

ABSTRACT

A method for attaching reclosable zipper to a package is provided. A pair of opposing film extensions are provided on the package above the seal at the package opening. The reclosable zipper is then inserted between the film extensions on the package and sealed thereto.

ABSTRACT

AUSTRALIA

Patents Act

**COMPLETE SPECIFICATION
(ORIGINAL)**

Class . Int. Class

Application Number:
Lodged:

Complete Specification Lodged:
Accepted:
Published:

Priority

Related Art:

Name of Applicant:

Illinois Tool Works Inc.

Actual Inventor(s):

RONALD L RAMSEY, STEVEN AUSNIT

Address for Service:

PHILLIPS ORMONDE & FITZPATRICK
Patent and Trade Mark Attorneys
367 Collins Street
Melbourne 3000 AUSTRALIA

Invention Title:

METHOD OF APPLYING RECLOSABLE ZIPPER TO PACKAGE

Our Ref : 612879
POF Code: 331914/1431

The following statement is a full description of this invention, including the best method of performing it known to applicant(s):

Method of Applying Reclosable Zipper to Package

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to the field of reclosable packaging. More particularly, the present invention relates to a method of applying reclosable zippers to packages previously made on horizontal form-fill-seal (HFFS) machines and vertical form-fill-seal (VFFS) machines.

2. Description of the Prior Art

Reclosable packages made on HFFS and VFFS machines are well known in the prior art. For example, U.S. Patent No. 4,876,842 discloses a method of manufacturing reclosable packages on an HFFS machine, while U.S. Patent Nos. 4,909,017, 4,655,862 and 4,894,975 disclose methods of manufacturing reclosable packages on VFFS machines.

These prior art methods, however, have proven unsatisfactory in certain circumstances. In particular, the disclosed methods are fairly complex in that they call for attachment of the reclosable zippers to the package material during formation, filling and sealing of the packages. This complexity in turn often necessitates the use of complex and expensive machinery in practice.

The above discussion of documents, acts, materials, devices, articles and the like is included in the specification solely for the purpose of providing a context for the present invention. It is not suggested or represented that any or all of these matters formed part of the prior art base or were common general knowledge in the field relevant to the present invention as it existed in Australia before the priority date of each claim of this application.

SUMMARY OF THE INVENTION

According to the invention in a first aspect, there is provided a method of attaching a reclosable zipper to a package, said method comprising the steps of:

providing a package having a first wall opposite a second wall, said walls being joined together at a first seal, each of said package walls including a portion extending a distance beyond said first seal not sealed to the other package wall;

providing a reclosable zipper having a first closure element interlocked with a second closure element;

inserting said reclosable zipper between said first and second package wall extending portions; and

attaching said first and second closure elements to said first and second package wall extending portions, respectively.

According to the invention in a second aspect, there is provided a method of attaching a reclosable zipper to each of a plurality of packages, said method comprising the steps of:

providing a plurality of packages, each of said packages having a first wall opposite a second wall, said walls being joined together at a first seal, each of said walls including a portion extending a distance beyond said first seal not sealed to the other wall;

providing a supply of reclosable zipper, said reclosable zipper having a first closure element interlocked with a second closure element;

inserting a portion of reclosable zipper from said reclosable zipper supply between the first and second package wall extending portions of a first package; and

attaching the first and second closure elements of said reclosable zipper portion to said first and second package wall extending portions, respectively.

The present invention, therefore, provides a simplified method for attaching reclosable zippers to packages made on HFFS and VFFS machines.

The reclosable zippers are attached to the packages after the packages are formed, filled and sealed by the HFFS or VFFS machine, rather than during package forming, filling and sealing as disclosed in the prior art. Essentially, a pair of opposing film extensions are provided on each package above the seal at the package opening. Reclosable zippers are then inserted between the film extensions on the packages and sealed thereto. In this manner the reclosable zippers may easily be attached to the packages after the packages have been formed, filled and sealed.

It is to be understood that, throughout the description and claims of the specification the word "comprise" and variations of the word, such as "comprising" and "comprises", is not intended to exclude other additives, components, integers or steps.

BRIEF DESCRIPTION OF THE DRAWINGS

In the accompanying drawings:

Figure 1 shows reclosable zippers being attached to packages in accordance with a first embodiment of the present invention;

Figure 2 shows a perspective view of a reclosable zipper being sealed to a package in accordance with the first embodiment of the present invention;

Figure 3 shows a cross-sectional view of a reclosable zipper being attached to a package in accordance with the first embodiment of the present invention;

Figure 4 shows a cross-sectional view of a reclosable zipper being attached to a package in accordance with a variation of the first embodiment of the present invention;

Figure 5 shows reclosable zippers being attached to a chain of packages in accordance

with a second embodiment of the present invention;

Figure 6 shows a cross-sectional view of Figure 5 along line A-A;

Figure 7 shows a cross-sectional view of Figure 5 along line B-B;

Figure 8 shows a cross-sectional view of Figure 5 along line C-C;

5 Figure 9 shows a perspective view of a package in accordance with the second embodiment of the present invention;

Figure 10 shows a cross-sectional view of two reclosable zippers being attached to a double package chain in accordance with a first variation of the second embodiment of the present invention; and

10 Figure 11 shows a cross-sectional view of a double reclosable zipper being attached to a double package chain in accordance with a second variation of the second embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

15 The present invention will now be described in detail, with frequent reference being made to the accompanying drawings in which identical numerals represent identical elements.

Figure 1 shows a series of individual packages 10 being moved along in a direction (to the right) by a transport mechanism 12, such as a conveyor belt. The individual packages 20 are made of thermoplastic film, or any suitable packaging material, and somewhere upstream were formed, filled and sealed on either an HFFS or VFFS machine (not shown). The packages 10 are guided by two guides 14, 16 which ensure that the packages 10 remain in

upright and stabilized positions.

Each package 10 is provided with a cross-seal 18 on either side and a peel seal 20 at the package mouth. Depending on how the package was formed in the HFFS or VFFS machine, the package may also have a bottom seal 22.

5 As shown in Figure 2, each package has first and second film extensions 24, 26 which extend upwardly above the peel seal. The extensions 24, 26 are part of first and second package walls 28, 30, respectively. The extensions 24, 26 are not sealed to each other and may readily be separated.

10 As the packages 10 are transported by the conveyor belt 12, a chain 32 of zippers 34 is fed between the extensions 24, 26 of the packages 10. The zipper chain 32 may be fed by any one of numerous mechanisms used in the reclosable packaging industry and well-known to those of ordinary skill in the art.

15 Each zipper 34 includes first and second interlocking closure elements 36, 38 and first and second flanges 40, 42 extending from the first and second closure elements 36, 38, respectively. The zipper may also be provided with a slider 44 to facilitate the opening and closing of the zipper 34, if desired.

20 After a zipper 34 is fed between the extensions 24, 26 of a given package, the first and second zipper flanges 40, 42 are respectively sealed along their lengths to the package extensions 24, 26 by horizontal portions 52 of a pair of seal bars 50. Simultaneously, vertical portions 54 of the seal bars 50 make end seals across the zipper ends 56, 58. As shown in figure 3, the vertical portions 54 of the seal bars 50 extend beyond the peel seal 20 so as to ensure integrity of the package 10. The vertical seal bar portions 54 also crush and seal the

zipper closure elements 36, 38 together at the zipper ends 56, 58 so that the zipper 34 does not come apart during use. Additionally, when a slider 44 is provided, the vertical portions 54 can be configured to provide end stops on the zipper 34 which prevent the slider 44 from sliding off the ends of the zipper. Alternatively, these slider end stops may have been pre-
5 applied.

After the zipper 34 is sealed to the package 10, it is simply cut from the next zipper in the chain 32 at a cutting station 60. A completed package 62 having a reclosable zipper 34 is then removed.

In situations where the zipper chain 32 is difficult to feed, it is advantageous to
10 provide a guide rail for guiding the zipper chain 32 and positioning the zipper chain 32 relative to the bag walls. Such a guide rail 64 is shown in figure 4. As shown in figure 4, the guide rail is positioned between the zipper flanges 40, 42. A pair of seal bars 66 are then positioned to seal the flanges to the extensions. The guide rail 64 provides the added benefit
15 of ensuring that the zipper flanges 40, 42 will not seal to each other, making it unnecessary to carefully control the sealing temperature. Because of the presence of the guide rail 64, however, it is not possible to simultaneously make the end seals, as in figure 3. The end seals must be made at a second sealing station somewhere downstream beyond the guide rail 64.

It is also possible to attach zippers to a chain of packages, as shown in figure 5. A
20 chain 68 of packages 70, such as filled trays, previously made somewhere upstream on a thermoform HFFS machine, or the like, are output from the HFFS machine and moved by a pair of drive rollers 71. Each package 70 is formed from a lower wall 72 sealed to an upper wall 74. As shown in figure 9, the upper wall 74 is sealed to the lower wall 72 at four

locations 76, 78, 80, 82. The seal 82 at the mouth 84 takes the form of a peel seal. Similar to the package of figure 1, wall extensions 86, 88 are provided beyond the peel seal 82. The wall extensions 86, 88 are not sealed to each other and may readily be separated for insertion of a zipper.

5 As the chain 68 of packages is output from the HFFS machine and moved by the drive rollers 71, three separating members 90 are provided which separate the wall extensions 86, 88. Then, a continuous supply of reclosable zipper 92 is fed between the separated wall extensions 86, 88. A roller 94 is provided for feeding and guiding the zipper 92 between the web extensions 86, 88. Figure 6, which is a cross-sectional view along line A-A of figure 5, shows clearly how the wall extensions 86, 88 are separated and how the zipper 92 is fed therebetween. As shown in figures 7 and 8, the zipper 92 comprises two interlocking closure elements 96, 98 and integral flanges 100, 102 extending on either side thereof. Optionally, the zipper 92 may also be provided with a slider for opening and closing the zipper. In that case the zipper flanges 100, 102 would only extend on one side of their respective
10 interlocking closure elements 96, 98, i.e., towards the package body.
15

After the zipper 92 is fed between the wall extensions 86, 88, a pair of rollers 99 bring the wall extensions 86, 88 together, enclosing the zipper 92 therebetween. Then, further downstream, a pair of seal bars 104 seal the zipper flanges 100, 102 to the wall extensions 86, 88. Figure 7, which is a cross-sectional view along line B-B of figure 5, shows the sealing
20 detail. The seal bars 104 are each provided with a cavity 106 so that the interlocking closure elements are not crushed and/or distorted. If a slider is used, the cavity is enlarged to accommodate it.

After the zipper webs 100, 102 are sealed to the wall extensions 86, 88 of the package, the zipper is spot sealed at its ends by a seal bar 108 to ensure that the zipper does not come apart during use. Figure 8, which is a cross-sectional view along line C-C of figure 5, shows this detail. The seal bar 108 extends beyond the peel seal 82 to ensure the integrity of the package 70. Finally, the finished packages 110 are cut from the chain by a cutting mechanism 112 while at the same time cutting the zipper from the continuous supply 92.

It is also possible to attach zippers to a double chain 114 of side-by-side packages joined at a central axis 116 of the chain. There are at least two possible configurations for this double chain. The first configuration, shown in figure 10, is where the zippers 92 are sealed to wall extensions 86, 88 on the outside of the trays. The zippers are basically attached to the packages in the manner shown in figure 5 (the chain is transported into or out of the page). A second cutting mechanism must be provided to cut the side-by-side trays from each other along the central axis 116 of the double chain 114. The second configuration, shown in figure 11, is where the wall extensions 86, 88 are provided along the central axis 116 of the chain 114. In that case a double zipper 118, i.e. two single zippers 120, 122 joined together side-by-side, is inserted between the wall extensions 86, 88 on side-by-side packages. Once again, the zippers are basically attached in the manner shown in figure 5 (the chain is transported into or out of the page). However, as in the embodiment of figure 10, a second cutting mechanism must be provided to cut the double zipper into two zippers and cut the side-by-side packages from each other along the chain axis 116.

Thus, in the foregoing manner the object of the present invention is achieved. Modifications to the above would be obvious to those of ordinary skill in the art, but would

not bring the invention so modified beyond the scope of the appended claims.

5
6
7
8
9
10

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A method of attaching a reclosable zipper to a package, said method comprising the steps of:

5 providing a package having a first wall opposite a second wall, said walls being joined together at a first seal, each of said package walls including a portion extending a distance beyond said first seal not sealed to the other package wall;

providing a reclosable zipper having a first closure element interlocked with a second closure element;

10 inserting said reclosable zipper between said first and second package wall extending portions; and

attaching said first and second closure elements to said first and second package wall extending portions, respectively.

2. The method according to claim 1 wherein said first seal is a peel seal.

3. The method according to claim 2 wherein said package is cross-sealed on opposite sides thereof, said cross-seals extending beyond said peel seal.

4. The method according to any preceding claim, including the step of guiding said reclosable zipper as it is inserted between said first and second package wall extending portions.

5. The method according to claim 4 wherein said reclosable zipper is guided by a guide rail positioned between opposing first and second zipper flanges.

6. The method according to any preceding claim, wherein said package walls are sealed to each other on four sides of said package.



7. The method according to any preceding claim, wherein said reclosable zipper includes a slider for opening and closing said zipper.



8. The method according to any preceding claim, wherein said first and second closure elements are attached to said first and second package wall extending portions via first and second integral zipper flanges, respectively.



9. A method of attaching a reclosable zipper to each of a plurality of packages, said method comprising the steps of:

providing a plurality of packages, each of said packages having a first wall opposite a second wall, said walls being joined together at a first seal, each of said walls including a portion extending a distance beyond said first seal not sealed to the other wall;

providing a supply of reclosable zipper, said reclosable zipper having a first closure element interlocked with a second closure element;

inserting a portion of reclosable zipper from said reclosable zipper supply between the first and second package wall extending portions of a first package; and

10 attaching the first and second closure elements of said reclosable zipper portion to said first and second package wall extending portions, respectively.

10. The method according to claim 9 wherein said first seal is a peel seal.

11. The method according to claim 10 wherein said packages are cross-sealed on opposite sides thereof, said cross-seals extending beyond said peel seal.

12. The method according to any one of claims 9 to 11, wherein said packages are connected together in a chain.

13. The method according to claim 12 including the step of cutting said first package from said chain after attachment of said reclosable zipper portion.

14. The method according to any one of claims 9 to 13, including the step of cutting said reclosable zipper portion from said reclosable zipper supply after attachment to said first and second package wall extending portions.

15. The method according to any one of claims 9 to 14, wherein said reclosable zipper portion is provided with a slider for opening and closing said reclosable zipper portion.

16. The method according to any one of claims 9 to 15, wherein said first and

second closure elements of said reclosable zipper portion are attached to said first and second package wall extending portions via first and second integral zipper flanges, respectively.

17. The method according to any one of claims 9 to 16, including the step of guiding said reclosable zipper portion between the separated first and second package wall extending portions of said first package.

18. The method according to claim 12 wherein said package chain includes a plurality of side-by-side packages joined along a central axis of said chain.

19. The method according claim 18 including the additional steps of:

providing a second supply of said reclosable zipper;

inserting a portion of reclosable zipper from said second reclosable zipper supply

between the first and second package wall extending portions of a second package, said

5 second package being joined side-by-side with said first package along said central axis of said chain; and

attaching the first and second closure elements of the reclosable zipper portion from said second reclosable zipper supply to the first and second package wall extending portions, respectively, of said second package.

20. The method according to claim 18 or claim 19, wherein the first package wall extending portions of side-by-side packages are joined together along said central axis of said chain.

21. The method according claim 20 wherein said reclosable zipper is a double zipper and is inserted between and attached to the first and second package wall extending portions of side-by-side packages.

22. The method according to any one of claims 9 to 21, wherein said packages are in the form of trays.

DATED: 10 May, 2000

PHILLIPS ORMONDE & FITZPATRICK

Attorneys for:

ILLINOIS TOOL WORKS INC.

David B Fitzpatrick



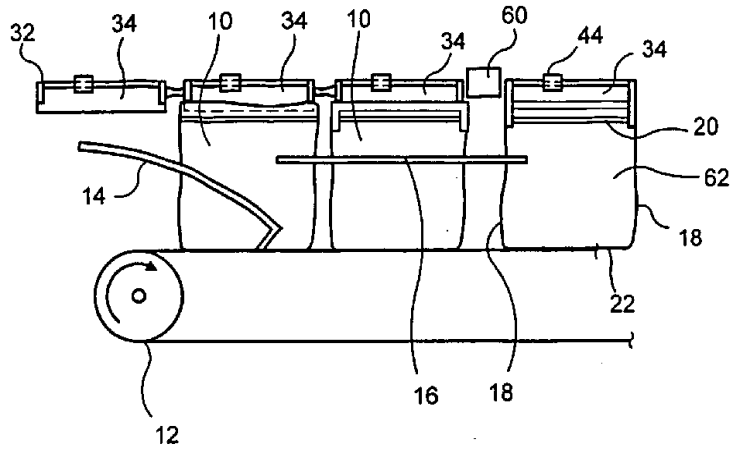


FIG. 1

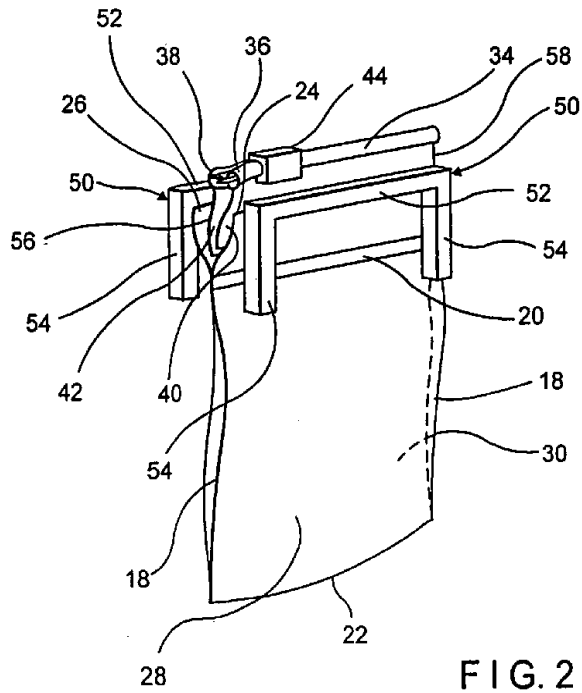


FIG. 2



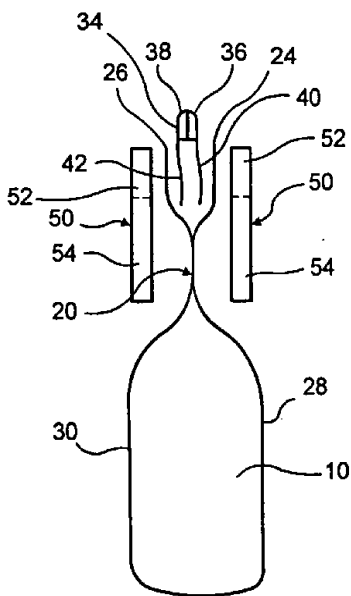


FIG. 3

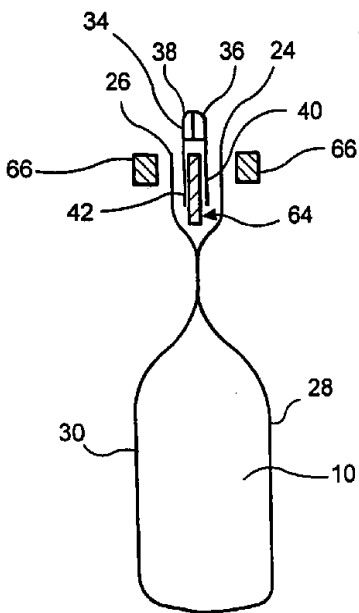


FIG. 4

5
4
3
2
1

11 05 00 34047

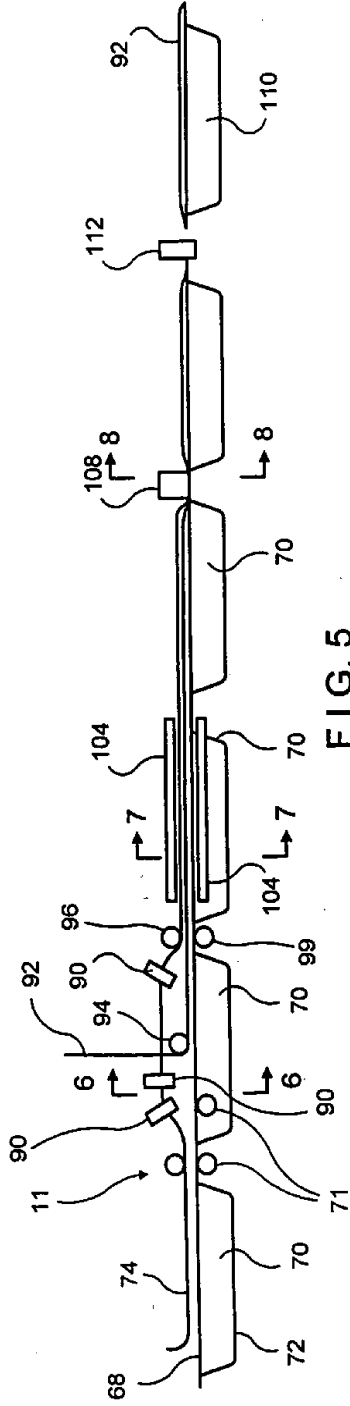


FIG. 5

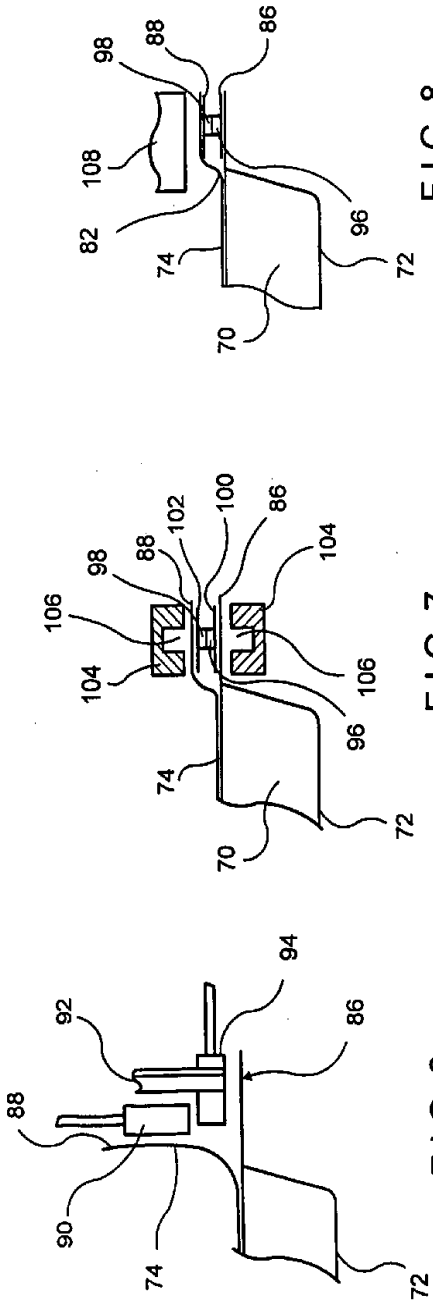


FIG. 6

FIG. 7

FIG. 8

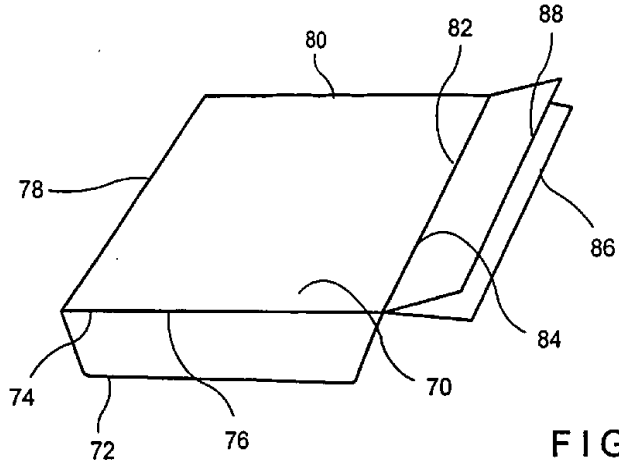


FIG. 9

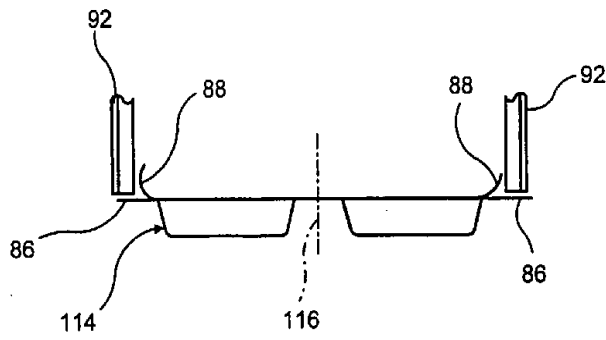


FIG. 10

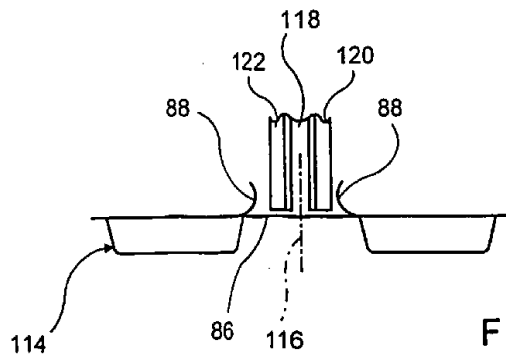


FIG. 11

