Dec. 17, 1963 S. A. PETERSON 3,114,644

HAM CANNING METHOD

Filed Sept. 16, 1959 2 Sheets-Sheet 1

Fig. 1.

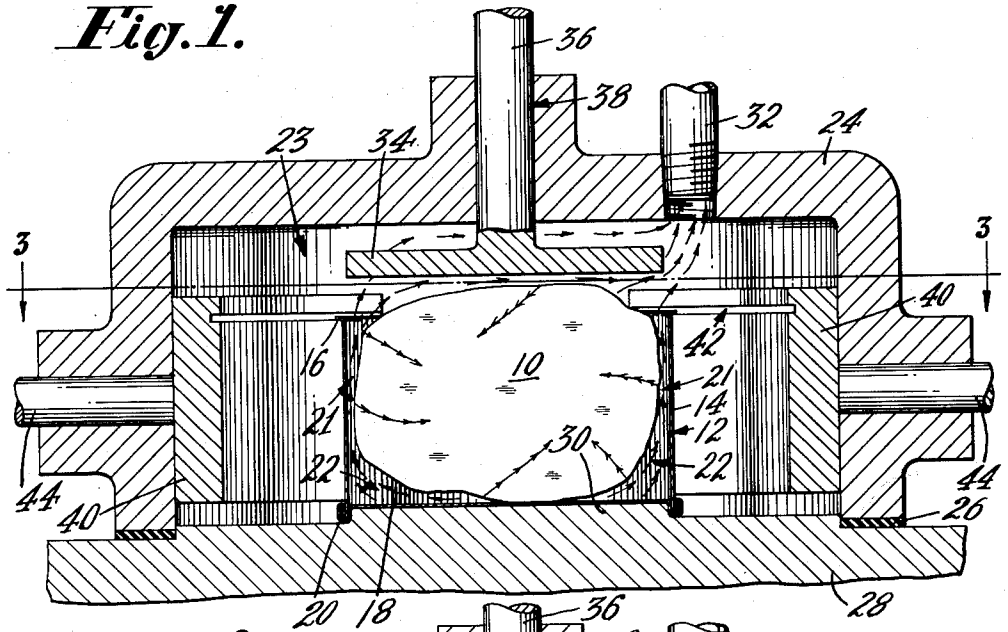
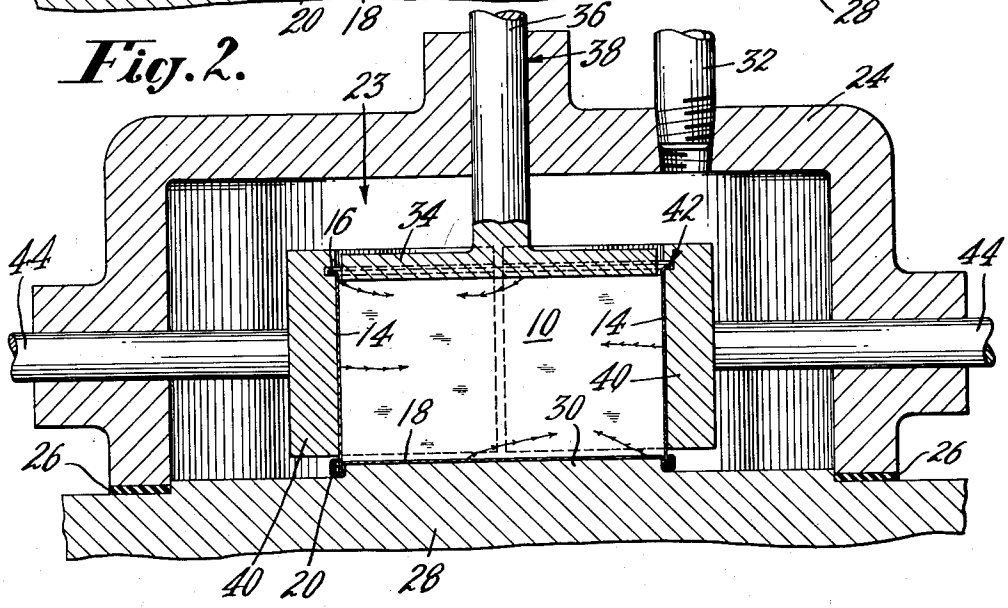


Fig. 2.



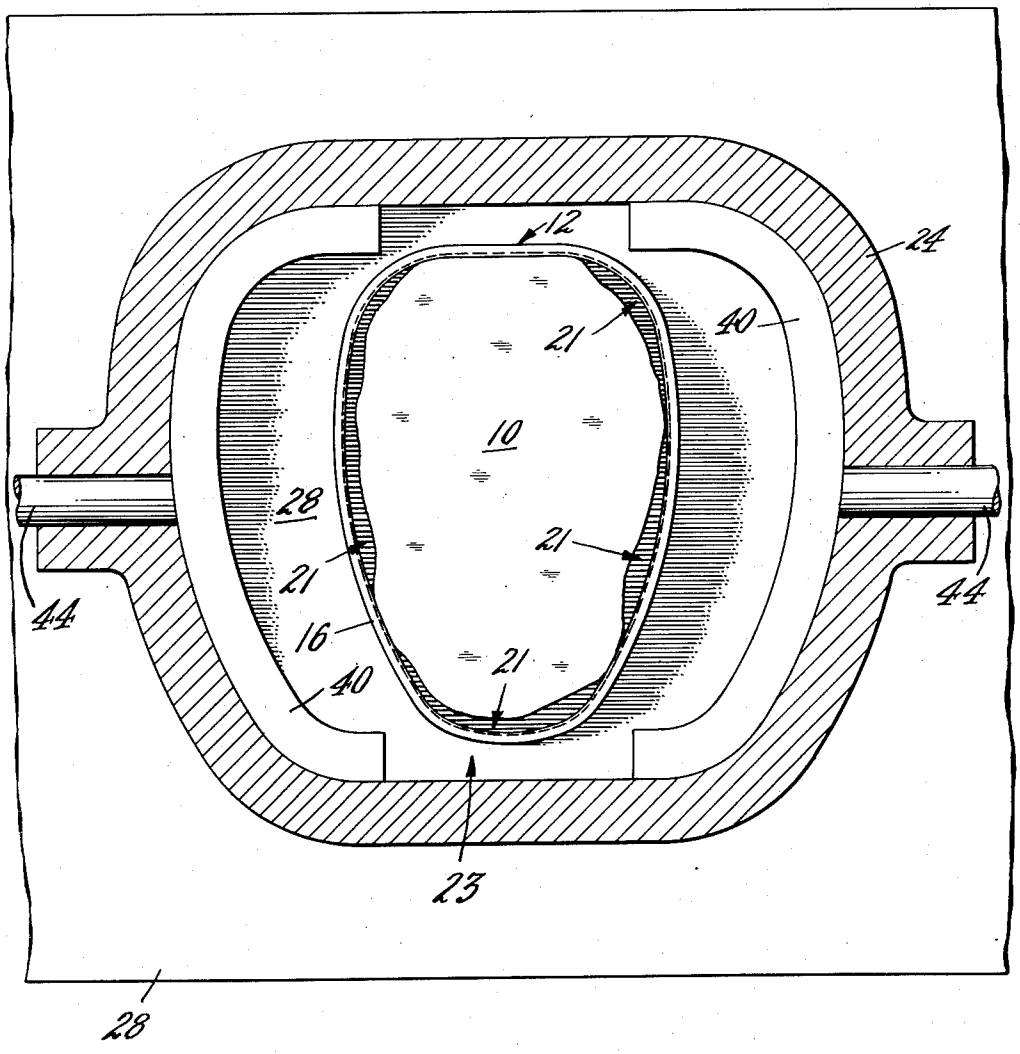
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Fig. 3.



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HAM CANNING METHOD

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1 Claim. (Cl. 99—187)

The present invention relates to canning methods, and has particular reference to a method of pressing whole hams or similar irregularly shaped chunks of meat into can bodies.

Reference is made to copending application Serial No. 840,318, filed September 16, 1959, now Patent 3,001,343, in the names of James Henry Gordon, Stanley Arthur Peterson and George Martin Stone and assigned to the instant assignee, which application is entitled "Canning Machine" and covers a machine wherein the method of the instant invention may be effectuated.

The cans ordinarily used for the canning of whole hams are generally formed with vertical tubular side walls having flat top and bottom ends secured thereto in conventional double seams. The cans are formed in various heights in order to accommodate variations in the size of the hams and are substantially ovate in horizontal cross-section. The hams themselves are quite irregular in shape, ranging from almost spherical to ellipsoidal or ovate and often have surface indentations or irregularities. Consequently, they do not readily fit completely into the can when they are first placed therein. Thus, it is necessary to force the ham into the can under substantial pressure in order to make it conform to the shape of the can.

It frequently happens that the shape of the ham is such that when it is inserted into the can, large air-filled spaces are initially present at the bottom of the can around the ham. Frequently too, the surface indentations of the ham are positioned at the bottom of the can. When the ham is then pressed into the can, usually by means of a hydraulically operated pressure plate which engages the upper side of the ham, the meat moves outwardly against the side wall of the can, sealing off the air between the ham and the can at the bottom of the can and in the surface indentations of the ham and preventing its escape. This entrapped air is compressed as the meat is forced downwardly by the pressure plate, thus preventing the ham from completely filling the can, and entrapped air expands somewhat when the pressure is relieved, thus causing the ham to move upwardly in the can. As a result, it is frequently necessary to use a can body of somewhat greater height than would otherwise be necessary to contain the volume of the ham.

The upward movement of the ham is generally insufficient to break the seal around the entrapped pockets of air, and thus the air remains in the can body, even though it is later closed under vacuum, with the result that the adjacent areas of the meat are discolored by the chemical reaction which takes place between the oxygen in this entrapped air and the ham after the can has been sealed.

The present invention overcomes these problems by utilizing the step of subjecting the can with the loosely fitting ham therein to a vacuum prior to the time pressure is applied to the ham to force it to take the shape of the can. As a result of this air evacuating step, the formation of air pockets is avoided, with the result that the ham is permitted to conform much more closely to the interior contour of the can and the undesirable oxidation discoloration is thus eliminated.

An object of the present invention therefore is the provision of a method of pressing hams wherein the entrapment of air at the bottom of the can is avoided.

Another object is the provision of a method of pressing whole hams which results in the formation of better shaped hams.

A further object is the provision of a method of pressing ham which results in material savings by reason of the fact that it permits the use of smaller height cans, since the cans are more solidly filled than heretofore.

Still another object is the provision of a method of pressing whole hams wherein the unsightly discoloration of surface portions of the hams in the subsequently sealed and processed cans is prevented by the elimination of air pockets beneath the pressed hams.

Numerous other objects and advantages of the invention will be apparent as it is better understood from the following description, which, taken in connection with the accompanying drawings, discloses a preferred embodiment thereof.

Referring to the drawings:

FIGURE 1 is a vertical section taken through the vacuum chamber of a ham pressing machine wherein the process of the instant invention is being performed, the view showing the air being withdrawn from a can body which contains a ham which fits loosely therein;

FIG. 2 is a view similar to FIG. 1, but illustrating the subsequent step of pressing the ham into contact with the interior walls of the evacuated can body; and

FIG. 3 is a view in horizontal section taken substantially along the line 3—3 of FIG. 1, and emphasizing how the ham is initially placed in the can body so that passageways leading to the potential air pockets at the bottom of the can are created.

As a preferred and exemplary embodiment of the instant invention, the drawings illustrate the instant method of pressing a whole, boned ham **10** into a can body **12**. As seen in FIGS. 1 and 3, the ham **10**, prior to the pressing operation, is irregular in shape. In practice, the hams being packed are never exactly the same in shape. The variations in shape are limitless, but in general it can be said that their shapes range from almost round to almost spheroidal or ovate. The hams are irregular in surface contour, sometimes being formed with deep or shallow surface indentations, and often are quite eccentric or lop-sided in shape.

The can body **12** is formed with a vertical side wall **14** which is substantially ovate in horizontal cross-section as best seen in FIG. 3, and is formed with a vertical side seam (not shown) in the usual manner. At its upper end, the side wall **14** is formed with an outwardly extending peripheral flange **16**. A flat bottom end **18** is secured to the lower end of the body **12** in a conventional double seam **20**.

As the first step of the instant invention, the ham is carefully placed loosely in position in the container body **12** in such a manner that one or more vertical open passageways **21** surrounding the ham lead from the upper, open end of the can to its closed bottom end, so that the large air spaces **22**, which are present in the bottom corner portions of the can because of the difference in shape between the ham and the can body, are not sealed off by the engagement between the ham and the can side wall **14**.

After the ham **10** has been thus positioned in the can body **12**, the can body **12** is subjected to a strong vacuum in order to remove all of the air which is present within the body. This is preferably done by positioning the filled can body **12** within a vacuum chamber **23** which is formed by a bell or housing **24**, the lower end of which carries a sealing gasket **26** which engages against a horizontal plate **28**. The plate **28** is preferably formed with a raised locating platform **30** which snugly fits within the bottom double seam **20** and flatly engages against the undersurface of the can end **18**.

The bell 24 and the plate 28 are vertically movable relative to each other to permit the insertion and removal of the can body 12 and the ham 10 contained therein.

The vacuum is drawn on the interior of the chamber 23 through a vacuum pipe 32 which is connected to any suitable source of vacuum, such as a vacuum tank or pump (not shown). Because of the existence of the passageways 21, the spaces 22 at the bottom of the can body 12 are in communication with the vacuum within the chamber 22 and the air is substantially completely removed from within the can body 12. The can body 12 need not be supported against collapse during the vacuumizing step because the pressures on both sides of the body wall 14 is equalized.

After the air has thus been removed or exhausted from the can body 12 and vacuum chamber 23, a flat presser plate 34 is moved downwardly against the top of the ham 10 under sufficient pressure to force the ham to take the shape of the inside of the can body 12, as seen in FIG. 2. The presser plate 34 is mounted at the lower end of a rod 36 and is substantially similar in outline to the cross-sectional shape of the body 12, being only slightly smaller in its horizontal dimensions so that it fits into the body without touching the body side wall 14. The rod 36 extends through an opening 38 formed in the top of the vacuum bell 24 and is preferably connected at its upper end to the piston of a hydraulic pressure cylinder (not shown) or other pressure means which is capable of exerting a total pressure of at least 1000 lbs. against the ham, when used in conjunction with a No. 4 base ham can.

As can be seen in FIG. 2, the evacuation of the air from the air spaces 22 and passageways 21 prevents the formation of sealed air pockets in the lower part of the can body 12, with the result that the ham is pressed into intimate contact with the side wall 14 and bottom end 18 of the can body 12. The ham thus conforms almost exactly to the interior contour of the can body 12, and waste space within the can body is substantially eliminated.

During the application of pressure to the ham by the presser plate 34, the can body 12 is supported against bursting and/or deformation by a pair of support molds 40 which move into intimate contact with the body side wall 14 prior to the pressing operation. The molds 40 contact the side wall 14 for substantially its full height above the bottom seam 20, and are provided with aligned grooves 42 which receive the outwardly projecting body flange 16. Each mold 40 is mounted for horizontal movement on a rod 44 which is connected to any suitable actuating means, such as a hydraulically actuated piston (not shown), which moves the mold 40 into contact with the body wall 14 and holds it in non-yielding contact

therewith to back up the body wall 14 against the pressure exerted by the presser plate 34. During the pressing operation, the can bottom end 18 is backed up by the raised platform 30.

At the completion of the pressing operation, the vacuum in the chamber 22 is shut off and the chamber is opened to atmospheric pressure, preferably by means of a valve (not shown) located in the vacuum pipe 32. The molds 40 and presser plate 34 are then retracted to the inoperative position of FIG. 1 and the bell 24 and plate 28 separated to permit removal of the filled can body 12.

Upon this release of the presser plate pressure, the ham expands slightly, but is kept in close contact with the body walls by the atmospheric pressure which is exerted against its exposed upper surface.

After removal, the filled can body 12 is closed and its contents heat processed in the usual manner.

It is thought that the invention and many of its attendant advantages will be understood from the foregoing description, and it will be apparent that various changes may be made in the steps of the method described and their order of accomplishment without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the method hereinbefore described being merely a preferred embodiment thereof.

I claim:

The method of packing a chunk of a whole ham into an open can body so as to prevent the entrapping of air between the ham and can body wherein the ham has an irregular contour relative to the can body interior, comprising the steps of:

arranging the ham loosely within the can body to provide open communication between the open end of the can body and areas within the can body where the ham is spaced inwardly therefrom,

subjecting the interior of the can body to a vacuum to evacuate the air from said areas through the open can body end, thereby eliminating the presence of air adjacent said ham throughout the can,

and pressing said ham into substantially intimate contact with the interior of said can body without causing any substantial deformation of the can body while continuing said vacuumizing step to thereby prevent the trapping of air between said ham and said can body, whereby subsequent discoloration of the ham by entrapped air is prevented.

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