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(54) **Improved sealing system for plastic containers.**

(57) The application describes a system for tight and hermetic sealing of plastics containers, characterized by the use of a metallic strip (1) which covers the peripheral edges of the lid and of the container (5) (6) and which is folded twice to seal the container, the second folding step also folding the said peripheral edges. The strip is preferably of an inverted "U" shape and may be clamped about the said peripheral edges.

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## SEALING SYSTEM FOR PLASTIC CONTAINERS

The present invention refers to a new sealing system for plastic containers, in particular for the tight closing and sealing of containers for food preserves.

One of the fundamental marketing problems of any product, especially large consumption ones, concerns the packaging. This, besides a desired low production cost, has to present other characteristics such as inviolability, easy opening, perfect preserving tightness and hermeticity, shock absorbercy and piling possibilities, among others.

Up to the present, a great part of the large consumption products, particularly canned ones, have been preserved in metallic packagings - the widespread folio cans. This type of packaging was until very recently thought ideal, as far as they presented all those above mentioned excellent packaging features.

However, due to new technologies and, particularly, the development of materials it can now be concluded that other materials, so-called "plastics", could be successful as responding to the demands of those products' packagings, especially of preserves and most especially of fish preserves.

Nonetheless, one cannot reach conclusions based only upon the mere existence of cheaper materials, with available package manufacturing technologies, and hermeticity properties, particularly those related to an optimal oxygen barrier. In order to reach a practical solution, other important problems must be solved, like the closing and sealing system, the container's opening, and the rigidity of the system, in particular for being piled up.

The resolution of these problems are, as a matter of fact, the main aim of the present invention. The present invention concerns an improvement on the known sealing of containers, particularly the plastic ones.

Another aim is to obtain a closing/sealing system which may guarantee total tightness and hermeticity.

According to the present invention there is provided a system for tight and hermetic sealing of plastics containers, characterized by the use of a metallic strip which covers the peripheral edges of the lid and of the container and which is folded twice to seal the container, the second folding step also folding the said peripheral edges.

The mentioned metallic strip also guarantees the necessary rigidity at the upper part of the container which allows, on the one hand, its opening without being deformed, and on the other hand, the piling up of quantities of units. Besides, the strip may also present a guiding function aimed at

its opening with a cutting device, or present inwardly an appropriate serration which may easily allow such final opening and lid tearing-off and removing, or even any other cutting element integrating the system.

One advantage of the sealing system is that it allows an opening with great simplicity, without any additional part or tool.

Still another advantage of this invention is the fact that the closing system itself guarantees to the entire packaging a rigidity that is absolutely necessary for its handling and mainly for the piling up of units.

A preferred embodiment of the invention is described in detail below, by example only, with reference to the accompanying drawings, wherein:

Fig. 1 represents the rim at the edge of the container and of the lid with a metallic strip, at a first phase of the system;

Fig. 2 represents the same system, but at a second phase of execution;

Fig. 3 represents the edges of the container and of the lid, completely closed and sealed, which is the system's final phase.

As can be understood of what has already been said, the problem consists essentially of replacing the metal cans by plastic material packaging at the level of large consumption products, especially food preserves.

The packaging may be made from polypropylene, polybutadien, and similar materials (from now on generically designated as plastic) and are, in fact, cheaper, have available production technologies and present an efficient barrier to oxygen and the outer environment in general, if duly treated for such purpose. However, the sealing problem still existed.

Considering canned products, particularly fish preserves, and the absolute necessity of their liquid fat overflowing, the feasibility of thermic welding becomes very reduced, which excludes, to start with, any of the easy and current processes.

In order to guarantee the sealing and the total tightness of the container, there has been the need to resort to a new system, which integrates a metal strip exerting pressure between the peripheral edges of the lid and of the container.

As can be seen from the figures, the strip 1 covers the peripheral edges of the lid 2 and of the container 3. The container has a side wall 4 and an outwardly directed rim 5. The lid at its periphery has a stretched "S" shape in crosssection, the upper limb 6 of the "S" resting on the rim 5 of the container and the middle section of the "S" abutting the side wall 4 of the container. The

strip 1 is substantially "U" shaped, with one arm abutting the mid-section of the "S" of the periphery of the lid 2, the base abutting the upper limb 6 of the lid, and the other arm overhanging the edge of the rim 5 of the container, the "U" shaped strip thus being in an inverted position. The strip 1 is submitted to a three-step folding operation: the first one (Fig. 1) is exerted downwards. The second one, upon those two edges, and the third of these foldings, exerted together with the folding of the edges' rims, this time upwards.

Alternatively, the operation may be seen as a two-step folding process. Firstly, as seen in Fig. 2, the outer arm of the strip 1 is folded upwards to about the underside of the rim 5 of the container. Secondly, as seen in Fig. 3, the strip 1 with the rims of the container and the lid inside is folded inwardly. In between these two steps the strip is preferably clamped (in the position seen in Fig. 2) to seal the container.

The squeezing between the two edges and the closing and sealing of the packaging and its lid are thus guaranteed.

These operations are possible for materials which have the necessary flexibility particularly the plastics of the container and of the lid, as well as the metal of the lid.

Simultaneously, the strip 1 guarantees the packaging rigidity, which is, at its top, necessary for its opening and, most of all, for piling up of units.

The strip 1 may have a serrated edge 7 to facilitate the opening of the container. The strip may be discontinuous, i.e. formed from a band or ribbon and not from a ring.

The strip 1 can be integrated by a serrated tip (not represented) or any other cutting element, which may allow the container's opening by pressure upon the lid. This strip can also serve for guiding, throughout its inner surface, any cutting device that may effect the container's opening.

Of course, these opening operations are possible only thanks to the malleability of the lid's plastic material.

Any of the possible opening operations noted are, nonetheless, of great simplicity and security.

The same strip 1 in its closing position also guarantees to the container enough rigidity as to permit the piling up of stored units and an easy handling.

The means of achievement here described is by no means intended to limit this invention. Alterations on the system are thus possible as will be evident to the experts in this area and the scope of the invention is only defined by the following claims.

## Claims

1. A system for tight and hermetic sealing of plastics containers, characterized by the use of a metallic strip which covers the peripheral edges of the lid and of the container and which is folded twice to seal the container, the second folding step also folding the said peripheral edges.

2. A system according to claim 1, wherein the strip is of an inverted "U" shape.

3. A system according to claim 1 or 2, wherein the strip is clamped about the said peripheral edges.

4. A system according to claim 1, 2 or 3, wherein the strip has a serrated edge to facilitate the opening of the container.

5. A system according to any preceding claim, wherein the strip is discontinuous.

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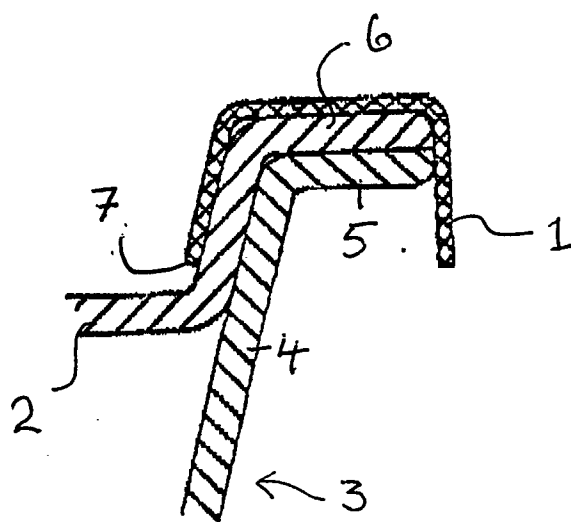


fig. 1

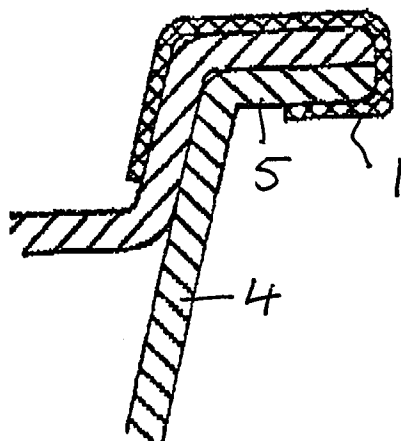


fig. 2

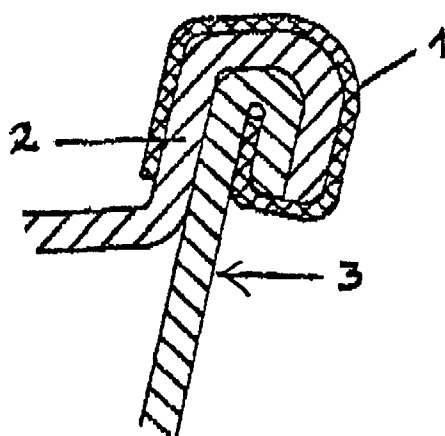


fig. 3