

May 22, 1934.

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1,959,946

SEALING MEANS FOR SOLIDIFIED CARBON DIOXIDE CONTAINERS

Filed Aug. 22, 1932

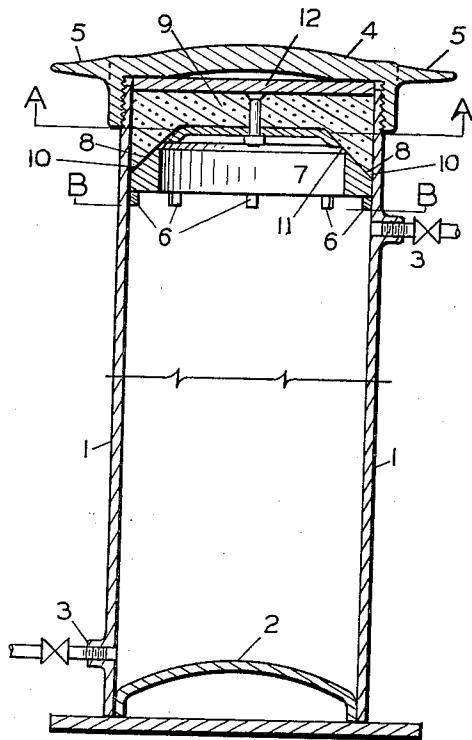


FIG-1.

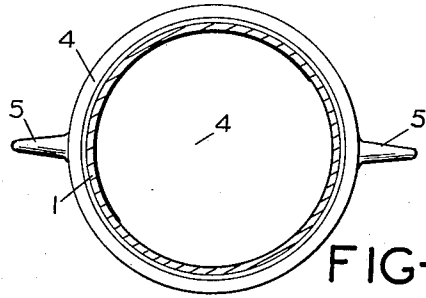


FIG-2.

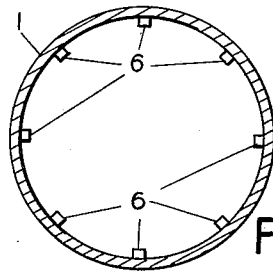
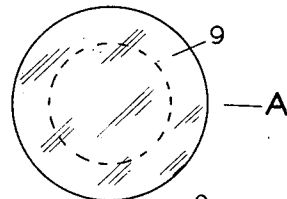
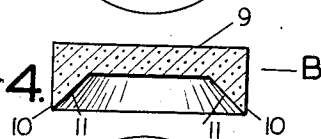


FIG-3.

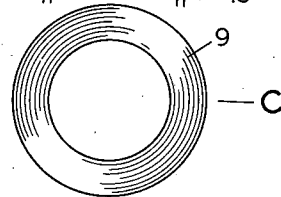


A

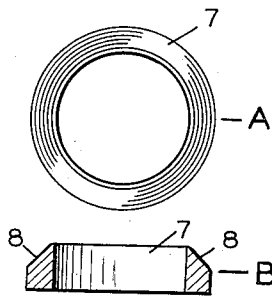
FIG-4.



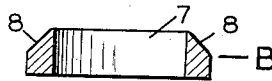
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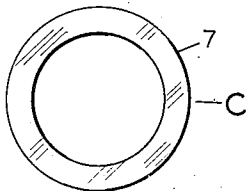


A



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FIG-5.



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UNITED STATES PATENT OFFICE

1,959,946

SEALING MEANS FOR SOLIDIFIED CARBON DIOXIDE CONTAINERS

William G. Cummings, Tulsa, Okla.

Application August 22, 1932, Serial No. 629,834

2 Claims. (Cl. 220-46)

My invention relates to new and useful improvements in sealing means with which to seal containers for solidified carbon dioxide or other high pressure fluid containers, and has for its object to provide an inexpensive, quick and convenient means of sealing such a container in manner whereby said sealing means may readily be removed for refilling the container, may be repeatedly used, and will maintain a tight seal against high pressure, and is particularly adapted to seal a large opening such as is desirable to have in containers for solidified carbon dioxide.

With the above and other objects in view which will appear as the description proceeds, my invention consists in the novel features hereinafter set forth in detail, illustrated in the accompanying drawing and more particularly pointed out in the appended claims.

Referring to the drawing in which numerals of like character designate similar parts throughout the several views:

Fig. 1 is a view in cross section of a tubular container particularly adapted for placing solidified carbon dioxide therein and to contain the same when in its gaseous state, having a large opening in one end thereof which is sealed by my aforesaid sealing means.

Fig. 2 is a view in cross section on line A—A of Fig. 1.

Fig. 3 is a view in cross section on line B—B of Fig. 1.

Fig. 4 discloses my packing element with A a top plan view, B a view in cross section, and C a bottom plan view, of said packing element.

Fig. 5 discloses my compression ring or beveled flange adapted to be held in said container and constituting one of the means of compressing said packing element against the inner wall of the container, with A a top plan view, B a view in cross section, and C a bottom plan view of said flange.

1 represents the wall of the tubular container and 2 its bottom, with 3 an outlet from the container. The container is shown as having an open end of the full diameter of the container, and with the end threaded to receive a threaded cap 4 therefor, which cap has lugs 5 thereon with which to more conveniently screw the cap to said container. While in the drawing the aforesaid opening is shown as of full diameter of the container, in which form it is more convenient to fill the container with solidified carbon dioxide, yet the end may be swaged if desired, for it is to be understood that while my invention applies primarily to means of sealing such contain-

ers having large openings, yet it is also adapted to seal smaller openings as well.

6 represents spot welds on wall 1, whereon a compression ring or annular flange 7 may rest and be seated, altho instead of having a removable ring, which is the preferred form of construction, the flange may be spotwelded to the wall in which event the opening to said container is restricted by the flange. The ring or flange 7 is outwardly beveled as at 8 to force the hereinafter mentioned packing element against the wall of the container.

9 represents the packing element which is in the form of a disk with one rim thereof ending in a projecting lip 10 which is inwardly beveled as at 11 to substantially conform to the bevel 8 of said ring 7.

12 represents a compression plate follower in the form of a disk adapted to fit over and rest upon the top of the packing element 9 and to be moved towards said packing element by screwing cap 4 in place on said container. In the particular form of construction shown, the plate 12 when normally resting on the packing element 9 protrudes beyond the end of the tube 1 sufficiently to cause it to be moved into said tube when the cap 4 is screwed thereon, thus compressing the packing element.

13 represents an inner protecting plate attached to the under side of the packing element 9 and serving to protect said packing element against the action of a gas such as carbon dioxide gas which otherwise would enter the element and unduly expand the same when the pressure in the container was released, and which expansion would result in it making the removal of the packing element more difficult as the expansion would cause the packing element to adhere somewhat to the wall of the container. Preferably therefore the sealing means is made with this protecting plate, which may also be in form designed with a beveled rim as shown at 14, as with this plate the gas does not permeate the packing element sufficiently to cause it to unduly adhere to the wall of the container as aforesaid.

In operation, the container is filled, as with solidified carbon dioxide, the compression flange 7 is then set in place on its seat which is shown as spot welds 6, the packing element 9 with its protecting plate 13 thereon is then positioned on said flange 7, and the follower plate 12 placed on the packing element, whereupon cap 4 is screwed on said tube 1, thereby compressing said packing element outwardly against the inner wall of said tubular container, said elements provid-

ing a means of sealing the open end of said container. The operation is reversed when the container is to be opened for refilling.

Having thus fully disclosed my invention, what I claim and desire to secure by Letters Patent is:

1. The combination of a tubular container adapted to hold a fluid having a high pressure, and with said container having an opening in one end thereof, an annular flange in the inner wall of said container positioned in proximity to said opening and with the face of said flange nearest to said opening being beveled outwardly, a packing element adapted to be compressed against the wall of said container laying between said flange and said opening to seal said opening and with said packing element having an annular lip thereon inwardly beveled to substantially conform to the bevel of said flange, a compression

plate follower for said packing element, a cap for said opening, means of attaching said cap to said container, and coacting means therewith for compressing said packing element.

2. A sealing means for sealing a tubular container adapted to receive and hold solidified carbon dioxide, comprising, an outwardly beveled compression ring adapted to be held in said container, a disk of packing material adapted to be compressed against the wall of said container and having one rim thereof ending in a projecting lip beveled inwardly to substantially conform to the bevel of said ring, a compression plate follower adapted to transmit pressure applied to it from a cap for said container to said disk, and a protecting plate positioned on the under side of said disk of packing material.

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