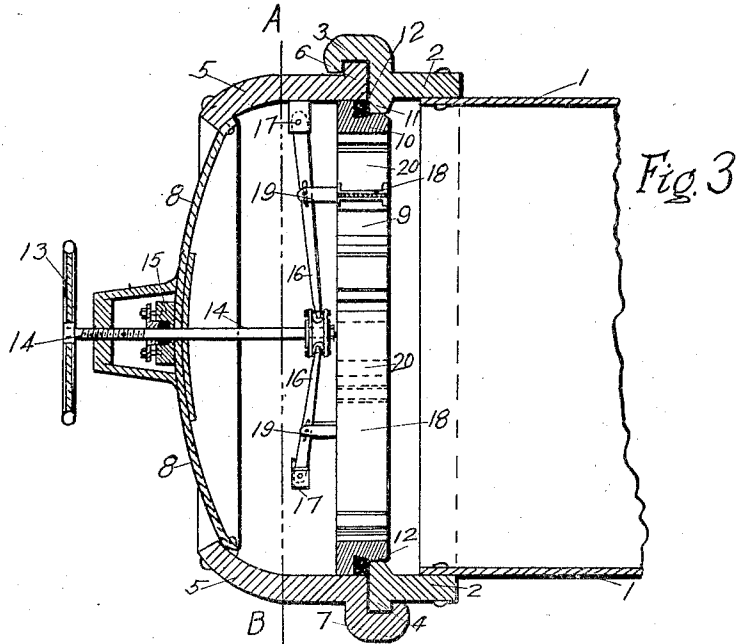
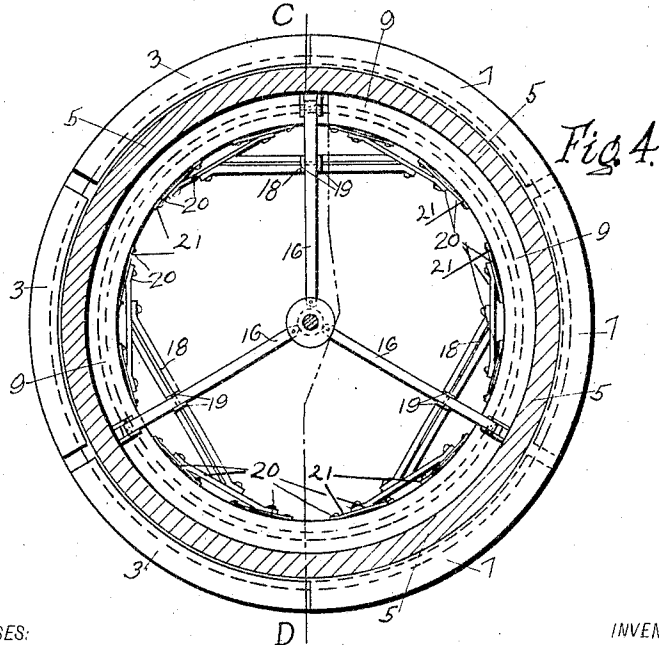
INVENTOR

Daniel B. Banks
BY
William W. Varney
ATTORNEY

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UNITED STATES PATENT OFFICE.

DANIEL B. BANKS, OF BALTIMORE, MARYLAND; GAREY T. W. BANKS EXECUTRIX OF
THE WILL OF SAID DANIEL B. BANKS, DECEASED.

DOOR.

1,381,958.

Specification of Letters Patent. Patented June 21, 1921.

Application filed July 6, 1917. Serial No. 178,996.

To all whom it may concern:

Be it known that I, DANIEL B. BANKS, a citizen of the United States, and a resident of Baltimore city, in the State of Maryland, have invented a certain new and useful Improved Door, of which the following is a specification.

My invention relates to an improved door, lid, cover, detachable head, or other closing member, hereinafter referred to as a door, for boilers, tanks or other containers.

It has for its object the construction of a door which may be quickly closed and sealed and as quickly opened with a minimum expenditure of energy.

It has for its further object the construction of a sliding door which may be secured against the action of both positive and negative pressures, that is, pressures above and below atmospheric pressure, without the use of bolts or similar fasteners.

It has for its further object the construction of a sliding door which may be sealed against either positive or negative pressure, or against a variable pressure changing in one operation from positive to negative.

And it has for its further object the construction of a sliding door which may be sealed as above by the use of a movable gasket controlled in its movement at a single point from which single point pressure may be applied as a practically uniformly distributed load to the entire circumference of said gasket.

With the foregoing and other objects in view my invention consists of the novel construction, combination and arrangement of parts as hereinafter specifically described and illustrated in the accompanying drawings, wherein is shown the preferred embodiment of my invention, but it is understood that changes, variations and modifications can be resorted to which come within the scope of the claims hereunto appended.

To more fully understand my invention I will refer to the accompanying drawings, in which:

Figure 1 is an end view of the door and the container, the door being in the removed or open position; Fig. 2 is a transverse hori-

zontal section of the same; Fig. 3 is a section through the door, cylinder, and interior gland, showing the door in closed position and the gland in the advanced position, Fig. 4 is a plan of the gland in position within the head, showing the system of levers and distributing girder arms, the head being in section.

Similar numerals refer to similar parts throughout the several views.

1 is the shell of the container, 2 is the receiving edge of the container having a projecting lug 3 on one portion thereof, and on the other portion a projecting rim 4. 5 is the outer member of the door carrying on the advancing portion thereof a projecting rim 6 and on the following portion thereof posteriorly projecting lugs 7, this outer member of the door being bolted to the central member of the door 8. 9 is the interior annular gland, the advancing portion of which 10 engages a projecting shoulder 11 on the receiving edge 2 of the container. 12 is a flexible gasket or other packing carried by the gland 9. 13 is an exterior wheel actuating a screw 14 which is connected through a stuffing box 15 with a series of levers 16, pivoted at the points 17 to the interior of the head 5. 18 are cross arms connected with the levers 16 by slotted posts 19 and attached to distributing arms 20 which are, again attached through distributing arms 21 to gland 9. 22 is a carriage supporting the door, which is guided by a bar 23 directing a guiding shoulder 24. The carriage 22 is mounted on wheeled truck 25 and travels upon a track 26. 27 is a screw and wheel mounted upon a swivel joint at 28, so that it may engage ring 29 if it is desired to draw the door into the closed position or to start the door upon opening.

The operation of my invention is as follows:

When it is desired to close the door the car 22 is pushed forward on the track 26 until advancing rim 6 engages the lugs 3 upon the container 1, and at the same time the following lugs 7 engage the projecting rim 4 upon the container 1. If necessary the wheel 27 is used for the final adjustment. Wheel 13

is then rotated so as to advance the screw 14 and the levers 16. The pressure thus applied to the cross girder arms 18 is distributed through the distributing arms 20 and 21 upon the gland 9 which advances into the position shown in Fig. 3. This rotation is continued until the gasket 12 is sufficiently compressed to seal the opening. The door is now locked in position against a movement in the direction of the axis of the cylinder by the projecting lugs and rim on the container and door respectively, and is locked against movement in a transverse direction by the advancing gland. The seal being secured by a direct mechanical application of pressure to the gland through the rotation of the wheel 13 is independent of the internal pressure, and therefore is a complete seal against both positive and negative pressures or against a pressure changing from positive to negative during the course of a single operation.

If it now be desired to open the door the wheel 13 is revolved in the opposite direction, and the gland 9 withdrawn by the force applied through the levers 16, the cross girder arms 18 and the distributing arms 20 and 21 until the gland 9 is clear of the plane face of the container member 4. The door is then withdrawn by the removal of the car 22, screw 27 being used if necessary to start the car in motion. The trapezoidal chamber containing the gasket 12 secures the withdrawal of the gasket or other packing with the gland 9.

Having thus described my process what I claim and desire to secure by Letters Patent is:

1. A sliding door having a section posteriorly concave terminating in a plane face parallel to the plane in which said door slides, said door having on the advancing portion thereof a projecting rim and on the following portion thereof one or more posteriorly projecting lugs in combination with a container, having about the opening thereof a continuous plane face opposing, when said door is closed, the plane face on said door, and having one or more projecting lugs engaging, when said door is closed, the rim of said door, and a projecting rim engaging, when said door is closed, the lugs of said door, and in further combination with a movable gland lying within the concavity of said door, and engaging, when advanced, the inner edge of the rim or opening of said container.

2. A sliding door having a section posteriorly concave terminating in a plane face parallel to the plane in which said door slides, said door having on the advancing portion thereof a projecting rim and on the following portion thereof one or more posteriorly projecting lugs, in combination with a container having about the opening thereof a continuous plane face, opposing, when

said door is closed, the plane face on said door, said plane faces being externally co-terminal, but the plane face on the said container having a greater transverse measurement, and forming a shoulder facing the concavity of said door, said container having one or more projecting lugs engaging, when said door is closed, the rim of said door, and a projecting rim engaging, when said door is closed, the lugs of said door, in further combination with a movable gland lying within the concavity of said door, and engaging, when advanced, the inner edge of the rim or opening of said container.

3. A sliding door having a section posteriorly concave terminating in a plane face parallel to the plane in which said door slides, said door having on the advancing portion thereof a projecting rim and on the following portion thereof one or more posteriorly projecting lugs, in combination with a container having about the opening thereof a continuous plane face, opposing, when said door is closed, the plane face on said door, said plane faces being externally co-terminal, but the plane face on said container having a greater transverse measurement, and forming a shoulder facing the concavity of said door, said container having one or more projecting lugs engaging, when said door is closed, the rim of said door, and a projecting rim engaging, when said door is closed, the lugs of said door, in further combination with a movable gland carrying a flexible gasket or other packing lying within the concavity of said door, and engaging, when advanced, the inner edge of the rim or opening of said container.

4. A sliding door having a section posteriorly concave terminating in a plane face parallel to the plane in which said door slides, said door having on the advancing portion thereof a projecting rim and on the following portion thereof one or more posteriorly projecting lugs, in combination with a container having about the opening thereof a continuous plane face opposing, when said door is closed, the plane face on said door, said plane faces being externally co-terminal, but the plane face on said container having a greater transverse measurement and forming a projecting shoulder facing the concavity in said door, said container having one or more projecting lugs engaging, when said door is closed, the rim of said door, and a projecting rim engaging, when said door is closed, the lugs of said door, in further combination with a movable gland contained within the concavity of said door and engaging, when advanced, the inner edge of the rim or opening of said container, said gland having on the outside of its anterior edge a laterally projecting shoulder extending to the inside of the concavity of said door, said gland, projecting

shoulder thereon, door, and plane face on said container forming a chamber containing a flexible gasket or other packing.

5 A sliding door having a section posteriorly concave terminating in a plane face parallel to the plane in which said door slides, said door having on the advancing portion thereof a projecting rim and on the following portion thereof one or more posteriorly projecting lugs, in combination with a container having about the opening thereof a continuous plane face opposing, when said door is closed, the plane face on said door, said plane faces being externally co-terminal, but the plane face on said container having a greater transverse measurement and forming a projecting shoulder facing the concavity in said door, said container having one or more projecting lugs engaging, when said door is closed, the rim of said door, and a projecting rim engaging, when said door is closed, the lugs of said door, in further combination with a movable gland contained within the concavity of said door and engaging, when advanced, the inner edge of the rim or opening of said container, said gland having on the outside of its anterior edge a laterally projecting shoulder extending to the inside of the concavity of said door, said gland, projecting shoulder thereon, door, and plane face on said container forming a trapezoidal chamber containing a flexible gasket or other packing, said chamber having its greatest width at the edge farthest from said container.

6. A sliding door having a section posteriorly concave and containing within said concavity a movable gland, carrying a flexible gasket or other packing, with a means of advancing or withdrawing said gland by power applied at a single point and distributed by means of levers and distributing girder arms, imposing a practically uniformly distributed load upon the periphery of said gland and levers and distributing girder arms distributing the pressure applied to said gland.

7. A sliding door having a section posteriorly concave and containing within said concavity a movable gland carrying a flexible gasket or other packing, together with an external screw connected with the periphery of said gland by a series of interior levers and distributing girder arms, and imposing, when said screw is rotated, a practically uniformly distributed load upon the periphery of said gland.

8. A sliding door having a section posteriorly concave terminating in a plane face parallel to the plane in which said door slides, said door having on the advancing portion thereof a projecting rim and on the following portion thereof one or more posteriorly projecting lugs in combination with a

container having about the opening thereof a continuous plane face opposing, when said door is closed, the plane face on said door, said plane faces being externally co-terminal, but the plane face on said container having a greater transverse measurement and forming a shoulder facing the concavity of said door; said container having one or more projecting lugs engaging, when said door is closed, the rim of said door, and a projecting rim engaging, when said door is closed, the lugs of said door, in further combination with a movable gland carrying a flexible gasket or other packing and engaging when advanced, the inner edge of the rim or opening of said door, said gland having on the outside of its anterior edge a laterally projecting shoulder extending to the inside of the concavity of said door, said gland, projecting shoulder thereon, door, and plane face on said container, forming a trapezoidal chamber containing a flexible gasket or other packing, said chamber having its greatest width at the edge farthest from said container, in further combination with an external screw connected by a series of levers and distributing girder arms to the periphery of said gland, said screw when rotated advancing or withdrawing said gland under a practically uniformly distributed load upon its periphery.

9. A sliding door having a section posteriorly concave terminating in a plane face parallel to the plane in which said door slides, said door having on the advancing portion thereof a projecting rim and on the following portion thereof one or more posteriorly projecting lugs, in combination with a container having about the opening thereof a continuous plane face opposing, when said door is closed, the plane face on said door, said plane faces being externally co-terminal, but the plane face on said container having a greater transverse measurement and forming a shoulder facing the concavity of said door; said container having one or more projecting lugs engaging, when said door is closed, the rim of said door, and a projecting rim engaging, when said door is closed, the lugs of said door, in further combination with a movable gland carrying a flexible gasket or other packing and engaging, when advanced, the inner edge of the rim or opening of said door, said gland having on the outside of its anterior edge a laterally projecting shoulder extending to the inside of the concavity of said door, said gland, projecting shoulder thereon, door, and plane face on said container forming a trapezoidal chamber containing a flexible gasket or other packing, said chamber having its greatest width at the edge farthest from said container, in further combination with an external screw connected by a series of interior levers and distribut-

ing girder arms to the periphery of said gland, said screw when rotated advancing or withdrawing said gland under a practically uniformly distributed load upon its periphery, said interior levers being connected with said distributing girder arms by slotted posts, permitting a reverse movement of said screw without immediate action upon said gland.

DANIEL B. BANKS.

Witnesses:

R. E. KANODE, Jr.,
W. W. VARNEY.