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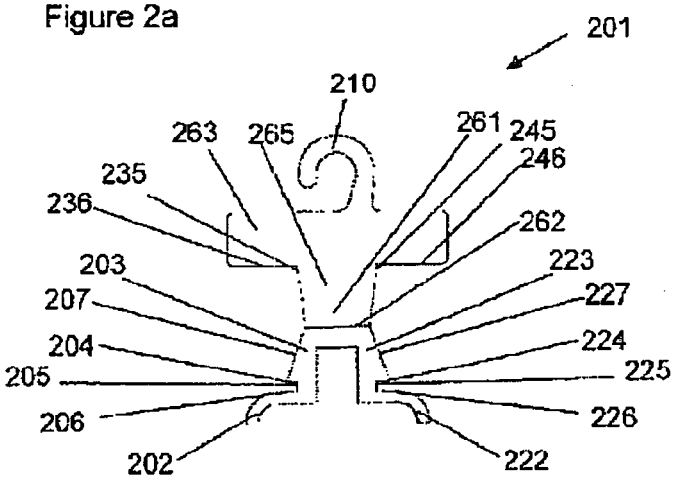
(54) **Removable package hanger**

(57) A hanger (201) for a package, the hanger comprising an actuator (202,222), a deformable engagement member (203,223) and a body (261),
the deformable engagement member configured to be repeatably deformable by user actuation of the actuator to allow for engagement and/or disengagement of the engagement member with ends of a package slit to allow for respective carrying and release of the package by/from the hanger, and
wherein the deformable engagement member is at an opposing end to a hook (210) end of the hanger, the body comprising a fold line (262) configured to allow the body to be folded back on itself to position the engagement member back towards the hook end.

Figure 2a



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Description

Technical Field

[0001] The present disclosure relates to the field of package/carton hangers and associated methods.

Background

[0002] Package hangers are generally used to allow packages (e.g. packed items of clothing, such as tights or underwear) to be conveniently stored or displayed on a hanger. Generally the package hangers are designed to be attached to the package when the package is being assembled. However, such package hangers are generally designed to be disposable with the package.

[0003] The listing or discussion of a prior-published document or any background in this specification should not necessarily be taken as an acknowledgement that the document or background is part of the state of the art or is common general knowledge. One or more aspecis/embodiments of the present disclosure may or may not address one or more of the background issues.

Summary

[0004] According to a first aspect there is provided a hanger for a package, the hanger comprising an actuator a deformable engagement member and a body,
the deformable engagement member configured to be repeatably deformable by user actuation of the actuator to allow for engagement and/or disengagement of the engagement member with ends of a package slit to allow for respective carrying and release of the package by/from the hanger, and
whereir the deformable engagement member is at an opposing end to a hook end of the hanger, the body comprising a first fold line configured to allow the body to be folded back on itself to position the engagement member back towards the hook end.

[0005] Any fold line disclosed herein may be configured to bias away from a folded back position. Thus, for example, when engaged with a slit, the engagement member may engage with sides of the slit to assist in retaining the package.

[0006] According to a second aspect there is provided a hanger for a package, the hanger comprising an actuator and a deformable engagement member,
the deformable engagement member configured to be repeatably deformable by user actuation of the actuator to allow for engagement and and/or disengagement of the engagement member with ends of a package slit to allow for respective carrying and release of the package by/from the hanger, and wherein the actuator is configured to extend away from the slit ends to allow finger-tip access to the actuator.

[0007] It will he appreciated the package hangers may be reusable. It will be appreciated that such reusable package hangers may be considered as recyclable.

[0008] Engagement of the engagement member may be provided by deformation of the engagement member so that it passes through the slit to engage with the slit ends.

[0009] The deformable engagement members may comprise tapering surfaces configured to impinge on the slit ends and thereby deform the deformable engagement members as the hanger is inserted into the slit.

[0010] The deformable engagement members may be configured to, in the absence of an external force, adopt an undeformed configuration.

[0011] The hanger may comprise two or more deformable engagement members. For example, a first deformable engagement member may allow for engagement and/or disengagement with a first end of a package slit and a second deformable engagement member may a low for engagement and/or disengagement with a second opposing end of the package slit.

[0012] The actuators may be configured, in an engaged configuration, to extend (e.g. curve) away from the package. The actuators may be configured, in an engaged configuration, to extend (e.g. curve) towards the package.

[0013] Disengagement of the engagement member may be provided by deformation of the engagement member so that it disengages from the slit ends to allow it to pass through the slit to release the package from the hanger.

[0014] The actuator may be configured to extend towards and behind an engaged package to, when engaged with a package, inhibit backward motion of the package.

[0015] The hanger may comprise a front portion. The front portion may be configured to extend towards and in front of an engaged package to, when engaged with a package, inhibit forward motion of the package. The front portion may be configured to conceal the actuators when the hanger is in a folded configuration. The front portion may be configured to carry (e.g. sticker) or comprise (e.g. directly printed thereon) a label for the package.

[0016] Respective support surfaces on engagement members may be configured to retain the engagement of the engagement member with the slit ends.

[0017] The hanger may comprise a front cover positioned to hide the actuator from view when the hanger is in a front carrying position. The front cover may be configured to carry (e.g. sticker) or comprise (e.g. directly printed thereon) a label for the package.

[0018] The hanger may comprise a head end and an engagement member end. Respective shoulder surfaces at the head end and engagement member end may be configured to substantially overlie one another in the folded configuration. The head end may be rigid.

[0019] The head end may be foldable about a second fold line. The second fold line may be substantially parallel to the first fold line. The second fold line may be

substantially perpendicular to an in-use loading axis. The second fold line may be configured to be parallel to or in line with a slit axis of a package when the hanger is in an engaged configuration. The second fold line may be aligned with an axis passing through engagement member lateral surfaces when the hanger is in a folded configuration (the engagement member lateral surfaces may be configured to engage with slit ends when the hanger is ir an engaged configuration). The second fold line may be aligned with shoulder portiors/surfaces of the hanger. Shoulder portions/surfaces may be configured to impinge on the surface of the package when in an engaged configuration, thereby preventing further insertion/removal of the hanger from the package.

[0020] A hanger composing a second fold line configured to be aligned with the slit axis in an engaged position may allow portions of an engaged hanger inside a package to be orientated independently to portions of the hanger outside the package. In this way, external portions (e.g. hook) may be orientated perpendicular (or at some other angle) to a slit surface, wailst internal portions may be orientated parallel to a slit surface (the slit surface being a surface of a package comprising a slit with which the hanger is engaged). This may allow more room for contents in the package because the internal portions of the hanger may not significantly extend into the package.

[0021] The in-use loading axis may be considered as an axis along which a load is carried when the hanger is in use. The slit axis may extend along the length of the slit in the package.

[0022] The hanger may comprise a hook, the hook being configured to allow for hanging of the hanger (and encaged package) on a clothes rack.

[0023] The hanger may comprise one or more of paper, cardboard, metal and plastic (such as polystyrene and/or polypropylene).

[0024] A package-assembly may comprise:

a package comprising a slit; and
a hanger, the hanger being engaged to the slit.

[0025] In a third aspect there is provided a method of making a hanger, the method comprising:

using a manufacturing process to provide a hanger for a package, the hanger comprising an actuator, a deformable engagement member and a body,
the deformable engagement member configured to be repeatably deformable by user actuation of the actuator to allow for engagement and/or disengagement of the engagement member with ends of a package slit to allow for respective carrying and release of the package by/from the hanger, and

wherein the deformable engagement member is at an opposing end to a hook end of the hanger, the body comprising a first fold line configured to allow the body to be folded back on itself to position the engagement member back towards the hook end.

[0026] In a fourth aspect there is provided a method of making a hanger, the method comprising;

using a manufacturing process to provide a hanger for a package, the hanger comprising an actuator and a deformable engagement member,
the deformable engagement member configured to be repeatably deformable by user actuation of the actuator to allow for engagement and/or disengagement of the engagement member with ends of a package slit to allow for respective currying and release of the package by/from the hanger, and wherein the actuator is configured to extend away from the slit ends to allow finger-tip access to the actuator.

[0027] The manufacturing process may comprise one or more of:

cutting the hanger out of a plane of material;
punching the hanger out of a plane of material (a-g-using a die cutting manufacturing process); or
injection moulding (e.g. in an injection moulding process).

[0028] Any fold line disclosed herein may be provided by a combination of one or more of:

scoring the hanger;
etching the hanger (e.g. with a scriber);
perforating the hanger material; and
folding the hanger into a folded configuration.

[0029] The present disclosure includes one or more corresponding aspects, embodiments or features in isolation or in various combinations whether or not specifically stated (including claimed) in that combination or in isolation. Corresponding means for performing one or more of the discussed functions are also within the present disclosure.

[0030] Corresponding computer programs for implementing one or more of the methods disclosed are also within the present disclosure and encompassed by one or more of the described embodiments. The computer program may be stored on a CD, a DVD and/or other non-transitory medium.

[0031] The above summary is intended to be merely exemplary and non-limiting.

Brief Description of the Figures

[0032] A description is now given, by way of example only, with reference to the accompanying drawings, in which:-

Figure 1a depicts an embodiment of a hanger and a package comprising a slit.
Figure 1b illustrates the embodiment of figure 1a a

as it is engaging with the slit.
Figure 1c shows embodiment of figure 1a engaged with the slit.
Figures 2a and 2b show a further embodiment in an unfolded configuration, in front and rear views respectively.
Figures 2c and 2d show the embodiment of figure 2a in a folded configuration in front and rear views respectively.
figure 2e and 2f show the embodiment of figure 2a in a folded engaged configuration in front and rear views respectively.
Figures 2g, 2h, 2i and 2j show the embodiment of figure 2a as it is engaging with a slit.
Figures 2k and 2l show the embodiment of figure 2a In an unfolded configuration in front and side views respectively, giving example dimensions in millimeters.
Figures 3a anc 3b show a further embodiment in an unfolded configuration in front and rear views respectively.
Figures 3c and 3d show the embodiment of figure 3a in a folded configuration in front and rear views respectively.
Figures 3e and 3f show the embodiment of figure 3a in a folded engaged configuration in front and rear views respectively.
Figures 3g and 3h show the embodiment of figure 3a in an unfolded configuration in front and side views respectively, giving example dimensions in millimetres.
Figure 4a and 4b show a further embodiment in an unfolded configuration in front and rear views respectively.
Figures 4c and 4d show the embodiment of figure 4a in a folded configuration in front and rear views respectively.
Figures 4e and 4f show the embodiment of figure 4a in a folded engaged configuration in front and rear views respectively.
Figures 4g, 4h and 4i show the embodiment of figure 4a in an unfolded configuration in back, front and side views respectively, giving example dimensions in millimetres.
Figures 5a, 5b and 5c show a further embodiment in an unfolded configuration in front, rear and side views respectively.
Figures 5d and 5e show the further embodiment in an folded configuration in front and rear views respectively.
Figures 5f, 5g and 5h show the embodiment of figure 5a being inserted into a package.
Figures 5i and 5j show the embodiment of figure 5a in an unfolded configuration in front and side views respectively, giving example dimensions in millimetres.

Description of Example Aspects/Embodiments

[0033] Other embodiments depicted in the figures have been provided with reference numerals that correspond to similar features of earlier described embodiments- For example, feature number 1 can also correspond to numbers 701, 201, 301 etc. These numbered features may appear in the figures but may not have been directly referred to within the description of these particular embodiments. These have still been provided in the figures to aid understanding of the further embodiments, particularly in relation to the features of similar earlier described embodiments.

[0034] It is common to siore packages on a package hanger, for example, in a shop. Some hangers form an integral part of the packaging. For example, the package and the hanger are manufactured from the same piece of cardboard. Other hangers are designed to engage with the package at the time of assembly. For example, a plastic package hanger may be connected to a cardboard package (e.g. by insertion or gluing). Generally, these, hangers are designed to remain attached to and be disposed with the packaging. It may be advantageous to have readily detachable package hangers which could be reused with other packages. For example, the package hangers could be removed from the package at the point of sale and retained for use with other packages.

[0035] The package may not be a fully enclosed package but be, in use, enclosed in a fully enclosed further package. For example, the non-fully enclosed package may be made from paper/card and have printed information and be subsequently enclosed in a clear plastic fully enc osable further package which would retain the item to be carried (e.g. undergarments)

[0036] Figure 1a depicts an embodiment of a hanger (101) for a package (190), the package comprising a slit (191). The hanger (101), in this case, comprises an actuator (102) and a deformable engagement member (103). The deformable engagement member, in this case, is configured to be repeatably deformable by user actuation of the actuator (102) to allow for engagement and/or disengagement of the engagement member (103) with a first end (192) of the package slit (191) to allow for respective carrying and release of the package (190) by/from the hanger (101). When in the engaged configuration, the actuator is configured to extend away from the slit ends to allow finger-tip access to the actuator. This embodiment also comprises an opposing rigid engagement member (123) which is configured to engage with the other opposing second end (193) of the package slit. It will be appreciated that the deformable end may be engaged with the second end (193) of the slit and the rigid end engaged with the first end (192) of the slit.

[0037] The deformable and rigid engagement members, in this cause, each comprise a supporting surface (104, 124) configured to support the weight of the package (and/or further package in which the package may be enclosed and associated contents) when in an en-

gaged configuration; a shoulder surface (105, 126) configured to prevent the hanger (101) from passing through the slit when in an engaged configuration: a lateral surface (105, 125) configured to connect with the inner surface of the slit end and restrict movement of the hanger (101) with respect to the package along the slit; and a tapering surface (107, 127) configured to enable the deformable engagement member to be automatically deformed as the hanger (101) is being inserted into the slit (191).

[0038] In this case the hanger (101) comprises a single plane of polystyrene, manufactured using an injection moulding manufacturing process. It will be appreciated that other embodiments be made of, for example, cardboard or other plastic (e.g. polypropylene). In this case the deformable member is deformable in the plane of the hanger. It will be appreciated that for other embodiments, the deformable engagement member may or may not be deformable out of the plane of the hanger. It will be appreciated that other embodiments may be manufactured by cutting the hanger out of a plane of material and/or punching the hanger out of a plane of material (e.g. using a die cutting manufacturing process).

[0039] Figure 1b depicts the hanger as it is being attached to the package. In this case, the non-deformable engagement member is engaged with the second end (193) of the slit. As the hanger (101) is inserted further into the slit, the tapering surface (107) impinges on and slides along the first slit end (192) thereby causing the deformable engagement member to deform, in the planes of the hanger and of the slit, to sallow the hanger (101) to be readily fully inserted into the slit. In this case, the actuator (102) need not be used to actuate deformation during insertion/engagement

[0040] Figure 1c illustrate the hanger (109) when it is in an engaged configuration with the slit (191) of the package (190). In this case, when the hanger (101) is fully inserted, the deformable engagement member (103) returns to an undeformed state. It will be appreciated that for some embodiments, the deformable engagement member in and engaged configuration, may be partially deformed. This may bias the lateral surfaces (105, 125) to apply a force to the inner surfaces of the slit ends (192, 193) in order to restrict lateral movement of the hanger (101) along the slit (191). It will be appreciated that for other embodiments, the lateral surfaces may not be configured to connect with the slit ends in the engaged configuration.

[0041] In this engaged configuration, the supporting surfaces (104, 124) of the two engagement members are positioned underneath the slit ends (192, 193) and would prevent the hanger (101) being removed from the package (190) by application of a force along the in-use loading axis (150). This allows the weight of the package (and as previously mentioned, further package and/or contents) to be supported by the hook (110) of the hanger (101).

[0042] The engaged hanger and package (and as previously mentioned, further package and/or contents) may be considered to be a package assembly.

[0043] Removing the engaged hanger (101) from the package (190) is facilitated by deforming the deformable engagement member by actuating the actuator (102) towards the rigid engagement member (124). The actuator in this case curves away from the package to allow easy fingertip access to the actuator. The deformation caused by the actuation causes the support surface (104) of the deformable engagement member (103) to move within the slit opening (191). This allows the hanger (101) to pass through the slit (191), or more specifically past the slit end (192), and be disengaged. It will be appreciated that the engagement and disengagement actions may be performed repeatedly by virtue of the material used to manufacture the hanger and/or the nature of construction.

[0044] It will be appreciated that, in a further embodiment (not shown), the rigid engagement member (123) may be replaced by a further deformable engagement member (103) such that both ends of the slit (199) are engaged by deformable engagement members. A further respective actuator may also be provided for the second deformable engagement member.

[0045] Facilitating easy disengagement of the hanger using actuators which extend (e.g. curve or linearly extend) away from the slit ends may allow users, such as shop workers, to readily remove the hangers for later reuse. This may reduce overall packaging costs and reduce waste. Embodiments wherein the actuators extend away from the package in an engaged configuration may be used where the slit is situated in a plane of the package.

[0046] Figures 2a and 2b depicts respective front and rear views of an embodiment of a hanger (201) for a package in an unfolded configuration. The hanger (201), in this case comprises first and second actuators (202, 222), first and second deformable engagement members (203, 223) and a body (261). In this case, the deformable engagement members are ai an opposing end to a hook (210) end of the hanger (201) when the hanger (209) is in an unfolded (planar) configuration. The body (261), in this case, comprises a first fold line (262) configured to allow the body to be folded back on itself to position the engagement members (203, 223) back towards the hook (210) end.

[0047] The body (261) in this case, also comprises a rigid head end portion (265) having lateral surfaces (235, 245).

[0048] In this case the hanger is made of polypropylene In this case, the hanger was manufactured by cutting the hanger out (in the unfolded configuration) of a single plane (one-piece) of material. It will be appreciated that other embodiments may be manufactured by punching the hanger out of a plane of material (e.g. using a die cutting manufacturing process) and/or using an injection moulding process.

[0049] The first fold line (262), in this case, is provided

by scoring or etching the polypropylene with a scriber. It will be appreciated that for other embodiments the fold line may be provided by perforating the material, or folding the hanger into a folded configuration.

[0050] Having first and second deformable engagement members (as with the modified embodiment of figure 1), rather than one deformable engagement member, may allow each deformable engagement member to deform less to enable engagement and/or disengagement with a slit This may allow stronger materials to be used to manufacture the hanger.

[0051] Figures 2c and 2d depicts respective front and rear views of an embodiment of a hanger (201) for a package in a folded configuration. This embodiment is configured such that the lateral surfaces (235, 245) of the rigid head end portion align with the lateral surfaces (205, 225) of the deformable engagement members (203. 223). Similarly, for this embodiment, the shoulder surfaces (236, 246) of the rigid head end portion (265) align with the shoulder surfaces (206, 226) of the deformable engagement members (203, 223). The rigid head end portion in this case also comprises a front cover (263), which conceals the actuators from a front view (figure 2a). This from cover (263) may be used, for example, to display information such as the size or price of the goods contained in the package.

[0052] The deformable engagement members are configured to be repeatably deformable by user actuation of the actuators (202, 222) to allow for engagement and/or disengagement of the engagement member with ends of a package slit to allow for respective carrying and release of the package by/from the hanger. It will be appreciated that squeezing the actuators (202, 222) together will provide for engagement and/or disengagement

[0053] Figures 2e and 2f depicts respective front and rear views of an embodiment of a hanger (201) for a package in an engaged configuration. As with the previous embodiment, in this case, the hanger (201) has been inserted into the slit until the shoulder portions (206, 226, 236, 246) impinge on the surface of the package, thereby preventing further insertion/removal. The fold (223) of this embodiment is configured such that the rigid head end portion (265) is biased away from the deformable engagement members (203, 223) in the folded configuration. Therefore when the hanger (201) is engaged with the slit (291), a planar surface of the rigid head end portion, and a planar surface of the deformable engagement members (203, 223) apply a force to the sides of the slit. This may help to restrict motion of the hanger from side to side in the slit (i.e. perpendicular to along the slit)- It will be appreciated that some embodiments may not be biased by the fold line.

[0054] For this embodiment the lateral surfaces (235, 245) of the rigid head end portion are configured to contact the inner surfaces of the slit ends (192. 193) when in an engaged configuration. That is, the distance between the first lateral surface (235) and the second lateral surfaces (245) is configured to correspond to the distance between the first slit end (192) and the second slit end (193). As the rigid head end portion is configured not to deform in the plane of the rigid head end section (along the length of the slit) the lateral surfaces restrict motion of the hanger along the slit.

[0055] Restricting movement along the slit (by the lateral surfaces) and/or from side to side in the slit (by the biased planar surfaces) may allow a stronger and more robust engagement between the hanger and the package. It may also help prevent the slit becoming damaged or frayed.

[0056] In the folded engaged configuration the hanger comprises two planes of material. Using two planes of material may make the hanger stronger than a hanger made of one plane of material. In the unfolded configuration, a hanger may comprise one plane of material. This may make the manufacture of the hanger easier as the same material can be conveniently folded to provide a reinforced, easy to manufacture, hanger.

[0057] Figures 2g-2j cepict cross sectional views of the embodiment of figure 2a as it is being engaged with the slit.

[0058] Figure 2g depicts the situation where the hanger (201) is in a folded disengaged configuration. In this case, the deformable engagement members (203, 223) are undeformed. As with the previous embodiment, in this case, as the hanger (201) is partially inserted into the slit (291) (depicted in figures 2h and 2i), the tapered surfaces (207, 227) impinge on the slit ends (292, 293). This causes the deformable engagement members (203, 223) to deform. As the hanger (201) is inserted further the tapered edges (207, 227) are configured to slide along the slit ends (292, 293) causing the deformable engagement members (203, 223) to deform further (figure 2i). When the tapered surfaces pass through the slit, or past the slit edges, the deformable engagement members (203, 223) at least partially revert to an undeformed configuration (figure 2j). This brings the supporting surfaces (204, 224) under the slit edges such that they engage with the slit. This prevent the hanger from being disengaged simply by pulling on the hook end. In this way the hanger is configured to support the weight of the package. The engaged hanger and package may be considered to be a package assembly.

[0059] It will be appreciated that this embodiment may be engaged to the slit by using the actuators (202, 222) (e.g. by squeezing together using fingertips) to deform the deformable engagement members (203, 223) such that they fit through the slit. It will be appreciated that other embodiments may not have tapering surfaces (207. 227).

[0060] As with the previous embodiment, in the engaged configuration, the actuators are configured to extend (curve) away from the package to enable the user easy access (e.g. using fingertips) to actuate the actuators to disengage the hanger from the slit It will be appreciated that other embodiments may not comprise an actuator which extends away from the slit ends.

[0061] Although in this embodiment, the slit is configured to be straight, it will be appreciated that for other embodiments, the slit may not be straight (for example, the slit may be curved). A sleight slit may make the packaging and the corresponding hangers easier to produce. A non-straight (e.g. curved) slit may allow the hanger to be stronger in a direction perpendicular to the slit axis (the slit axis lying along the length of the slit). In addition, for example, where a flat planar hanger (in a disengaged configuration) is deformed to be inserted into a curved slit, the hanger may be configured to exert a force on the sides of the slit thereby assisting in retaining the package.

[0062] Figures 2k and 2l illustrate the embodiment of figure 2a in a front and side view respectively. Figures 2k and 2l give example dimensions for the various features of the embodiment of figure 2a. Values for length and for curvatures (corresponding to radial distances) are given in millimetres.

[0063] Figures 3a-3f depicts a further embodiment of a hanger. This embodiment is similar to the previous embodiment in that the hanger (301) comprises first and second actuators (302, 322), first and second deformable engagement members (303, 323) and a body (361). In this case, the deformable engagement members are at an opposing end to a hook end of the hanger when the hanger is in an unfolded (planar) configuration (as depicted, in a front view, in figure 3a and, in a rear view, in 3b). The body (361), In this case, comprises a first fold line (362) configured to allow the body to be folded back on itself to position the engagement members (303, 323) back towards the hook (310) end. In this case the first fold line is provided by making perforations through the hanger along the fold line.

[0064] Figures 3c and 3d show the embodiment of figure 3a in a folded configuration in a front view and a rear view respectively.

[0065] Figures 3e and 3f show the embodiment of figure 3a in a folded engaged configuration in a front view and a rear view respectively. Unlike the previous embodiments wherein the actuators were configured to curve away from the package in an engaged configuration, in this embodiment the actuators are configured, in an engaged configuration, to curve towards from the package. In this case the slit (391) of the package (390) is positioned on a fold in the package, In this case, the actuators (302, 322) are configured to extend towards and behind an engaged package (390) to, when engaged with a package, inhibit backward motion of the package with respect to the hanger. It will be appreciated that the actuators (302, 322) (on the outside of the package) in combination with the deformable engagement members (303, 323) (on the inside of the package) may apply a pinching force to the surface of the package. This may restrict movement of the hanger with respect to the package. The engaged hanger and package may be considered to be a package assembly.

[0066] It will be appreciated that this embodiment may be suitable for slits which are situated on a fold (e.g. a fold of 180° or 90°).

[0067] Figures 3g and 3h illustrate the embodiment of figure 3a in a front and side view respectively- Figures 3g and 3h give example dimensions for the various features of the embodiment of figure 3a. Values for length and for curvatures (corresponding to radial distances) are given in miliimetres.

[0068] Figures 4a-4f depicts a further embodiment of a hanger. This embodiment is similar to the previous embodiment in that the hanger (401) comprises first and second actuators (402, 422), first and second deformable engagement members (403, 423) and a body (461). In this case, the deformable engagement members are at an opposing end to a hook end of the hanger when the hanger is in an unfolded (planar) configuration (as depicted, in a front view, in figure 3a and, in a rear view, in 3b). The body (461), in this case, comprises a first fold line (462) configured to allow the body to be folded back on itself to position the engagement members (403, 423) back towards the hook (410) end. In this case the first fold line is provided by making perforations through the hanger along the first fold line.

[0069] Figures 4c and 4d show the embodiment of figure 4a in a folded configuration in a front view and a rear view respectively. Unlike the previous embodiment, this embodiment comprises a from portion (471) which conceals the actuator (402, 422) in the folded configuration), when viewed from the front.

[0070] Figures 4e and 4f show the embodiment of figure 4a in a folded engaged configuration in a front view and a rear view respectively. Like the previous embodiments, in this embodiment, the actuators are configured, in an engaged configuration, to curve towards from the package. In this case the sift (491) of the package (490) is positioned on a fold in the package In this case, the actuators (402, 422) are configured to extend towards and behind an engaged package (490) to, when engaged with a package, inhibit backward motion of the package with respect to the hanger. It will be appreciated that the actuators (402, 422) on the outside of the package in combination with the deformable engagement members (403, 423) may apply a pinching (or compressing) force to a first surface of the package which may restrict movement of the hanger with respect to the package. The engaged hanger and package may be considered to be a package assembly.

[0071] The front portion (471) is, in this case, configured to extend towards and in front of the engaged package (490) to, when engaged with a package, inhibit forward motion of the package with respect to the hanger. In this case, the front portion also conceals the slit in the engaged configuration, which may make the packaging look neater. It will be appreciated that the front portion (471) on the outside of the package in combination with the deformable engagement members (403, 423) may apply a pinching (or compressing) force to a second surface of the package which may restrict movement of the hanger with respect to the package.

[0072] It will be appreciated that this embodiment may be suitable for slits which are situated on a fold (e.g. a fold of 180°). It will be appreciated that the front portion and/or the actuators which are configured to extend towards the engaged package (on the outside of the package) may have an angle corresponding to that of the package. That is, the front portion and/or the actuators may be configured to connect with the outer surface of the package when in the engaged position.

[0073] Figures 4g, 4h and 4i illustrate the embodiment of figure 4a in back, front and side views respectively. Figures 4g, 4h and 4i give example dimensions for the various features of the embodiment of figure 4a. Values for length and for curvatures (corresponding to radial distances) are given in millimetres. It will be appreciated that the example dimensions may be changed (for example, if the package were larger, a larger hanger may be requirec).

[0074] Figures 5a, 5b and 5c depict respective front, rear and side views of a further embodiment of a hanger (501) for a package In an unfolded configuration. The hanger (501), in this case comprises first and second actuators (502, 522), first and second deformable engagement members (503, 523) and a body (561). In this case, the deformable engagement members are at an opposing end to a hook (510) end of the hanger (501) when the hanger (501) is in an unfolded (planar) configuration. The body (561), in this case, comprises a first fold line (562) configured to allow the body to be folded back on itself to position the engagement members (503, 523) back towards the hook (510) end. However, unlike the head end of figure 2 which was rigid, the head end (561), in this case, is also foldable about a second fold line (569) configured to allow the head end to be bent about the second fold line. This may allow the hook to be at an angle to the engagement member. In this case the second fold line is configured to be aligned with shoulder surfaces (536, 546) of the head end portion (565). That is, when the hanger is in an engaged configuration, the second fold line is configured to be aligned with the slit axis. This may also allow external portions of the hanger (e.g. hook) to be at an angle (e.g. 90°) to internal portions of the hanger when in an engaged configuration. This may allow the external portions of the hanger to move independently to the internal portions and/or the package. As discussed below, this can allow more) room for content in the package because the internal portions of the hanger do not significantly extend into the package.

[0075] In this case the hanger is made of polypropylene. In this case, the hanger was manufactured by cutting the hanger cut (in the unfolded configuration) of a single plane (one-piece) of material. It will be appreciated that other embodiments may be manufactured by punching the hanger out of a plane of material (e.g. using a die cutting manufacturing process) and/or using an injection moulding process or by any other means.

[0076] The first fold line (562) and the second fold line (569), in this case, are provided by scoring or etch ng the polypropylene with a scriber. It will be appreciated that for other embodiments one or both of the fold lines may be provided by perforating the material, or folding the hanger into a folded configuration.

[0077] Figures 5d and 5e depict respective front and rear views of an embodiment of a hanger (501) for a package in a folded configuration. This embodiment is configured such that the lateral surfaces (535, 545) of the rigid head end portion align with the lateral surfaces (505, 225) of the deformable engagement members (503, 523). Similarly, for this embodiment, the shoulder surfaces (536, 546) of the head end portion (5.65) align with the shoulder surfaces (506, 526) of the deformable engagement members (503, 523).

[0078] The deformable engagement members are configured to be repeatably deformable by user actuation of the actuators (502, 522) to allow for engagement and/or disengagement of the engagement member with ends of a package slit to allow for respective carrying and release of the package by/from the hanger. It will be appreciated that squeezing the actuators (502, 522) together will provide for engagement and/or disengagement.

[0079] Figure 5f depicts the situation where the hanger (501) is in a partially folded disengaged configuration before being inserted into a package slit (591). In this case, the slit is positioned centrally on a surface of the package- In this case, the deformable engagement members (503, 523) are undeformed- As with the previous embodiments, in this case, as the hanger (501) is partially inserted into the slit (591) (not shown), the tapered surfaces of the engagement members to impinge on the slit ends (592, 593). This causes the deformable engagement members (503, 523) to deform and move towards each other. As the hanger (501) is inserted further the tapered edges are configured to slide along the slit ends (592, 593) causing the deformable- engagement members (503, 523) to deform further and move closer together. When the tapered surfaces pass through the slit or past the slit edges, the deformable engagement members (503, 523) at least partially revert to an undeformed configuration. This brings the supporting surfaces (504, 524) of the deformable engagement members (503, 523) under the slit edges such that they engage with the slit This prevents the hanger from being disengaged simply by pulling on the hook end. In this way the hanger is configured to support the weight of the package. The engaged hanger and package may be considered to be a package assembly.

[0080] In this case, the second fold line (569) allows the hook to be positioned in a different plane to the engagement members and to the portion of the hanger which is inside the package. For example, the hook can be generally perpendicular to the top surface of the package (590) and the portion of the hanger that is within the package (590) is generally parallel to the top surface of the package (590). It will be appreciated that the actuators (502, 522) are also generally parallel to the top surface of the package (590) but are outside the package

(590).

[0081] This embodiment may allow the portion of the hanger which is inside the package to lie along the inside surface of the package. It will be appreciated that this may allow more room for the contents of the package. It will be appreciated that the package may be constructed such that the internal portion of the hanger is restricted such that it lies along the internal plane (e.g. by having a channel or groove on the internal surface of the package configured to receive the internal portion of the hanger).

[0082] Figures 5g and 5h depict two perspective views of the package hanger in an engaged configuration.

[0083] It will be appreciated that by allowing the head end to fold, the user may have more freedom to move the hook with respect to the package.

[0084] It will be appreciated that this embodiment may be engaged to the slit by using the actuators (502, 522) (e.g. by squeezing together using fingertips) to deform the deformable engagement members (503, 523) such that they fit through the slit.

[0085] As with the previous embodiment, in the engaged configuration, the actuators are configured to extend (curve) away from the slit ends to enable the user easy access (e.g. using fingertips) to actuate the actuators to disengage the hanger from the slit

[0086] Figures 5i and 5j illustrate the embodiment of figure 5a in back and side views respectively. Figures 5i and 5j give example dimensions for the various features of the embodiment of figure 5a. Values for length and for curvatures (corresponding to radial distances) are given in millimetres. It will be appreciated that the example dimensions may be changed (for example, if the package were larger, a larger hanger may be required).

[0087] In view of the foregoing description it will be evident to a person skilled in the art that various modifications may be made within the scope of the disclosure. For example, an embodiment of a hanger with a fold-line (like the embodiment of figure 2a) may comprise only a single deformable engagement member (like the embodiment of figure 1 a). There may be provided an embodiment with actuators configured to extend both away and towards the package (e.g. a combination of figures 2 and 3).

Claims

1. A hanger for a package, the hanger comprising an actuator, a deformable engagement member and a body,
   the deformable engagement member configured to be repeatably deformable by user actuation of the actuator to allow for engagement and/or disengagement of the engagement member with ends of a package slit to allow for respective carrying and release of the package by/from the hanger, and
   wherein the deformable engagement member is at an opposing end to a hook end of the hanger, the body comprising a first fold line configured to allow the body to be folded back on itself to position the engagement member back towards the hook end.

2. A hanger for a package, the hanger comprising an actuator and a deformable engagement member,
   the deformable engagement member configured to be repeatably deformable by user actuation of the actuator to allow for engagement and/or disengagement of the engagement member with ends of a package slit to allow for respective carrying and release of the package by/from the hanger, and wherein the actuator is configured to extend away from the slit ends to allow finger-tip access to the actuator.

3. The hanger of claim 1 wherein, the first fold line is configured to bias away from a folded back position.

4. The hanger of claim 1 and/or claim 2 wherein the engagement of the engagement member is provided by deformation of the engagement member so that it passes through the slit to engage with the slit ends.

5. The hanger of any preceding claim, wherein the actuators are configured, in an engaged configuration, to extend away from the package.

6. The hanger of any preceding claim, wherein the actuators are configured, in an engaged configuration, to extend towards from the package.

7. The hanger of any preceding claim, wherein the disengagement of the engagement member is provided by actuated deformation of the engagement member so that it disengages from the slit ends to allow it to pass through the slit to release the package from the hanger.

8. The hanger of any preceding claim, wherein the actuator is configured to extend towards and behind an engaged package to, when engaged with a package, inhibit backward motion of the package.

9. The hanger of any preceding claim, comprising respective supporting surfaces on engagement members configured to retain the engagement of the engagement member with the slit ends.

10. The hanger of any preceding claim, the hanger further comprising a front cover positioned to hide the actuator from view when the hanger is in a front carrying position.

11. The hanger of any preceding claim, comprising respective shoulder surfaces of the head end and engagement member end which substantially align with one another in the folded configuration.

12. The hanger of any preceding claim, wherein the hanger comprises a hook, the hook being configured to allow for hanging of the hanger on a clothes rack.

13. The hanger of any preceding claim, wherein the hanger comprises two opposing deformable engagement members.

14. The hanger of any preceding claim, wherein the hanger comprises a second fold line, the second fold line configured to be aligned with an axis passing through engagement member lateral surfaces when the hanger is in a folded configuration.

15. A package-assembly comprising:

a package comprising a slit and
the hanger of claim any preceding claim, the hanger being engaged to the slit.

Figure 1a

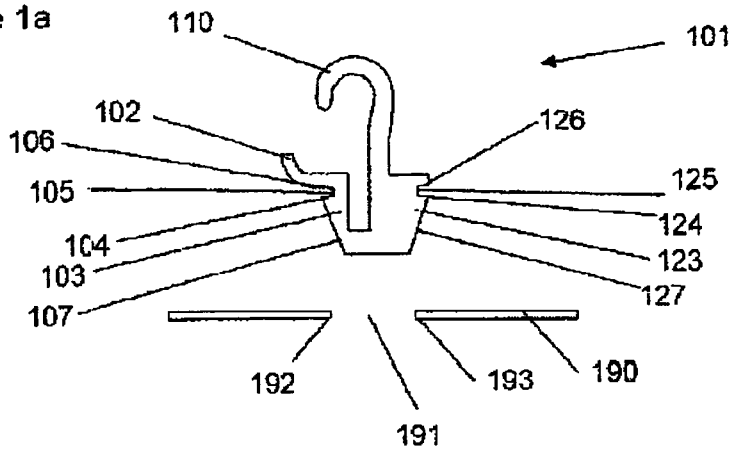


Figure 1b

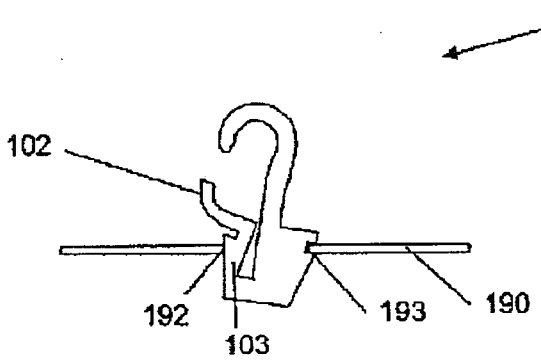


Figure 1c

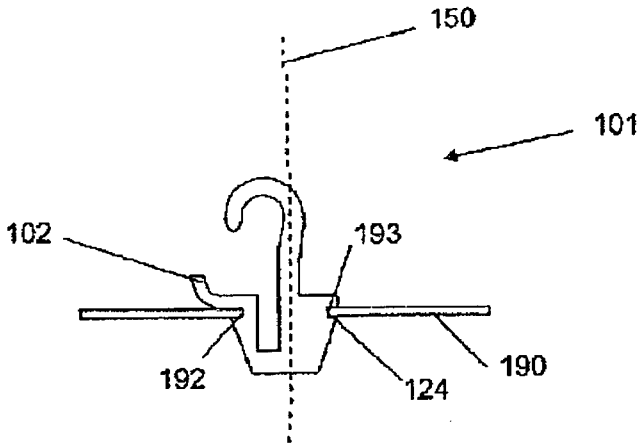


Figure 2a

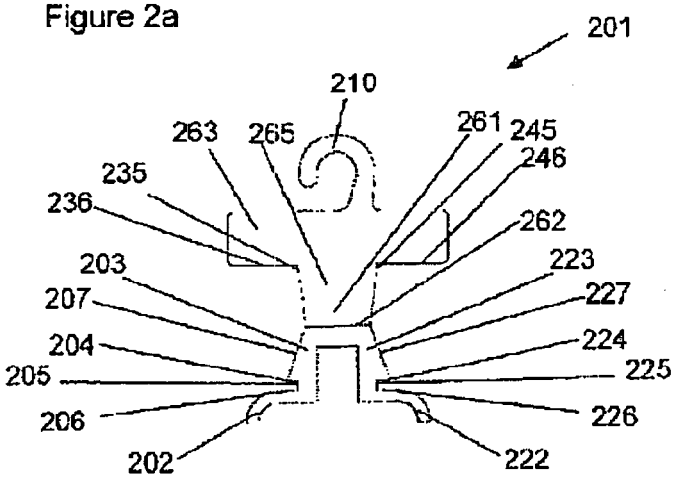


Figure 2b

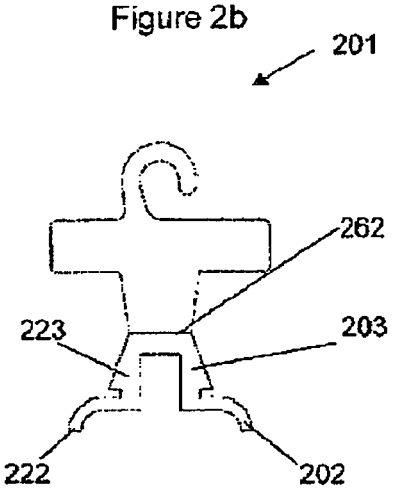


Figure 2c

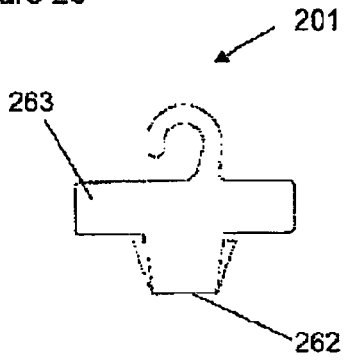


Figure 2d

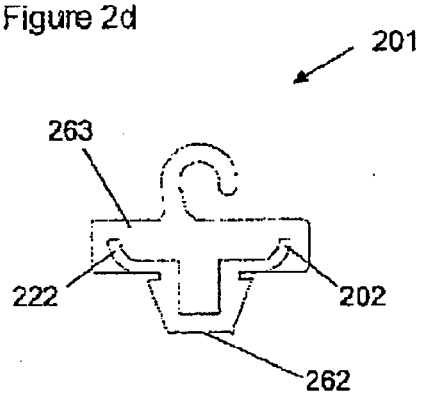


Figure 2e

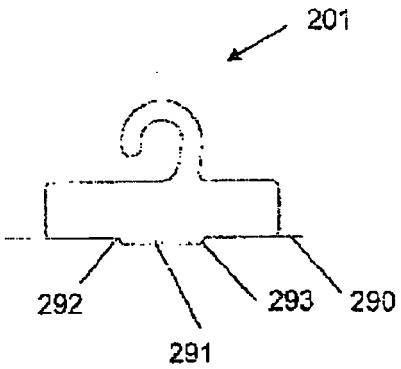


Figure 2f

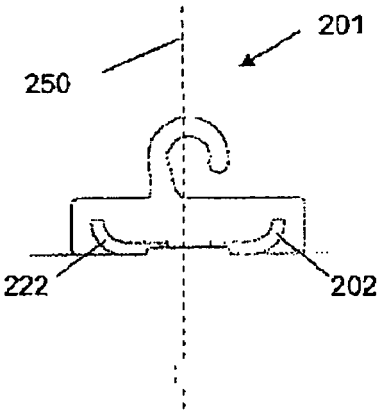


Figure 2g

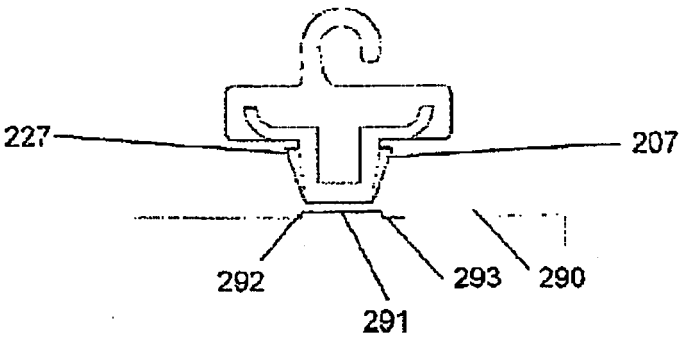


Figure 2h

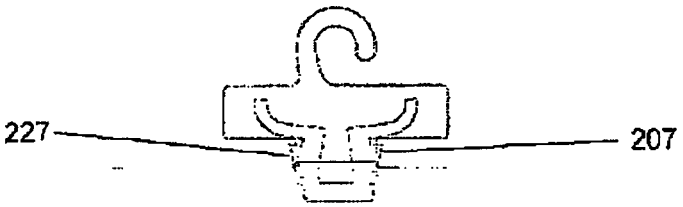


Figure 2i

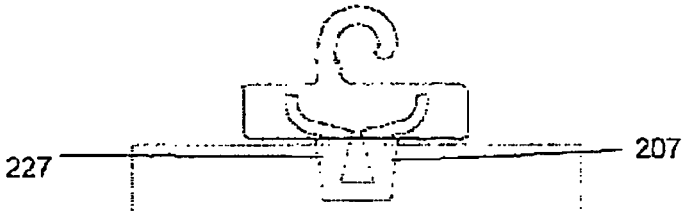


Figure 2j

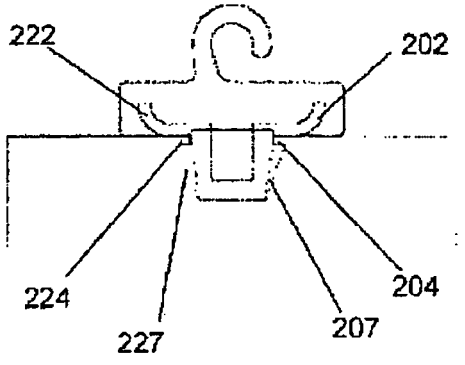


Figure 2k FRONT

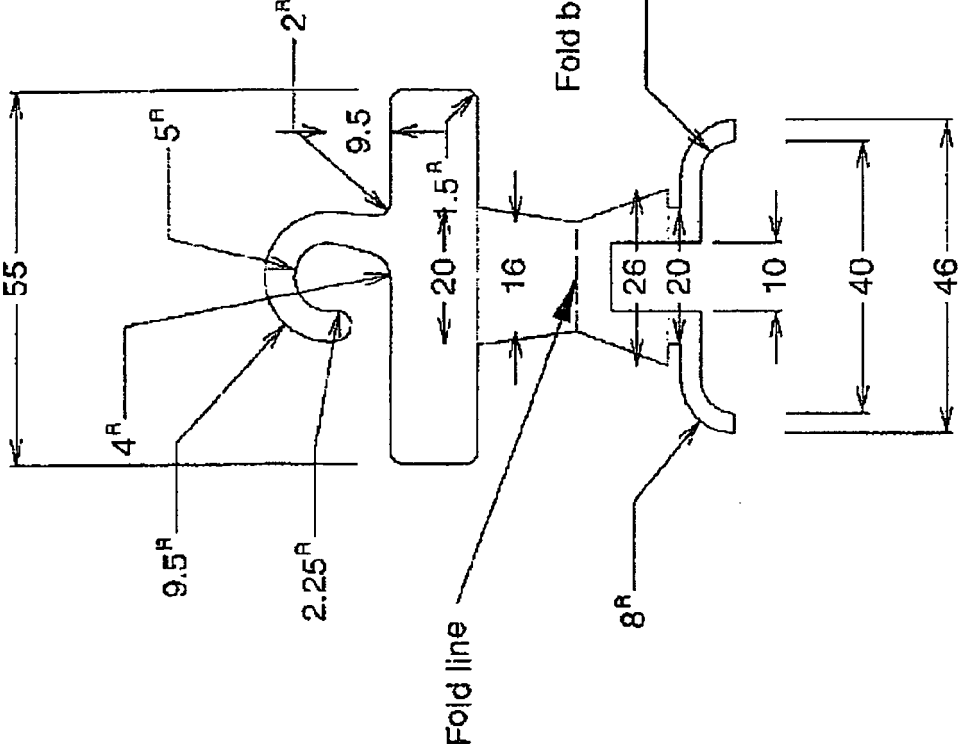


Figure 2l SIDE

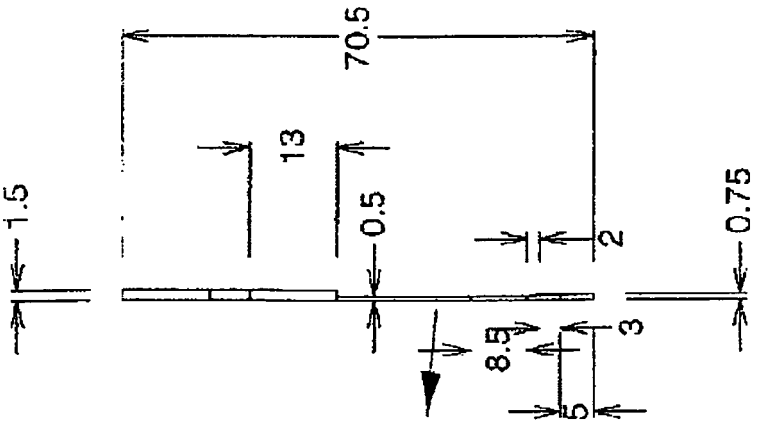


Figure 3a

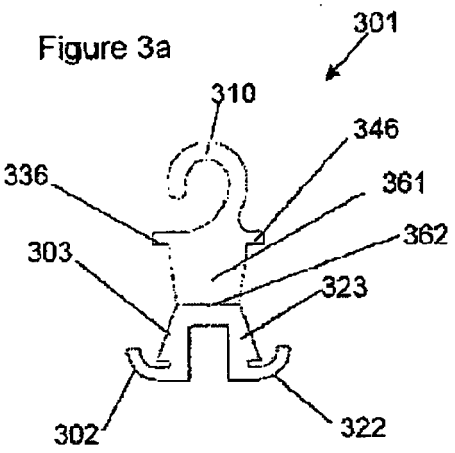


Figure 3b

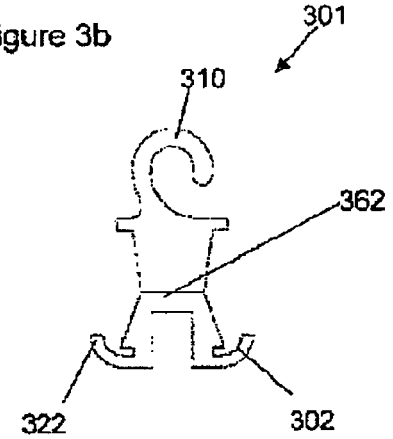


Figure 3c

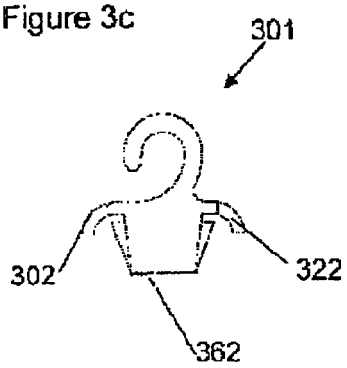


Figure 3d

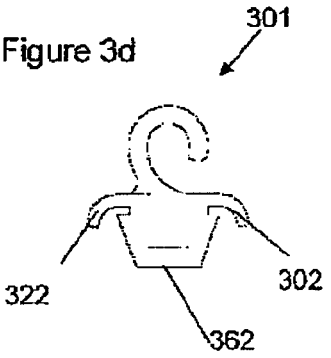


Figure 3e

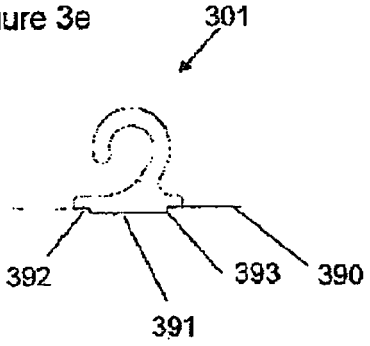


Figure 3f

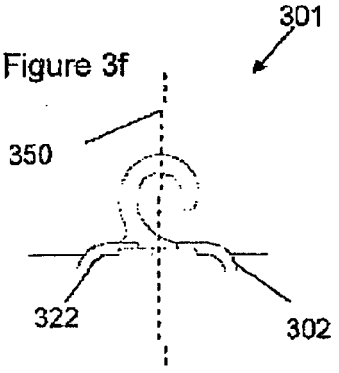


Figure 3a- FRONT

Figure 3b SIDE

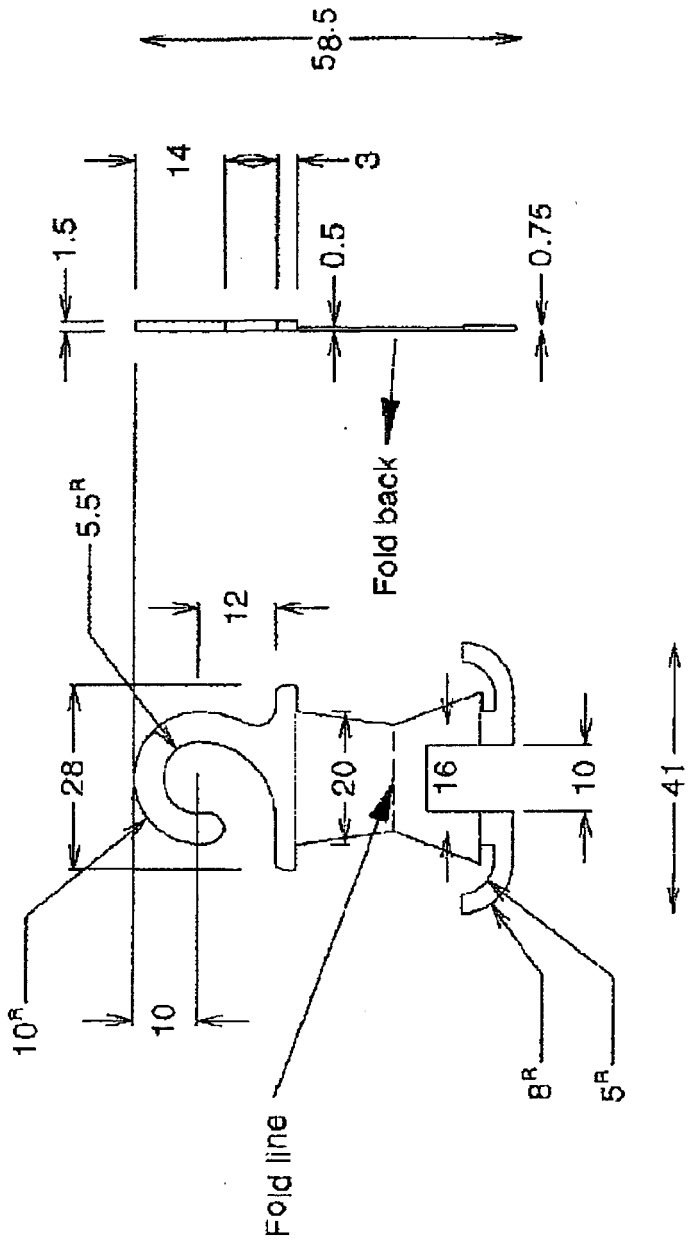


Figure 4a

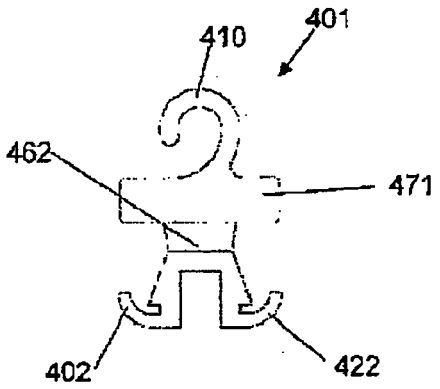


Figure 4b

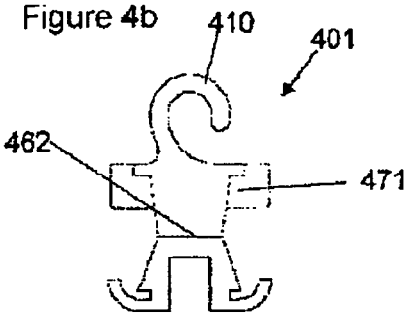


Figure 4c

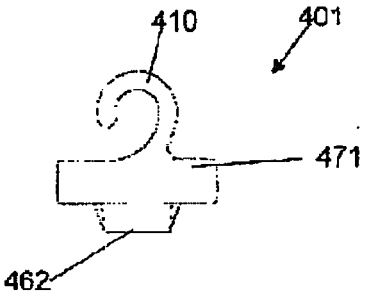


Figure 4d

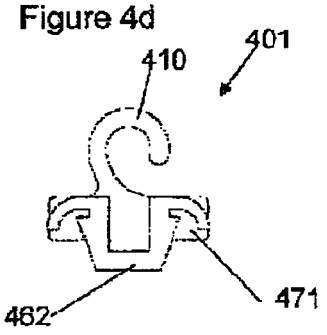


Figure 4e

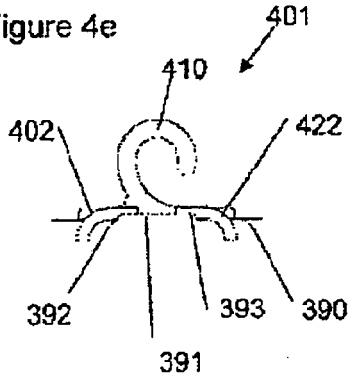


Figure 4f

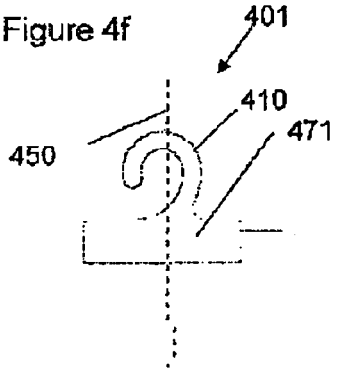


Figure 4i
SIDE

Figure 4h
FRONT

Figure 4g
BACK

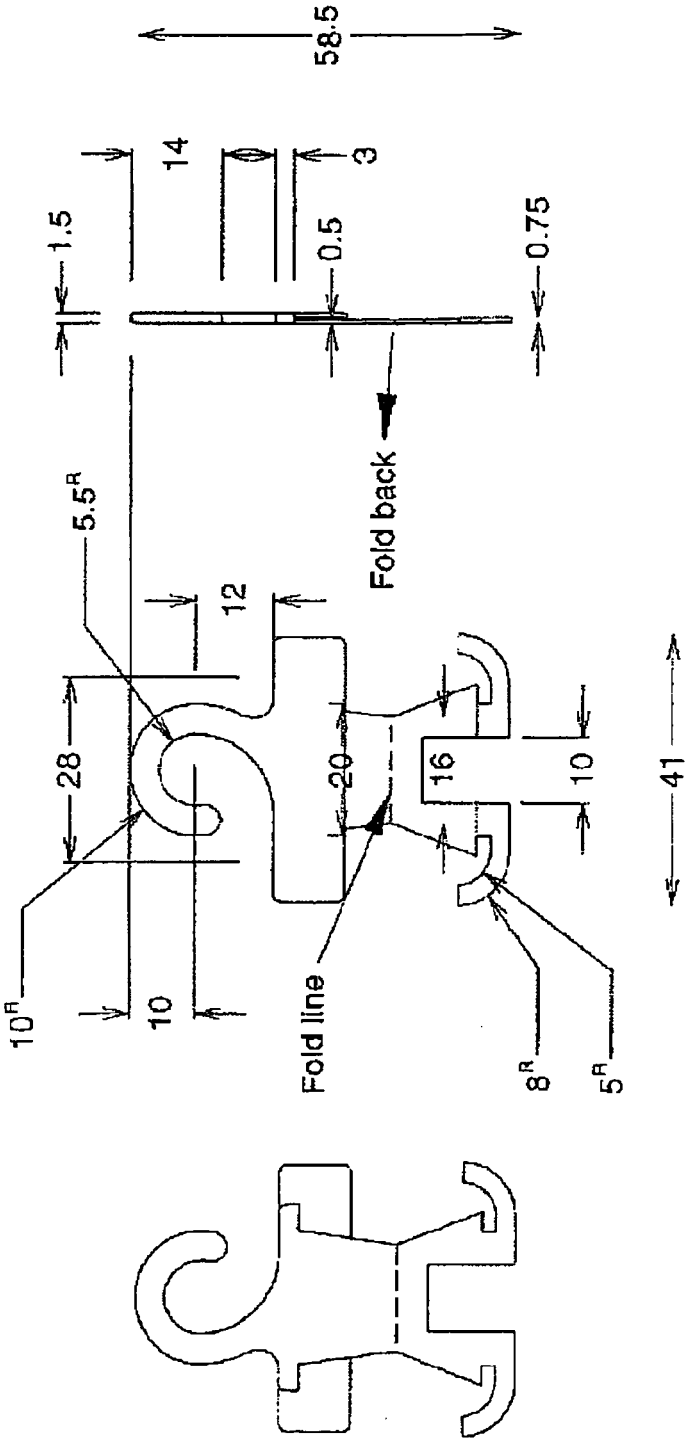


Figure 5a

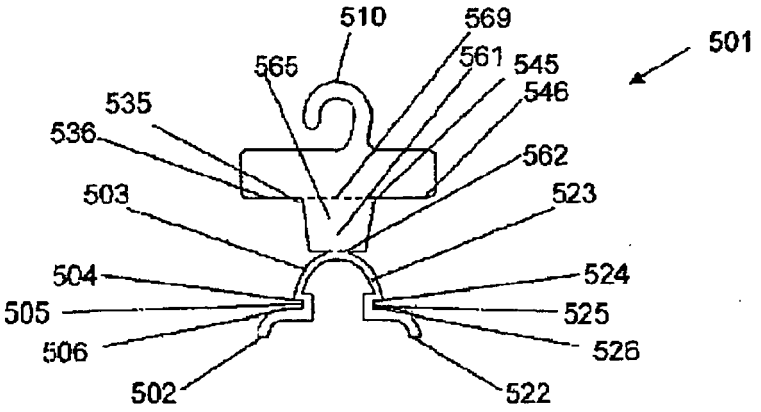


Figure 5b

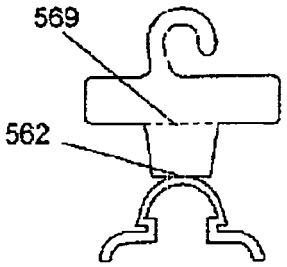


Figure 5c

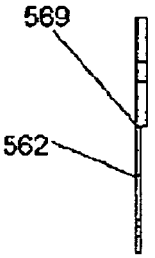


Figure 5d

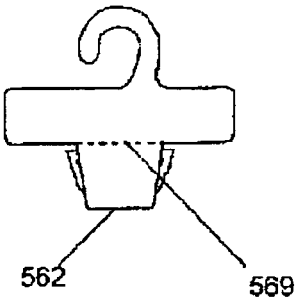


Figure 5e

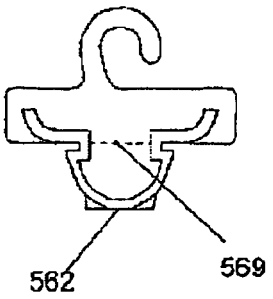


Figure 5f

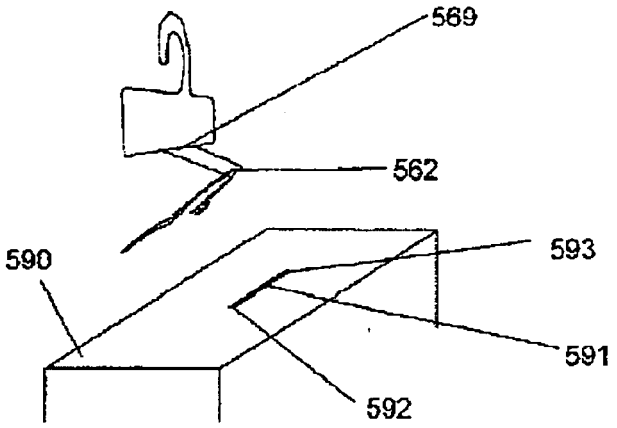


Figure 5g

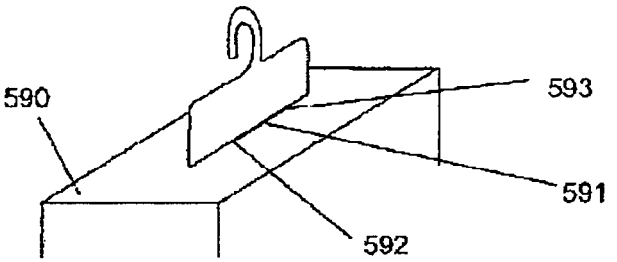
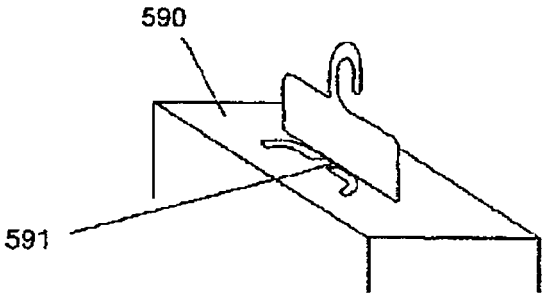


Figure 5h



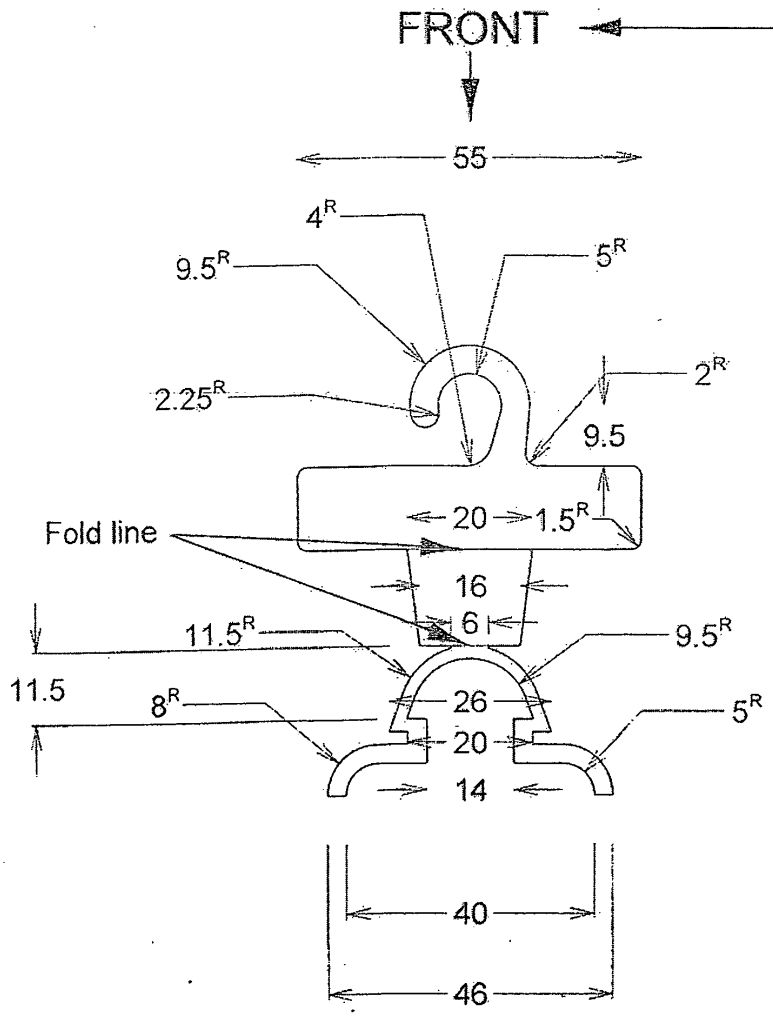


figure 5i

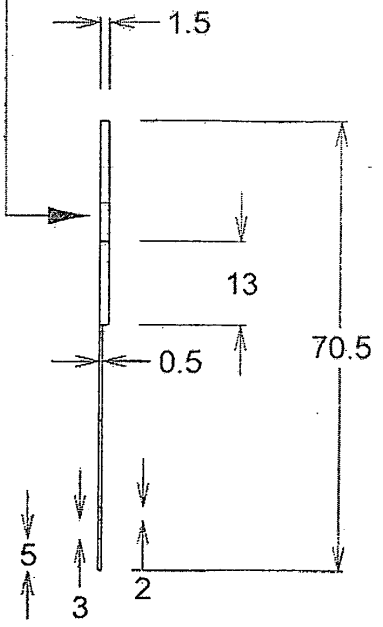


figure 5j

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EUROPEAN SEARCH REPORT

Application Number
EP 11 25 0816

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 4 155 531 A (BAGNE GORDON [US]) 22 May 1979 (1979-05-22) * the whole document * -----	1,3,4,6, 8,12,15	INV. A47F5/00 B65D5/42
X	DE 25 18 424 A1 (LEIFHEIT INTERNATIONAL) 28 October 1976 (1976-10-28) * figures * -----	2,4,5, 7-9,12, 13	ADD. B65D85/18
X	FR 2 751 188 A1 (JACQUEMARD ETS [FR]) 23 January 1998 (1998-01-23) * page 4, line 13 - line 24 * * figures 2a, 2b * -----	2,4-9, 12,13,15	
A	EP 0 392 878 A2 (WILKINS ANDRE PHILIP [GB]) 17 October 1990 (1990-10-17) * the whole document * -----	1-15	
E	GB 2 480 645 A (MAINETTI [GB]) 30 November 2011 (2011-11-30) * the whole document * -----	2,4,5, 7-10,12, 13,15	

TECHNICAL FIELDS SEARCHED (IPC)
A47F
B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	13 July 2012	van Hoogstraten, S

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

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Application Number
EP 11 25 0816

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☒ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).

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LACK OF UNITY OF INVENTION
SHEET B

Application Number
EP 11 25 0816

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1, 3-15

A hanger being foldable in configuration

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2. claim: 2

A hanger having actuators being accessible when the hanger is in an engaged position

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 11 25 0816

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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13-07-2012

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82