METHOD OF FORMING HERMETIC CLOSURES.

UNITED STATES PATENT OFFICE.


Method of Forming Hermetic Closures.

1,332,838.


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To all whom it may concern:

Be it known that I, John G. Hodgson, a citizen of the United States, residing at Maywood, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Methods of Forming Hermetic Closures, of which the following is a specification.

My invention relates to the manufacture and use of containers and the like and more particularly to the manufacture and use of sheet metal containers in the canning industry. In canning vegetables and other food stuffs of various kinds it is a custom to cook the materials after they have been placed in the cans in which they are to be sold to the trade. In order that the materials being canned may be properly preserved, the cans are permanently and hermetically closed during or immediately after the cooking process in order to prevent the entrance of germs and ferments.

It has frequently been the custom prior to my invention to permanently close the cans either by seaming or by plugging vents immediately upon the termination of the cooking step and to then lacquer the seam or closed vents while the can is still extremely hot and before any contraction of the material takes place. This process has been found efficient when used in canning food stuffs wherein the period of heating or cooking need not be accurately determined and observed. In the canning of peas and other vegetables, however, where the quality of the cooked product depends in great degree upon the sudden cooling of the can and consequent termination of the cooking step, the method has not been found so satisfactory, in cooking peas and the like it is the custom to immerse the cans in cool or cold water as soon as they are received from the cooking chamber, insufficient time being given to apply the coating of lacquer.

It is a purpose of this invention to provide a method for preparing the can, and hermetically sealing the can during the cooking or processing operation, so that it will not be necessary to wait until after the can has come from the cooking chamber.

It is a principal object of the present invention to provide an improved hermetic sealing method, so that the seal automatically applies itself during the processing of a container or can.

A further object of the invention is to cause the forming of a hermetic seal between the can body and closure or end that no manipulation by the packer or canner is required other than seaming the container in the ordinary manner.

Other objects and advantages of the invention will be apparent as it is better understood from the following description when considered in connection with the accompanying drawing illustrating a preferred manner of carrying it into effect.

Referring to the drawing:

Figure 1 shows a can or container for use according to my invention the same being hermetically sealed.

Fig. 2 is a side elevation of the can body.

Fig. 3 is a transverse section of an end or closure for the same and;

Fig. 4 is a partial transverse sectional view showing the closure and end of the body seamed together.

For the purpose of illustrating my invention I have illustrated it in connection with a can of an ordinary and well known type in which the ends and body are joined by a double seam.

The can body 5 in the present instance is provided with outwardly extending flanged end edges 6 of the ordinary type adapted to be turned over, as seen in Fig. 4, in forming the double seam. On the under side of these flanges and extending longitudinally of the body is painted or otherwise provided a film or coating 7 of some gummy material adapted to expand and soften under heat. The extent of this film or coating is preferably such that when the seam is formed the coating will terminate at or about the seam, as seen at 8 in Fig. 4. The cover or end 9 in the present instance is provided with an outwardly extending flange 10 turned down slightly at its edge 11 in the ordinary manner. The usual packing 12 is provided on the under side of the flange 10. On the upper surface of this flange and adjacent its edge is provided, if desired, a coating or film 13 of material similar to that forming the coating or film 7. However, it will be manifest, as the invention is better understood, that either the film 7 or the film 13 may be omitted. Films 7 and 13, after
being placed on the can, are permitted to dry and they form little more than a coat
of lacquer of the ordinary thickness in their dried condition. When the can is sealed
will be noted that the coating 7 on the can body is brought opposite the adjacent sur-
facing of the cover and the coating 13, if used, is brought opposite the adjacent sur-
face of the can body. These coatings are
provided and are substantially dried before
the ends are secured to the body and they
may be provided, if desired, on the blanks
before the ends or body are formed. When
the can has been sealed and is hot from
processing or in processing, the lacquer or
sealing material softens and swells and
forms a film adhering to the adjacent sur-
facing of the body and cover to form a
hermetic seal.

The manner of forming the double seam
is or may be such that horizontal pressure
is thereby applied to the seam so as to
tightly compress both the paper liner and
cement, the said sealing elements being
ordinarily located in the seam one outside
of the other with the body flange 6 inter-
posed between them.

In practice it is customary to secure one
end to the can body at the can factory and
to supply the other end free of the can to
subsequently be positioned and attached by
the packer or canner.

Where cans are provided according to
my invention one end may be completely
sealed in the manner described and the can
furnished with a lacquer coating or film at
the other end of the can body or on the
outer surface of the other end closure or
both, it only being necessary for the canner
or packer to fill the can with its contents
and process it in the usual manner, the re-
sulting product being hermetically sealed
without the necessity of subsequently lac-
quering the can in the manner earlier de-
scribed. Such a can filled and sealed in
proper manner will hide completely the
lacquer film and an article more pleasing in
appearance is thereby produced than is pos-
sible where the lacquer is painted over the
sealed ends after processing.

The packing 12 is or may be a paper ring
liner. The film or coating 7 may be applied
with some accuracy so that after the seal
has been formed said film will be entirely
embraced within the seam and will not ap-
pear at all on the surface of the body out-
side of the seam. During the processing
operation the two films 7 and 13 unite, so
that a single film is in effect formed the
inner side of which is hermetically united
with the body of the container and the out-
ner side of which is hermetically united
with the inturned edge of the cover, and
the middle portion of which consists of the
united and in effect integral film bodies.

The films 7 and 13 or either of them
 singly I have termed herein as a lacquer.
It might be stated, however, that I have
only used this term relatively, it may be a
lacquer of low melting point, or it may be a
fused cement. It is preferably applied
to the flange surfaces in a liquid state and
dried by heat or otherwise, and is then fused
by the processing heat and caused to her-
metically seal the joint in which it is in-
corporated.

It is also to be noted that I provide two
distinct and separably efficient sealing means.
The first comprising a sealing liner inter-
posed between the under surface of the can
cover flange, and the upper surface of the
can body flange; and the second a sealing
medium interposed between the wall of the
can body and the outer surface of the can
cover flange; this latter sealing medium
providing a hermetic joint in a portion of
the double seam that has not been sealed
hermetically heretofore as I have men-
tioned, by applying a sealing compound
after the seam was finally completed.

The operation of double sealing and
finally closing a double seam, containing a
pulping, into a hermetic joint, requires so
much pressure that the metallic surfaces in
the seam are pressed so tightly together that
it is next to impossible to apply a sealing
compound to the interstices of a tightly
rolled seam and have it penetrate between
the surfaces it is desired to seal, the result
being that the seal is made on the outside
and the sealing medium is more or less ex-
posed to abrasion or mutilation from the
ordinary handling of canned goods.

The fusible seal I apply, however, is in-
corporated in the seam during its formation, and when the material is fused by the pro-
cessing heat, it instantly unites with the sur-
faces between which it is lodged and pro-
duces a hermetic joint separate and distinct
from the regular hermetic joint formed by
the means of the sealing liner interposed in the
seam in the ordinary manner.

A suitable material to act as a lacquer
could be made of water white resin stiffened
with flux to ten per cent. of sandarac to
which would be added carnauba wax and
about five per cent. of castor oil.

A suitable fusible cement or gum might
be made of chicle mixed with some waxy
material similar to a high melting paraffin
or esmonta wax and filled with magnesium
oxide or magnesium carbonate or mixtures
of the two, or a mixture of gelatin and
glycerin in suitable proportions and prop-
erly compounded will form a rubbery com-
position that will fuse under processing
heat.

This application is a division of my ap-
plication, Serial No. 861,534, filed Septem-
bber 14th, 1914.
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 procedure, without departing from the spirit and scope of the invention or sacrificing any of its material advantages.

What is claimed is:

1. A method of forming a hermetic rolled seam joint between a container body and an end closure, consisting in forming an outstanding flange on a container body, coating the said flange with a fusible cement, applying a sealing liner to the outstanding flange of a can cover, interfolding the said flanges into a rolled seam and thereby attaching the can cover to the can body, whereby the sealing liner on the can cover forms a hermetic joint between adjacent surfaces of the seam, the two joints being independent in their sealing capacities.

2. A method of forming a hermetic closure between a container body and a cover, consisting in coating an end of the container body with a fusible cement, applying a sealing gasket or material to the seam portion of a can cover, forming an interfolded joint or seam uniting the body and cover, and applying heat to the seam for fusing the cement and applying pressure, whereby the said fusible cement forms a hermetic seal in one portion of the said joint and the said sealing gasket or material forms a hermetic seal in another portion of the said joint.

3. A method of forming a hermetic closure between a sheet metal body element having an outstanding flange, and a sheet metal end element, which consists in applying a sealing liner to one of said elements, coating one of said elements with a fusible cement, bending and interfolding the parts to which said liner and cement are applied and thereby forming a double seam in which said liner is held between the outer face of the flange of the body and the under face of the end, and said cement is held between the vertical exterior face of the body and the contacting face of the said end, and applying by said formation of the seam horizontal pressure both to said liner and to said cement.

4. A method of forming a hermetic closure between a sheet metal body element having an outstanding flange, and a sheet metal end element, which consists in applying a sealing liner to one of said elements, coating one of said elements with a fusible cement, bending and interfolding the parts to which said liner and cement are applied and thereby forming a double seam in which said liner is held between the outer face of the flange of the body and the under face of the end, and said cement is held between the vertical exterior face of the body and the contacting face of the said end, and applying by said formation of the seam horizontal pressure both to said liner and to said cement, and applying heat to the seam for fusing the cement.

5. A method of forming a hermetic closure between a can body and a can end, which consists in applying a lacquer to the metal parts which are to be comprised in the outer portion of the seam, drying and hardening said lacquer, applying a gasket so as to fill the inner part of the seam, interfolding the flanges of the can body and can end to form a double seam, and at the same time applying pressure to the said gasket and to the said lacquered parts of the seam, and applying heat to cause the lacquer to fill that portion of the seam in which it is inclosed.

In testimony whereof I affix my signature hereto.

JOHN G. HODGSON.

Witnesses:

J. C. CARPENTER,
ESTHER ABRAMS.