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(54) PACKAGING FOR PROTECTING OBJECTS AND METHOD FOR MANUFACTURING SAME

(57) The invention relates to a packaging consisting of a cover (20) obtained from a packaging sheet (22) obtained from a film (23), with transverse (30) and longitudinal (31) joining lines, in order to establish therebetween pads (32) which are filled with a fluid (33), in order to protect an object (21) to which the protective cover (20) is applied on the outside in a fitted manner. The cover (20) can have the pads (32) thereof closed or open (34) and communicating with one another, allowing the fluid to pass through. The packaging sheet (22) also has folding areas (35) allowing same to be adapted to the contour or the shape of the object to be protected (21), also having hollow areas (36) for adapting to the surface of the object to be protected (21), including closing areas (37) for closing the sheet (22) onto itself, being fitted to the object to be protected.

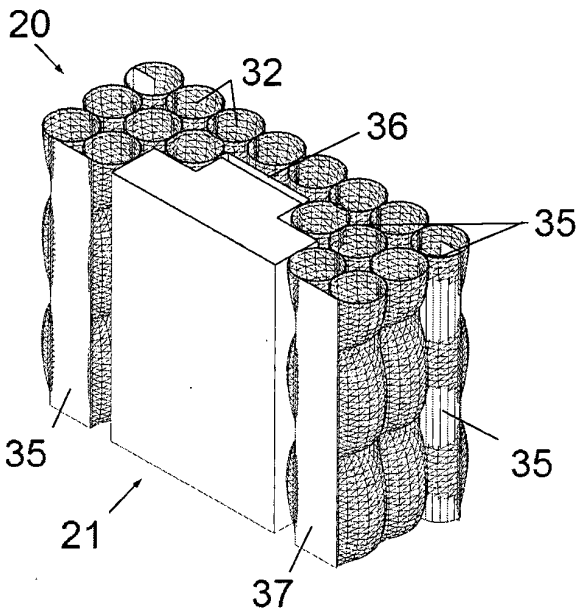

FIG. 2

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Description

SCOPE

[0001] The scope of the invention is packaging to protect objects or appliances, especially voluminous electrical household appliances such as refrigerators, washing machines, dishwashers, ovens or similar, comprising at least one protective cover composed of at least two layered films or sheets, each film with at least one layer of plastic, the two stacked layers of film are joined by transverse and longitudinal joint lines, these joint lines preferably made using heat sealing, creating pads of different sizes which are filled with fluid to protect the aforesaid objects or appliances from rubbing, knocks and/or vibrations during storage and/or transport until they are put into service at the final user's address.

[0002] Also the subject of the invention is the procedure for manufacturing this packing to protect objects is part of the scope of this invention.

STATE OF THE ART

[0003] Packaging for objects comprises a variety of covers or elements, commonly but not exclusively, two covers, one upper and one lower, or two sides, one left and one right, or one back and one front, or a base upon which the object is positioned and a lid which is positioned on top of the object, four edge protectors which at least partially cover the four edges of the object, from the base to the lid, and panels halfway up the sides of the object, used to spread the load produced by fork-lift truck forks. Similarly, packaging can include four edge protectors that extend past its top and bottom so as to make the base and lid or just one of them unnecessary, as described, for example, in the Spanish utility model published under number ES 1069687 U.

[0004] Packaging can also be conceived to protect one of the faces of the object during transport, as described, for example, in patent ES 2382853 A1.

[0005] In any case, packaging with more or less covers, and with one arrangement or another, is usually complemented by a plastic shrink wrap or stretch wrap, or a cardboard box, to prevent movement of the packaging parts or elements of which the packing is composed and, of course, the packaged and protected object.

[0006] Normally, although not exclusively, the covers that constitute conventional packaging are usually made from cardboard and/or cut or moulded EPS (expanded polystyrene).

[0007] This type of packaging is sufficient to protect all types of objects and appliances at a reasonable cost. However, manufacturing them requires a large amount of energy in the form of steam and compressed air. Once the product has been obtained by transforming the raw material, and due to the low densities obtained, transporting this product is costly due to the ratio of transport cost per kilogram of product transported. This characteristic in some cases leads the packaging manufacturing company to build transformation facilities close to its customers, with the investment costs this involves. This type of product also requires moulds to be built, which are generally made from metal, to make it possible to obtain the shapes to fit the object to be packaged. Another characteristic feature of this packaging, particularly those made from EPS, is that even though they are fully recyclable materials, collecting and transporting discarded packaging requires significant investments due, again, to its low density and the ratio of transport cost per kilogram of material transported.

[0008] Also used in packaging is plastic bubble wrapping or bubble packaging. This is characterised by having closed bubbles, i.e. separate bubbles, of equal size and uniform distribution throughout the surface of the plastic sheet supporting them, so giving protection to the object partially or completely enveloped by the bubbled plastic, protecting its surface and cushioning impacts and/or vibrations. However, this type of packaging does not intentionally adapt the size, shape and position of the bubbles to the object surface details or to its shape or outline. Also, in the case of using a cardboard box, for example, to complete the packaging, this can leave gaps between the packaged object and the box containing it.

[0009] In other cases, bubbled plastic, in which the bubbles have become larger pads, is used to fill spaces between the object and the box, generally made from cardboard, enclosing the object-bubbled plastic combination. In this regard, the patents US 7254932 and US 8366594 describe packaging of this type which is conceived to fill the gap between the object or set of objects placed in a cardboard box. However, this type of protection generally has all or a large proportion of the pads connected together, and if one of them breaks, all the rest connected to it will lose the air contained in them, rendering the packaging useless. Another possibility is that they have one-way air valves to make each pad independent, and if any break, the rest will hold the air inside them and the protection capability of the packaging will not be lost entirely. However, these items make the packaging more expensive.

[0010] None of these types of packaging are usually made in situ, i.e. alongside the object or appliance production line, nor are they made when needed, i.e. they are manufactured somewhere other than where they are used and before they need to be used, hence after being manufactured they need to be stored and transported to the object or appliance producer's factory.

DESCRIPTION OF THE INVENTION

[0011] The purpose of the invention is to provide packaging for objects or appliances which is at least as secure against rubbing, knocks and/or vibrations as current packaging made from plastics and/or cardboard, and is made to achieve economic savings in manufacturing and distribution, as well as achieving greater ease of recy-

cling. The economic saving is mainly due to the packaging detailed in the invention using less raw material, a fraction of the energy used in manufacturing current packaging, and a much more favourable ratio of transport cost per kilogram of material transported, due to the density of the material transported being several times higher than that of current packaging made from cardboard and/or EPS. At the same time, the greater ease of recycling comes from the use of less raw material, and that the packaging fluid can be extracted easily by breaking or cutting the pads, hence the discarded packaging will occupy less space and have a higher density than current packaging, improving the transport cost per transported kilogram of material to be recycled.

[0012] The first purpose of the invention is achieved by making available packing to protect objects or appliances, especially voluminous electrical household appliances such as refrigerators, washing machines, dishwashers, ovens or similar, characterised in that it comprises at least one protective cover composed of at least two stacked films or sheets, each film with at least one layer of plastic, the two stacked layers of film are joined by transverse and longitudinal joint lines, where these joint lines form pads filled with fluid, and this protective cover has at least one layer of pads, with fold zones, gap zones and with the possibility of having closure zones, such that this protective cover specifically fits the surface and outline of the object to be protected during storage and transport, from manufacture until it is put into service at the final user's address.

[0013] That is to say, the packaging can be made up of one or several protective covers, obtained from a film or sheet which is preferably multilayer and has at least one plastic layer. As such, the film or sheet is preferably a multilayer plastic material, where these can be layers of different materials, such as paper, cardboard or metal or a combination of different materials in one film.

[0014] To be able to adapt the protective cover to the surface and the shape of the object it protects, both the transverse joint lines and the longitudinal joint lines can have constant or varying spacing to form pads of the same or different dimensions.

[0015] That is to say, each fluid-filled pad in the protective cover is appropriately configured in dimensions, shape and position for the protective cover to fit the details of the object's external surface and to its shape or general outline and to protect it during storage and transport.

[0016] The protective cover is the result of folding the packaging sheet, which is an intermediate product in the process to obtain the packaging detailed in the invention of the invention, in a process described later. The concept of the packaging sheet will now be explained to facilitate understanding of the characteristics of the protective cover which is the subject of the invention. The packaging sheet comprises the same characteristics as the protective cover, except that it is flat and therefore does not have the characteristics of a three-dimensional element, that is, for example, that it is formed of a single layer of pads and not several layers of pads, from which the protective cover can be configured. The packaging sheet, like the protective cover derived from it, comprises fold zones as well as the pads, which correspond to areas in which the pads are of a size and position so as to allow the sheet to be folded in these zones to fit the general shape of the object it is desired to pack and protect in the end, such that the fold zones facilitate the folding of the packaging sheet, leading to different types of protective covers, such as bases or lids, edge protectors, corner protectors, panels, etc.

[0017] The packaging sheet with the pads and the fold zones also includes gap zones, as areas where the pads are of the appropriate size and position to adapt the protective cover to the surface details of certain areas of the object to be packaged, such as recesses, projections, etc.

[0018] In a preferred configuration, the pads form a closed, fluid-filled cavity in each case. That is to say, the pads are not connected together, thus preventing the fluid from one pad to flow to another. In another configuration, one part of the pads can be connected together; in this case the cavity will be open. This connection is made using channels of appropriate dimensions, allowing fluid to flow from one pad to another at a controlled rate to increase control over the protection of the object to be packaged. Both configurations can coexist in the same protective cover.

[0019] Clearly, the pads and their configuration (shape, size and position) will have the function of cushioning the packaged object from the blows and/or vibrations it could receive during transport, storage or handling.

[0020] The protection against impacts or vibrations is provided by the capacity the plastic used has to deform without breaking, up to a certain limit, thus absorbing the energy from that impact or vibration. The connected pads provide additional protection by allowing the fluid to move in a given direction at a controlled rate in the event of an impact or vibration. When the fluid flows through a narrow passage, the rate of deformation of certain pads can be controlled, thus making it possible to improve packaging design.

[0021] After folding, the packaging sheet, which is a flat element of a certain thickness, adopts a shape in three dimensions, so leading to the protective cover. This has an internal surface that can adapt to the external surface details of the object and enclose it entirely or partially, and in a preferred configuration, a basically flat external surface which fits the internal surface of the final wrap, commonly a sheet of shrink wrap or stretch wrap plastic or a cardboard box, and in another configuration, the external surface of the protective cover adopts a shape which is basically not flat, for decorative and/or structural reasons.

[0022] Logically, the packaging with its protected object can be housed in a cardboard box or wrapped in a

sheet of shrink wrap or stretch wrap plastic.

[0023] Similarly, another objective of the invention is the method or procedure for transforming the film to obtain the fluid-filled pads. The procedure comprises three stages; Stage 1: Shaping of the transverse joints; Stage 2: Shaping of the longitudinal joints and simultaneous fluid filling, shaping of the gap and closure zones; and Stage 3: Folding the packaging sheet and obtaining the protective cover. These three stages make it possible, starting from at least two reels of film, to obtain a protective cover in three dimensions with its shape and surfaces adapted to the object that needs to be protected, and to be manufactured where and when this protective cover is needed. Thanks to this manufacturing method, with joint modules that enable joints to be made with the necessary quality and characteristics, the packaging can be manufactured in the same facilities where the object is manufactured, not in separate facilities, and the packaging does not require transportation. It is also manufactured when it is used, not before, and it therefore does not need to be stored inflated with the volume this occupies. Example. In the current technique, the packaging is preformed uninflated, delivered in rolls or boxes as preformed sheet and needs to be inflated one by one, which is why all the pads or chambers are connected. With the method proposed in this invention, the protective cover is made alongside the production line for the objects or appliances when this object or appliance is finished and ready to be packaged.

[0024] As regards the procedure for manufacturing the packaging described, this is based on stacking at least two films of the appropriate width and thickness, and composed of at least one layer of plastic, and consists of joining the films by means of transverse joint lines forming transverse channels between each two consecutive transverse joint lines. These transverse channels are open on at least one of their ends to give a preformed sheet characterised, logically, by having transverse channels open on at least one of their sides; the subsequent joining by means of longitudinal joint lines to form pads, fold zones, gap zones and closure zones, filling these pads with a fluid in the longitudinal joint execution phase, to create the packaging sheet; when folding the packaging sheet at the fold zones, this packaging sheet can be closed onto itself using the closure zones, creating the protective cover which is the objective of the invention.

[0025] The terms "preformed sheet" and "packaging sheet" are understood to mean two intermediate states or semi-finished products between the initial film and the protective cover which is the objective of the invention.

[0026] In an initial shaping stage, the initial films are moved in a longitudinal direction, that is to say in the direction of the longest dimension of the films, at a controlled speed, in which the appropriately spaced transverse joints are made in the films to form the aforementioned transverse channels that can be of different widths in the same preformed sheet. These joints can be made by welding or by using adhesive. In the case of welding, any system or method known for welding plastics can be used, such as using heat or radiofrequency vibration for example, and in an ideal process, the shaping system can be based on the use of at least one roller of the appropriate length and sufficient diameter to obtain a number of welds per minute as determined in the packaging design, in accordance with production needs for the protective cover. The cylinder shall have, welding bands on its external surface in the shape and thickness required for the design of the protective cover to be obtained. The welding bands on the cylinder can be moved so that they can project out from the external surface of the cylinder, or be flush with it or concealed in it, thus making it possible to vary the number of joint lines per linear metre of preformed sheet, and avoid the need to manufacture a different cylinder for each number of joint lines per linear metre of preformed sheet needed. This system makes it possible to make uniformly spaced or non-uniformly spaced joint lines to adapt the size of the pads to the outline of the object to be protected. In another configuration, the joint between the films to obtain the packaging sheet can be made using adhesive, with the adhesive being deposited on one of the plastic films by spraying, then stacking the second film on the first, already impregnated with adhesive, and joining the two films using pressure rollers. The two films will join at the lines printed on the first film.

[0027] The intermediate material called "preformed sheet" is obtained in this way. Forming the joint lines in separate stages makes it possible to prepare and store reels of preformed sheet before it is required for use, if necessary, thus enabling the rate of packaging production to be matched to the production rate of the objects.

[0028] The size, thickness and shape of the joint lines is determined by the type of film, the size of the transverse channel formed by two contiguous joint lines, the fluid they are to contain and the shape of the packaging sheet that is desired.

[0029] As regards the dimensions, position and separation between the transverse channels, this is determined depending on the dimension and shape of the object to be packaged, and the relative position of the channel with respect to the surface shapes of the packaged object. For example, if there is a hollow in the surface of the object to be packaged, the position of the transverse channel or channels in that zone will be defined so as to enable pads to be created to fill said hollow. Another example is if the packaging sheet needs to cover a curved surface, such as an edge of the object to be packaged, in the transverse direction of the packaging sheet. In this first stage, transverse channels will be positioned to allow such a rotation or folding of the packaging sheet.

[0030] The transverse channels will in any case form an angle of between 90° and 0° with the longest dimension direction of the sheet, or if the sheet dimensions are equal, with either of the main sheet directions.

[0031] The second stage in the packaging sheet man-

ufacturing procedure is performed by making longitudinal joints on the preformed sheet obtained in the previous stage, by means of a system of joint modules arranged in a group, and comprising joint wheels and evacuation wheels, as well as the appropriate mechanisms to allow the separate vertical movement of each wheel as well as the appropriate means for producing joints by welding the films, via a thermal or vibration method or by any other system known for joining plastic.

[0032] Each joint module can form welds independently of the rest of the modules, thus producing pads of different sizes in the same packaging sheet, creating fold zones, gap zones and closure zones on the packaging sheet.

[0033] The longitudinal joints are made at the same time that fluid is introduced into the transverse channels from at least one of their sides, giving rise to fluid-filled pads, such that the transverse channels are in this case inflated by introducing a fluid through the open side or sides of the transverse channels. The channels are subdivided into parts, which are not necessarily equal, to form fluid-filled pads of an appropriate size and position to fit the outline and surface of the object area to be covered.

[0034] The fluid can be a gas or mixture of gases, a liquid or foam.

[0035] Specifically, each joint module is positioned independent to the rest of the modules and in an appropriate place with respect to the preformed sheet from the previous shaping stage to make longitudinal joint lines, such that these modules are positioned in a group to join the centre of the sheet first and extend the joints towards the sides of the preformed sheet. This arrangement from the center to the outside is what enables the joint to be made between the two films at the same time that the fluid is introduced.

[0036] Each joint module of those participating in the longitudinal joint stage for the preformed sheet which will constitute the packaging sheet contains one or more evacuation wheels, the function of which is to prevent fluid from entering the pads, leaving them totally or partially empty of fluid. These evacuation wheels can be configured to join, for example by welding, or only bring together the two plastic layers or films forming the preformed sheet.

[0037] Different zones on the packaging sheet are shaped in this stage, each with a different function. Specifically, the fold zones leave spaces without pads, or with pads of the appropriate size and position, to facilitate folding of the packaging sheet to adopt the shape of the outline of the object to be packaged. The gap zones are for the packaging sheet to take the shape of the surface of the object to be packaged, that is to say to fill hollows in the object surface or leave spaces for projecting zones of the object surface, enabling it, once packaged, to take on a principally parallelepiped or cylindrical shape to facilitate covering either in a cardboard box or in a plastic shape. Similarly, the closure zones are specific packaging sheet development zones, allowing the closure of the packaging sheet onto itself to obtain a compact, easy to handle packaging piece. These closure zones are necessary if the protective cover is composed of more than one layer of pads; the closure zones are not needed with a single layer of pads.

[0038] In the longitudinal joint stage, what previously were open transverse channels become closed pads, but always with the option of connecting them together, containing a fluid inside, or fold or gap zones.

[0039] The longitudinal joint lines form an angle of between 0° and 90° in the direction of the longest dimension of the sheet, or if the sheet dimensions are equal, with the direction taken in the first shaping stage.

[0040] After the previous stages, that is to say the creation of the transverse and longitudinal joints, the obtained packaging sheet is folded in a third stage, not shown in any figures. The folding is done in a specific order to obtain the appropriate shape of the outline of the packaging piece, whether in the form of a panel, edge protection, lid, etc., of the thickness required for the packaging piece, and with the position required for the fold and gap zones of said packaging piece, in the appropriate place depending on the surface of the object to be packaged, to protect it from impacts and vibrations.

DESCRIPTION OF THE DRAWINGS

[0041] To complement the description to be given next, and in order to improve understanding of the characteristics of the invention, a set of illustrative (though non-limiting) drawings representing an example creation of the invention, accompany this descriptive record and form an integral part of it. The figures, the description and the claims contain numerous characteristics in combination. The person skilled in the art will consider the advantageous characteristics individually as well, and combine them in other reasonable combinations.

[0042] Shown in these are the following:

Figure 1 shows a perspective view of an assembly that is to be protected/protective cover not assembled, created in accordance with the objective of the invention.

Figure 2 shows a perspective section of an assembly that is to be protected/protective cover from the previous figure.

Figure 3 shows a section view of the assembly represented in the previous figure. The mid-line of the packaging sheet has been drawn in this.

Figure 4a shows a top view corresponding to the packaging sheet.

Figure 4b shows a section view corresponding to the packaging sheet from the previous figure.

Figure 4c shows a three-dimensional perspective view corresponding to the packaging sheet from Figure 4a.

Figures 5 shows a top view diagram corresponding to the first shaping stage for the packaging cover.

Figure 6 shows a perspective view of the diagram of two rollers used to make the transverse joints in the sheets or films that shall constitute the packaging cover.

Figure 7 shows a detail view of the diagram corresponding to the movement mechanism for the welding bands on the cylinders represented in the previous figure.

Figure 8 shows a diagram in plan view corresponding to the second shaping stage for the packaging cover, comprising the making of the longitudinal joint lines and filling the pads with fluid.

Figure 9 shows a side view of two opposing joint modules used in making the longitudinal joints in the packaging sheet.

Figure 10 shows, finally, a top view of the arrangement in a group of the joint modules to make the longitudinal joints.

LIST OF REFERENCES

[0043]

20 protective cover
21 object to be packaged and protected. Outline of the object.
22 packaging sheet
23 base material film
24 preformed sheet
25 stage 1 transformation zone. Transverse joints and channels.
26 stage 2 transformation zone. Longitudinal joints and fluid filling.
27 mid-line of the packaging sheet

30 transverse joint or transverse joint line
31 longitudinal joint or longitudinal joint line
32 bags or pads
33 fluid
34 detail of connected pads
35 fold zone
36 gap zone
37 closure zone
38 projecting part of the object to be packaged. Detail of the object surface.
39 transverse channel
40 welding cylinders
41 welding bands
42 welding band movement mechanism
43 preformed sheet edge
44 joint module
45 joint wheel
46 evacuation wheel

PREFERRED CONFIGURATION OF THE INVENTION

[0044] Shown in Figure 1 is a combination of the object to be packaged (21)/protective cover (20) not assembled, in which the object (21) can be seen to have projecting parts (38) which fit into the gap zones (36) in the protective cover (20), showing how the protective cover (20) as a whole wraps around and perfectly fits the shape or outline of the object to be protected (21) whether it has these projecting parts (38) or recesses. In any case, by virtue of the fold zones (35) and the gap zones (36), the protective cover (20) will always adapt to the shape or outline of the object to be protected (21).

[0045] In further detail, this Figure 1 shows the protective cover (20) obtained by folding the packaging sheet (22) of Figure 4a at the fold zones (35), with the gap zones (36) for the projecting parts (38), and the corresponding closure zones (37) already joined, such that the protective cover (20) is completed and can be used to wrap and protect the object (21).

[0046] Shown in Figure 2 is a perspective section of a protective cover (20) assembled with the object to be protected (21), with folding at the zones (35), to determine packaging with an appropriate configuration in which gaps are established in accordance with the shape of the object to be protected (21).

[0047] Shown in Figure 3 is a section of the assembly represented in Figure 2, in which the mid-line (27) of the already folded packaging sheet (22), the pads or bags (32), the fold zones (35) and the already joined closure zones (37) can be seen.

[0048] As can be seen in the figures referred to above and, more specifically in Figure 1, the packaging from this invention to protect objects, the protective cover (20) is constituted based on the packaging sheet (22) of Figure 4a, which is obtained from one or more sheets or films with at least one layer of plastic (23). These sheets or films are joined together by means of transverse joints (30) and longitudinal joints (31), forming bags or pads (32) which will be filled with a fluid (33). These bags or pads (32) can be closed or open, as shown in the detail referenced with (34) in Figure 4a, where four bags or pads (32) are connected together so that the fluid (33) passes from one to another.

[0049] Similarly established in said packaging sheet (22) are fold zones (35), where the pads or bags (32) are of lesser amplitude to allow precise folding of the packaging sheet (22) in these zones (35).

[0050] Also shaped are gap zones (36) to fit projecting parts (38) or recessed parts of the object to be protected (21), finally with closure zones (37) of the packaging

sheet (22), enabling the closure of said sheet (22) onto itself to give the packaging cover (20) rigidity.

[0051] The fluid (33) needed to fill the pads or bags (32) is introduced at the same time that the longitudinal joints (31) are made in the transformation zone of the second stage (26), as shown in Figures 8 and 9.

[0052] Clearly, the shapes and sizes of the pads (32) can be of a larger or smaller size, always appropriate to the protective cover (20) to be obtained and more specifically to the type of object to be protected (21).

[0053] As regards the procedure for obtaining the protective cover (20) which is the subject of the invention, Figure 5 shows the first transformation stage (25), starting from the stacking of films (23) with at least one layer of plastic which are drawn in the longitudinal direction towards the transformation zone (25) where the film (23) joining system is located, and they are joined together by means of transverse joint lines (30) such that the transverse joints (30) determine transverse channels open (39) at one or both ends (43) of the resulting sheet (24).

[0054] As already stated, the joining of the transverse lines (30) can be performed by welding or using adhesive. When the joining is performed by welding as shown in Figure 6, one or two cylinders (40) can be used with welding bands (41) on their external surface and appropriately spaced to make the aforementioned transverse joint lines (30). A characteristic feature is that these welding bands (41) in the cylinders (40) can be moved radially such that they can project from the external surface of the cylinder (40) or be flush with said surface, as represented in Figure 7, where an appropriate mechanism (42) makes the aforementioned movements on the welding bands (41).

[0055] It has previously been previously stated that the transverse joint or joints (30) can also be made using adhesive with the device and mechanisms or means appropriate for the purpose.

[0056] In a second shaping phase shown in Figure 8, the longitudinal joints (31) are made, and at the same time, the pads (32) formed by these longitudinal joints (31) and the transverse joints (30) are filled with fluid (33), using in this case a system of joint modules (44) as represented in Figures 9 and 10, each of which has at least one joint wheel (45) and at least one evacuation wheel (46), where both types of wheels (45 and 46) are enabled to move independently in the vertical direction.

[0057] Each joint module (44) is positioned independently from the rest of the modules (44) and in an appropriate place with respect to the preformed sheet (24) obtained in the previous shaping stage, with these modules (44) positioned in a group. As can be seen in Figures 8 and 10, the centre of the preformed sheet (24) is joined first and then the longitudinal joints (31) are extended to the sides (43) of said sheet (24), from the centre to the side, permitting the creation of the joint between the two films (23) to form the packaging sheet (22), while at the same time introducing the fluid (33).

[0058] According to the characteristic of the protective cover (20) that is desired, fold zones (35) can be arranged in the packaging sheet (22) in both the transverse and longitudinal directions.

[0059] Once the packaging sheet (22) has been obtained, as represented in Figure 4a, and in a third shaping phase, it suffices to fold said sheet (22) at the fold zones (35) in the order established in the design of the protective cover (20) to obtain said protective cover (20), as represented in Figure 1.

Claims

1. Packaging to protect objects (21) or appliances, especially electrical household appliances such as refrigerators, washing machines, dishwashers, ovens or similar, **characterised in that** it comprises at least one protective cover (20) composed of at least two stacked films (23), each film (23) with at least one layer of plastic, the two stacked layers of film (23) are joined by transverse joint lines (30) and longitudinal joint lines (31), where these joint lines (30 and 31) form pads (32) filled with fluid (33), **characterised in that** the protective cover (20) has at least one layer of pads (32), with fold zones (35), gap zones (36) and with the possibility of having closure zones (37); such that this protective cover (20) specifically fits the surface (38) and outline of the object to be protected (21) during storage and transport, from manufacture until it is put into service at the final user's address.

2. Packaging for the protection of objects (21), as per claim 1, **characterised in that** the material of the two films (23) forming the protective cover (20) can be multilayer, having at least one layer of plastic, where it can have other layers of paper, cardboard or metal or a combination of materials in one film.

3. Packaging for the protection of objects (21), as per claims 1 and 2, **characterised in that** the transverse joint lines (30) and the longitudinal joint lines (31) are capable of having constant or varying spacing, to form pads (32) with the same or different dimensions.

4. Packaging for the protection of objects (21), as per claims 1 to 3, **characterised in that** the pads (32) are closed.

5. Packaging for the protection of objects (21), as per claims 1 to 4, **characterised in that** some of the pads (32) can be furnished with connecting channels (34) between them, to allow the fluid (33) to pass from one to another at a controlled rate to increase the control over the protection for the object to be protected (22).

6. Packaging for the protection of objects (21), as per claims 1 to 5, **characterised in that** the protective

cover (20) can have an essentially flat external surface that fits the internal surface of the final cover, or can have an external surface that is not essentially flat for decorative and/or structural reasons.

7. A manufacturing procedure to produce packaging (20) for the protection of objects (21), starting from at least two stacked films (23) of the appropriate width and thickness, and composed of at least one layer of plastic, **characterised in that** it consists of various stages:

- The joining of the films (23) by means of transverse joint lines (30) forming transverse channels (39) between consecutive transverse joint lines (30), where said transverse channels (30) are open on at least one of their ends (43), giving a preformed sheet (24);
- The subsequent joining by means of longitudinal joint lines (31), to form pads (32), fold zones (35), gap zones (36) and closure zones (37), performing the filling of said pads (32) with a fluid (33) during the longitudinal joint (26) making phase to give a packaging sheet (22);
- And the folding of the packaging sheet (22) at the fold zones (35), said packaging sheet (22) can be closed onto itself by means of the closing zones (37), creating the protective cover (20) which is the subject of the invention.

8. A manufacturing procedure to produce packaging (20) for the protection of objects (21), as per claim 7, **characterised in that** the transverse channels (39) of a given preformed sheet (24) can be of a different width to fit the outline or shape of the object to be packaged (21).

9. A manufacturing procedure to produce packaging (20) for the protection of objects (21), as per claims 7 and 8, **characterised in that** the transverse joints (30) can be made by welding or by means of adhesive.

10. A manufacturing procedure to produce packaging (20) for the protection of objects (21), as per claim 9, **characterised in that** rollers or cylinders (40) are used in welding the transverse joints (30), which are fitted with welding bands (41), prepared to be able to move radially (42) and to emerge from the external surface of the cylinders (40), or to remain concealed in them.

11. A manufacturing procedure to produce packaging (20) for the protection of objects (21), as per claim 9, **characterised in that** the transverse joints (30) made using adhesive are made by spraying the adhesive onto the film (23) that is to form the preformed sheet (24).

12. A manufacturing procedure to produce packaging (20) for the protection of objects (21), as per claims 7 to 11, **characterised in that** the longitudinal joints (31) are made in the preformed sheet (24) of the previous stage by means of a system of joint modules (44) arranged in a group, with each of these having at least one joint wheel (45) and at least one evacuation wheel (46), where these wheels (45 and 46) have the appropriate mechanism to enable them to be moved independently in the vertical direction and also have the appropriate means to produce the joint by welding the films.

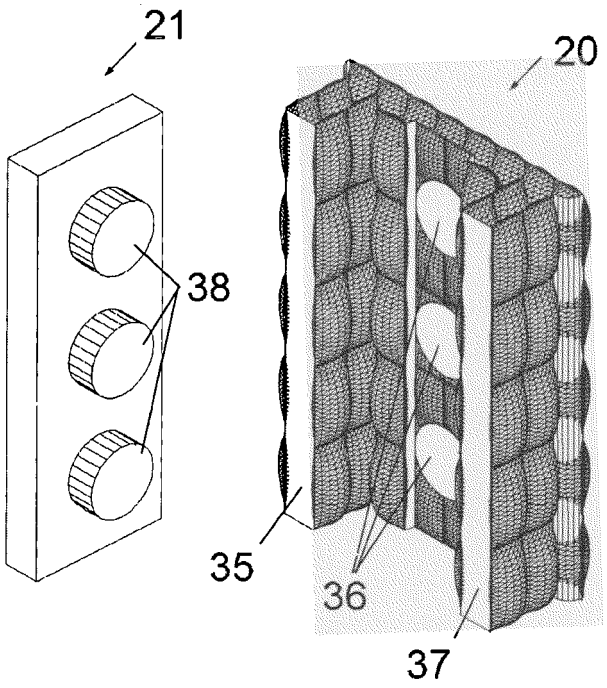
13. A manufacturing procedure to produce packaging (20) for the protection of objects (21), as per claim 12, **characterised in that** each joint module (44) can form welds independently from the rest of the joint modules (44), producing pads (32) of different sizes on the same packaging sheet (22), so giving rise to the fold zones (35), gap zones (36) and closure zones (37) on the packaging sheet (22).

14. A manufacturing procedure to produce packaging (20) for the protection of objects (21), as per claims 7 to 13, **characterised in that** the longitudinal joints (31) and the introduction of the fluid (33) to the transverse channels (39) through at least one of their ends (43) is performed at the same time and in the shaping zone of the second stage (26).

15. A manufacturing procedure to produce packaging (20) for the protection of objects (21), as per claims 7 to 14, **characterised in that** the fluid (33) for filling the pads (32) can be a gas, a mixture of gases, a liquid or foam.

16. A manufacturing procedure to produce packaging (20) for the protection of objects (21), as per claims 7 to 15, **characterised in that** the packaging sheet (22) is folded at the fold zones (35) in an order determined in the design of the packaging, thus forming the protective cover (20).

FIG. 1



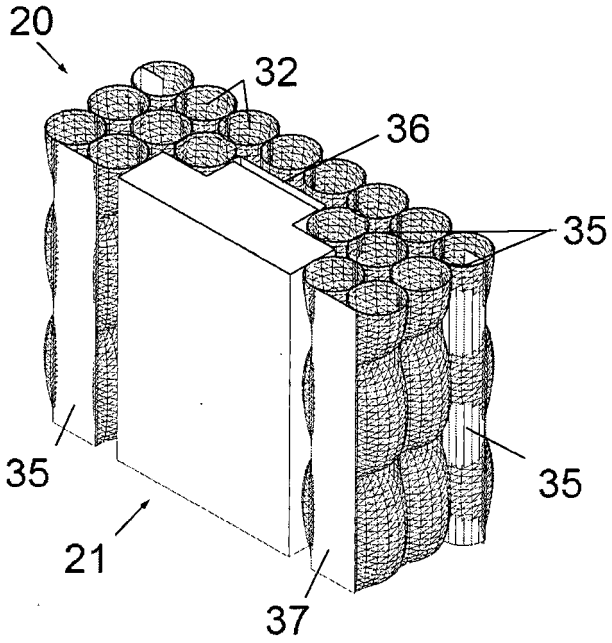
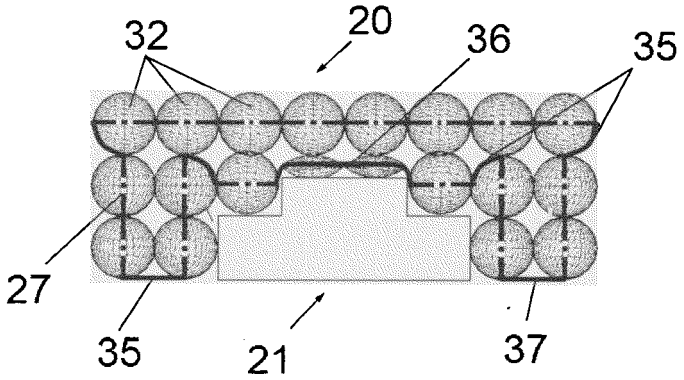


FIG. 2

FIG. 3



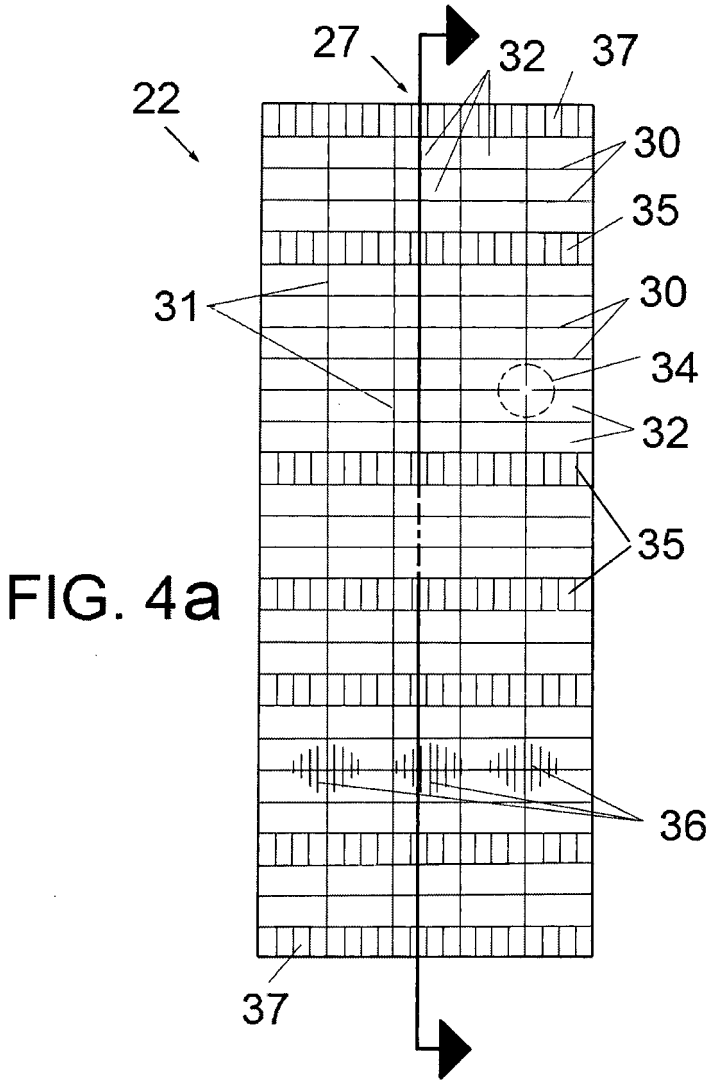


FIG. 4a

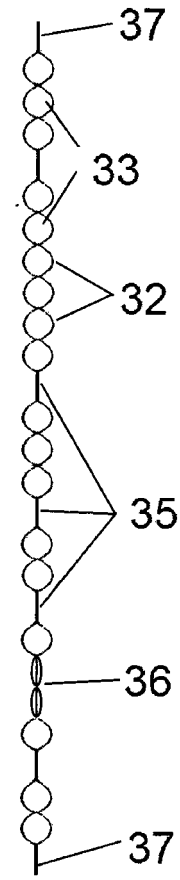


FIG. 4b

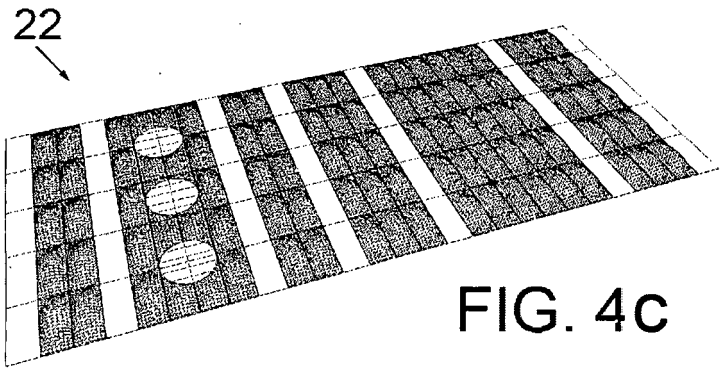


FIG. 4c

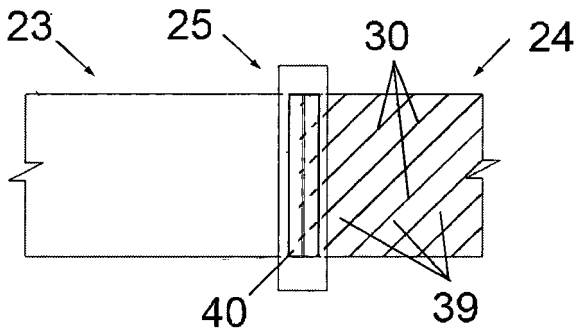


FIG. 5

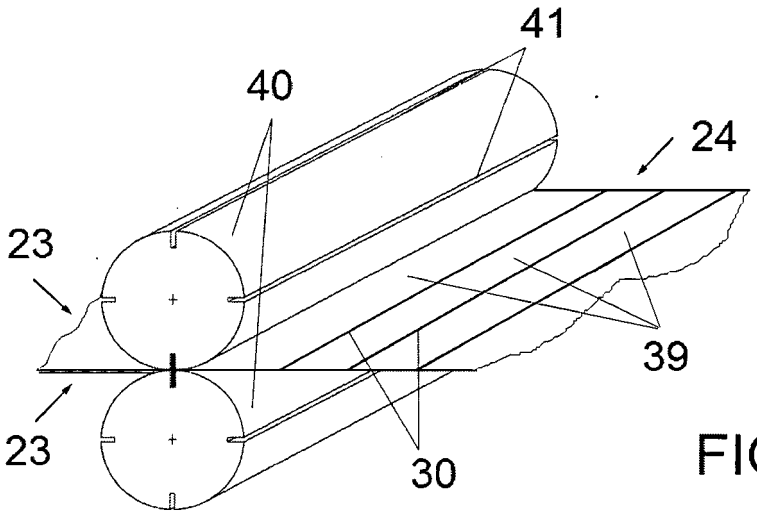


FIG. 6

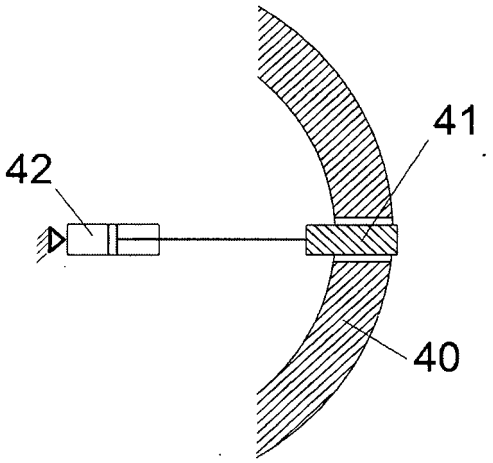


FIG. 7

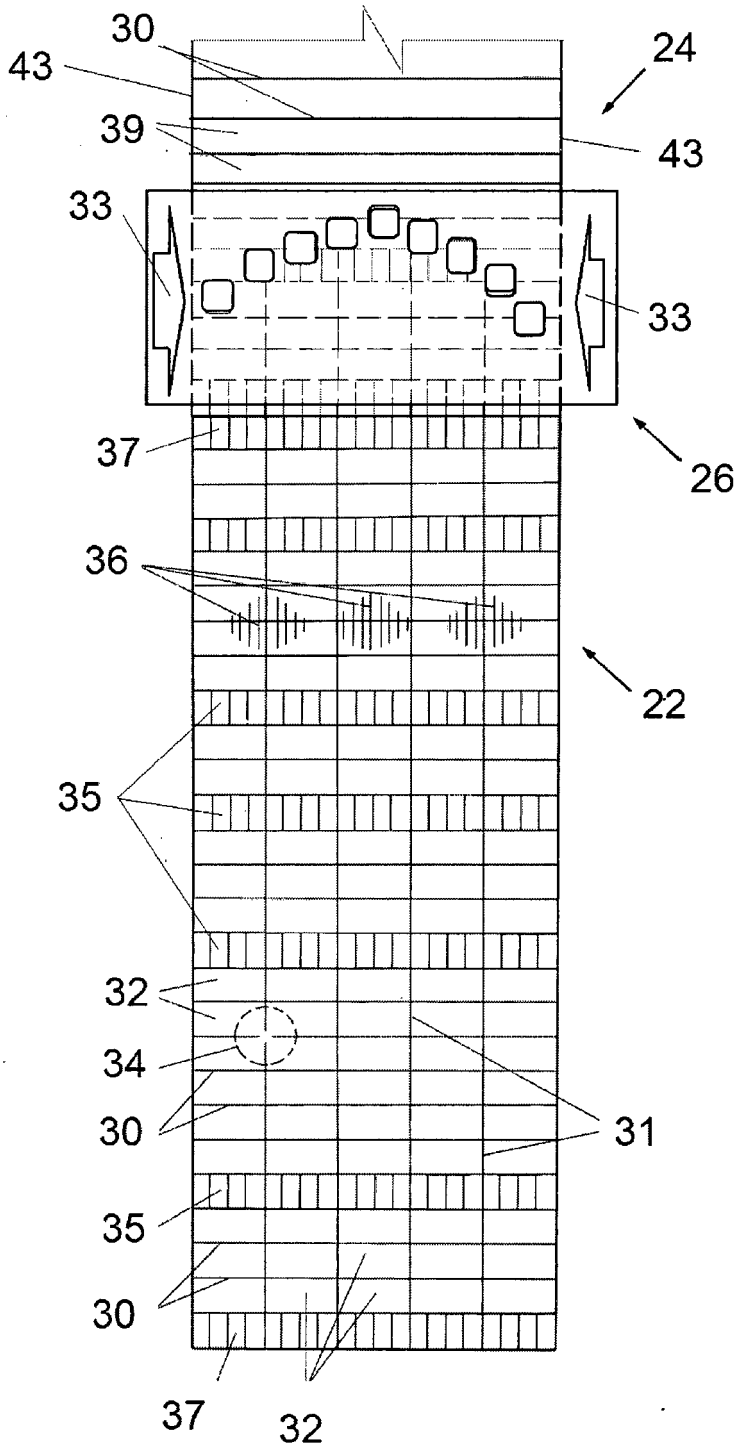


FIG. 8

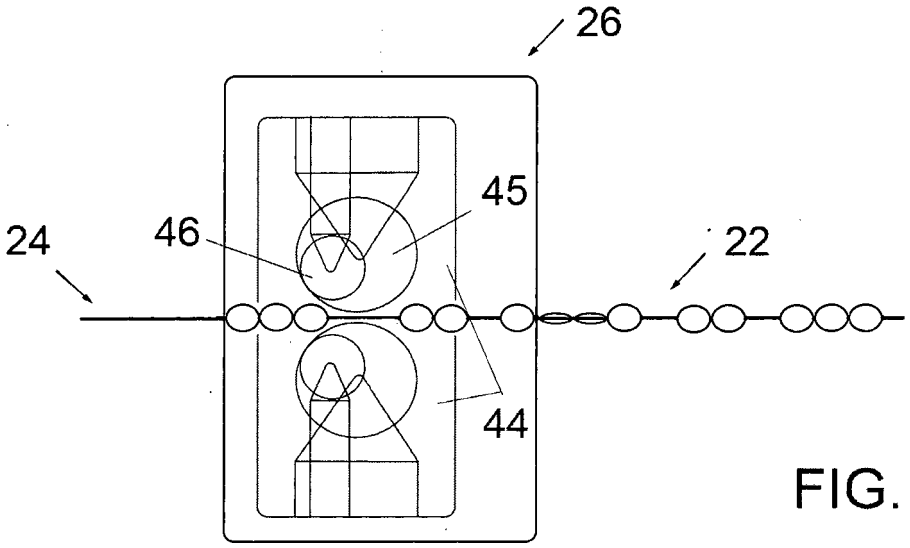


FIG. 9

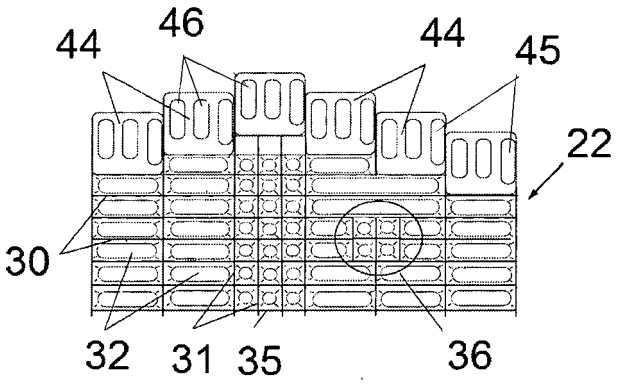


FIG. 10

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2014/070537

A. CLASSIFICATION OF SUBJECT MATTER

See extra sheet

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B65D, B31B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPODOC, INVENES

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5340632 A (CHAPPUIS) 23/08/1994, column 2, line 44 - column 6, line 27; figures 1-5	1-6
A		7-16
A	US 8366594 B2 (ZHANG ET AL.) 05/02/2013, Abstract; figures (cited in the application)	1-6
A	US 2009242450 A1 (ZHANG ET AL.) 01/10/2009, Abstract; figures	1-6
A	US 2958620 A (I. ONO) 01/11/1960, column 1, line 53 - column 2, line 57; figures 1-3	1-6
A	WO 2007145386 A1 (KIM) 21/12/2007, Abstract; figures	7-16

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:
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"O" document referring to an oral disclosure use, exhibition, or other means.
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other documents , such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
09/10/2014	**(10/10/2014)**
Name and mailing address of the ISA/ OFICINA ESPAÑOLA DE PATENTES Y MARCAS Paseo de la Castellana, 75 - 28071 Madrid (España) Facsimile No.: 91 349 53 04	Authorized officer F. Monge Zamorano Telephone No. 91 3495541

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Information on patent family members

International application No.
PCT/ES2014/070537

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/ES2014/070537

CLASSIFICATION OF SUBJECT MATTER

B65D81/03 (2006.01)
B65D81/05 (2006.01)
B31B1/64 (2006.01)

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REFERENCES CITED IN THE DESCRIPTION

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