

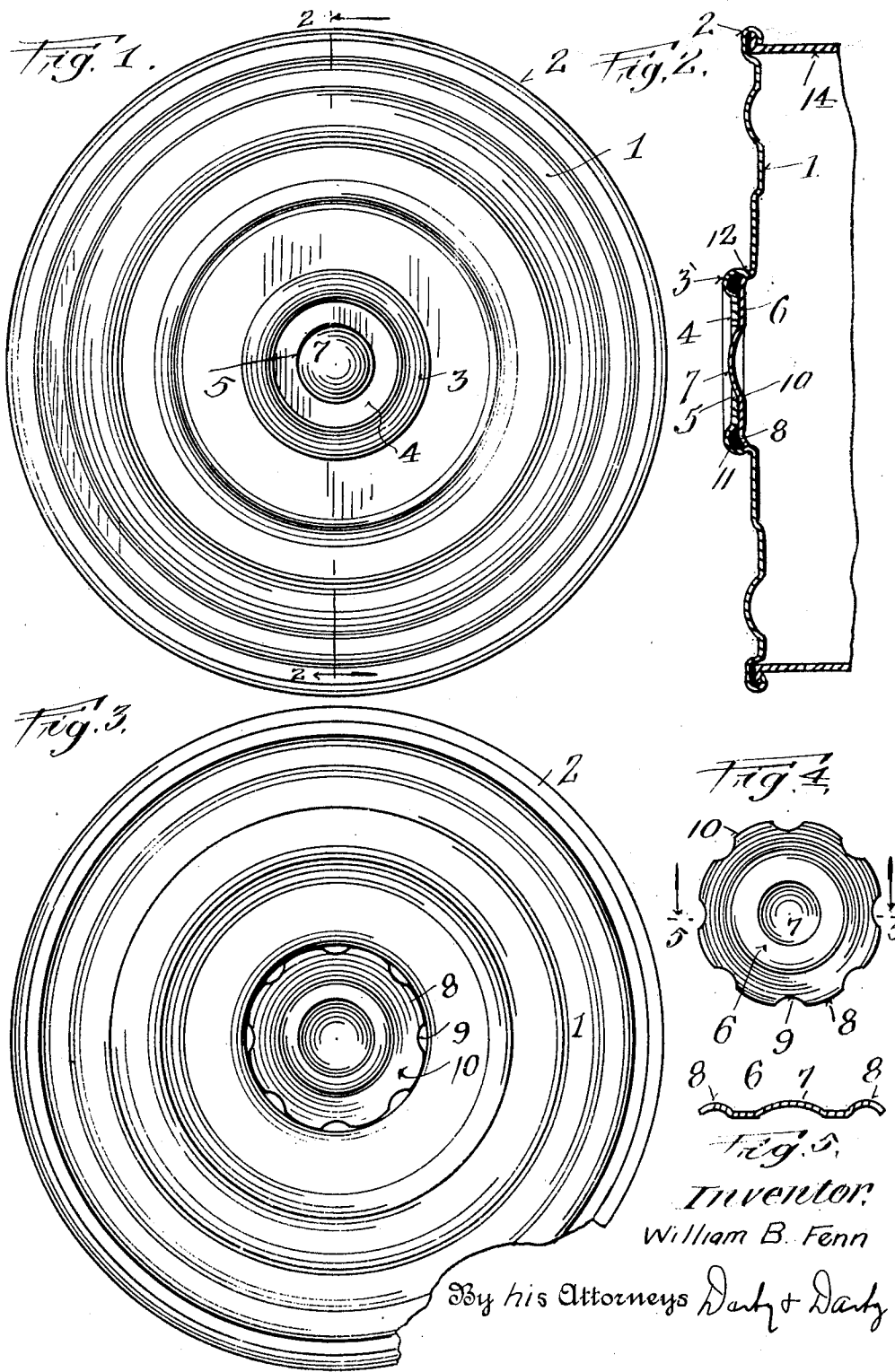
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METHOD AND MEANS OF SEALING CONTAINERS

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METHOD AND MEANS OF SEALING CONTAINERS

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This invention relates broadly to a novel form of container for foods and the like.

One of the objects of this invention is to provide a new and novel form of valve construction for use in containers for food products and the like.

Another object of this invention is to provide a special form of container particularly adapted for permitting the rapid vacuumiza-
10 tion and sterilization of containers and their contents.

A further object of this invention is to provide a valve of this type which is relatively simple in construction and adapted for cheap
15 and rapid manufacture.

A still further object of this invention is the provision of a novel method of vacuumizing, sterilizing and sealing containers. These and many other objects as will appear
20 from the following description are obtained by my invention.

This invention resides substantially in the combination, arrangement, location and relative arrangement of parts and steps of procedure as will appear from the following dis-
25 closure.

Referring to the drawings there is shown in—

Figure 1 a top plan view of a container provided with the valve of my invention;

Figure 2 is a cross-sectional view taken on the line 2—2 of Figure 1 looking in the direction of the arrows;

Figure 3 is a bottom plan view of the cover
35 for the container showing the bottom of the valve;

Figure 4 is a bottom plan view of the valve disc, and

Figure 5 is a cross-sectional view taken on
40 the line 5—5 of Figure 4.

In the modern methods of vacuumizing, sterilizing and sealing containers the two main requisites are speed of operation and uniformity of product. Many methods have
45 been devised for carrying out these operations but none of them are particularly adapted to meet the rapid production requirements of the present date. It is, therefore, one of the purposes of this invention to provide a
50 valve structure for containers that permits

of a high rate of production in canning procedure. I have found that by use of containers equipped with valves of the type about to be described by me that a suitably constructed machine will thoroughly and com-
55 pletely vacuumize, sterilize and seal cans or other containers at the rate of from one hundred to one hundred and fifty per minute.

Referring to the drawings, the container is shown at 14. This container may be of the
60 usual metallic type or any other type as, for instance, bottles having the well known crown seal caps. It is, of course, evident that any type of container could be used with this
65 valve. A suitable closure 1 is shown for the container which, in this instance, is secured thereto by beading as at 2 or with interlay-
70 ing sealing compounds and by soldering to form an air-tight and liquid-tight joint. Near the center of this closure is shown a
75 raised cylindrical portion which is depressed into a plane disc like center at 4 to provide an annular pocket 3. An opening 5 is provided in the center of the plane surface 4 and is
80 preferably circular. It will be noticed that at the base of the projection the diameter is slightly less than the diameter of the remaining portion and serves to hold therein
85 a valve disc shown generally at 10. This disc consists of a central flat portion 6 having a raised circular hump 7 and having its edges
85 curved as at 8. The edges are scalloped or notched as shown at 9. A suitable sealing compound is placed within the pocket at 3
90 as shown at 11 and serves to form an air and liquid-tight joint as will appear shortly. To seal the container it is necessary to force the valve rigidly against the plane surface 4 so that the hump 7 projects through the
95 opening 5. To do this suitable clamping devices force the base portion of the projection 3 at the point where it runs into the closure body itself as shown at 12 radially inwardly
100 so that the valve disc looking at Figure 2 is firmly forced against the can top so as to seat firmly in the sealing compound 3. A suitable clamping device would consist, for instance, of a plurality of arcuate jaws which, when finally forced together radially to form the

base of the projection in its final shape, would form a complete circle.

This container has been particularly devised to aid in carrying out a process developed by me which I will now describe and which is essential to get rapid production. The containers after they have been filled with the product to be sealed therein are fed to a machine having a suitable resilient seat therein to receive the raised portions of the container top which forms a valve. It may be pointed out here that before the containers are sealed that the valve merely fits loosely in the projection and is held there by reason of the fact that the base portion of the projection is of slightly less diameter than the valve disc. The introduction of the container into this machine provides an airtight connection between the top of the raised portion of the container and a conduit which connects to the vacuumizing device. At the same time a pin contacts with the hump to positively force the valve off its seat. The container is then rapidly vacuumized by withdrawing the air or gases therein which escape past the valve disc at its scalloped edges. When the container is fed to the machine and it becomes seated therein a series of arcuate clamping arms, as described above, grasp the raised projection of the valve structure around the curved portion 3 to hold it firmly without deforming the metal. As soon as the container is completely vacuumized the whole structure including the container is rotated through 180° so as to invert the container. Steam is then immediately fed to the interior of the container through the same conduit as before. This inversion of the container is one of the essential features of my method which permits a high rate of production. I have found that the steam quickly and rapidly travels to every portion of the container to carry out this sterilizing and other functions in a minimum period of time. As soon as the sterilizing operation is completed the clamping jaws which have served to both hold the container on the seat of the machine and to aid in its inversion are forced inwardly radially to further reduce the diameter of the raised portion at 12 so as to simultaneously close the container and seal it by embedding the valve disc in the sealing compound. The sealing compound serves to stop up all openings, especially the notches on the periphery of the valve disc. Instead of steam I can, of course, use any desired heated medium as water, air, or other gases, or syrups.

It will be apparent from the foregoing description that I have provided a novel form of container and method of treating the same which is relatively simple in construction and which permits of rapid and accurate processing.

I am well aware that many changes in the details of construction relative to the arrange-

ment of parts and association of steps will readily occur to those skilled in the art without departing from the principles of my invention and I do not, therefore, desire to be limited to the particular features pointed out by me for illustrative purposes, but rather to the spirit and scope of the invention as defined in the appended claims.

What I seek to secure by United States Letters Patent is:

1. A container closure comprising a substantially plane member having a raised central portion projecting above the plane thereof, with an opening therein, and a valve in said opening adapted to seal it when the raised portion is squeezed inwardly radially.
2. A container closure comprising a body portion having a raised central part having an opening therein, the base of said raised part being of slightly less diameter than the top and a valve disc under and within said raised part; said valve disc contacting at its periphery with the base of said raised part.
3. The combination with a container of a closure therefor having a raised central portion with an opening therein, the base of said portion being of slightly less diameter than the top and a scalloped valve disc in said raised portion.
4. A closure for a container comprising a central raised portion having an opening therein, the base of said raised portion being of slightly less diameter than the rest, and a valve disc therein having a hump thereon to close said opening when the disc is firmly seated by applying pressure to the base of said raised portion.
5. A container closure comprising a body member having a pocket formed therein, said pocket having an opening, and a free valve member within said pocket, and arranged to seal said opening when the pocket is compressed at its point of juncture with the body member.
6. A closure for a container comprising a central raised portion having an opening therein, the base of said raised portion being of slightly less diameter than the rest, and scalloped valve disc therein having a hump thereon to close said opening when the disc is firmly seated.
7. A closure for a container comprising a central raised portion having an opening therein, the center of said raised portion being depressed, a valve disc in said raised portion having a hump to fit in said opening, and a sealing ring between said disc and the top of said raised portion.
8. A closure for a container comprising a central raised portion having an opening therein, the center of said raised portion being depressed, a valve disc in said raised portion having a hump to fit in said opening, the periphery of said disc being curved and notched, said curved periphery underlying

an annular pocket formed by the depression of the raised portion and a sealing compound in said pocket above said curved periphery.

5 9. A closure for a container including a valve a portion thereof being loosely located within the container when the closure is applied thereto and means for permanently sealing said valve by pressure exerted substantially in the direction of the periphery
10 of said valve.

In testimony whereof I have hereunto set my hand on this second day of February A. D., 1927.

WILLIAM B. FENN.

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