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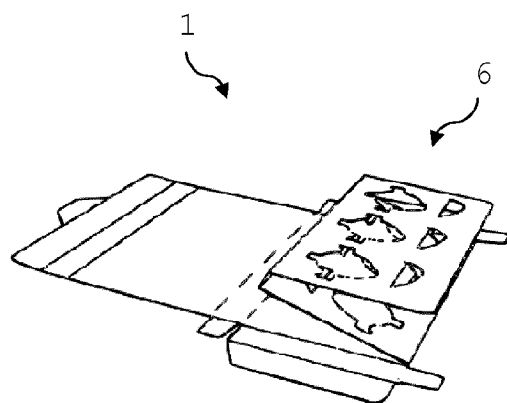


Fig. 4

(57) **Abstract:** The invention provides a method for the sec-
ondary packaging of ophthalmic lenses for example contact
lenses, contained in individual primary packages (17). The
method including the steps of providing a plurality of single
individual primary packages (17) each containing an ophthal-
mic lens and determining a number of single individual
primary packages (17) to be taken from the plurality of single
individual primary packages (17) and to be packed into a sec-
ondary package (16). The method further includes the steps of
providing a secondary package blank (1) of a size capable of
accommodating the determined number of single individual
primary packages (17) to be packed into the secondary pack-
age (16) and placing each single individual primary package
(17) of the determined number of single individual primary
packages (17) into the secondary package blank (1). The
method further includes the step of folding and closing the
secondary package blank (1) containing the determined num-
ber of single individual primary packages (17) to form the
secondary package (16).

PACKAGING METHOD AND SYSTEM

TECHNICAL FIELD

5 The invention relates to a method for the secondary packaging of ophthalmic lenses, e.g. contact lenses, contained in individual primary packages, and to a system for such the secondary packaging of ophthalmic lenses.

BACKGROUND

10 Methods for the secondary packaging of contact lenses contained in blister-type primary packages are well-known, in particular for single use contact lenses which are disposed of after use. Such a primary package is known, for example, from EP 0 680 955. In such a primary package a single contact lens is contained in a cavity in a storage solution such as saline. The individual primary packages are closed by a foil in a manner such that a plurality of primary packages is arranged in a row and a foil strip is
15 placed over the so arranged primary packages. The foil strip is then sealed or welded to the packages, so that a strip of primary packages is formed which are connected to one another by the common foil strip. A so formed strip includes a predetermined number of primary packages (the number of the packages arranged in a row) each containing a contact lens. The predetermined numbers of primary packages of such
20 strip, however, limits the secondary packaging flexibility in that the total number of contact lenses contained in a secondary package is determined as being an integer multiple of the predetermined number of primary packages forming a strip. By way of example, in case a strip includes five individual primary packages each containing a contact lens, then the secondary package always contains an integer multiple of five
25 contact lenses.

A method for producing a secondary package containing such arrays (strips) of five primary packages each containing a contact lens is known from EP 1 125 849 A2. As a consequence, the secondary package has a size capable of accommodating one

or more such strips of five primary packages. A customization of the primary or the secondary package can be added to the packaging material, like the name of the ophthalmic doctor who has prescribed the lens or the name of the patient, the telephone number of the ophthalmic doctor, or other information. If the customization includes
5 graphics, the graphics are selected/specified at the time the order is given by the customer, for example by the ophthalmic doctor ordering the lenses.

The described procedure of providing strips of primary packages each containing a contact lens as well as the secondary packaging of such strips suffers from some disadvantages. For example, in case the order specifies a number of contact lenses of
10 one particular type and this number is not an integer multiple of five, then the order cannot be strictly adhered to. For example, if only strips of five primary packages are stored at the lens manufacturer it may be possible for the customer to order only multiple integers of five contact lenses which may be dissatisfying for a customer who wants to order twelve contact lenses, for example. Alternatively, the lens manufacturer
15 may send a total of fifteen lenses to the customer without charging the three lenses in excess of the ordered total of twelve lenses which may be dissatisfying for the lens manufacturer from an economic point of view.

As a further alternative, strips of different numbers of contact lenses can be stored at the lens manufacturer. For example, in addition to storing strips of five primary
20 packages it may be possible to additionally store strips of three primary packages. While this allows a little more flexibility as regards the ordered number of contact lenses, it increases the expense at the lens manufacturer. This is because the lens manufacturer must store strips of three primary packages and strips of five primary packages for each single type of contact lens. This increases both the manufacturing
25 expense (strips of three primary packages and of five primary packages must be produced) as well as the storage expense (strips of three primary packages and of five primary packages must be stored) at the lens manufacturer. In addition, different types of secondary packages may become necessary due to having strips of different lengths, which must be packaged in a secondary package. And even with this increased
30 expense it is still not possible to strictly adhere to each incoming order, since an

incoming order may still specify a desired number of contact lenses which is neither an integer multiple of five contact lenses nor an integer multiple of three contact lenses nor a combination thereof.

It is therefore an object of the present invention to reduce the manufacturing expense and the stock at the lens manufacturer, and at the same time to increase flexibility in the secondary packaging of contact lenses so that incoming orders can be strictly adhered to. Also, the number of different secondary packages should be kept as small as possible.

10 SUMMARY

The method and the system according to the present invention overcome the afore-described problems and disadvantages. In particular, the method for the secondary packaging of ophthalmic lenses, for example contact lenses, according to the invention allows for a reduced manufacturing expense and stock and for an improved flexibility in the secondary packaging of contact lenses.

According to the present invention, there is provided a method for the secondary packaging of ophthalmic lenses, for example contact lenses, contained in individual primary packages. The method includes the steps of

- providing a plurality of single individual primary packages each containing an ophthalmic lens and
- determining a number of single individual primary packages to be taken from the plurality of single individual primary packages and to be packed into a secondary package
- providing a secondary package blank of a size capable of accommodating the determined number of single individual primary packages to be packed into the secondary package,
- placing each single individual primary package of the determined number of single individual primary packages into the secondary package blank and
- folding and closing the secondary package blank containing the determined number of

single individual primary packages to form the secondary package.

The single individual primary packages can generally be of any type or material. It is preferred, however, that the primary packages are blister packs, for example blister packs like those described in the above-mentioned EP 0 680 955. The single primary packages are sealed and stored individually, so that it is no longer necessary to store strips of different lengths including one particular type of contact lens. This reduces the manufacturing expense since only single individually sealed blisters must be produced and also reduces the type of stock, since only single individual primary packages must be stored. In addition, having a stock of only single individual primary packages it is possible to exactly provide any desired number of lenses. The number of single individual primary packages to be packed into a secondary package is determined before the secondary package blank is selected. This allows to select a secondary package blank of suitable size which is capable of accommodating the determined number of single individual primary packages. Once the secondary package blank has been selected, the single individual primary packages are placed into the selected secondary package blank, whereupon the secondary package blank containing the single individual primary packages is folded and closed to form the secondary package. The size of the secondary package blanks is generally flexible. However, for an efficient processing, preferably a predetermined number of secondary package blanks of different sizes are provided.

With the method according to the invention, it is possible to provide any desired number of one type of contact lens in one (or more) customized secondary packages. For example, if an ophthalmic doctor has ordered a number of contact lenses for one of his patients, the single individual primary packages containing the lenses for this patient can be provided in one customized secondary package. This secondary package containing exactly the desired number of lenses may be provided with printing such as "Contact lenses for patient John Smith provided by ophthalmic doctor Tom Cross".

Alternatively, combinations of different types of lenses can be provided in one customized secondary package to the same customer, for example to an ophthalmic

doctor who has ordered different types of lenses for different patients. The term "different type of lens" as used in this application refers to ophthalmic lenses which are distinct from other ophthalmic lenses in at least one property, which can be a physical or a chemical property of the lens, the overall size of the lens, the shape, optical
5 correction, material, color, or any other property of the lens which is capable of distinguishing one ophthalmic lens from another ophthalmic lens. In particular, the ophthalmic lenses are contact lenses.

Of course, both the primary packages as well as the secondary packages can be provided with printing such as branding of the lens manufacturer. Also, the primary
10 package may be provided with additional printed information such as data related to the respective lens contained in the primary package (e.g. base curve radius, optical correction, production lot number, etc.).

According to one aspect of the method according to the present invention, the step of providing a plurality of single individual primary packages includes providing a
15 plurality of single individual primary packages containing at least two different types of ophthalmic lenses. This aspect is directed to the afore-mentioned possibility to provide a variety of at least two different types of contact lenses in one secondary package, as mentioned above. For example, an ophthalmic doctor has ordered a number of contact lenses for his patients John Smith, Jeff Miller and Jane Blair. The single individual
20 primary packages containing the different types of contact lenses can be placed together in one or more secondary packages which are then sent to the ophthalmic doctor who has ordered the lenses for his patients. The primary packages containing the different types of contact lenses can be marked individually (e.g. by printing the names John Smith, Jeff Miller or Jane Blair on the primary package containing the
25 lenses for these individuals) so that the ophthalmic doctor can easily identify which lens in the secondary package is dedicated to whom. In addition, the secondary packages can be individually marked with printing such as "Contact lenses for John Smith, Jeff Miller and Jane Blair provided by ophthalmic doctor Tom Cross" so as to allow the ophthalmic doctor to easily identify which secondary package includes the lenses for a
30 respective patient.

Accordingly, in one embodiment of the method of the invention the number and the type of ophthalmic lenses which are contained in the single individual primary packages and which are to be packed into the secondary package is determined by a customer order.

5 In accordance with a further aspect of the method according to the invention, the step of providing a secondary package blank includes providing a plurality of predetermined different secondary package blanks, the different secondary package blanks having an identical width. This simplifies the process of picking the single individual primary packages and placing them into a secondary package blank with the
10 aid of automatic equipment such as pick-and-place robots prior to folding the blank to form the secondary package, as will be explained in more detail below. Typically, a number of one to twelve single individual primary packages can be packed into a single secondary package, so that only a limited number of secondary package blanks must be provided, as will also be discussed in more detail below.

15 In accordance with a further aspect of the method according to the invention, it is preferred that the step of placing each single individual primary package into the secondary package blank includes placing each single individual primary package in a corresponding individual cut-out portion formed in the secondary package blank. The number of individual cut-out portions in the secondary package blank defines the
20 maximum capacity of the secondary package blank so that the secondary package blank is selected to have a maximum number of cut-out portions that corresponds to or slightly exceeds the number of single individual primary packages to be packed into the secondary package.

 In accordance with a further aspect of the method according to the invention, the
25 single individual primary packages are placed in the corresponding individual cut-out portion of the secondary package blank such that the single individual primary packages are (securely) retained in the respective cut-out portions. This can be achieved for example by a frictional fit due to slightly different sizes of the single individual primary packages and the cut-out portion. In another example, a retaining member can be

provided in the cut-out portion to (securely) retain the single individual primary packages in the cut-out portion. The primary packages are thus retained in a fixed position in the secondary package blank once they have been placed into the cut-out portion which is advantageous in that the primary packages are securely retained in the respective cut-out portions as the secondary package blank is folded to form the secondary package.

In a further variant of the present invention, the method includes the step of folding and closing the secondary package blank which includes folding and closing the secondary package blank to form a wallet-type secondary package. The wallet-type secondary package is advantageous in that it allows to arrange a comparatively large number primary packages in the secondary package by folding the package blank such that after folding the curved bowls (cavities containing the contact lenses and the saline) of the primary packages are facing one another but are arranged offset relative to one another in a space-saving manner. Also, the wallet-type secondary package allows to conveniently access the individual primary packages by unfolding that part of the wallet-type secondary package carrying the primary packages.

As already discussed above, a further embodiment of the method according to the invention includes the step of applying images, graphic designs, written information, or the like to the secondary package blank, to the secondary package or to the single individual primary package, or to any combination thereof. The application of images, graphic designs or written information allows the customization and/or personalization of the primary and secondary packages, and also allows for branding etc. Application of the images, graphic designs, written information, or the like can be carried out before or after the secondary package is formed from the secondary package blank. In particular the step of applying images, graphic designs, written information, or the like can be determined by a customer order.

Another aspect of the present invention deals with a system for the secondary packaging of ophthalmic lenses, for example contact lenses, contained in individual primary packages. The system includes a storage unit for providing a plurality of single individual primary packages each containing an ophthalmic lens as well as an input unit

for determining a number of single individual primary packages to be taken from the storage unit and to be packed into a secondary package. The system further includes a package blank magazine for providing a secondary package blank, the secondary package blank being capable of accommodating the determined number of single individual primary packages. Still further, the system includes at least one robot for placing each single individual primary package of the determined number of single individual primary packages into the secondary package blank. Finally, the system includes a folding unit for folding and closing the secondary package blank containing the determined number of single individual primary packages to form the secondary package.

The storage unit may, for example, include a rack system in which the single individual primary packages are stored and from which they can be automatically retrieved and transferred for secondary packaging. The input unit may be embodied as a computer receiving information regarding the number and type of lenses to determine the number of single individual primary packages. The computer also may serve for controlling the retrieval and transfer of the respective single individual primary packages as well as the placing of the single individual primary packages into the secondary package blank.

The package blank magazine may contain different secondary package blanks which are already cut to length and which are capable of accommodating a number of single individual primary packages. Alternatively, the package blank magazine may include strips of package blank material which are cut to length only after the number of single individual packages to be placed into the secondary package blank is determined. In any event, the secondary package blanks all have the same width. This enables an easy transport of the secondary package blanks on the same transport line for the secondary package blanks without any adjustments of the transport line being necessary, regardless of the number of primary packages to be placed into the secondary package. In addition, a "pick and place robot" can always perform more or less the same operation since it has to place a respective individual primary package always at a location which is arranged along the transport line at the same lateral

position on the transport line.

According to one aspect of the system according to the invention, the storage unit includes at least one tray, and each tray has at least two compartments. The compartments are dimensioned for accommodating at least one single individual
5 primary package, more preferably a plurality of single individual primary packages containing lenses of the same type.

According to a further aspect, the system according to the invention includes an input unit which is adapted for receiving and processing a customer order determining the number of single individual primary packages. The input unit (e.g. computer) may
10 directly receive and process the customer order that determines the number of single individual primary packages which are to be taken from the plurality of single individual primary packages (i.e. from the storage) and which are to be packed into the secondary package. The input unit receives a customer order including information inter alia about the type of contact lens, the number of ordered contact lenses, the customer, etc. This
15 information is processed to determine the size of a secondary package accommodating the single individual primary packages according to the customer order. Thus, the input unit controls at least the storage unit, the robot and the secondary package blank magazine in accordance with the customer order received.

In a further preferred variant of the invention, the package blank magazine is
20 adapted for providing a plurality of predetermined different secondary package blanks having an identical width. In this respect, the term "predetermined different secondary package blanks" means, that the secondary package blanks stored in the magazine are already cut to length, however, secondary package blanks of different lengths are provided, with different secondary package blanks being capable of accommodating a
25 different number of single individual primary packages. Typically, 1 to 12 single individual primary packages are packed into one secondary package blank, so that in this case a number of six different sizes (lengths) of secondary package blanks may be stored in the package blank magazine, as will be explained in more detail below.

For placing the single individual primary packages in the secondary package blank, in accordance with a further aspect the system according to the invention includes a plurality of robots arrayed one after the other along first and second transport lines for transporting the trays (containing the individual primary packages) and the secondary package blanks, respectively. Such an arrangement of more than one robot along the transport lines improves the efficiency of the system as it allows a higher throughput, since in case one robot cannot pick an individual primary package from a tray and place it in the secondary package blank due to already being busy, the next robot can perform this action.

In accordance with a further aspect, the system according to the invention includes an application unit which is adapted for applying images, graphic designs, written information, or the like to the secondary package blank, to the secondary package or to the single individual primary package, or to any combination thereof. The application unit can be of any suitable type, for example the application unit may be a printer. The application unit preferably is connected to the input unit such that any information contained in the customer order can be forwarded to the application unit which may then apply the information, if desired. As has already been mentioned, the information contained in the customer order may contain graphics, images, other design or written information which is to be provided on the surface of the secondary package.

BRIEF DESCRIPTION OF THE DRAWINGS

Embodiments of the invention are further described below with reference to the accompanying drawings for a more complete understanding of the present invention and advantages thereof.

Fig. 1 is a top view of a first embodiment of an unfolded secondary package blank (wallet-type) used in the method and system according to the invention;

Fig. 2 is a perspective view of a secondary package obtained from the secondary packing blank of Fig. 1 through folding;

Fig. 3 is a top view of a single individual primary package that may be packed into a secondary package blank in accordance with the method and system according to the invention;

Fig. 4 is a perspective view of the secondary package blank of Fig. 1 in a first
5 folding state;

Fig. 5 is a perspective view of the secondary package blank of Fig. 1 in a second folding state;

Fig. 6 is a perspective view of the secondary package blank of Fig. 1 in a third folding state;

10 Fig. 7 is a perspective view of the secondary package blank of Fig. 1 in a fourth folding state;

Fig. 8 is a top view of a second embodiment of a secondary package blank having one cut-out portion;

15 Fig. 9 is a top view of a third embodiment of a secondary package blank having two cut-out portions;

Fig. 10 is a top view of a fourth embodiment of a secondary package blank having eight cut-out portions; and

Fig. 11 is a schematic illustration of an embodiment of a system according to the invention.

20

DESCRIPTION OF EMBODIMENTS

Fig. 1 shows a first embodiment of a secondary package blank 1 that can be used in a method for the secondary packaging of ophthalmic lenses in accordance with the invention, in particular for the secondary packaging of contact lenses. The contact
25 lenses are contained in single individual primary packages 17 shown in Fig. 3. Primary package 17 has a base member 18 in which a cavity 20 is formed. The contact lens is contained in the cavity 20 (bowl) in an aqueous solution such as saline. A lid foil 19 is

attached to the base member 18 e.g. with the aid of suitable sealing or welding techniques.

Returning to Fig. 1, secondary package blank 1 has a size capable of accommodating a predetermined number of single individual primary packages 17, in the embodiment shown secondary package blank 1 is capable of accommodating a maximum of six single individual primary packages 17 in cut-out portions 4 (each cut-out portion 4 including two cut-out sections in the embodiment shown). Each individual cut-out portion 4 has a size and shape which is slightly smaller than the size of the respective portion of primary package 17 so as to securely hold the single individual primary packages 17 within the corresponding individual cut-out portion 4 by a friction fit. Additionally, the single individual primary packages are fixed with their side flanks engaging into insertion slits 5.

Secondary package blank 1 shown in Fig. 1 is made of carton which is already cut to size and has a width 30 which is the same for all types of secondary package blanks described in this application. This width 30 is independent from the number of single individual primary packages to be accommodated by the secondary package blank. The length 3 of secondary package blank 1 determines the maximum number of primary packages that can be accommodated by secondary package blank 1. Secondary package blank 1 includes a bottom panel 9, two side panels 13 and a rear panel 10. Rear panel 10 is connected to a top panel 11, and top panel 11 is connected to a front panel 12. An insertion panel 6 including first insertion panel section 7 and second insertion panel 8 is hingedly attached to bottom panel 9. A latching tab 15 is provided for introduction into a slit 14 provided in bottom panel 9.

A closed secondary package 16 as shown in Fig. 2 can be formed from a secondary package blank 1 as shown in Fig. 1 by folding secondary package blank 1 in a plurality of folding steps along a number of folding lines 2 running parallel to one another in the direction of the length 3 of secondary package blank 1. The cut-out portions 4 are formed in first and second insertion panel sections 7 and 8.

Figs. 4-7 show the various steps to be performed to obtain the secondary package 16 shown in Fig. 2 from secondary package blank 1 shown in Fig. 1.

In a first step shown in Fig. 4, folding is performed in a manner such that insertion panel sections 7 and 8 are folded to lie one above the other and the so formed
5 insertion panel 6 is then folded to lie on bottom portion 9. And while the primary packages 17 are not shown, it is evident that the cavities 20 (bowls) are facing one another but are arranged offset relative to one another thus allowing the two primary packages 17 to be stored in a space-saving manner.

In a second step shown in Fig. 5 side panels 13 are folded to form side walls of
10 the secondary package 16. In a third step shown in Fig. 6, the top panel 11 is folded over the already formed corpus so as to form the - yet open - secondary package shown in Fig. 7. For forming the closed the wallet-type secondary package 16 shown in Fig. 2 it is then only required to introduce latching tab 15 into slit 14 of bottom cover panel 9.

15 Figs. 8-10 show further embodiments of the secondary package blank 1 according to the invention. As can be seen, the second embodiment of secondary package blank 1 shown in Fig. 8 and the third embodiment of the secondary package blank 1 shown in Fig. 9 have both the same width 30 and lengths 3. However, they differ from each other in that the second embodiment of the secondary package blank 1
20 shown in Fig. 8 is capable of accommodating only one single primary package 17 while the third embodiment of the secondary package blank shown in Fig. 9 is capable of accommodating two single primary packages 17. As to the folding operations to be performed to form the secondary package, it is referred to the corresponding description above.

25 The fourth embodiment of the secondary package blank 1 shown in Fig. 10 has the same width 30 as the other embodiments described above, but is different in length 3. The fourth embodiment of the secondary packaging blank shown in Fig. 10 is capable of accommodating a maximum number of eight primary packages 17. As to the folding operations to be performed to form the secondary package, it is referred to the

corresponding description above.

Fig. 11 shows an embodiment of a system for the secondary packaging of contact lenses contained in individual primary packages. The contact lenses are contained in single individual primary packages 17 as described above which are to be
5 inserted into respective secondary package blanks 1, which are subsequently folded and closed to form a secondary package 16 as described above. For that purpose, a plurality of single individual primary packages is provided including different types of contact lenses; however, the primary package is the same for each type of contact lens.

The individual primary packages 17 are stored in a plurality of trays 21 which can
10 be retrieved from a rack system 22. Each tray 21 may have one or more compartments. Each single compartment of tray 21 includes a plurality of primary packages 17, however, within one compartment of a tray 21 packages 17 containing only one type of contact lenses are provided, whereas different compartments typically contain primary packages 17 containing different types of contact lenses. To be able to
15 automatically distinguish between the different types of contact lenses an identification mark (such as a bar-code or clear text printing) can be applied to the individual primary packages.

When a customer order comes in, an input means 24 such as a computer is used for determining the total number of single individual primary packages 17 to be packed
20 into one or more secondary packages. The input means 24 may not only determine the total number of single individual primary package from a customer order, it also determines the total number of each type of contact lens and optionally customization information from the customer order.

After having determined how many contact lenses of each type are to be packed
25 (e.g. by a customer order), one or more secondary package blanks 1 capable of accommodating the determined number of single individual primary packages are selected from a secondary package blank magazine 23 and are transferred onto a conveyor belt 25. Magazine 23 may contain different types of secondary package blanks 1. As can be seen in Fig. 11, magazine 23 may contain secondary package

blanks 1 which may be capable of accommodating a maximum of one, two three, six or twelve contact lenses. All these package blanks 1 have the same width 30 but may vary in length, as this has been described above.

Once the secondary package blank (or blanks) 1 have been transferred to
5 conveyor belt 25, one or more robots 26 pick the respective primary packages determined by the customer order from the compartments of the trays 21 and place the picked individual primary packages 17 into the cut-out portions 4 (see Fig. 1) of the secondary package blank 1. One or more folding units 27 perform the various folding operations to form the wallet-type secondary package 16, as this has been described
10 above.

Having formed the secondary package 16, the secondary package 16 may be customized by applying design or other information 29, in particular images, graphic designs, written information or the like to a dedicated surface area of the secondary package 16. And while the customization information to be applied is determined by a
15 customer order via the input means 24, as this has been described, alternatively or in addition branding information can be applied by a printer 28 to the secondary package 16 which may contain design or information, in particular images, graphic designs, written information or the like.

While embodiments of the invention have been described many changes,
20 substitutions, variations, alterations, transformations and modifications are conceivable to a person skilled in the art without departing from the spirit and scope of the present invention. Therefore, the embodiments are not intended to limit the invention, but rather the present invention is intended to encompass such changes, substitutions, variations, alterations, transformations and modifications. Accordingly, the scope of the invention
25 is defined by the appended claims.

Claims

1. Method for the secondary packaging of ophthalmic lenses for example contact lenses, contained in individual primary packages (17), the method comprising the steps of

5 providing a plurality of single individual primary packages (17) each containing an ophthalmic lens,

determining a number of single individual primary packages (17) to be taken from the plurality of single individual primary packages (17) and to be packed into a secondary package (16),

10 providing a secondary package blank (1) of a size capable of accommodating the determined number of single individual primary packages (17) to be packed into the secondary package (16),

placing each single individual primary package (17) of the determined number of single individual primary packages (17) into the secondary package blank (1),

15 folding and closing the secondary package blank (1) containing the determined number of single individual primary packages (17) to form the secondary package (16).

2. Method according to claim 1, wherein the step of providing a plurality of single individual primary packages (17) comprises providing a plurality of single individual primary packages (17) containing at least two different types of ophthalmic lenses, each
20 type of ophthalmic lens being different from another type of ophthalmic lens in at least one physical or chemical property.

3. Method according to claim 2, wherein the number and the type of ophthalmic lenses which are contained in the single individual primary packages (17) and which are to be packed into the secondary package (16) is determined by a customer order.

25 4. Method according to any one of the preceding claims, wherein the step of providing a secondary package blank (1) comprises providing a plurality of predetermined different secondary package blanks (1), the different secondary package blanks (1) having an identical width (30).

5. Method according to any one of the preceding claims, wherein the step of placing each single individual primary package (17) into the secondary package blank (1) comprises placing each single individual primary package (17) in a corresponding individual cut-out portion (4) formed in the secondary package blank (1).

5 6. Method according to claim 5, wherein the single individual primary packages (17) are placed in the corresponding individual cut-out portions (4) of the secondary package blank (1) such that the single individual primary packages (17) are retained in the respective cut-out portions (4).

7. Method according to any one of the preceding claims, wherein the step of folding
10 and closing the secondary package blank (1) comprises folding and closing the secondary package blank (1) to form a wallet-type secondary package (16).

8. Method according to any one of the preceding claims, wherein the method further comprises the step of applying images, graphic designs, written information, or the like to the secondary package blank (1), to the secondary package (16) or to the single
15 individual primary package (17), or to any combination thereof.

9. Method according to claim 8, wherein the step of applying images, graphic designs, written information, or the like is determined by a customer order.

10. System for the secondary packaging of ophthalmic lenses, for example contact lenses, contained in individual primary packages (17), the system comprising
20 a storage unit for providing a plurality of single individual primary packages (17) each containing an ophthalmic lens,
an input unit (24) for determining a number of single individual primary packages (17) to be taken from the storage unit and to be packed into a secondary package (16),
a package blank magazine (23) for providing a secondary package blank (1), the
25 secondary package blank (1) being capable of accommodating the determined number of single individual primary packages (17),
at least one robot (26) for placing each single individual primary package (17) of

the determined number of single individual primary packages (17) into the secondary package blank (1), and

a folding unit (27) for folding and closing the secondary package blank (1) containing the determined number of single individual primary packages (17) to form the
5 secondary package (16).

11. System according to claim 10, wherein the storage unit comprises at least one tray (21), each tray (21) having at least two compartments, each compartment being sized to accommodate at least one single individual primary package (17).

12. System according to any one of claims 10 or 11, wherein the input unit (24) is
10 adapted for receiving and processing a customer order determining the number of single individual primary packages (17) which are to be taken from the plurality of single individual primary packages (17) and which are to be packed into the secondary package (16).

13. System according to any one of the preceding claims, wherein the package blank
15 magazine (23) is adapted for providing a plurality of predetermined different secondary package blanks (1) having an identical width (30).

14. System according to any one of claims 11 to 13, further comprising a plurality of robots (26) arranged one after the other along first and second transport lines for transporting the trays (21) and the secondary package blanks (1) respectively.

20 15. System according to any one of the preceding claims, further comprising an application unit (28) adapted for applying images, graphic designs, written information, or the like to the secondary package blank (1), to the secondary package (16) or to the single individual primary package (17), or to any combination thereof.

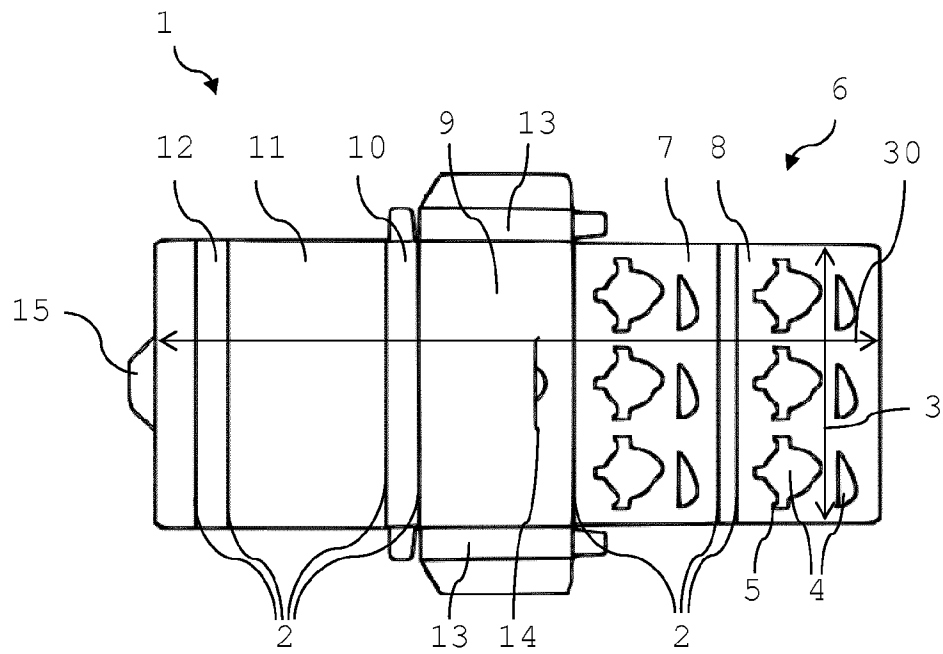


Fig. 1

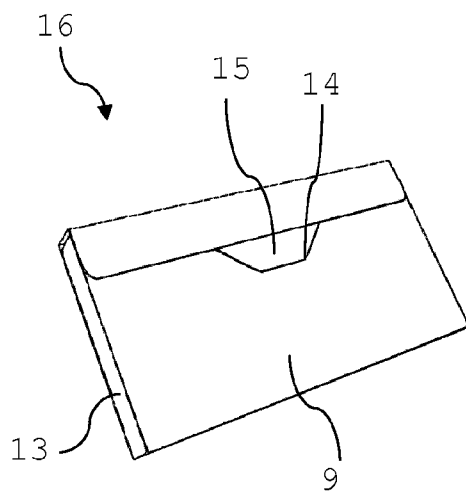


Fig. 2

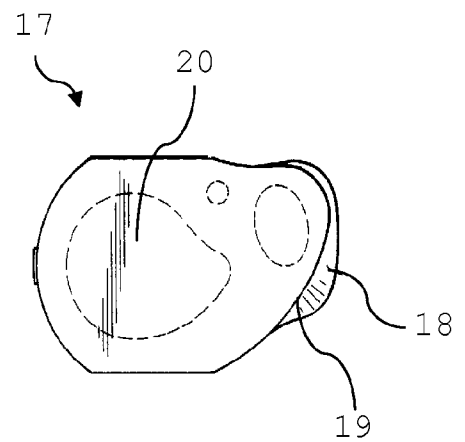


Fig. 3

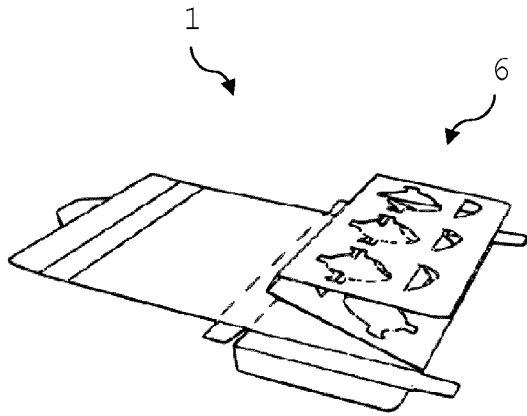


Fig. 4

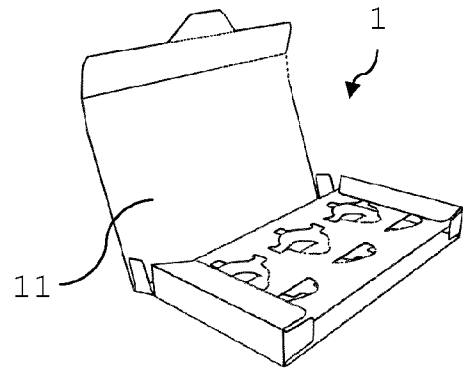


Fig. 6

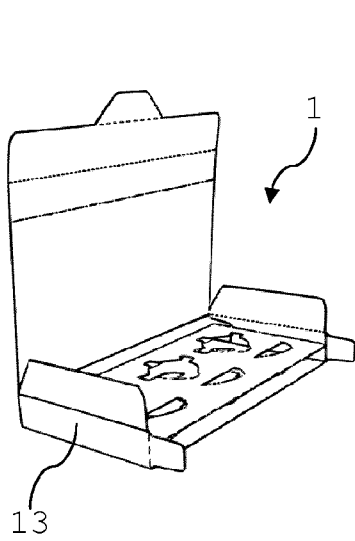


Fig. 5

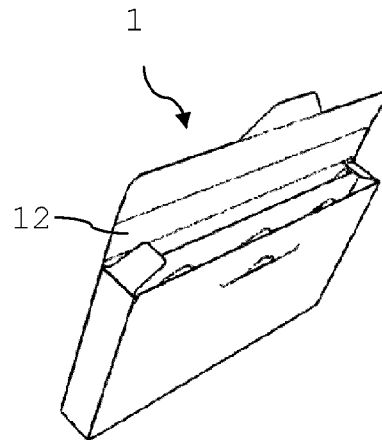
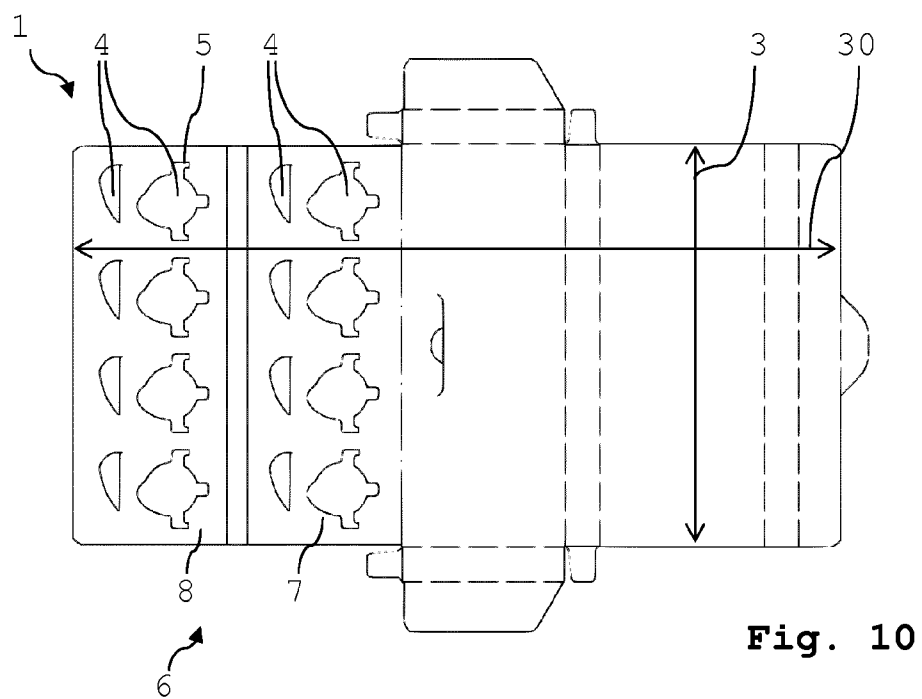
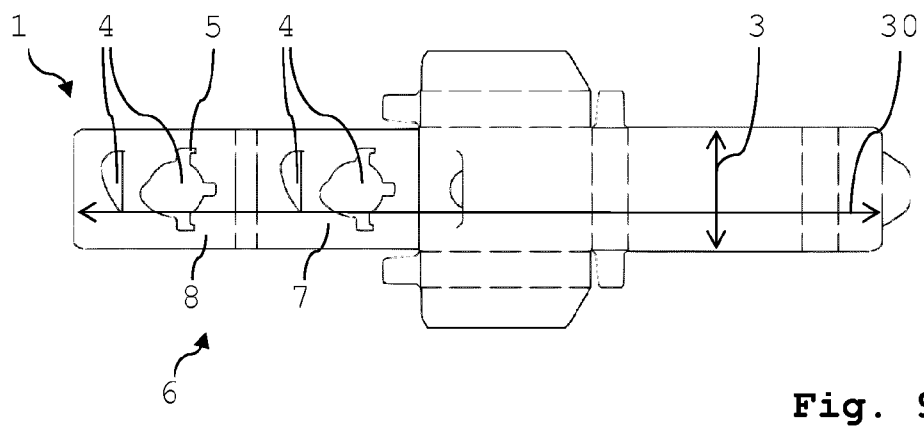
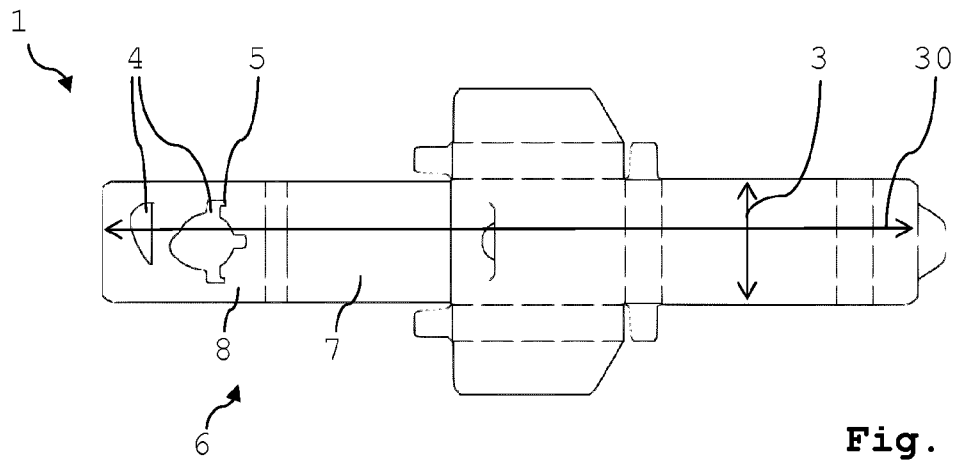


Fig. 7



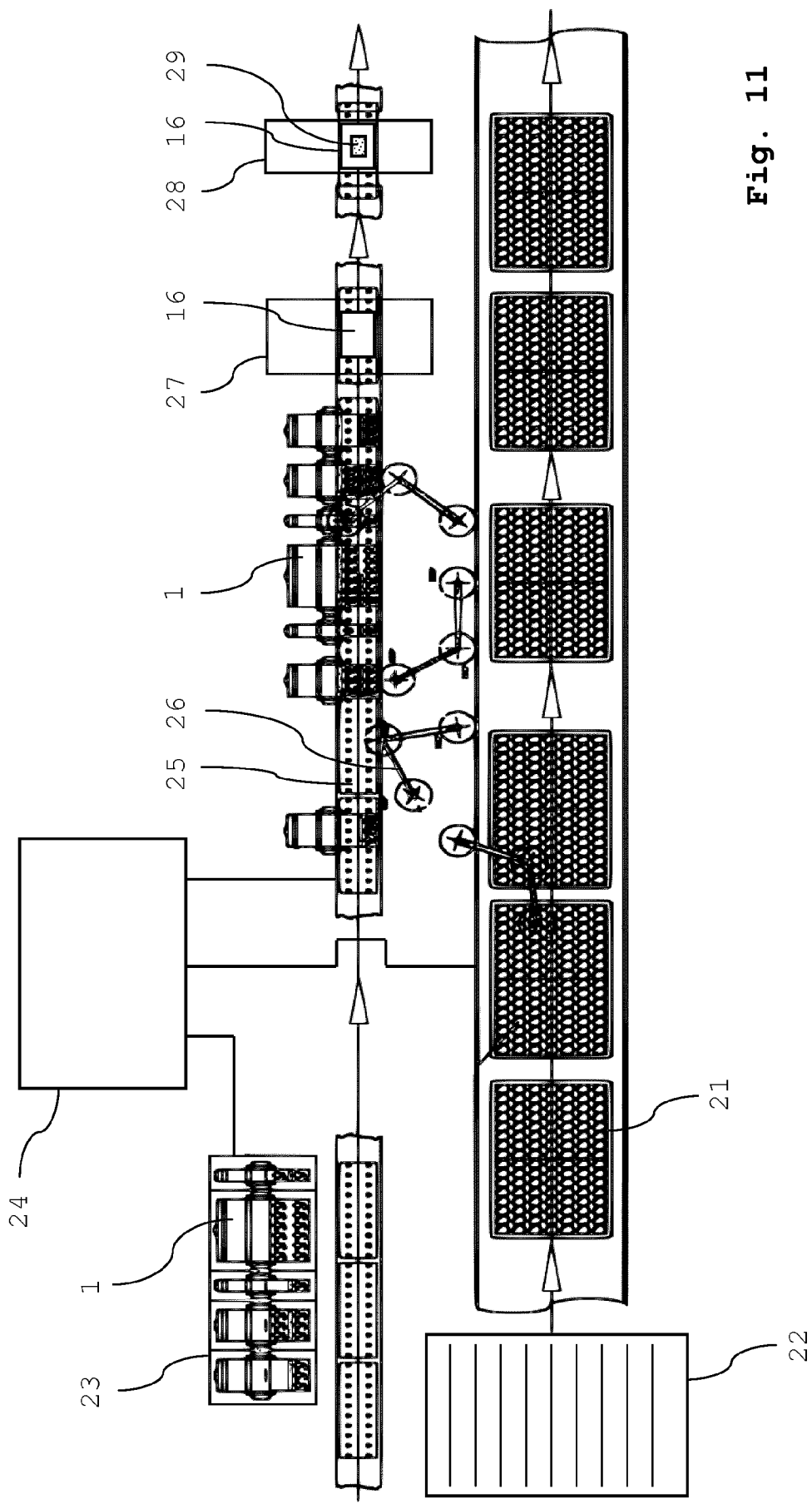


Fig. 11

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2013/056688

A. CLASSIFICATION OF SUBJECT MATTER
INV. B65B25/00 B65B59/00 B65D5/50
ADD.

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)
B65B B65D

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)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2004/238380 A1 (NEWMAN STEPHEN D [SG]) 2 December 2004 (2004-12-02) paragraph [0003]; figures 4,5 paragraph [0235] paragraph [0280] - paragraph [0289]; figures 139-159 -----	1-15
A	EP 1 270 441 A1 (DIVIDELLA AG [CH]) 2 January 2003 (2003-01-02) paragraph [0015] - paragraph [0028]; figures 1-8 -----	1-15
A	GB 2 385 841 A (PIAE LTD [GB]; NOVARTIS AG [CH]) 3 September 2003 (2003-09-03) page 2, line 16 - page 5, line 20 ----- -/-	1-15



Further documents are listed in the continuation of Box C.



See patent family annex.

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Date of the actual completion of the international search

11 June 2013

Date of mailing of the international search report

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INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2013/056688

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2004/004930 A1 (JOHNSON & JOHNSON VISION CARE [US]) 15 January 2004 (2004-01-15) page 11, line 1 - line 3 -----	4,13
A	EP 0 897 880 A1 (QUELLE SCHICKEDANZ AG & CO [DE] PAPST LICENSING GMBH & CO KG [DE]) 24 February 1999 (1999-02-24) paragraph [0020] - paragraph [0025]; figures 1-, 2 -----	4,10-15
A	EP 1 122 194 A1 (JOHNSON & JOHNSON VISION CARE [US]) 8 August 2001 (2001-08-08) paragraph [0012] - paragraph [0056]; figures 1a-3 -----	10-15

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2013/056688

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2004238380	A1	02-12-2004	
		AU 2005217221 A1	09-09-2005
		AU 2011200587 A1	03-03-2011
		BR PI0507761 A	10-07-2007
		CA 2556761 A1	09-09-2005
		EP 1718538 A2	08-11-2006
		EP 2526808 A1	28-11-2012
		EP 2526809 A1	28-11-2012
		EP 2526810 A1	28-11-2012
		JP 3716994 B2	16-11-2005
		JP 4586121 B2	24-11-2010
		JP 4751075 B2	17-08-2011
		JP 4928583 B2	09-05-2012
		JP 2005231740 A	02-09-2005
		JP 2005234576 A	02-09-2005
		JP 2005250496 A	15-09-2005
		JP 2009214944 A	24-09-2009
		KR 20070006777 A	11-01-2007
		NZ 549210 A	27-08-2010
		RU 2006133304 A	27-03-2008
		RU 2010148131 A	27-05-2012
		RU 2010148132 A	10-06-2012
		TW 201216941 A	01-05-2012
		TW 201216942 A	01-05-2012
		TW 201216943 A	01-05-2012
		US 2004238380 A1	02-12-2004
		US 2006249403 A1	09-11-2006
		US 2007199832 A1	30-08-2007
		US 2008264804 A1	30-10-2008
		US 2011162980 A1	07-07-2011
		US 2012061260 A1	15-03-2012
		WO 2005082721 A2	09-09-2005
EP 1270441	A1	02-01-2003	
		AT 334076 T	15-08-2006
		CA 2447773 A1	19-12-2002
		DK 1395500 T3	20-11-2006
		EP 1270441 A1	02-01-2003
		EP 1395500 A1	10-03-2004
		ES 2267829 T3	16-03-2007
		JP 2004535337 A	25-11-2004
		US 2005035023 A1	17-02-2005
		WO 02100736 A1	19-12-2002
GB 2385841	A	03-09-2003	NONE
WO 2004004930	A1	15-01-2004	
		AU 2002346033 A1	23-01-2004
		EP 1565276 A1	24-08-2005
		WO 2004004930 A1	15-01-2004
EP 0897880	A1	24-02-1999	
		AT 313499 T	15-01-2006
		EP 0897880 A1	24-02-1999
EP 1122194	A1	08-08-2001	
		AR 027340 A1	26-03-2003
		AU 1678301 A	02-08-2001
		BR 0102364 A	09-10-2001
		CA 2333334 A1	01-08-2001
		CN 1310125 A	29-08-2001
		DE 60106989 D1	16-12-2004
		DE 60106989 T2	01-12-2005

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2013/056688

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
		EP 1122194 A1	08-08-2001
		HK 1039310 A1	15-09-2006
		JP 2001301930 A	31-10-2001
		KR 20010078237 A	20-08-2001
		SG 99342 A1	27-10-2003
		TW 589275 B	01-06-2004
