Feb. 29, 1944. T. F. MAKOWSKI 2,343,197

VACUUM SHIELD FOR CONTAINERS

Filed Feb. 15, 1940

Fig. 1

Prior Art

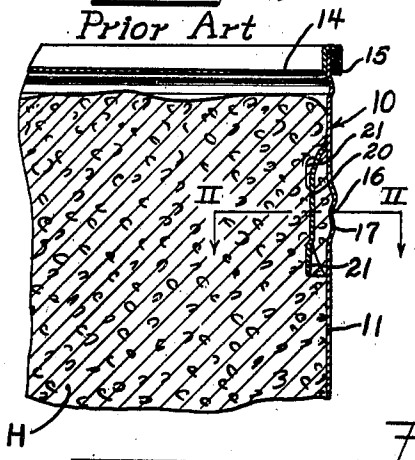


Fig. 3

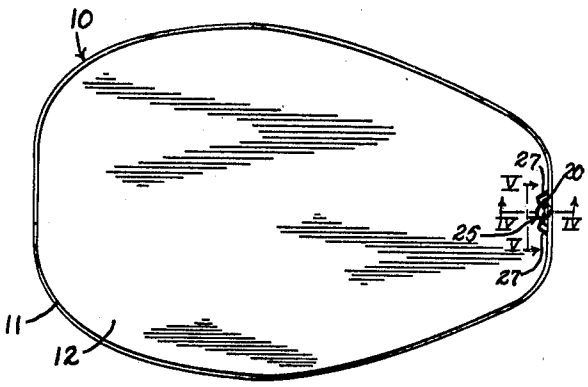


Fig. 2

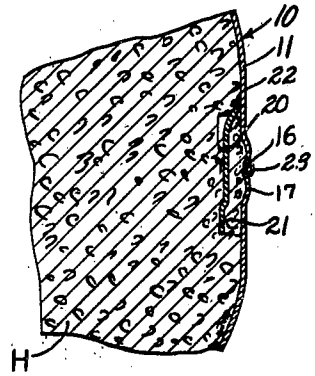


Fig. 4

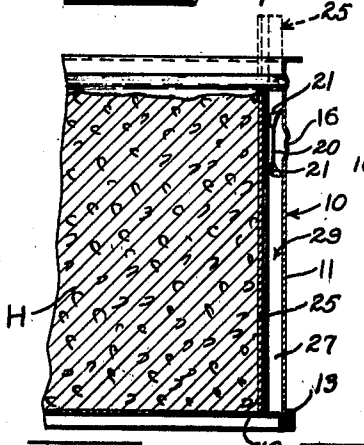


Fig. 5

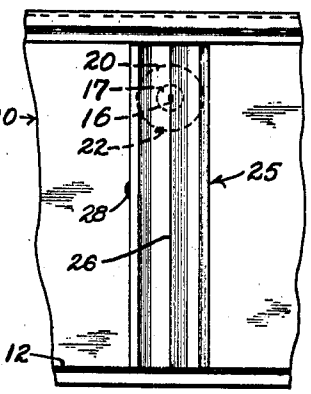


Fig. 6

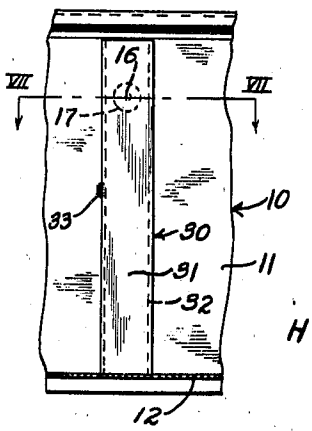


Fig. 8

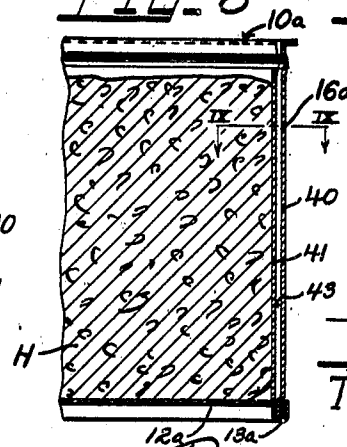


Fig. 9

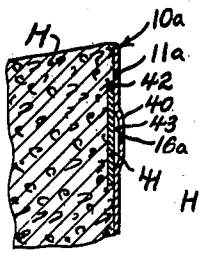
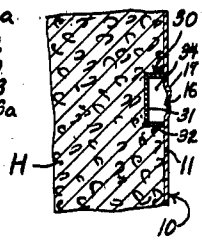


Fig. 7



Inventor

Thaddeus F. Makowski

by Charles O. Hill Attys

Patented Feb. 29, 1944

2,343,197

UNITED STATES PATENT OFFICE

2,343,197

VACUUM SHIELD FOR CONTAINERS

Thaddeus F. Makowski, Cicero, Ill.

Application February 15, 1940, Serial No. 319,016

1 Claim. (Cl. 220—44)

This invention relates to containers adapted to be evacuated and having shields therein covering the vacuum hole to eliminate extrusion of the contents of the can through the hole during the evacuation process.

More specifically, the invention relates to elongated metal shields for the vacuum ports of metal cans, which shields are loosely fitted into or affixed to an inner wall of the can for surrounding the port to define an elongated passageway and trap in the can communicating with the interior thereof at points spaced widely from the port.

The hermetic sealing of evacuated packages such as cans and the like is quite difficult, because the package must contain at least a small opening for connection with a source of suction, and this opening must be immediately sealed before the suction connection is broken in order that air will not enter the evacuated package. The contents of the package frequently clog up the opening thus slowing up or stopping the evacuation process. When the package assumes the form of a metal can, the opening therein is usually sealed with a dab of solder immediately after the can is evacuated and extrusion of material from the interior of the can through the opening presents a serious problem since the solder will not stick to the can and will not seal the opening.

It has been proposed to surround the opening or vacuum port of a metal can with a stamped metal rosette disposed in the can around the vacuum port and held in position by a dab of solder. These rosettes are in the form of concave circular buttons or cups having radial flutes stamped therein to provide passages joining the interior of the can with the vacuum port. However these rosettes are buried in the contents of the can and frequently only a small portion of the can can be evacuated because the drawing of air out of the vacuum port will cause the contents of the can to tightly surround the rosettes thus forming a seal and preventing the withdrawal of air from remote portions of the can.

The passageways provided by the flutes in the rosettes frequently receive materials in the can therethrough during the evacuation process so that these materials not only fill up the rosettes but also extrude through the vacuum ports.

Therefore, the heretofore proposed rosette type shields have not been satisfactory.

The present invention now provides an elongated slide or shield adapted to be mounted in a package to be evacuated and surround or cover the vacuum port to define an elongated localized passageway communicating with the interior of the can at widely spaced points.

The shields of this invention are preferably mounted vertically in a metal can and extend from the top to the bottom of the can along a side wall of the can. An elongated vertical localized passageway is thus formed in the can and has full communication with the top and bottom of the can. The shield surrounds the vacuum port, and any solid or liquid material entering the passageway from the contents of the can will fall by gravity to the bottom of the passageway instead of being extruded out of the vacuum port. The elongated shields of this invention therefore provide traps protecting the vacuum port from contact with the contents of the can. At the same time, however, the shields are in communication with the interior of the can and air can be withdrawn from the can in a more rapid manner than was heretofore possible without extrusion of liquids or solids from the can. The shields of this invention make possible the creation of higher vacuum inside of containers and evacuated containers can be hermetically sealed without difficulty.

The invention will hereinafter be specifically described in connection with metal cans for boneless ham of the type commonly known as "Polish" ham. It should be understood, however, that the invention is not limited to such use and has wide application in the art.

It is an object of the invention to provide rigid elongated shields for the vacuum ports of packages adapted to be hermetically sealed.

A further object of the invention is to provide an elongated metal shield adapted to form a localized passageway in a metal can to protect a vacuum port in the can from contact with the contents of the can.

A specific object of the invention is to provide a metal strip having solid side walls connected by a base to hold the base in spaced relation from the side wall of a metal can and bridge a vacuum port in the can to protect the port.

Another specific object of the invention is to provide a metal vacuum shield for a ham container to protect the vacuum port of the container from ham juices and the like while, at the same time, presenting an unrestricted air passageway to the vacuum port.

A further specific object of the invention is to provide a metal can having a vacuum port in a side wall thereof with an elongated vertically disposed shield surrounding the port and defin-

ing a localized air passageway communicating with the top of the can.

Other and further objects of the invention will become apparent to those skilled in the art from the following detailed description of the annexed sheet of drawings which discloses the prior art rosette type shields and several embodiments of the improved vacuum shields of this invention.

On the drawing:

Figure 1 is a fragmentary vertical cross-sectional view of a metal can containing a ham and equipped with a rosette to protect the vacuum port in the side wall of the can.

Figure 2 is a fragmentary horizontal cross-sectional view taken along the line II—II of Figure 1.

Figure 3 is a top plan view of an open ham can equipped with both the prior art rosette type shield and the elongated shield or slide of this invention.

Figure 4 is an enlarged vertical cross-sectional view taken along the line IV—IV of Figure 3.

Figure 5 is a fragmentary inside elevational view taken along the line V—V of Figure 3.

Figure 6 is an inside fragmentary elevational view taken through a ham can equipped with a modified shield according to this invention.

Figure 7 is a horizontal cross-sectional view taken along the line VII—VII of Figure 6.

Figure 8 is a fragmentary vertical cross-sectional view taken through a ham can having a modified vacuum port shield arrangement according to this invention.

Figure 9 is a horizontal cross-sectional view taken along the line IX—IX of Figure 8.

As shown on the drawing:

In Figures 1 to 7 inclusive the reference numeral 10 designates generally a metal container for a boneless ham H. The metal container 10 has a vertical side wall 11 shaped in the general configuration of a ham as shown in Figure 3. A flat bottom 12 is provided for the can and is joined with the side wall through a sealed crimped seam 13 (Figure 4). The top of the container is closed with a cover 14 seated in the open top of the side wall 11 and sealed in position by means of a crimped or rolled seam 15 (Figure 1).

The side wall 11 of the container 10 has a small hole or port 16 therethrough in the center of a circular bead 17 embossed on the wall.

The bead 17 defines a pit around the port 16 for receiving solder to seal the port after the evacuation process.

The boneless ham H is shaped to the can size by being pressed in the can before the cover 14 is mounted in position. Pressures of the order of 250 lbs. are used to force the ham into the can.

After the ham is pressed in position in the can, the top of the ham is partially covered with gelatin, flavoring materials and the like. The cover 14 is then mounted in the open top of the can as shown in Figure 1 and rolled in position as shown at 15. The vacuum port 16 is next connected with a source of suction and attempt made to evacuate the interior of the can. After the can is evacuated the pit provided by the bead 17 around the opening 16 is filled with solder to hermetically seal the can.

The hermetically sealed can is placed in a cooker to cook the ham.

Due to the fact that the ham H surrounds the hole 16 on the inside of the can, it is quite difficult to evacuate the can and even more difficult to obtain a hermetic seal because ham juices and the like will extrude through the hole thereby making it impossible to obtain a good solder joint.

It has been the practice to attempt to protect the vacuum port 16 by means of a rosette 20 (Figures 1 to 4) mounted in the can around the hole 16. The rosette 20 was cup-shaped to provide a localized circular recess in the interior of the can and flutes 21 were stamped around the periphery of the rosette to join the recess with the interior of the can. The rosette was held in position by a dab of solder 22.

While these rosettes afforded some protection for the vacuum hole 16, the circular recess provided thereby was frequently sealed from the interior of the can by the ham H being pressed around the entire periphery of the rosette. As a result, air would only be withdrawn from the localized recess and the main interior of the can would not be evacuated. In addition, the flutes 21 would allow the passage of ham juices, fats and the like into the recess to substantially fill the same as shown in Figures 1 and 2. The withdrawal of air through the vacuum port 16 would result in an extrusion of the ham materials as shown at 23 in Figure 2. This would, of course, prevent a good hermetic seal.

The vacuum shields of this invention are readily adapted for use in cans already equipped with rosettes 20 as shown in Figures 3 to 5. However, it is obvious that the shields of this invention can totally replace the rosettes.

As shown in Figures 3 to 5, an elongated metal strip 25 is inserted in the can 10 around the rosette 20 and extends from the bottom 12 of the can to about ⅛" beneath the top 14 of the can. As indicated in Figure 4, this strip 25 can be slid into position after the ham H is pressed in the can. The strip 25 has a corrugated back wall 26 and solid side walls or legs 27 contacting the side wall 11 of the can along their entire length. The strip 25 is sufficiently wide so that the legs 27 will straddle the rosette 20.

As indicated in Figure 5, the strip 25 can be soldered in the can by a dab of solder 28 joining one leg 27 with the side wall 11 of the can. The strip 25 is obviously soldered in position before the ham is pressed into the can. Alternatively, as explained above, the strip can be slid into position after the ham is pressed into the can as indicated in Figure 4.

The elongated metal strip 25 provides a vertical localized passageway 29 communicating with the top portion of the can at its top end. Since the strip is only united with the can by means of a dab of solder such as 28 or by means of the ham H pressing thereagainst, as indicated in Figure 4, the entire length of the passageway 29 has some communication with the interior of the can. Likewise the bottom of the passageway communicates with the interior of the can, because an air-tight seal is neither provided at the bottom of the passageway nor along the sides of the passageway.

The localized passageway 29 therefore has free communication with the top portion of the closed can and restricted communication with the bottom portion of the can as well as along the main body portion of the can as explained above. When the vacuum hole 16 is connected with a source of suction, air will readily flow into the passageway 29 through the open top thereof as well as along the sides and bottom thereof. However,

the points of entry of the air into the passageway 29 are always remote from the opening 16 so that any liquids or solids entering the passageway will drop by gravity to the bottom thereof and will not reach the opening 16.

As a result, the elongated shields or strips 25 have made possible a more rapid evacuation of ham containers than was ever heretofore attained. At the same time, the evacuation is more complete, and vacuums up to 29" are obtained when, with the use of the rosettes alone, it was only heretofore possible to obtain a vacuum of 22".

Since any juices or solid materials entering the passageway 29 cannot reach the vacuum port 16, the pit around the port provided by the bead 17 is not contaminated, and the solder joint efficiently seals the container.

If the containers are not already equipped with rosettes such as 20, the shields of this invention can be narrower than the shields 25 as shown in Figures 3 to 5, because the same do not need to straddle an inserted rosette. As shown in Figures 6 and 7, therefore, a channel-shaped narrow gauge strip 30 is provided to bridge the vacuum port 16 on the inside of the container. This strip 30 extends vertically from the bottom 12 of the can to within about ⅛" of the top of the can. It consists of a flat, solid back wall 31 and solid side legs 32. The strip 30 can be held in position by means of a dab of solder 33. It provides a localized open topped elongated passageway 34. The back wall 31 is not corrugated as is the back wall 26 of the strip 25, since it is not as wide as the back wall 26 and does not need to be rigidified by corrugations.

In Figures 8 and 9 a modified container 10a is provided. This container is substantially identical with the container 10 described in Figures 1 to 7, but the side wall 11a thereof has an outturned vertical flute 40 pressed thereon. The vacuum hole 16a is formed through the flute 40.

According to this invention, a flat metal strip 41 is mounted in the container 10a and bridges the recess provided by the flute 40. A dab of solder 42 can hold the plate 41 in position over the flute 40. The plate 41, as shown in Figure 8, extends from the bottom 12a of the container into closely spaced relation with the top of the container. A localized passageway 43 is thus provided in the container. The air in the main interior of the can communicates with this localized passageway and can be rapidly withdrawn from the interior of the can by connecting the port 16a to a source of suction. The plate 41 prevents extrusion of ham juices or other extraneous matter through the port.

The elongated shields of this invention may assume many forms. For example, semi-cylindrical shields can be used in place of the U-shaped or channel shaped shields 25 and 30. Likewise a V-shaped strip could be used. As indicated in Figures 8 and 9, flat plates can be used by embossing a flute on the container itself.

From the above descriptions, it should be understood that this invention now provides an elongated shield for evacuated hermetically sealed packages to protect the vacuum port of the package from contact with extraneous matter. The shields of this invention form localized recesses extending vertically from the bottom of the container into closely spaced relation from the top of the container. The localized recesses act as traps for solids or liquids entering therein and prevent contact of these materials with the vacuum ports.

The vacuum shields of this invention make possible a more rapid evacuation of containers, as well as insure the formation of tight hermetic seals. The cans can be evacuated to a higher degree than was heretofore possible. The more highly evacuated container can thus be dipped in boiling water for a longer period of time, thereby insuring a thorough cooking of the contents of the container.

It will, of course, be understood that various details of construction may be varied through a wide range without departing from the principles of this invention and it is, therefore, not the purpose to limit the patent granted hereon otherwise than necessitated by the scope of the appended claim.

I claim as my invention:

In combination with a metal can having a vacuum port adapted to be hermetically sealed, a rigid metal strip extending from the top to the bottom of the can and having legs contacting the can on each side of said port, together with a corrugated back wall for engaging contents of the can, said strip defining with the adjacent wall of the can an elongated open topped passageway throughout the body of the can and communicating with the interior of the can only at points widely spaced from the vacuum port whereby said port is protected from the contents of the can.

THADDEUS F. MAKOWSKI.