C. E. STEERE.

PROCESS KETTLE.

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1,208,041.

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Fig. 1.

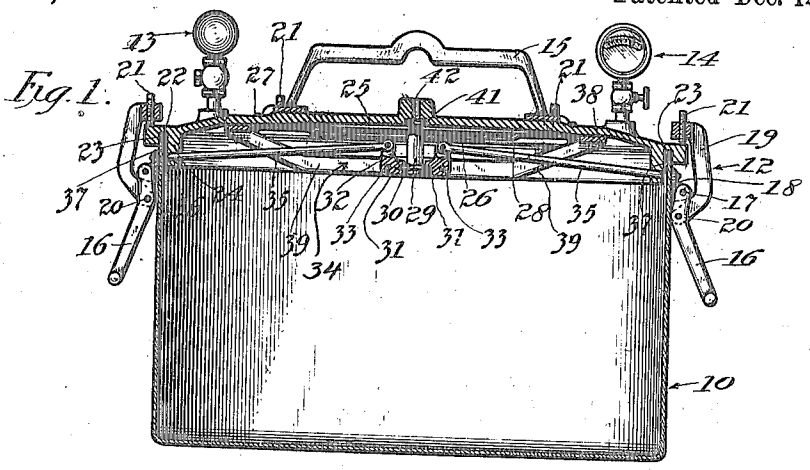


Fig. 2.

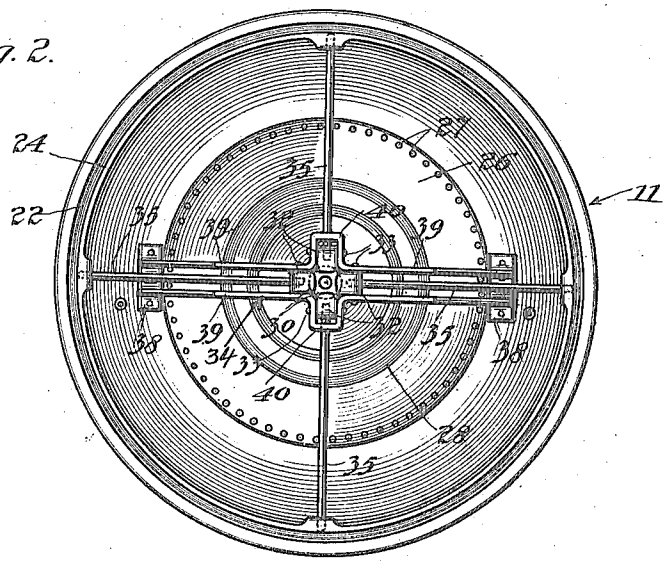
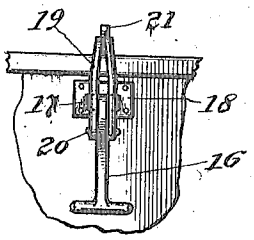


Fig. 3.



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PROCESS-KETTLE.

1,208,041 Specification of Letters Patent. Patented Dec. 12, 1916.

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To all whom it may concern:

Be it known that I, CLARENCE E. STEERE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Process-Kettles, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

My invention relates to process kettles and the like.

One of the objects of my invention is to provide improved means whereby the cover of the process kettle cannot be removed as long as there is any appreciable pressure within the kettle.

Further objects will appear from the detailed description to follow taken in connection with the appended claims.

In the drawings, in which I have shown one embodiment of my invention,

Figure 1 is a central vertical section through a process kettle embodying my invention; Fig. 2 is a bottom view of the cover of the process kettle; and Fig. 3 is a side elevational view showing one of the clamps for holding the cover on the kettle.

Referring now to the drawings in detail, the process kettle 10 is provided with a cover 11 which is held on to the kettle by means of clamps 12. A combined safety and release valve 13 is secured to the cover 11, and a steam gage 14 is mounted thereon. The safety valve and steam gage may be of any suitable standard construction and form no part of the invention set forth in this application. The cover is provided with a handle 15. The kettle is provided with a number of clamps 12 located at suitable intervals, each clamp comprising an arm 16 pivoted at 17 to an ear 18 secured to the side of the kettle, a bent arm 19 pivoted to the arm 16 at 20, and a set screw 21 threaded through the arm 19 for engagement with the edge of the cover 11.

The cover 11 is provided with a groove 22 on which is located a suitable packing 23 for engagement with the upper edge of the kettle 10 and is provided with a flange 24 for positioning the cover with respect to the kettle. The cover is recessed or dished as shown at 25 to allow for movement of the diaphragm 26 which is secured to the cover in any suitable manner as by rivets 27. This diaphragm is provided with annular reinforcing ribs 28 and has centrally secured thereto a pin or plunger 29 having an annular flange 30 for engagement with the notches 31 of bell crank levers 32 which are pivoted at 33 to a bracket 34 secured to the cover 11. Locking rods or pins 35 are pivotally secured to the bell crank levers 32. The outer ends of these rods extend through openings 36 in the flange 24 in position to extend beneath an inwardly extending annular band 37 secured adjacent the upper edge of the kettle 10. The bracket 34 on which the levers 32 are mounted comprises base portions 38 secured to the cover 11, parallel arms 39 between which two of the levers 32 are mounted, and U-shaped portions 40 between the branches of which the other two levers 32 are pivoted. The cover 11 is recessed at 41 to provide clearance for the upper end of the pin 29 and is provided with an opening 42 leading from the diaphragm chamber to the atmosphere.

The use and operation of the improved process kettle is as follows: The canned material to be processed is placed in the kettle with the proper amount of water, the cover 11 is placed in position and secured in place by means of the clamps 12. The kettle and its contents are then heated in any suitable manner to the desired degree. As soon as steam is generated in the kettle the pressure acts against the diaphragm 26 to cause it to lift the plunger 29 to rock the lever 32 to force the rods 35 outwardly and cause their ends to engage beneath the inwardly extending band 37. After the contents of the kettle have been heated as long as desired the pressure in the kettle is allowed to drop. This may be hastened by opening the release valve 13. When the pressure has dropped sufficiently to permit the diaphragm 26 to resume its normal position to withdraw the rods 35 from beneath the band 37 the clamps 12 may be released and the cover removed.

It will be seen that it will be impossible to remove the cover 11 as long as there is any appreciable pressure within the kettle even if the clamps 12 are released. This will prevent any danger of scalding the operator which might occur if it were possible for the cover to be removed while there was any steam pressure in the kettle. The recessed or dished portion 25 of the cover is so designed that it will prevent injury to the dia-

phragm 26 by affording a backing for the diaphragm when the pressure within the kettle becomes sufficient to force the diaphragm against the cover.

The opening 42 is provided to permit the air to flow freely into and out of the space between the cover and the diaphragm 28 to permit the free movement of the diaphragm.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:—

1. The combination with a receptacle having an opening and a closure therefor, of pressure controlled means for holding said closure in position with respect to said opening, said pressure controlled means including a diaphragm exposed to the pressure within said receptacle, said diaphragm being supported by said cover, said cover having a portion for engagement with the movable part of the diaphragm to limit its movement.

2. The combination with a receptacle having an opening and a closure therefor, of pressure controlled means for holding said closure in position with respect to said opening, said pressure controlled means including a diaphragm exposed to the pressure within said receptacle, said diaphragm being supported by said cover, said cover having an opening therethrough leading from the space between the cover and diaphragm.

3. The combination with a receptacle having an opening and a closure therefor, of pressure controlled means for holding said closure in position with respect to said opening, said holding means comprising an inwardly extending member on said receptacle, and an outwardly movable member supported by said cover for engagement with said inwardly extending member, said pressure controlled means including a diaphragm supported by said cover, and transmission mechanism between said diaphragm and said outwardly movable member.

4. The combination with a receptacle having an opening and a closure therefor, of pressure controlled means for holding said closure in position with respect to said opening, said holding means comprising an inwardly extending member on said receptacle, and an outwardly movable member supported by said cover for engagement with said inwardly extending member, said pressure controlled means including a diaphragm supported by said cover, and transmission mechanism between said diaphragm and said outwardly movable member, said transmission mechanism including a plunger member supported by said diaphragm, and a bell crank actuated by said plunger member.

5. The combination with a receptacle having an opening and a closure therefor, of pressure controlled means for holding said closure in position with respect to said opening, said holding means comprising an inwardly extending member on said receptacle, and an outwardly movable rod supported by said cover and having a portion for engagement with said inwardly extending member, said pressure controlled means including a diaphragm supported by said cover, and transmission mechanism between said diaphragm and said movable rod.

6. The combination with a receptacle having an opening and a closure therefor, of pressure controlled means for holding said closure in position with respect to said opening, said holding means comprising an inwardly extending member on said receptacle, and an outwardly movable rod supported by said cover and having a portion for engagement with said inwardly extending member, said pressure controlled means including a diaphragm supported by said cover, transmission mechanism between said diaphragm and said movable rod, said transmission mechanism including a plunger member supported by said diaphragm, and a bell crank actuated by said plunger member.

7. The combination with a receptacle having an opening and a closure therefor, of pressure controlled means for holding said closure in position with respect to said opening, said holding means comprising an inwardly extending member on said receptacle, and an outwardly movable member supported by said cover for engagement with said inwardly extending member, said pressure controlled means including a diaphragm supported by said cover, and transmission mechanism between said diaphragm and said outwardly movable member, said transmission mechanism including a plunger member supported by said diaphragm, and a bell crank actuated by said plunger member, and means supported by said cover for supporting said bell crank.

8. The combination with a receptacle having an opening, and a closure therefor having a flange adjacent the edge of said opening, said flange having a plurality of openings therein, of pressure controlled means for holding said closure in position with respect to said opening comprising a plurality of members, one extending through each of said openings, and means on said receptacle with which said members engage, said pressure controlled means including also a diaphragm supported by said closure, transmission mechanism between said diaphragm and members.

9. The combination with a receptacle having an opening, and a closure therefor having a flange adjacent the edge of said opening, said flange having a plurality of openings therein, of pressure controlled means

for holding said closure in position with respect to said opening comprising a plurality of members, one extending through each of said openings, means on said receptacle with which said members engage, said pressure controlled means including also a diaphragm supported by said closure, transmission mechanism between said diaphragm and members, said transmission mechanism including a plurality of bell crank levers one for each member.

10. The combination with a receptacle having an opening, and a closure therefor having a flange adjacent the edge of said opening, said flange having a plurality of openings therein, of pressure controlled means for holding said closure in position with respect to said opening comprising a plurality of rods, one extending through each of said openings, and means on said receptacle with which said rods engage, said pressure controlled means including also a diaphragm supported by said closure, and transmission mechanism between said rods and diaphragm.

11. The combination with a receptacle having an opening, and a closure therefor having a flange adjacent the edge of said opening, said flange having a plurality of openings therein, of pressure controlled means for holding said closure in position with respect to said opening comprising a plurality of rods, one extending through each of said openings, and means on said receptacle with which said rods engage, said pressure controlled means including also a diaphragm supported by said closure, and transmission mechanism between said rods and diaphragm, said transmission mechanism including a plurality of bell crank levers, one for each rod.

12. The combination with a receptacle having an opening, and a closure therefor having a flange adjacent the edge of said opening, said flange having a plurality of openings therein, of pressure controlled means for holding said closure in position with respect to said opening comprising a plurality of rods, one extending through each of said openings, means on said receptacle with which said rods engage, said pressure controlled means including also a diaphragm supported by said closure, transmission mechanism between said rods and diaphragm, said transmission mechanism including a plurality of bell crank levers, one for each rod, and a plunger actuated by said diaphragm and engaging said bell crank.

13. The combination with a cooking receptacle having an opening and a closure therefor, of manually actuated means for forcing said closure into sealing engagement with said receptacle, and means actuated by the steam pressure in the receptacle for preventing the removal of said closure so long as there is any appreciable steam pressure in the receptacle.

14. The combination with a cooking receptacle having an opening and a closure therefor, of manually actuated means outside of said receptacle for forcing said closure into sealing engagement with said receptacle, and means inside of said receptacle actuated by the steam pressure in the receptacle for preventing the removal of said closure so long as there is any appreciable steam pressure in the receptacle.

15. The combination with a cooking receptacle having an opening and a closure therefor, of manually actuated means for forcing said closure into sealing engagement with said receptacle, and means carried by said cover actuated by the steam pressure in the receptacle for preventing the removal of said closure so long as there is any appreciable steam pressure in the receptacle.

In witness whereof I have hereunto subscribed my name.

CLARENCE E. STEERE.