Feb. 21, 1933. E. D. ANDERSON 1,898,925

METHOD OF FORMING EASY OPENING CONTAINERS

Filed July 3, 1929

Fig. 1.

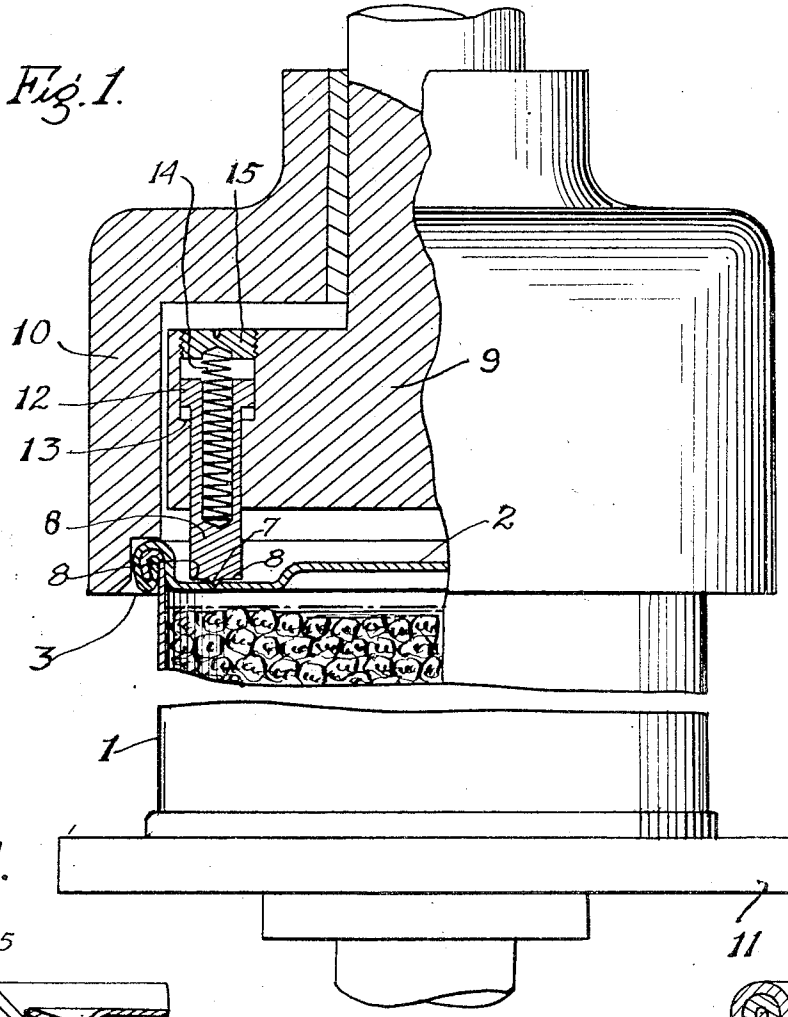


Fig. 2.

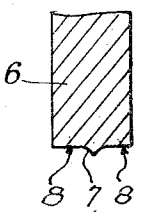


Fig. 4.

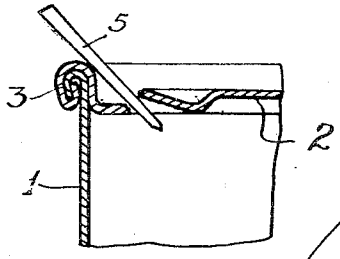


Fig. 5.

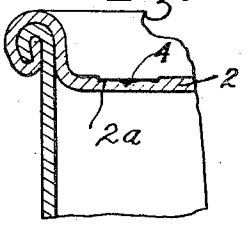


Fig. 3.

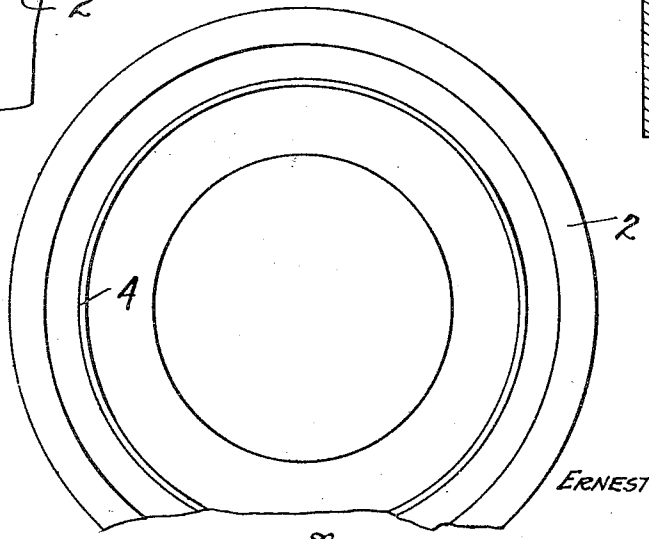
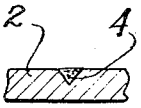


Fig. 3a.



Inventor

ERNEST D. ANDERSON

By Sturtevant & Mason

Attorneys

Patented Feb. 21, 1933

1,898,925

UNITED STATES PATENT OFFICE

ERNEST D. ANDERSON, OF PASSAIC, NEW JERSEY, ASSIGNOR TO CONTINENTAL CAN COMPANY, INC., OF NEW YORK, N. Y., A CORPORATION OF NEW YORK

METHOD OF FORMING EASY OPENING CONTAINERS

Application filed July 3, 1929. Serial No. 375,857.

The invention relates to new and useful improvements in a method of forming an easy opening container. It is a well known practice to score the metal of a container body or a container end so as to render the same easily ruptured along the score line for opening. This scoring of the metal weakens the metal and this is what produces the easy opening of the container. When a food product is processed in a container after the container is closed there are severe strains placed upon the metal parts incident to the heating of the contents of the container to a high temperature. If the wall of the container is scored or weakened to too great an extent, the strains incident to processing are liable to rupture the metal and break the seal of the container.

An object of the present invention is to provide a method of producing an easy opening container wherein the scoring or otherwise weakening of the wall of the container to facilitate the easy rupturing of the same does not in any way interfere with the proper processing of the food product and neither does the proper processing of the food product in any way limit the extent to which the wall of the container is weakened.

In the drawing which shows more or less diagrammatically an easy opening container produced by my improved method:—

Fig. 1 is a view partly in side elevation and partly in section showing a container and the scoring of the same after it has been hermetically closed and processed.

Fig. 2 is a detail in vertical section through the active end of the scoring tool.

Fig. 3 is a plan view of the container after it is scored.

Fig. 3*a* is a vertical enlarged section through the scored wall of the container, showing the channel formed by scoring as filled with enamel.

Fig. 4 is a vertical sectional view through a portion of the container showing a tool applied for rupturing the metal for removing the section of the wall within the score line.

Fig. 5 is a view in vertical section through a portion of the container, showing a slightly modified form of the invention.

The invention is directed to a method of forming an easy opening container. The container consists of a body portion of the usual character to which the ends are secured by double seaming or in some other suitable way. This container is made easy to open by weakening the wall of the container along a predetermined line, thus providing a portion which can be easily removed by the rupturing of the wall along said weakened line. The essential step in my new method consists in weakening the wall of the container along a predetermined line after the container has been closed with the food product therein and the food product processed. When the container is closed and processed before the wall is weakened there is no danger of the strains incident to processing breaking the wall at the weakened line.

The invention will possibly be better understood by a detailed reference to the drawing. A container made easy to open by my improved method is shown in the drawing as consisting of a body portion 1 to which an end 2 has been attached by a double seam 3. After the food product has been placed in the container and the end secured thereto it is then processed. The wall of the container is of uniform strength throughout and the strains incident to processing do not in any way rupture the walls. After the container is closed and processed the wall thereof is then weakened along a predetermined line so that it may be easily ruptured. This weakening of the body wall may be accomplished in any desired way; in the present illustrated embodiment of the invention a cutting tool is used to cut a channel into the wall of the container, thus scoring the same.

In the drawing the end wall of the container is shown as scored and scored at a distance inward from the double seam. It will be understood, of course, that the channel in the wall may be made at any place in the end within the double seam or at the double seam. It may be made also in the body wall; the essential feature is that the wall of the container which is to be ruptured shall be channeled or otherwise weakened after the container is filled, closed and processed.

The scoring tool as shown in the drawing

is indicated at 6. This scoring tool has a cutting tooth 7 and at each side of the cutting tooth 7 there are flat faces 8, 8 which are substantially horizontal. The scoring tool 6 is carried by a rotating head 9. Surrounding the head 9 is a centering chuck 10. This centering chuck 10 has a recessed portion at its lower end which receives the end of the container and centers said container relative to the chuck. The chuck is centered relative to the rotating head 9. The scoring tool 6 is mounted in said rotating head at one side of the center of rotation.

Said head is provided with a seating recess for the scoring tool. This recess is formed with a shoulder 13 and the scoring tool has an enlarged head 12 which is adapted to engage said shoulder when the head is raised. A spring 14 seated in a recess in the scoring tool bears against a removable abutment 15 and normally presses the scoring tool in a downward direction. When the head is lowered onto the container the scoring tool will be held pressed by the spring in yielding engagement with the end of the container. As the head is rotated the cutting tool 7 will cut the channel 4 in the end 2. The flat faces 8, 8 at the sides of the cutting tooth 7 will limit the extent to which the cutting tooth will cut into the metal.

The metal forming the container wall is of substantially uniform thickness, and, therefore, when the depth of the channel is made uniform by the limiting flat faces 8, 8 of the cutting tooth this will produce a weakened line of scoring wherein the metal left which joins the parts is of substantially uniform thickness.

In Fig. 5 of the drawing, I have shown the metal forming the end before it is attached to the container body as sized throughout the region 2*a* so as to insure that the metal is of uniform thickness in the region where the channel is to be cut to weaken the wall. By this sizing of the metal prior to the placing of the end on the container and prior to the scoring of the same, the amount of metal left holding the parts at the score line will be of uniform thickness and the channel, therefore, may be cut to a greater depth and the wall weakened to a greater extent. Inasmuch as the container is not subjected to the intense strains incident to processing after the channel is formed which weakens the wall of the container, this channel may be cut to a greater depth and thus the line where the metal is to be ruptured, weakened to a greater extent. This all contributes to the making of a very easy opening container.

A sharp tool of any character, such as an ice pick or the like, may be applied to the wall of the container at the score line and by a slight pressure the metal ruptured and the section of the wall within the score line removed.

In Fig. 4 the tool is shown applied and the metal ruptured. When this channel is cut in the end to weaken the wall for easy opening, the channel extends through the tin surface and into the steel core of the tin. It is preferred, therefore, to fill the channel with paint, enamel or any suitable non-metallic material, which does not in any way strengthen the weakened portion of the metal, but which does prevent the corroding of the exposed steel parts.

It will be understood, of course, that any suitable way may be provided for scoring the metal or for weakening the metal without cutting the same. The essential feature, however, consists in the weakening of the metal after the container is closed and processed, thus producing a weakened line along which the metal may be easily ruptured and a section removed for rendering the contents of the container accessible.

It will also be understood that while I have referred to a method for forming an easy opening container for a food product, the container may be used for packaging any material and the term "food" is used merely in a descriptive sense and does not limit the use of the invention.

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

The method of forming an easy opening hermetically sealed metal container comprising hermetically sealing the metal container with the food product therein, processing the food product in the container after it is sealed and after processing cutting a score line in the outer face of the end wall of the container to define a section which may be easily removed by rupturing the metal along the score line.

In testimony whereof, I affix my signature.

ERNEST D. ANDERSON.