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BREATHER FILTER FOR FLEXIBLE BOIL-IN AND STERILIZATION PACKAGES

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FIG. 1.

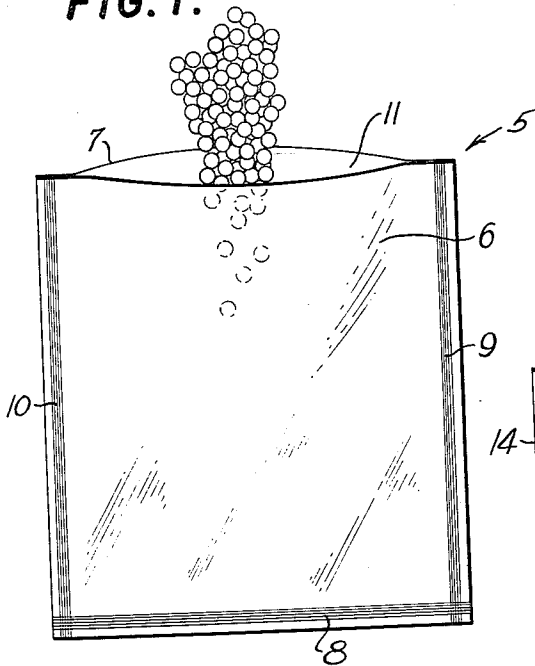


FIG. 2.

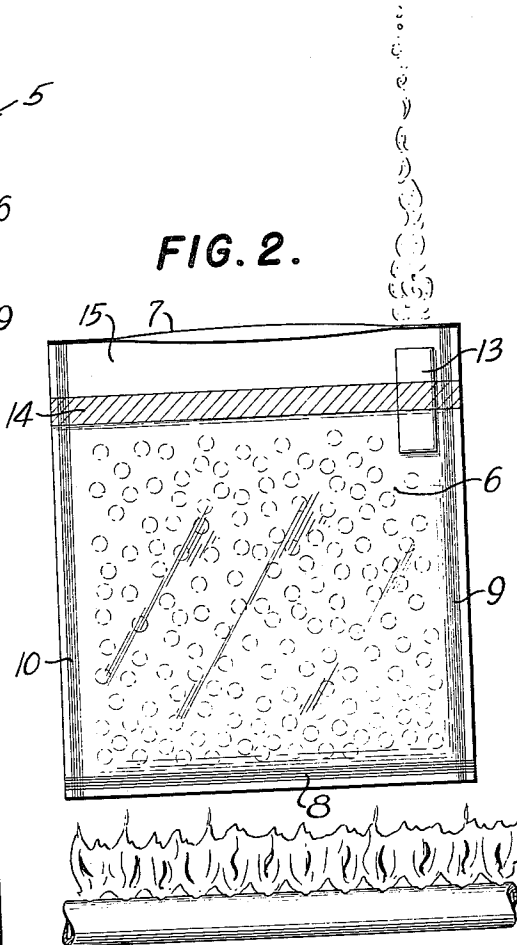
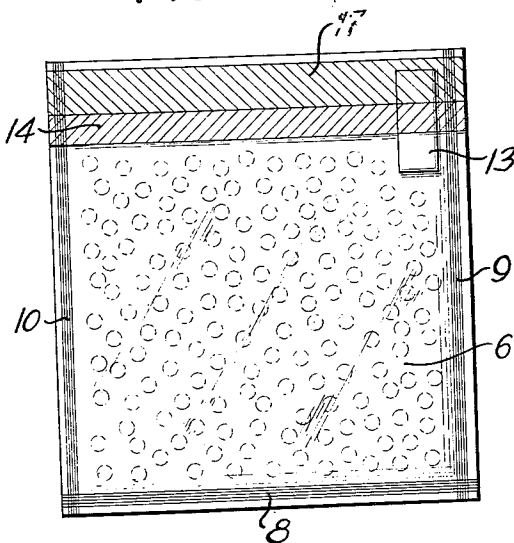


FIG. 3.



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BREATHER FILTER FOR FLEXIBLE BOIL-IN AND STERILIZATION PACKAGES

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2 Claims. (Cl. 53—14)

This invention relates generally to commodity packages of the flexible, heat sealable type. More specifically the invention relates to a sealable breather filter for such a package.

Prior art devices have been proposed for providing a pervious breather material for a container and then sealing the container after heating. However, the means for sealing this container has been rather costly and cumbersome. As well as being awkward to finally seal, these conventional devices have required a certain amount of time to perform the final sealing operation and it is necessary that this last operation be performed immediately and expeditiously after the heating process, particularly when done for sterilization purposes.

In accordance with the present invention a flexible and heat-sealable wrapper has been provided which has a breather or filter strip carried by the otherwise sealed wrapper which breather can be quickly and immediately sealed after the package and its contents have been heated.

A more specific object of the present is to provide a flexible and heat sealable package having contents sealed therein, said package having a vent to relieve pressure build-up in the package during heating of its contents, which vent can be immediately sealed by applying heat to that area of the package around the end of the vent.

According to the invention a process of packaging a commodity has been provided which includes loading a flexible heat sealable wrapper, through an open top in the latter, forming an initial sealing area across said open top and including a breather filter therein, heating the commodity for sterilization and/or cooking purposes and then forming a final seal area in said package which seals the filter.

These and other objects and advantages will appear hereinafter as this disclosure progresses, reference being had to the accompanying drawings, in which:

FIGURE 1 shows a flexible wrapper being filled through its open top with a product to be sealed therein;

FIGURE 2 illustrates the wrapper after the initial sealing operation, with the breather vent in place, and during the heating process of the contents; and

FIGURE 3 shows the completed package after the final sealing operation has been performed.

Referring more specifically to the drawings, the wrapper 5 is made from flexible heat sealable sheets of thermoplastic material, such as Pliofilm, polyethylene, Saran or the like. Thermoplastically coated material may also be used, such as heat sealable coated cellophane, coated foil or the like.

The wrapper has two sides 6 and 7 which are sealed together along their bottom 8 and sides 9 and 10. The wrapper may be formed in various ways, for example, by folding a single sheet to eliminate the necessity for a seal along one side or across the bottom, or it may be formed from a tube of material which would require only a seal to form the closed bottom edge of the wrapper. In any type of bag or envelope wrapper, an open top 11 is provided initially through which the commodity, either of the solid or liquid type, may be loaded into the wrapper, as shown in FIGURE 1.

As shown in FIGURE 2, a filter strip 13 has been inserted between the sides 6 and 7 and an initial closure seal

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14 has been made across the top of the package. This seal is made in the conventional manner by applying heat and pressure to the area to be sealed. It will be noted that an unsealed portion 15 is left above the seal 14. In forming this initial seal 14 with the filter in place, it is unnecessary to maintain exact dimensions or locations of the seal and/or filter. It is only necessary to insure that the filter completely intersects the band of sealed area 14, and the exact position of the filter in a direction across the width of the package is not critical. The exact position of the filter as to the extent of its entry into the wrapper is not critical either, except that the outer end of the filter should be spaced a distance from the uppermost edge of the package, in order that some sealable material is left entirely around the outer filter end to insure complete sealing thereof, as will appear. Of course, it would be possible to seal the filter by sealing the package sides adjacent the inner end of the filter but it is more desirable to seal at the outer end of the filter, so as to prevent damage to the contents or distortion to the package.

The breather filter 13 may be made of various pervious materials, namely, cloth strips, filter paper or cellulose plugs, and should preferably be heat resistant.

During the heating process of the product in the partially sealed wrapper, as shown in FIGURE 2, the vent 13 acts to relieve pressure formed in the package. This pressure may be caused by expansion of the residual air left in the package, the production of steam in the package due to moisture content of the product, or possible shrinkage of the packaging material.

The filter may be sealed immediately after the heating is completed. This may be desirable where sterilization of the contents, for example surgical instruments, is highly important, or a vacuum is desirable in the package after it has cooled, in the situation where a food product is involved.

Alternatively, it may be desirable to delay sealing the filter so as to eliminate any pressure differential between the inside and outside of the package during all stages of heating or cooling. By so doing, all straining or distortion of the parts of the package is eliminated and this is particularly important where printed matter appears on the package. Furthermore, by delaying the application of the final seal, the temperature between the inside and outside of the package is more quickly equalized.

The final seal 17 is shown in FIGURE 3 and is formed in the same manner as the initial seal 14, that is, by applying heat and pressure to the area to be sealed. The entire area 15 need not be completely sealed but only a sufficient portion around the end of the filter to form an effective seal. As previously mentioned, it is preferable to seal adjacent the outer end of the filter, although the area within the package and adjacent the inner end of the filter may be sealed instead.

Various modes of carrying out the invention are contemplated as being within the scope of the following claims particularly pointing out and distinctly claiming the subject matter which is regarded as the invention.

I claim:

1. The method of packaging a batch of heat processable commodity in a bag-like container of flexible sheet material having an open mouth at one end provided with opposed heat sealable surfaces spanning the mouth opening, which method comprises, introducing the commodity batch into the bag through the open mouth, initially heat sealing the said surfaces across the mouth opening while retaining a local breathing and filtering passage by positioning a breather filler across the initial seal so as to be communicable with the interior of the bag and the exterior thereof, processing the commodity by heating the confined batch through the bag wall while venting the bag

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interior to the atmosphere through the breather filter to prevent excessive inflation of the bag by the expansion of its heated contents, and finally hermetically heat sealing the bag mouth surfaces entirely across said mouth beyond an end of said breather filter.

2. The method of packaging a batch of heat process-
able commodity in a bag-like container of flexible sheet
material having an open mouth at one end provided with
opposed heat sealable surfaces spanning the mouth open-
ing, which method comprises, introducing the commodity
batch into the bag through the open mouth, initially heat
sealing the said surfaces a spaced distance from and across
the mouth opening while retaining a local breathing and
filtering passage by positioning a breather filter across
the area of the initial seal communicable with the interior
of the bag and the exterior thereof, processing the com-
modity by heating the confined batch through the bag wall
while venting the bag interior to the atmosphere through
the breather filter to prevent excessive inflation of the bag

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by expansion of its heated contents, and finally hermeti-
cally heat sealing the bag mouth surfaces entirely across
said mouth beyond the outlet end of said breather filter
and within the space between the initial seal and the
mouth.

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