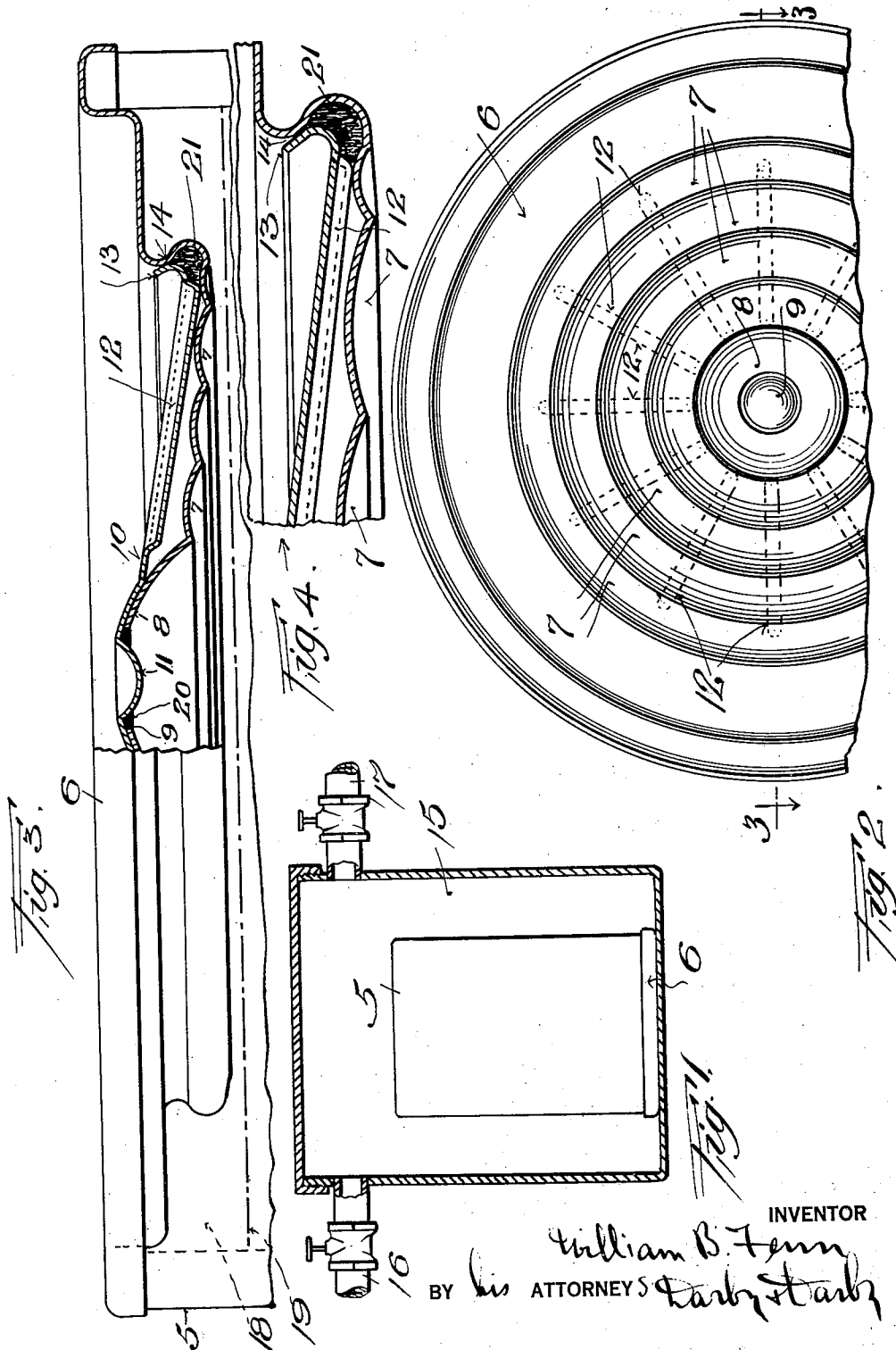


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METHOD OF AND APPARATUS FOR STERILIZING AND SEALING CANNED FRUITS,
VEGETABLES, OR THE LIKE
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METHOD OF AND APPARATUS FOR STERILIZING AND SEALING CANNED FRUITS, VEGETABLES, OR THE LIKE.

Application filed September 24, 1921. Serial No. 503,003.

To all whom it may concern:

Be it known that I, WILLIAM B. FENN, a citizen of the United States, residing at Port Washington, in the county of Nassau and State of New York, have made a certain new and useful Invention in Methods of and Apparatus for Sterilizing and Sealing Canned Fruits, Vegetables, or the like, of which the following is a specification.

This invention relates to a new and improved method of and apparatus for sterilizing canned fruits, vegetables and other goods.

The object of the invention is to provide a method of and apparatus for sterilizing and canning fruits, vegetables and other goods, efficiently and economically.

A further object of the invention is to provide a method and apparatus of the nature referred to wherein the sealing of the fruit, vegetables or other goods after being sterilized is accomplished automatically.

A further object of the invention is to provide a method of and apparatus for sterilizing fruits, vegetables and other goods, and utilizing the exhaust of the steam employed in effecting the sterilization of the goods to effect automatically the sealing of the sterilized goods within its can or container.

Other objects of the invention will appear more fully hereinafter.

The invention consists substantially in the construction, combination, location and relative arrangement of parts and mode of operation, all as will be more fully hereinafter set forth, as shown in the accompanying drawing and finally pointed out in the appended claims.

Referring to the accompanying drawing—Fig. 1 is a view in vertical central section of a sterilizing apparatus illustrating a method of effecting the sterilization of fruits, vegetables or other products contained within a can or container placed within said chamber;

Fig. 2 is a view in plan of the inner face of the top for the can or container for the goods to be sterilized;

Fig. 3 is an edge view of the same partly in diametrical section on the line 3—3, Fig. 2;

Fig. 4 is a fragmentary view in larger scale in section on the same plane as the sectioned portion of Fig. 3.

In my Patent No. 1,365,673, granted January 18, 1921, I have shown, described and claimed a process of sterilizing canned goods by subjecting a can and its contents to the action of steam under pressure before sealing the can, then sealing the can while contained under pressure or within the closed sterilizing chamber containing the sterilizing steam. And in said patent I have shown and described mechanical means operating within the sterilizing chamber to effect the sealing of the can by fixing a previously loosely applied cap upon the end of the can containing the sterilized goods. In my Patent No. 1,378,531, granted May 17, 1921, I have shown and described a process of sterilizing canned goods wherein an unsealed can is placed within a sterilizing chamber in a position other than its top side up position, and then admitting steam to the chamber to effect the sterilization, and then shifting the can to its top side up position, and finally completing the sealing application of the top to the can.

I have discovered, however, that manual operation and manipulation in effecting the sealing of the can after the sterilizing action is completed, may be avoided by utilizing steam pressure to effect the sealing of the can automatically. In one form of my invention I have found that the sealing of the can may be readily and easily effected automatically by or simultaneously with the exhaust sterilizing steam pressure from the sterilizing chamber, thereby avoiding the necessity of manual appliances or other manipulation or handling of the can. This result is accomplished by providing the can containing the fruit, vegetables or other products to be sterilized with a top which is permanently applied to the can after being filled with the goods to be sterilized, and before the filled can and its contents are subjected to the sterilizing action of the steam pressure, and which cap is formed with an opening therethrough which opening is automatically closed by the seating of the valve thereover, the seating of the valve being accomplished by or coincident with the exhaust of the sterilizing steam pressure from the sterilizing chamber, or the reduction of steam pressure in such chamber after the sterilizing action is completed.

It is among the special purposes of my

present invention to provide a method of and apparatus for attaining this result.

In the drawing reference numeral 5 designates a can or container in which the fruit, vegetables or other products to be sterilized are placed, and 6 is the top or cover to be applied to the open end of said can. This top or cover is constructed at its peripheral edge in any suitable or convenient manner to be permanently applied to the open end of the can, the method of attachment of the cover and can not forming any part of my present invention. The body portion of the top or cover is preferably made flexible so as to be capable of yielding slightly in the direction of length of the can as, for instance, by slightly buckling when pressure is applied to the surface of side body portion. This flexibility may be produced in many different ways. I have shown one simple arrangement for accomplishing the purpose by forming a portion of the body of the cover with annular outwardly pressed channels as indicated at 7. At its central portion the body of the top or cover is formed into an outwardly pressed spherical or dome-like portion indicated at 8, through the centre of which is formed an opening 9. My invention is not to be limited, however, in respect to this particular form or structure of body portion of the cap, as it is obvious that caps of various forms and structures of body portions may be equally well adapted for use in carrying out my invention. The important and essential feature is the provision of a top or can having an opening therethrough, and the body portion of which is sufficiently flexible to allow it to move or more or less buckle to some extent. The form shown, however, I have found to be efficient for the purpose. The opening 9 through the body of the cap, in accordance with my invention, is controlled by a suitable valve or closure. In the particular structure shown as an illustrative practical embodiment of my invention I employ a relatively stiff disk member 10, having a central depression 11, formed in the outer surface thereof, and which when the disk is applied in position to the outer surface of the body of the cap extends into the opening 9 in the cap. The required or desired stiffness of the disk 10 may be secured in any convenient way as, for instance, by forming radial channels 12 therein. The central portion of the disk 10, in the specific form shown, fits over and conforms to the shape of the exterior surface of the dome portion 8 of the body of the cap. This disk 10 may be applied to the cap in many different ways. A simple arrangement is shown wherein the peripheral edge 13 of the disk is formed into a reverse curve which may be snapped beneath a co-operating curved portion 14, formed in the top.

It will be understood that the disk 10 with its valve portion 11 fitting into an opening 9 in the top, is applied to the exterior face of the top, and then after filling the can with the fruit, vegetables or other products to be sterilized, the top with the disk applied thereto is permanently affixed or secured to the open end of the can. The can with its contents and with the top applied as described is then placed within a sterilizing chamber 15, having valve controlled steam supply in exhaust connections 16, 17. By supplying the steam under pressure to the sterilizing chamber 15 with the exhaust connections closed, the steam not only surrounds the can, thereby exteriorly heating the same and its contents, but the steam pressure entering between the disk 10 and the top 6 at the point between the engaging surfaces 13, 14, causes an inward flexing movement of the body of the top away from the adjacent surface of the disk thereby permitting steam pressure to enter the can through the opening 9 and penetrate through the body of the contents of the can, thereby thoroughly and efficiently sterilizing the contents thereof. This sterilizing action only requires a very few seconds, depending somewhat on the size of the can and the nature of the contents to be sterilized. The steam supply connection to the sterilizing chamber is then closed and the exhaust connection therefrom opened. This results in the reduction of the steam pressure within the chamber, and the consequent return of the body portion of the cap to its unflexed position, whereby the valve portion 11 of the disk seats within and closes the opening 9 at the top and seals the can. The can and its contents are then removed, and the operation is repeated upon another or other cans.

It is to be understood, of course, that according to usual canning practice, the contents of the can do not completely fill the can up against the inner face of the top, the space 18 being left between the inner face of the top and the top surface of the contents of the can indicated by the dotted line at 19 in Fig. 3.

If desired, and in order to insure the maintenance of an efficient seal, a composition which softens under the influence of heat or steam, but becomes hard and set when cold, may be placed in the opening 9, surrounding the valve 11, as indicated at 20. In like manner, if desired, the peripheral portion of the disk 10 and the adjacent portion of the body of the top may be so shaped as to form an annular space or channel in which may be placed a similar composition indicated at 21 in Figs. 3 and 4. I have found a rubber composition suitable for this purpose. Said composition, softening under the action of the steam and heat

does not interfere with the passage of the steam therearound or therethrough, but upon cooling, after the sterilizing action is completed, this composition becomes set and hardened, thereby effectually insuring a sealing of the can.

In practice, the can with its contents may be positioned in any suitable or desirable relation within the sterilizing chamber. I have found it convenient and satisfactory, however, to position the can within the chamber in inverted relation, resting the same upon the cap 6 as a base, as I have found that the best results are attained when the can is in this position, or in any position other than its top side up.

It is to be understood that many variations and changes in details will readily occur to persons skilled in the art and still fall within the spirit and scope of my invention. I do not desire, therefore, to be limited or restricted in respect to the specific details shown and described.

But having now set forth the objects and nature of my invention and the manner of carrying the same into practical operation, what I claim as new and useful and of my own invention and desire to secure by Letters Patent is:

1. In an apparatus for sterilizing fruits, vegetables and other products, a container, a top therefor, said top having an opening therethrough for admission of the sterilizing medium to the interior of the container, and means rendered effective by the sterilizing medium for closing and sealing said opening without removal of the container from its sterilizing position.

2. In an apparatus for sterilizing fruits, vegetables and other products, a container, a top therefor, said top having an opening therethrough for admission of the sterilizing medium to the interior of the container, and means rendered operative by the sterilizing medium to close said opening.

3. In an apparatus for sterilizing fruits, vegetables and other products, a container, a top therefor, said top having an opening therethrough for admission of the sterilizing medium to the interior of the container, and means carried by said top and rendered operative by said sterilizing medium to close said opening.

4. In an apparatus for sterilizing fruits, vegetables and other products, a container, a top therefor, said top having an opening therethrough for admission of the sterilizing medium to the interior of the container, a disk applied to said top and having a valve portion to control said opening.

5. In an apparatus for sterilizing fruits, vegetables and other products, a container, a top therefor, said top having an opening therethrough for admission of the steriliz-

ing medium to the interior of the container, said top being flexible, and a relatively stiff member applied to said top and having a portion adapted to close said opening.

6. In an apparatus for sterilizing fruits, vegetables and other products, a container, a top therefor, said top having an opening therethrough for admission of the sterilizing medium to the interior of the container, a member applied to said top and having a portion arranged to close and seal said opening, and a sealing composition interposed between said top and member.

7. In an apparatus for sterilizing fruits, vegetables and other products, a container, a top therefor, said top having an opening therethrough for admission of the sterilizing medium to the interior of the container, a member with a disk applied to said top and having means to close said opening, said member and disk having interengaging portions to retain the said member in place.

8. In an apparatus for sterilizing fruits, vegetables and other products, a container, a top therefor, said top being flexible and having a central opening therethrough, a disk of relatively stiff material formed at its peripheral edge to engage and be retained by said top, said disk having a central portion to form a sealing closure for said opening.

9. In an apparatus for sterilizing fruits, vegetables and other products, a container, a top therefor, said top being flexible and having a central opening therethrough, a disk of relatively stiff material formed at its peripheral edge to engage and be retained by said top, said disk having a central portion to form a sealing closure for said opening, and a sealing composition interposed between said disk and top.

10. The method of canning, sterilizing and sealing fruits, vegetables, and other products in containers, which comprises subjecting an open container and its contents to the action of steam under pressure, causing said steam to sterilize the contents of said container, causing a reduction of pressure and utilizing said reduction in pressure to effect the sealing of the container.

11. The method of canning, sterilizing and sealing fruits, vegetables and other products in sealed containers which comprises subjecting a filled container having an open valve to the action of steam under pressure, permitting said steam to penetrate the interior of the can, and permitting reduction of pressure, and utilizing said reduction of pressure for closing and sealing said containers.

In testimony whereof I have hereunto set my hand on this 12th day of September, A. D., 1921.

WILLIAM B. FENN.