Fig. 4.

Fig. 5.

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This invention relates to doors and more particularly to that type of door used in pressure steamers or the like having compartments into which live steam is admitted and maintained at moderate temperature, the object of the invention being a continuation-in-part of my copending application, Serial No. 649,109, filed February 20, 1946, now abandoned.

One object of the invention is to provide a door for sealing a compartment of the type described and for preventing the escape of the live steam while entering and after admission to the compartment. Another object of the invention is to provide a door of the type described which is of simple, durable and light construction, inexpensive and easy to manufacture, easy to operate and which possesses a minimum of parts subject to deterioration from the heat and moisture associated with the use of live steam, said parts being quickly and inexpensively replaced. Still another object of the invention is to provide a door of the type described which will insure the attainment of the highest standard of cleanliness and freedom from sources of contamination and obnoxious cooking odors.

According to the present invention the door comprises a closure member having a marginal portion similar to but larger than a compartment opening, gasket supporting means similar to but larger than said opening being mounted on the outer surface of the closure member and having a peripheral portion offset relative thereto, a frame-like gasket having an inner peripheral portion formed with a continuous groove defining a tapering wall and fitting about the supporting means with said offset portion extending into the groove, the faces of said gasket being interposed between the marginal portions of the closure member and opening, and a gasket retaining member abutting the outer peripheral portion of the gasket so that when pressure is admitted to the compartment it exerts a force against the tapered wall of the gasket to wedge it downwardly against the marginal portions of the opening and outwardly against the gasket retaining member to seal the opening. In a preferred embodiment the gasket may have a Y-shaped inner peripheral portion with the non-peripheral portion of the supporting means extending into the legs of the Y, and may further have inwardly diverging faces adapted to be pinched between the marginal portions of the closure member and opening, when the door is closed, thereby to provide an efficient seal for the opening while steam is being admitted to the compartment and before sufficient pressure has been generated therein to exert a wedging force against the inner periphery of the gasket. The gasket may also have a beveled outer periphery juxtaposed to the gasket retaining member to provide a more efficient fit therebetween.

In still another aspect the lower portion of the gasket has at least one passage affording communication between the bottom of the groove and the outer periphery of the gasket which, abuts the gasket retaining member, the parts being so constructed and arranged that when pressure is admitted to the compartment it exerts a force against the tapering wall of the gasket to wedge the gasket downwardly against the marginal portion of the opening and outwardly against the gasket retaining member to seal the opening and passage, and when the door is opened and the pressure released any condensate collected between the tapering wall and supporting means will drain by force of gravity to the bottom of the groove, through the passage and thence out of the door between the gasket and gasket retaining member.

For the purpose of illustration reference is made to the following detailed description and drawings in which:

Fig. 1 is a perspective view of one embodiment of the invention;
Fig. 2 is a cross section of the gasket of the embodiment of Fig. 1;
Fig. 3 is a face view of the gasket of Fig. 2;
Fig. 4 is a top view of the cover of the embodiment of Fig. 1;
Fig. 5 is a cross section along lines 5-5 of Fig. 4;
Fig. 6 is a fragmentary face view of a lower corner of a modified embodiment of the gasket of Fig. 3;
Fig. 7 is a cross section of a modified embodiment of the invention taken along the lines 7-7 of Fig. 4 with the modified gasket of Fig. 6; and
Fig. 8 is an enlarged view similar to Fig. 7 but showing the relationship of the parts when the door is in open position.

Referring to Fig. 5, the numeral 1 designates marginal portions of a steamer compartment defining a compartment opening 2. A closure member 3 having marginal portions 4 similar to but larger than said opening 2 is removably juxtaposed to the opening. A dome-shaped cover 5 is mounted, adjacent to its edge 6, to the outer edge of the marginal portions 4 of the closure member by suitable means such as a weld, said edge 6 extending downwardly to form
a gasket retaining member 7. A gasket-supporting plate 8, similar but larger than the opening 2, is secured to the outer surface of the closure member and has a peripheral portion 9 extending into the leg of the Y. The gasket 10 further has a beveled outer periphery 12 abutting the gasket-retaining member 7 of the cover, and further has inwardly diverging faces 13 and 14 interposed between the marginal portions of the closure member and opening as shown in Fig. 5.

Referring to Fig. 5, reinforcing channel frame 15 is disposed within the dome-shaped cover in spaced relation to the closure member, the opposed edges of said frame extending outwardly, in opposite directions, through slots 16 formed in the cover to provide two projecting members 17 and 18. The frame is secured to the cover, at the slots, by suitable means as a weld. To provide a butt hinge for the above described door, a plate 19 is secured by a weld to the upper face of projecting member 17 and to the cover 8 and has a projecting loop 20 to which is secured, in a similar manner, an elongate collar 21. The collar is adapted to fit between complementary spaced ears 22 mounted on the compartment end, and is pivotally held by a pivot 23 as shown in Fig. 1.

A handle 24 is provided on the opposite side of the door and comprises two spaced post members 25 and a connecting bar 26, the bases of the posts extending through openings 27 in projecting member 18 and there secured by means of a weld. A pair of spaced cover plates 28, each provided with openings 29 through which the posts extend, are secured at one end 30 to the cover 8 above and adjacent to the slot 16 and extend outwardly beyond the posts, at which point they are bent downwardly and inwardly, the opposite ends 31 being welded to the cover to the edge of the door.

To provide means for locking closed the above described door, a tongue 32 is disposed between said spaced cover plates and comprises a plate 33 secured by a weld to the cover below and adjacent slot 16 and extending outwardly and upwardly to a point adjacent the bend of said spaced plates where it is similarly bent downwardly and inwardly and secured to the edge of the cover.

A complementary locking clamp 34 is pivotally mounted on the compartment, as shown in Fig. 1, and is adapted when the door is closed to clamp over the tongue 32 to lock the door closed.

From the foregoing it is evident that when the door is in closed and locked position as shown in Fig. 5, the faces 13 and 14 of the gasket have already been pinched between the marginal portions of the closure member and opening to create a seal. On admission of steam to the compartment, the pressure within the compartment exerts a force against the lower arm of the Y-shaped inner periphery of the gasket, as aforesaid, to wedge it outwardly against the gasket-retaining flange so that the seal of the passage is increased in strength with the increase in pressure to prevent the escape of steam from the compartment.

It is further evident that when the gasket begins to deteriorate from the exposure to the heat and moisture of the live steam, it may be removed quickly and inexpensively by merely unbolting the inner peripheral portion of the supporting plate and inserting a new gasket by the reverse procedure.

Referring to Figs. 6, 7 and 8, the embodiment shown therein, except as hereinafter pointed out, is substantially the embodiment previously described and the same or similar reference numerals are applied to corresponding parts. In this embodiment each marginal portion 4 of closure member 3 is provided at its periphery with a gasket-retaining flange 34 inclined inwardly toward the marginal portion 1 of the compartment. The outer face of the flange abuts the inner face of the member 7 and is secured thereto by suitable means, as a weld. The inner face of the flange provides a complementary surface abutting the beveled outer periphery 12 of a modified gasket 10 when the door is in closed position as shown in Fig. 7. The lower portion of the modified gasket 10a is provided intermediate its ends with a passage 35 affording communication between the bottom of the leg of the Y of the inner periphery 11 and the beveled outer periphery 12 which abuts the gasket-retaining flange 34. When the door is in closed and locked position as shown in Fig. 7, the beveled outer periphery 12 is forced against the gasket-retaining flange 34 to seal the outer opening of the passage. On admission of steam to the compartment, the pressure within the compartment exerts a force against the lower arm of the Y-shaped inner periphery of the gasket, as aforesaid, to wedge it outwardly against the gasket-retaining flange 34 so that the seal of the passage is increased in strength with the increase in pressure to prevent the escape of steam from the passage.

When the door is in open position as shown in Fig. 8, and the steam pressure is released, all the pressure upon the gasket is removed, the beveled periphery of the gasket withdraws slightly from the gasket-retaining flange, and the seal of the passage is broken. Any condensate collecting upon the inner face of the gasket-supporting plate will drain by force of gravity into the space between the arm of the Y-shaped inner periphery and the peripheral offset portion 9 of the gasket-supporting plate. Thence it will flow downwardly between the loose-fitting inner periphery of the gasket and said offset portion 9 of the gasket-supporting plate to the bottom of the leg of the Y, and thence through the passage 35 and out of the door between the outer periphery of the gasket and the gasket-retaining flange. In a similar manner any condensate pocketed in the leg of the Y when the door was closed and while the gasket was under pressure will drain through the passage and out of the door when the door is opened and the pressure on the gasket is released. From the foregoing it is evident that without interfering in any way with the inner periphery of the gasket and without incurring the usual and insidious freedom from stagnant condensate which is the source of contamination and obnoxious cooking odors. While the embodiment of Figs. 6, 7 and 8 has been described as provided with only one passage 35, it is to be understood that the invention is not to be so limited and may comprise a plurality of similar passages provided in the lower portion of the gasket 10a. It should be understood that the present dis-
closure is for the purpose of illustration only and that the invention includes all modifications and equivalents which fall within the scope of the appended claims.

I claim:

1. In combination, a pressure compartment having marginal portions defining an opening, a door for sealing said opening, comprising a closure member having a marginal portion similar to but larger than said opening; gasket supporting means similar to but larger than said opening mounted on the inner surface of said closure member to abut the outer periphery of the gasket, so that when pressure is admitted to the compartment it exerts a force against the tapering wall of the gasket to wedge the gasket downwardly against the marginal portion of the opening and outwardly against the gasket-retaining member whereby the seal is increased in strength with the increase in pressure within the compartment.

2. In combination, a pressure compartment having marginal portions defining an opening, a door for sealing said opening, comprising a closure member having a marginal portion similar to but larger than said opening; gasket supporting means similar to but larger than said opening mounted on the inner surface of said closure member in face contact therewith and having a peripheral portion offset relative thereto, a resilient frame-like gasket having an inner peripheral portion formed with a continuous groove defining a tapering wall and fitting about said supporting means with the offset peripheral portion extending into the groove, the faces of said gasket being interposed between the marginal portions of the closure member and opening; and a gasket-retaining member abutting the outer periphery of the gasket, so that when pressure is admitted to the compartment it exerts a force against the tapering wall of the gasket to wedge the gasket downwardly against the marginal portion of the opening and outwardly against the gasket-retaining member to seal the opening.

3. In combination, a pressure compartment having marginal portions defining an opening, a door for sealing said opening, comprising a closure member having a marginal portion similar to but larger than said opening, means for removable locking the closure member in juxtaposed relation to the opening, gasket supporting means similar to but larger than said opening mounted on the inner surface of said closure member in face contact therewith and having a peripheral portion offset relative thereto, a resilient frame-like gasket having an inner peripheral portion formed with a continuous groove defining a tapering wall and fitting about said supporting means with the offset peripheral portion extending into the groove, and having inwardly diverging faces interposed between the marginal portions of the closure member and opening, when the closure member is locked, and adapted to be pinched therebetween to form a seal, and a gasket-retaining member abutting the outer periphery of the gasket, so that when pressure is admitted to the compartment it exerts a force against the lower arm of the Y-shaped inner peripheral portion of the gasket to wedge the gasket downwardly against the marginal portion of the opening and outwardly against the gasket-retaining member whereby the seal is increased in strength with the increase in pressure within the compartment.

4. In combination, a pressure compartment having marginal portions defining an opening, a door for sealing said opening, comprising a closure member having a marginal portion similar to but larger than said opening, means for removable locking the closure member in juxtaposed relation to the opening, gasket supporting mean.
having marginal portions defining an opening, a door for sealing said opening, comprising a closure member having a marginal portion similar to but larger than said opening, gasket supporting means similar to but larger than said opening mounted on the inner surface of said closure member in face contact therewith and having a peripheral portion offset relative thereto, a resilient frame-like gasket having an inner peripheral portion formed with a continuous groove defined by an inner and outer wall inclined toward each other and fitting about said supporting means with the offset peripheral portion extending into the groove, the faces of said gasket being interposed between the marginal portions of the closure member and opening, and a gasket-retaining member comprising a flange integral with the marginal portions of the closure member and inclined inwardly toward the marginal portions of the opening, the inner face of the flange abutting the outer periphery of the gasket when the closure member is in closed position, the portion of the gasket which is lowermost when said door is open having at least one passage affording communication between the bottom of the groove and the outer periphery of the gasket which shuts the flange, the parts being so constructed and arranged that when pressure is admitted to the compartment it exerts a force against the inner inclined wall of the gasket to wedge the gasket downwardly against the marginal portions of the opening and outwardly against the flange to seal the opening and passage, and when the door is opened and pressure upon the gasket is released, any condensate collected between the inner inclined wall and supporting means will drain by force of gravity to the bottom of the groove, through the passage and thence out of the door between the gasket and flange.

7. In combination, a pressure compartment having marginal portions defining an opening, a door for sealing said opening, comprising a closure member having a marginal portion similar to but larger than said opening, gasket-supporting means similar to but larger than said opening mounted on the inner surface of said closure member in face contact therewith, and having a peripheral portion offset relative thereto, a resilient frame-like gasket having an inner peripheral portion formed with a continuous groove defining a tapering wall and fitting about said supporting means with the offset peripheral portion extending into the groove, the faces of said gasket being interposed between the marginal portions of the closure member and opening, the outer periphery of the gasket having a beveled portion, and a gasket-retaining member abutting said beveled portion so that when pressure is admitted to the compartment it exerts a force against the tapering wall of the gasket to wedge the gasket downwardly against the marginal portion of the opening and outwardly against the gasket-retaining member to seal the opening.

8. In combination, a pressure compartment having marginal portions defining an opening, a door for sealing said opening, comprising a closure member having a marginal portion similar to but larger than said opening, a gasket-supporting means similar to but larger than said opening mounted on the inner surface of said closure member in face contact therewith, and having a peripheral portion offset relative thereto, a resilient frame-like gasket having an approximately Y-shaped inner periphery fitting about said supporting means with the offset peripheral portion extending into the leg of the Y, the faces of said gasket being interposed between the marginal portions of the closure member and opening, the outer periphery of the gasket having a beveled portion, and a gasket-retaining member abutting said beveled portion, so that when pressure is admitted to the compartment it exerts a force against the lower arm of the Y-shaped inner periphery of the gasket to wedge the gasket downwardly against the marginal portion of the opening and outwardly against the gasket-retaining member to seal the opening.

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REFERENCES CITED

The following references are of record in the file of this patent:

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<td>Taylor</td>
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