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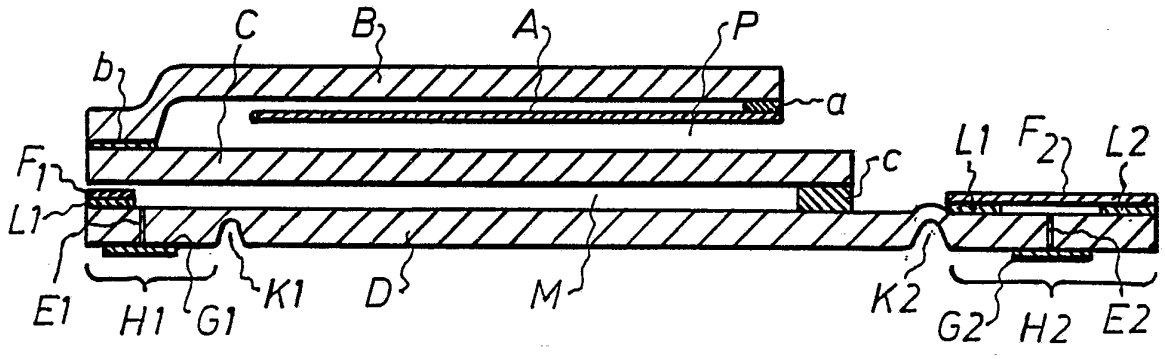
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(57) Abstract

The invention concerns a package and a method for producing the package and aims at obviating the risk of infection from a possibly contaminated or leaking sample, as well as enabling inexpensive and simple production. This is essentially achieved by a package having two compartments (P, M) each sealable by means of a flap (H_1, H_2), the flaps (H_1, H_2) as well as the openings of the two compartments being located on opposite sides of the package. The use of a translucent material and of an absorber changing colour when contacted with the sample enables visual detection of leakage inside the sealed package.

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PACKAGING BAG, PREFERABLY FOR PERILOUS SAMPLES, AND METHOD FOR PRODUCING THE PACKAGING BAG

The present invention relates to a package, preferably for perilous samples and the like, and a method for producing the package.

Swedish Patent 8304910-6 discloses a package intended primarily for perilous samples. This package comprises an inner compartment for perilous samples or the like, and an outer compartment surrounding the inner compartment and intended for some kind of document, such as a packing slip. The outer compartment has a slot-shaped opening next to the opening of the inner compartment. Both compartments can be closed by means of one and the same flap, sealing the inner compartment in a liquid-tight manner. The outer compartment can be opened by means of a tear thread, leaving the inner compartment sealed.

Packages of this type serve their purpose fairly well, but are not cheap enough to allow low-cost mass production. Further, they involve a certain risk of confusion, i.e. that the perilous sample is placed in the wrong compartment. There is also the admittedly small risk that an externally besmeared sample may, when put in the right compartment, come into contact also with that part of the flap which is intended to seal the other or second compartment, i.e. the document compartment, in which case there is a risk of infection when opening this compartment.

The present invention aims at obviating the risk of the first compartment thus infecting the second compartment when the sample is leaking or exteriorly besmeared, especially when opening the second compartment. Further, the invention provides a method for producing such a package, enabling simple and low-cost mass production as well as reducing the risk of the sample compartment being confused with the document compartment.

According to the invention, this is achieved by a package having the features recited in the characterising clause of appended claim 1, and by a method of production having the features recited in the characterising clause of appended claim 14. The appended subclaims define advantageous developments and embodiments of the invention.

The provision of the first and the second flap, and consequently of the openings of the two compartments, on opposite sides of the package effectively obviates the risk of infection when an exteriorly besmeared sample is put in the first compartment and the compartments are sealed, or in the case of a leaking sample, when the second compartment is later opened. In a further development of the invention, the first flap is located, when not in use, outside the two compartments of the package, and so this flap and the associated compartment are naturally perceived by the user as intended primarily for the perilous sample.

This effect is further enhanced if, as in one embodiment of the invention, the contour of the second flap essentially coincides with the adjoining contour of the package, such that the second flap is not perceived as a sealing flap until the first flap has been applied and only the second flap remains open. This further reduces the risk of the sample being put in the wrong compartment.

Suitably, the flaps are provided with pressure-sensitive adhesive covered by a removable protective layer. Also, the flaps are formed with a slot extending therethrough and externally covered by a strip to be torn off for opening the associated compartment. This ensures, in a manner known per se, that the pressure-sensitive adhesive will seal the associated compartment only when intended to, as well as facilitates subsequent opening of the compartments.

Suitably, the layer of pressure-sensitive adhesive on the first flap surrounds the entire associated slot with a certain spacing, whereby the slot or the surrounding adhe-

sive layer will have to be accurately positioned in relation to the opening of the compartment, this rendering production more simple and less expensive while enabling liquid-tight closure of the compartment and simplified handling.

Suitably, the pressure-sensitive-adhesive layer flanks, preferably with a certain spacing, the associated slot in the second flap closest to its outer terminal edge. This also renders less expensive and simplifies production without adversely affecting the handleability of the package. Also, it confers the additional advantage of reducing the risk that documents which may not have been pushed far enough into the second compartment will inadvertently get stuck when the second flap with the adhesive layer is applied over the opening to the document compartment.

Suitably, the external side of the first compartment sealable by means of the first flap comprises or consists of a shock-absorbing material. In this case, one side of the second compartment sealable by means of the second flap may conveniently also comprise or consist of a shock-absorbing material. Alternatively, the internal side of the first compartment sealable by means of the first flap may comprise or consist of a shock-absorbing material.

In one embodiment, a liquid absorber is provided in the first compartment sealable by means of the first flap. Suitably, the absorber is in the form of a sheet which is placed between the shock-absorbing layers and attached along one short side to the inside of the outer, optionally shock-absorbing layer, close to the opening of the document compartment, thereby rendering it impossible to place the sample between the absorber and the outer layer. Conveniently, the absorber is opaque to make it impossible to read text or the like on the sample. Further, the liquid-absorbing layer suitably looks different when dry than when wet or moist, and the outside of the first compartment suitably is transparent, translucent, opaque or

otherwise translucid to make it possible to observe from outside the appearance of the liquid-absorbing layer and thus alterations caused by a leaking sample.

In another preferred embodiment, the internal and/or the external side of the second compartment sealable by means of the second flap is made of an opaque material. This is to prevent unauthorised persons from reading or otherwise optically perceiving, without opening the package, messages, documents or the like placed in the second compartment. If a package according to the invention has once been opened, this can be seen from outside.

The method according to the invention confers the advantage that the package can be mass-produced at a low cost and in a simple manner with high machine time utilisation and high availability. Certain broad tolerances as to material and positioning may thus be adopted, and accuracy is only required in some final operations, which renders less expensive and simplifies production and results in a product having a competitive price. The method can be continuous and effective, since preferably the paper web and the shock-absorbing materials are unwound from rolls and are all, with one of their longitudinal sides, adjusted into edge-to-edge relationship, which is a fairly simple operation, and since the roll width of, inter alia, the first shock-absorbing-material web is chosen so as to be about a flap width narrower than that of the paper web, but wider than the roll width of the second shock-absorbing-material web.

Conveniently, also the liquid-absorbing material is delivered in rolls which are narrower than the package, and is cross-cut slightly shorter than the width of the shortest shock-absorbing material, such that also this material can be supplied continuously. The cut liquid-absorbing sheets are preferably attached by or adjacent to one cut edge, either directly at or adjacent to the closest edge of the second shock-absorbing material.

Also the tear strips may be supplied from rolls and when applied over the slots be provided with adhesive, excepting the tear-strip ends, thereby to produce gripping flaps at the ends so that the tear strips can be easily torn off.

Conveniently, use is made of opaque paper, preferably kraft paper, kraft liner or the like, providing strength as well as shutting off the document or referral compartment from view. The paper web has suitably printed on it opening directions, flap and compartment designations, mailing address pre-print and/or current information with pattern repeat corresponding to the length or width of the package.

The shock-absorbing material used conveniently consists of two plastic sheetings welded together and enclosing gas or air cushions. Alternatively, use can be made of two plastic sheetings with a third, intermediate plastic sheeting forming the air cushions. The plastic sheetings of the layers to be welded together with the liquid-absorbing material are suitably translucent. The shock-absorbing material provided between the paper layer and the liquid-absorbing material need not be translucent but may of course be so. One reason for choosing translucent plastic sheetings is that they are as a rule less expensive and available as standard articles, rendering production and the final product less expensive.

The invention will now be described in more detail with reference to the accompanying drawings illustrating an embodiment of a package according to the invention and an embodiment of a plant for implementing the method of production according to the invention. In the drawings,

Fig. 1 is a schematic section of an embodiment of a package according to the invention,

Fig. 2 is a plan view towards the sealing flap of the sample compartment,

Fig. 3 is a section of the right-hand end portion (in Fig. 1) of the package when sealed,

Fig. 4 is a cross-section of an alternative embodiment of the package,

Fig. 5 is a schematic side view of a plant for implementing the inventive method for producing the package according to the invention,

Fig. 6 is a view illustrating the cutting and the supply of the liquid-absorbing material,

Fig. 7 is a top view of the arrangement in Fig. 6, and

Fig. 8 is an enlarged plan view showing the impulse-welding station to the right in Fig. 5.

The embodiment of the package according to the invention as schematically illustrated in cross-section in Fig. 1 comprises a first compartment P adapted to contain a sample and sealable by means of a first flap H2, as well as a second compartment M adapted to contain documents or referrals and sealable by means of a second flap H1. As is evident from Fig. 1, the first flap H2 and the second flap H1, as well as the opening of the first compartment P and the opening of the second comparment M, are provided on opposite sides of the package. In the first compartment P, sealable by means of the first flap H2, there is provided a liquid absorber A. At its right-hand terminal edge, the liquid absorber is attached adjacent to the opening of the compartment P. A sample R placed in the compartment P (see Fig. 4) is thus not visible, and the opacity of the absorber A further makes it impossible to read anything that may be written or printed on the sample.

As appears from Figs 1 and 2, the flap H2 adapted to seal the sample compartment P is situated outside the two compartments of the package when not in use. The flap H1 of the referral or document compartment, on the other hand, has a contour which substantially coincides with the adjoining contour of the package.

The two flaps H1 and H2 each have a layer of pressure-sensitive adhesive L1 and L2 covered by a strippable protective layer or release layer F1, F2. Preferably, these protective layers consist of silicone-treated sheeting material, such as silicone-treated paper. Further, each flap has a slot E1 or E2 extending through it and externally (i.e. on the downward side in Fig. 1) covered by a removable strip G1 or G2 for opening the associated compartment. The slots E1 and E2 are shorter than the associated flap in the longitudinal direction of the slot, as appears from Fig. 2 (slot E2). The pressure-sensitive-adhesive layer L2 surrounds the slot E2 at a distance, while the adhesive layer L1 is only flanking the slot E1 closest to the outer long side of the flap. The strips G1 and G2 covering the slots E1 and E2 are but slightly longer than the associated slot and are covered by adhesive layers, while one or both ends of the strips are left without adhesive to form gripping flaps, making it easy to remove the tear strips from an optional side.

The upper boundary wall B of the sample compartment P in Fig. 1 consists e.g. of a two-layer bubble film of polyethylene measuring 250 x 200 mm (roll width 200 mm). The absorption layer attached at a may then measure 230 x 170 mm (roll width 170 mm). The absorber is attached along one short end or both short ends to the two-layer bubble film. It is important that the absorber, at the left-hand end in Fig. 1, does not extend too close to the left-hand end of the layer B, such that there is room for welding together the layer B and the underlying layer C, e.g. a three-layer bubble film of polyethylene, here measuring 270 x 200 mm (roll width 270 mm). Under these two layers, there is a layer D of polyethylene-coated kraft liner, here measuring 320 x 200 mm (roll width 320 mm). This kraft liner is provided with a scoring, in this case about 50 mm from the short end of the flap. This scoring is designed to make it easier to fold the sealing flap of the sample compartment over the compartment opening (see

also Fig. 3). To the left of the scoring K2, and optionally at a shorter distance than illustrated in Fig. 1 (cf. Fig. 2), the shock-absorbing layer C is welded together with the kraft liner D by the weld c_1 close to the opening edge of the sample compartment P. In addition, the layers C and D are also welded together by the longitudinal welds d_1 and d_2.

The shock-absorbing layer B should always be transparent to enable an observer to perceive any changes in the appearance of the liquid-absorbing material A caused by a leaking sample. The other shock-absorbing layer C may, but need not, be transparent, translucent, opaque or otherwise translucid. As a rule, the layer D provided with the flaps should not be transparent or translucent, at any rate if it is desired to prevent anyone from reading the contents of the referral compartment M from outside. The material of the layer D is chosen amongst suitable prior-art materials to give this layer the desired properties. For instance, the layer D may be shock-absorbing while the layer C need not.

Tests involving prototypes have proved it to be very easy to seal the two compartments of the package as well as open them separately, which need not be done by tearing off the strips G_1 or G_2 but may also be done by cutting or slitting them up. As a rule, this would be more difficult.

Fig. 5 illustrates an embodiment of a plant for producing packages in accordance with the method of the invention. The plant operates in a one-way assembly design along a line (not designated) from the left to the right in Fig. 5. The measurement values given in the following are but examples and do not in any way restrict the invention. The plant operates in such a manner that the package edge situated to the left in Fig. 1 is common to the three layers B, C and D, but the invention is not restricted thereto, as will appear further below.

Polyethylene-coated kraft paper is unwound from a roll 1 having a width of 320 mm and a tolerance of ± 1 mm. The kraft paper passes a buffer roller 21, also termed dancing roller, which can move up and down if the paper is unwound from the roll in continuous manner (here by means of a pair of driving rollers 25, 25') while impulse welding at the end of the plant is performed in discontinuous manner, as will be described further below. After the buffer roller 21, the web passes over an alignment roller 30 maintaining the side of the web facing the observer in a given position.

The two feed rollers 25 and 25', nipping the paper web between them, are suited for providing the web, when being fed, with scorings, which in this case is done 50 mm from the side facing away from an observer of Fig. 5. Another scoring K may be provided on the side facing the observer, for the sealing flap of the referral compartment.

After positional adjustment of the edge facing the observer, the two sealing flaps are slotted. The sealing flap of the sample compartment may be given a slot 33 ± 2 mm from the side at issue and having a length of 160 mm, centred over the width of the future bag in parallel with the feed direction of the kraft paper. The sealing flap of the referral compartment is given a slot, e.g. 25 ± 2 mm from the associated edge. Also in this case, the length of the slot is 160 mm, centred over the bag width. The slots are sealed by a tear strip, e.g. 10 mm wide, just opposite the slot. The tear strips are each unwound from a roll, only the roll 40 facing the observer being shown in Fig. 5. An arm 41 is linked to the holder (not designated) of the roll. The arm 41 is acted upon by a tension spring 42 and has, at its free end, a pulley 43 over which the tear strip G is unwound and fed to a gluing device 42 which intermittently applies glue to the tear strip in such a manner that about 20 mm are left unglued and then about 180 mm are coated with glue for a package

width of 200 mm. Gluing is so synchronised with the slotting devices that the glued part of the tear strips is centred on the slots of the sealing flaps, give or take a few mm. The tear strips and the paper web are joined and compressed by feed rollers 26 and 26'.

A protective layer, so-called release paper, is unwound from a roll 50 and passed over a pulley 53 which is arranged at the free end of an arm acted on by a tension spring 52 and which is linked to the holder (not designated) of the release-paper roll. The release paper is fed to a second gluing device 55 where glue is applied, whereupon the glued protective strip passes a pair of feed rollers 27, 27' and joined with the kraft liner on the side thereof facing away from the tear strip.

One release-paper roll and one gluing device 55 are provided both for the sealing flap of the referral compartment and for the sealing flap of the sample compartment. In the chosen example, the width of the sample-compartment flap is equal to that of the protective strip, i.e. about 50 mm, while the second silicone-coated protective strip for the referral compartment has a width of e.g. 18 mm.

In this case, the glue is applied to the release-paper strip, but it may also be applied directly to the kraft liner. For the sealing flap of the sample compartment, glue is applied, starting from maximally 1.5 mm from the edge and with a gap of about 10 x 170 mm just opposite to the slot, i.e. glue surrounds the slot throughout. For the sealing flap of the referral compartment on the opposite side, glue is applied, starting from about 1.5 mm from the edge and over a width of about 10 mm.

A first shock-absorbing material C is unwound from a roll 60, passed between a pair of feed rollers 28, 28' and over a dancing roller 22 as well as a plurality of guide rollers, aligned with its edge facing the observer of Fig. 5 in edge-to-edge relationship to the kraft paper D on the side facing the observer of Fig. 5 by means of a

pair of alignment rollers 61, and finally joined with the kraft liner at 62. This shock-absorbing layer, which will be the intermediate layer of the package, may consist e.g. of a three-layer bubble film of polyethylene having a roll width of 270 mm ± 2 mm.

A second shock-absorbing material, e.g. a two-layer bubble film of polyethylene, here having a roll width of 200 ± 2 mm, is unwound from another roll 70, passed through a pair of feed rollers 29, 29' and over a dancing roller 23, and fed, via guide rollers (not designated), to a gluing device 65 applying transverse, narrow strands of glue to the shock-absorbing material with a spacing corresponding to the roll width of the shock-absorbing material B. Then, the web is passed into a device (illustrated in more detail in Fig. 6) for cutting and applying a liquid-absorbing material A unwound from a roll 80. An arm 81 is at one end linked to the holder (not designated) of the roll. This arm is acted upon by a tension spring 82 and has, at its other end, a pulley 83. Together with the arm and the tension spring 82, the pulley 83 also serves as a dancing roller, albeit not in the vertical direction, and enables continuous tearing off when the material is discontinuously fed by the pair of feed rollers 28, 28'. The liquid-absorbing material A may have a roll width of 170 ± 2 mm, and is cut by means of a photocell and a cutting device (not shown) into lengths of e.g. 230 mm ± 3 mm. The absorber sheets are placed on the bubble film layer B in such a manner that the cut edges are situated on and adjacent to, respectively, the glue strands applied in the gluing device 65, such that the front edges of the sheets are attached to the shock-absorbing material B, whereupon they pass round half the circumference of a breast roller 85, are aligned with their edge facing the observer of Fig. 5 in edge-to-edge relationship to the webs B and C by means of alignment rollers 86, and are joined with the other two webs at 87.

The three webs (the kraft liner D at the bottom, the first shock-absorbing material C in between, and the shock-absorbing material B with the liquid-absorbing sheets A at the top) are then fed to an impulse-welding device 90, where they are welded together. In the welding step shown in Fig. 7, two packages at a time are always welded together in a single operation. In the top view of Fig. 7, the upper edge is the edge where the three layers are positioned edge to edge on top of one another. To the left in Fig. 7, two longitudinal welds b and c are applied. As shown in Fig. 1, the weld b is situated at the left-hand end, where only the two shock-absorbing materials B and C are interconnected, while the polyethylene-coated kraft liner D is not connected to the shock-absorbing layer C, since welding takes place in the area where the adhesive layer L_1 on the kraft liner D is covered by the silicone-treated release strip F_1 which thus does not adhere to the shock-absorbing layer C. Consequently, the sealing flap of the referral compartment M does not adhere to this layer but remains open.

The other longitudinal weld c is applied along the right-hand edge in Fig. 1 of the intermediate shock-absorbing layer C with the polyethelene-coated kraft liner. This bond may take place closer to the scoring K_2 than shown in Fig. 1 (cf. Fig. 2).

Further, there are provided two transverse welds both designated d_1, d_2, since one and the same weld forms e.g. the right transverse weld of one package and the left transverse weld of the other adjoining package. After welding, the web passing through the impulse-welding unit is cut in the cutting device 65 (farthest to the right in Fig. 5) along transverse marking lines indicated by dash-dot lines in Fig. 7. The longitudinal dash-dot marking line indicates the middle between the two longitudinal welds b and c. Once the web has passed the cutting device, the packages are completed. Naturally, the web may be cut

in such a manner that the edges are not pointed but are given another desired, e.g. rounded, shape (cf. Fig. 2).

When a pressure is applied to the kraft liner, it should be recurrent in accordance with the chosen width of the bag, in this example every 200 mm with a tolerance of e.g. ± 1 mm. The total width of the pressure should suitably be less than and centred over the intended width of the bag. Conveniently, a longitudinal gap having a width of e.g. 10 mm is left for a timing mark to be sensed by a pressure-mark transducer which in known manner controls the feed of the kraft liner, the shock-absorbing material and the liquid-absorbing material, as well as the application of glue to the tear strips, the slotting, and so forth.

When a sample (cf. Fig. 4), e.g. a perilous sample in the form of a tube closed by a plug, has been put in the sample compartment P, the latter may be sealed by removing the protective sheeting F_2 and folding the flap H_2 upwards and over the opening of the sample compartment and applying it. Since the adhesive layer L_2 extends round the slot E_2 and is glued to the adjoining outside of the shock-absorbing layers closest to the opening, as well as to the free area between the scoring K_2 and the bottom weld c of the referral compartment and also round the ends of the slot E_2, the sample compartment is sealed in a liquid-tight manner.

Documents relating to the sample, such as a packing slip, may then or even before be placed in the referral or document compartment M, which is sealed by removing the strippable protective sheeting F_1 and pressing the pressure-sensitive-adhesive layer L_1 against the second shock-absorbing sheet C. Preferably, the contour of the flap H_1 is identical to that of the bottom end of the sample compartment P and that of the package as a whole at the left-hand end in Fig. 1. The right-hand flap H_2, on the other hand, projects outwardly of the sample compartment P when not in use.

When the package according to the invention is to be opened, the removable tear strip G_1 or G_2 (depending on whether the sample compartment or the referral compartment is to be opened) is seized by one gripping flap and torn off, thereby opening the associated compartment. Suitably, the tear strip is so chosen that the structure of the kraft liner clearly shows that the strip has been torn off. After removal, the tear strip must not be sticky from any residual glue, and it should not be possible to use the tear strip for reclosing the compartment.

As a rule, the referral or document compartment is first opened by removing the tear strip G_1. At this stage, the sample compartment is still completely sealed, and there is thus no risk of contamination, not even if the sample R has, contrary to expectation, become untight or been damaged, giving rise to leakage in the sample compartment P. At any rate, leakage can be visually established by the absorber A changing its colour and appearance. Since the sample R is located inwardly of the absorber A, it cannot conceal any alteration of colour. By "alteration of colour" is here meant also that the colour remains the same but becomes darker or lighter owing to the leakage compared with the rest of the absorber colour. If such alteration of colour is observed, requisite protective measures against contamination can be taken well before opening the sample compartment. Since the openings of the document compartment and the sample compartment are located on diametrically opposed ends of the sample bag, the risk that one compartment is opened by mistake instead of the other is insignificant. This risk would be much greater if the openings of the two pockets or compartments were located on the one and same side of the package.

CLAIMS

1. A package, preferably for perilous samples, having a first compartment (P), which is sealable by means of a first flap (H_2), and a second compartment (M), which is sealable by means of a second flap (H_1), said flaps (H_1, H_2) each having a layer of pressure-sensitive adhesive (L_1, L_2) covered by a strippable protective layer or release layer (F_1, F_2) of sheeting material, characterised in that the first flap (H_2) and the second flap (H_1), as well as the opening of the first compartment (P) and the opening of the second compartment (M), are provided on opposite sides of the package, that the external side (B) of the first compartment (P) sealable by means of the first flap (H_2) comprises or consists of a shock-absorbing material, that the internal side (C) of the first compartment (P) sealable by means of the first flap (H_2) comprises or consists of a shock-absorbing material, and that each flap (H_1, H_2) has a slot (E_1, E_2) extending therethrough, which, on the outside, is covered by a strip (G_1, G_2) which can be torn off for opening the associated compartment.

2. A package as claimed in claim 1, characterised in that a liquid absorber (A) is arranged in the first compartment (P) sealable by means of the first flap (H_2).

3. A package as claimed in claim 1 or 2, characterised in that the first flap (H_2), when not applied, is located outside the two compartments (M, P) of the package.

4. A package as claimed in claim 1, 2 or 3, characterised in that the contour of the second flap (H_1) essentially coincides with the adjoining contour of the package.

5. A package as claimed in any one of claims 1-4, c h a r a c t e r i s e d in that a pressure-sensitive-adhesive layer (L_2) completely surrounds the associated slot at a distance therefrom, preferably the slot (E_2) of the first flap (H_2).

6. A package as claimed in claims 1-5, c h a r a c t e r i s e d in that a pressure-sensitive-adhesive layer (L_1) is provided so as to flank the associated slot closest to the outer long side of the flap, preferably the slot (E_1) of the second flap (H_1).

7. A package as claimed in claims 1-6, c h a r a c t e r i s e d in that one side of the second compartment (M) sealable by means of the second flap (H_1) also comprises or consists of a shock-absorbing material.

8. A package as claimed in claims 2-7, c h a r a c t e r i s e d in that the liquid-absorbing material (A) has a different appearance when dry than when wet, and that the outside of the first compartment is transparent, translucent, opaque or otherwise translucid or diaphanous.

9. A package as claimed in any one of the preceding claims, c h a r a c t e r i s e d in that the internal and/or the external side of the compartment (M) sealable by means of the second flap (H_1) is made of an opaque material (D), preferably kraft paper.

10. A package as claimed in any one of claims 1-9, c h a r a c t e r i s e d in that only a narrow strand of pressure-sensitive adhesive (L_1) is applied along the outer edge or edges of the second flap (H_1) to prevent unintentional adherence of documents (T) placed in the second compartment (M) when the compartment is sealed by means of the second flap (H_1).

11. A method for producing packages, preferably for perilous samples, with two compartments (M, P) each having a flap (H_1, H_2), as claimed in one or more of claims 1-13, comprising the steps of

partially slotting (E) one or both flaps (H) at a distance from the closest outer edge of the flap, in parallel with this outer edge (D);

attaching a tear strip (G) to one flap side over each slot (E);

applying pressure-sensitive adhesive (L) to the flaps (H) adjacent to the slots (E);

applying a protective sheeting (F), preferably of silicone-treated sheeting material, to the other flap side against each flap over the applied adhesive (L);

moving a first shock-absorbing, liquid-tight material (C) against the other side of a paper web (D), substantially in edge-to-edge relationship to at least one edge of shock-absorbing material; and

placing a second shock-absorbing material (B), slightly narrower than the first, on the first shock-absorbing, liquid-tight material (C), and thereafter welding together the first and the second shock-absorbing material (B, C) as well as the paper (D) around all the edges of the first shock-absorbing material (C) without the protective strip (F_1) on the second flap (H_1) of the paper web adhering to the first shock-absorbing material (C).

12. A method as claimed in claim 11, c h a r a c t e r i s e d by unwinding the paper web (D) and the shock-absorbing materials (C, B) from rolls and adjusting all of them, with one of their longitudinal sides, so as to be in edge-to-edge relationship on top of one another; and choosing the roll width of the web of the first shock-absorbing material (C) to be about one flap width narrower than that of the paper web (D) but wider than the roll width of the web of the second shock-absorbing-material (B).

13. A method as claimed in claim 11 or 12, c h a r a c t e r i s e d by choosing an opaque liquid-absorbing web (A) narrower than the package; cross-cutting it so as to be slightly shorter than the width of the second shock-absorbing material (B); and attaching (a) the resulting

liquid-absorbing sheets (A) preferably by or adjacent to one cut edge, either directly at or adjacent to the closest edge of the second shock-absorbing material (B).

14. A method as claimed in claim 11, 12 or 13, c h a r a c t e r i s e d by leaving the ends of the tear strips (G_1, G_2), when applying the latter over the slots (E_1, E_2), without adhesive to form gripping flaps for easily tearing off the tear strips.

15. A method as claimed in any one of claims 11-14, c h a r a c t e r i s e d by choosing the outer shock-absorbing layer (B), preferably attached (a) to the liquid-absorbing layer (A), to be transparent, translucent, opaque or otherwise translucid, such that any alteration of the appearance and the colour of the liquid-absorbing material (A) due to a leaking sample (R) or the like can be visually established.

16. A method as claimed in one or more of claims 11-15, c h a r a c t e r i s e d by choosing an opaque paper, preferably kraft paper, kraft liner or the like, as paper (D); and providing the paper web with a scoring (K) for one or both flaps (H).

17. A method as claimed in one or more of claims 11-16, c h a r a c t e r i s e d by providing the paper web (D) with print regarding opening instructions, flap and compartment designations, mailing address pre-print and/or current information with a pattern repeat corresponding to the length and/or width of the package.

18. A method as claimed in claim 17, c h a r a c t e r i s e d by choosing the print of the paper web to be narrower than the width of the package; and/or including in the print, or leaving space therein for, a timing mark to be sensed for timing the operation of a plant for producing the package.

19. A method as claimed in one or more of claims 11-18, c h a r a c t e r i s e d by using, as shock-absorbing material, two optionally translucent plastic sheetings, preferably polyethylene sheetings, which are

welded together and between which are enclosed gas or air cushions.

20. A method as claimed in one or more of claims 11-18, c h a r a c t e r i s e d by using, as shock-absorbing material, two translucent plastic sheetings with a third translucent plastic sheeting, preferably a polyethylene sheeting, provided therebetween to form gas or air cushions.

21. A method as claimed in one or more of claims 11-20, c h a r a c t e r i s e d by applying adhesive (L_1, L_2) to the first flap (F_2) around the entire first slot (E_2) and to the second flap (F_1) only along one side of the slot (E_1).

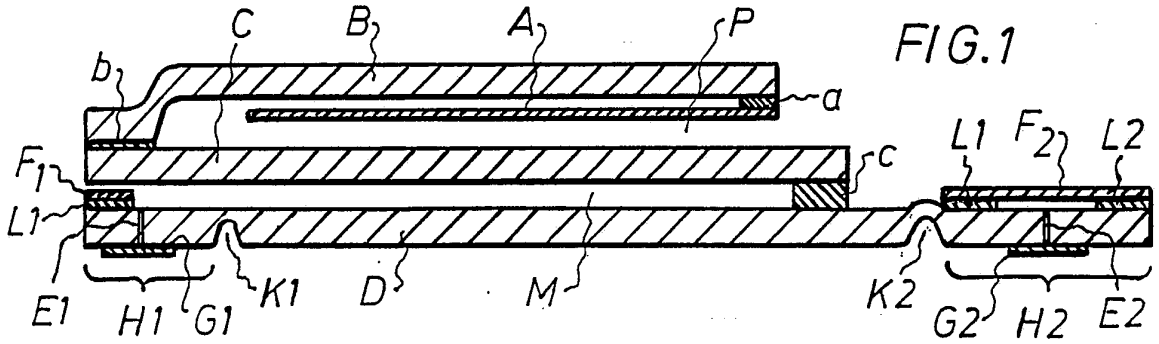


FIG.1

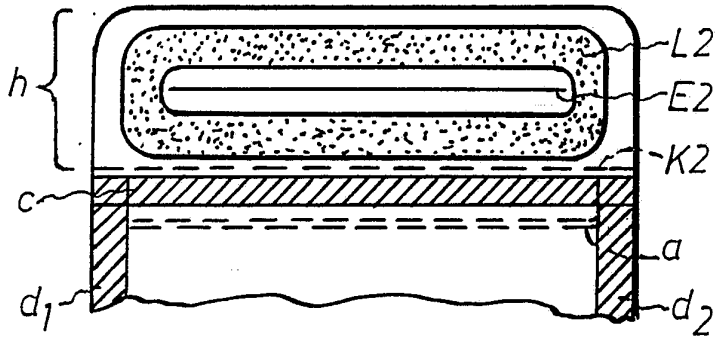


FIG.2

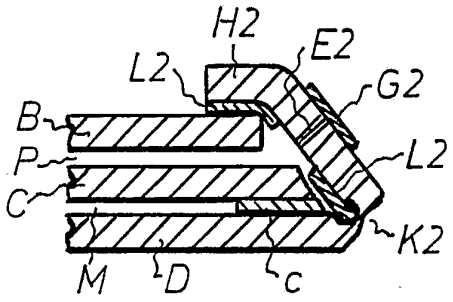


FIG.3

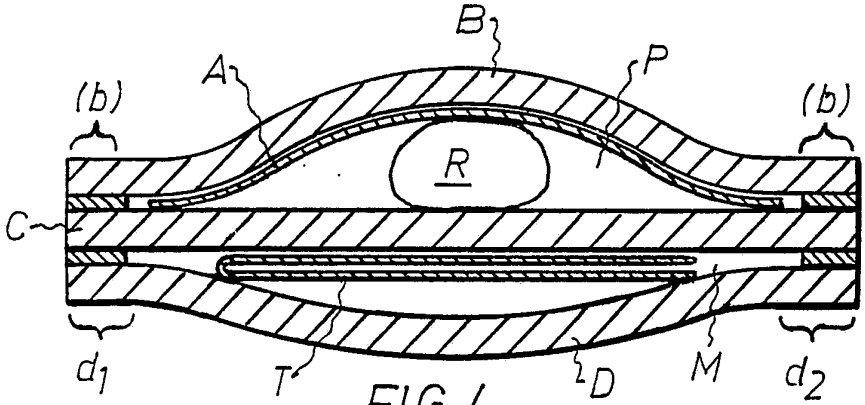


FIG.4

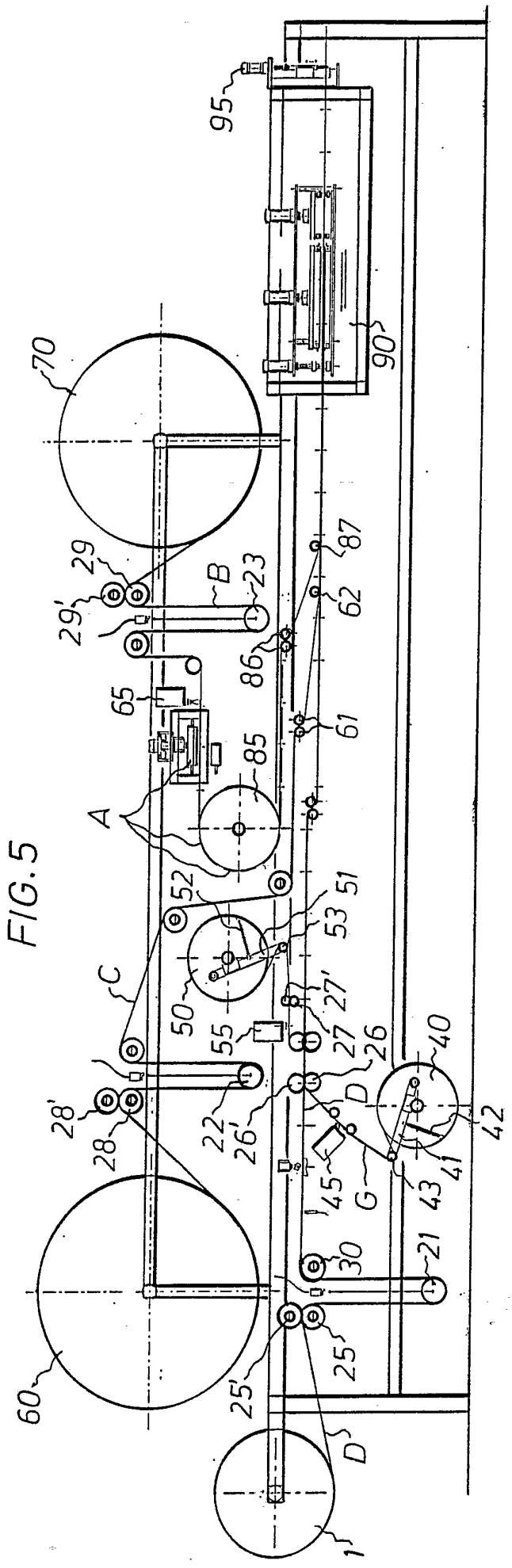

95
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70
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29'
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86
61
65
85
A
52
51
53
C
50
55
27'
27
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28'
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26'
D
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41
45
G
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30
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25'
60
D
1

FIG. 5

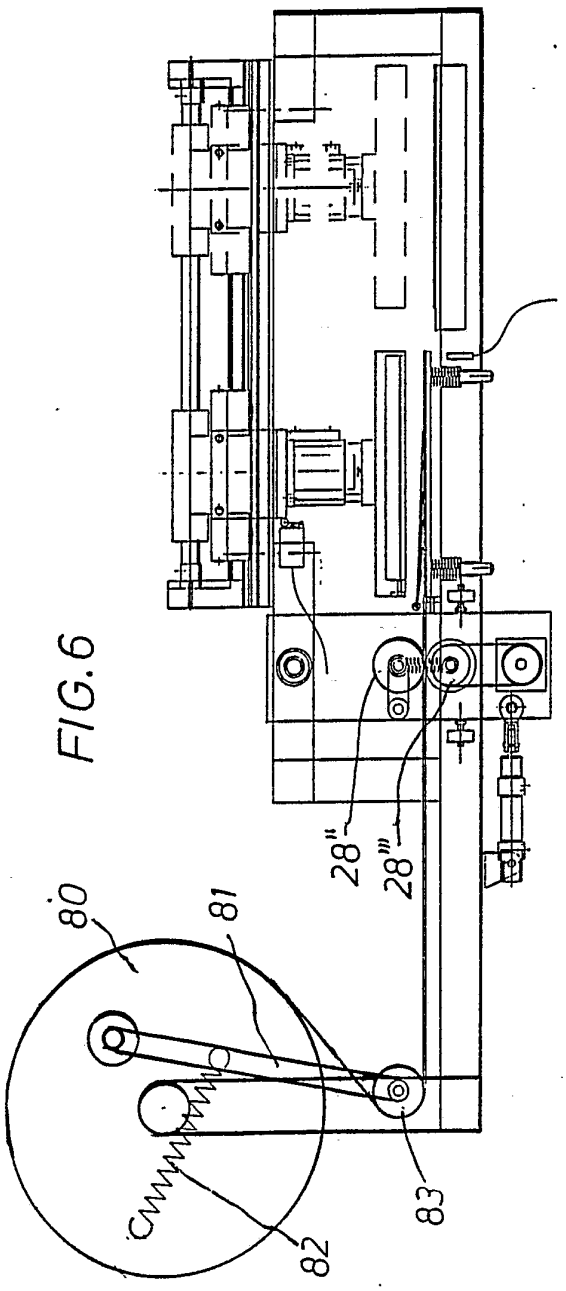


FIG.6

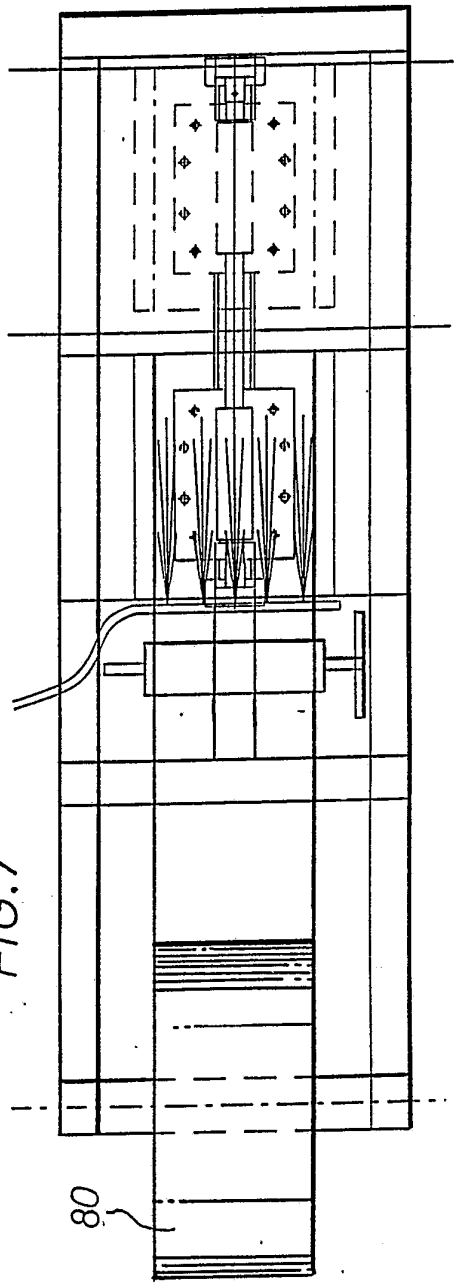
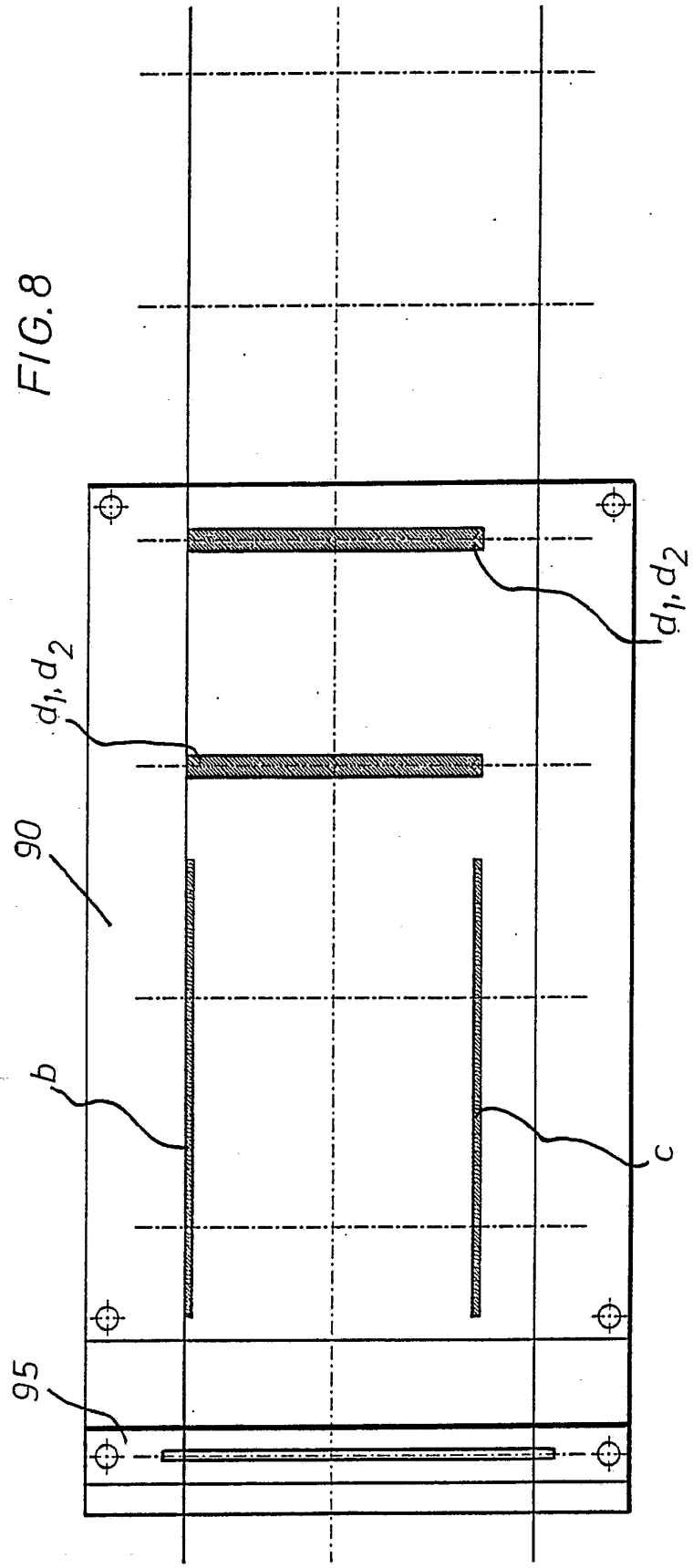


FIG.7

FIG.8



INTERNATIONAL SEARCH REPORT

International Application No PCT/SE 92/00605

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all)[6]

According to International Patent Classification (IPC) or to both National Classification and IPC

IPC5: B 65 D 81/02, 27/08, B 31 B 41/00

II. FIELDS SEARCHED

Minimum Documentation Searched[7]

Classification System	Classification Symbols
IPC5	B 31 B; B 65 D

Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in Fields Searched[8]

SE,DK,FI,NO classes as above

III. DOCUMENTS CONSIDERED TO BE RELEVANT[9]

Category *	Citation of Document,[11] with indication, where appropriate, of the relevant passages[12]	Relevant to Claim No.[13]
A	CH, A, 468913 (CASAGRANDE) 15 April 1969, see column 3, line 6 - line 13; figures 5,6; claims 1,3 --	1-10
A	SE; B, 444555 (JAN SÖDERHOLM, HUGO CEDRAEUS) 21 April 1986, see page 2, line 24 - page 4, line 35; figures 1,2 --	1-10
A	GB, A, 2081215 (DECOFLEX LIMITED) 17 February 1982, see figures 1,2; claims 1-3 --	1-10
A	EP, A2, 0378861 (ANTON DEBATIN GMBH) 25 July 1990, see figure 1; claim 1 --	1

* **Special categories of cited documents:**[10]

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"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

"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 such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

IV. CERTIFICATION

Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report
8th December 1992	10 -12- 1992
International Searching Authority	**Signature of Authorized Officer**
SWEDISH PATENT OFFICE	Kerstin Hällgren

III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)

Category *	Citation of Document, with indication, where appropriate, of the relevant passages	Relevant to Claim No
A	US, A, 3266712 (H.F. MCCLENEGHAN) 16 August 1966, see figures 1-4; claims 1,2 --	1
A	US, A, 4744673 (NAKAMURA) 17 May 1988, see figures 8-11 --	11-21

ANNEX TO THE INTERNATIONAL SEARCH REPORT ON INTERNATIONAL PATENT APPLICATION NO. PCT/SE 92/00605

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report.
The members are as contained in the Swedish Patent Office EDP file on 30/10/92
The Swedish Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
CH-A- 468913	69-04-15	NONE		
SE-B- 444555	86-04-21	AU-D-	3396084	85-04-11
		DE-A-	3470141	88-05-05
		EP-A-B-	0189406	86-08-06
		SE-A-	8304910	85-03-14
		US-A-	4679688	87-07-14
		WO-A-	85/01272	85-03-28
GB-A- 2081215	82-02-17	NONE		
EP-A2- 0378861	90-07-25	DE-U-	8900239	90-02-08
US-A- 3266712	66-08-16	NONE		
US-A- 4744673	88-05-17	AU-D-	5583186	86-09-24
		WO-A-	86/05162	86-09-12