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NOTICE OF ENTITLEMENT

(To be filed before acceptance)

I, CHRISTER ZARELIUS of, SKEPPARGATAN 29, S-114 52 STOCKHOLM, SWEDEN being the applicant in respect of Application No. 26347/95 state the following:-

The Person nominated for the grant of the patent is the actual inventor.

The person nominated for the grant of the patent is the applicant of the applications listed in the declaration under Article 8 of the PCT.

The basic applications listed In the declaration made under Article 8 of the PCT are the first applications made in a Convention country in respect of the invention.

By my Patent Attorneys,
WATERMARK PATENT & TRADEMARK ATTORNEYS

7 November, 1997

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Registered Patent Attorney

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A PICTURE OR TEXT DISPLAY UNIT

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(56) Prior Art Documents
GB 2172734
DE 2504171
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(57) Claim

1. An easily assembleable and easily dismantleable picture or text display unit which includes at least two, first and second, sheet-like panels which are mutually fastenable edge-to-edge by the use of edge related two-part coupling devices whereby first parts of said two-part coupling devices are arranged at the two mutually opposing edge portions of the first panel and second parts of the two-part coupling devices are arranged at the mutually opposing edge portions of the second panel and that the distance between said first coupling parts associated with the first panel differs from the distance between the second coupling parts associated with the second panel when said panels are dismantled, wherein said first parts and said second parts are formed as separate strip arrangements, onto said first sheet-like panel and adjacent its edge parts are said one parts of said two-part coupling devices attached at a predetermined distance from the edge portion, onto said second sheet-like panel and adjacent its edge parts are said second parts of said two-part coupling devices attached at a predetermined distance from the edge portion and in an assembled position of said sheet-like panels said first and second parts of the two-part coupling devices are interacting with each other.

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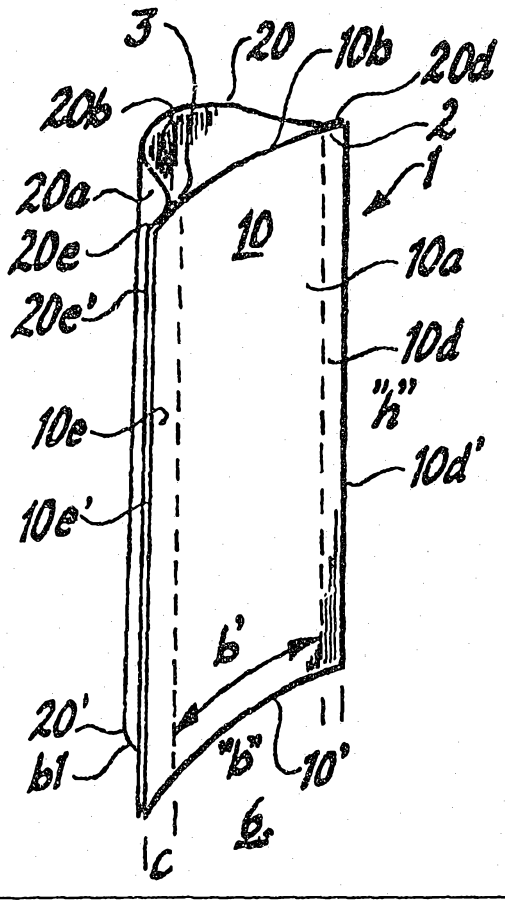
(54) Title: A PICTURE OR TEXT DISPLAY UNIT

(57) Abstract

The invention relates to an easily assembled and easily dismantlet picture or text display unit (1) which comprises at lest two panels. First parts of two-part coupling devices are fastened to the two mutually opposing edge parts of a first panel (10). Second parts of the two-part coupling devices (2, 3) are fastened to the two opposing edge parts of the second panel (20). The distance (b') between the two first coupling parts associated with the first panel (10) differs from the distance between the two second coupling parts associated with the second panel (20).



TITLE OF THE INVENTION: A PICTURE OR TEXT DISPLAY UNIT

TECHNICAL FIELD

The present invention relates to a picture or text display unit, and then particularly to a display unit which can be easily assembled and easily dismantled with the aid of simple means.

The inventive unit is comprised of at least two sheet-like panels which advantageously have a square or rectangular surface extension, although other shapes are conceivable.

The properties of the two or more sheet-like panels described below are significant to the invention and by the expression "bendable or flexible" is meant that an initially flat panel can be rolled to cylinder form with a diameter which is at least smaller than 0.5 m, without being broken or deformed plastically in any way that will be problematic to its intended purpose.

It lies within the scope of the invention to produce the sheet-like panels from a material and/or material composition, and/or to give the sheet-like panels a thickness which will impart to the panels a stiffness and flexibility that will enable the panels to be readily rolled-up to a form suitable for transportation purposes, said roll having a predetermined small diameter, and also enable the sheet-like panels to be unrolled readily from their cylindrical form to their initially flat shape, or at least to an essentially flat state, without appreciable plastic deformation of the panels.

According to the concept of the invention, it shall be possible to slightly bend a suitably supple sheet-like panel to construct a self-supporting structure which has suitable rigidity for the intended purpose. It is necessary for this

construction to be given a sufficiently wide base surface so as to enable a structure of given height to stand firmly, by virtue of bending the sheet-like panels and as a result their coaction with other panels in the structure.

In this regard, the length (height) and width dimensions of individual sheet-like panels will depend on current circumstances and requirements.

Naturally, it also lies within the concept of the invention to make available different variations with regard to the outer shape of respective panels and other measures.

DESCRIPTION OF THE BACKGROUND ART

Several different designs of picture display units of the aforedescribed kind are known to the art.

For instance, it is known to use in conjunction with such picture display units erectable and collapsible support devices which when in an extended or erected position are able to support one or more normally flat picture-carrying panels, by fitting to the support device a first part of a two-part coupling unit and by fitting the other part of said coupling unit to the picture-carrying panel. The coupling unit is preferably comprised of two mutually coacting strip-shaped permanent magnets, whereby the picture-carrying panel will hang from its upper edge part and rest on the support device, in either a flat or curved state.

It will be noted in this respect that the picture-carrying panel can be transported in the form of one or more rolls and any plastic deformation to the shape of the panel caused when rolling-up the panel is compensated for by the intrinsic weight of the panel when suspended and resting on the support device.

U.S. Patent Specification 4,825,930 discloses a hinge system adapted for large picture display systems, including a frame or a support device onto which a picture panel or a wall part is applied.

Other examples of the earlier standpoint of techniques are found in U.S. Patent Specifications 4,147,198 and 4,448,231, and in the International Patent Publication WO 91/12402 (PCT/SE91/00090).

It is known in the production of simpler display devices or picture display units to fasten a picture carrier in a stiffened frame and to fasten the picture carrier to a rigid sheet or like device.

The present invention relates to the simpler display arrangements and to display arrangements which have a relatively small display surface, although the width-height dimensions of the display surface of each display panel used may be in the order of 0.5-2.0 m x 1.0-4.0 m, preferably 0.5-1.0 m x 1.0-3.0 m.

It is known to construct an easily assembled and easily dismantled picture or text display unit which comprises at least two panels of which a first panel is fastened to the edge of the second panel and where the width of said second panel is greater than the width of said first panel.

Examples of the earlier standpoint of techniques are found in prior Patent Publications GB-A 2,172,734, DE-B2-25 04 171, US-A 2,160,724 and Finnish Patent Application 88 3327.

These prior patent publications thus teach methods of building structures in which one panel is flat while the other panel is bent in tension to form a convex shape when seen in plan.

DISCLOSURE OF THE PRESENT INVENTION

TECHNICAL PROBLEMS

When considering the present standpoint of techniques as described above, it will be seen that a technical problem resides in constructing a picture or text display unit which can be easily assembled and easily dismantled, with the aid of solely two sheet-like panels and which in an erected or assembled state can be readily given different degrees of stability in accordance with the dimensions of the picture-carrying panels in relation to a structure supporting surface, and with which when dismantled, the panels can be readily rolled to a cylinder form without destroying or damaging the panels.

It will also be seen that a technical problem resides in realizing the significance of allowing the panels to be rolled into a cylinder form in a manner such that any permanent deformations caused when rolling-up the panels will be compensated for when two or more sheet-like panels are brought into mutual coaction in an assembled or fitted state by virtue of bending the panels perpendicular to the permanent deformation when assembling the panels to form said structure.

It will also be seen that a technical problem resides in realizing the significance of needing to fasten to two mutually opposing edge parts of one picture-carrying panel first parts of two-part coupling devices, and of fastening to the mutually opposing two edge parts of the second panel second parts of two-part coupling devices, and by realizing that the distance between the first coupling parts on the first panel will differ from the distance between the second coupling parts on the second panel.

It will also be seen that a technical problem is one of

realizing the significance that are associated with and the advantages that are afforded by the possibility simple and known, readily bendable two-part coupling devices.

Another technical problem is one of realizing the advantages that are afforded by configuring respective coupling devices that one coupling part will define a gap, and such that the gaps of the two first coupling parts associated with the first panel will face towards one another, and therewith also to realize the necessity the second coupling parts defining a gap such that the gaps of the two second coupling parts associated with the second panel will face away from each other.

It will also be seen that another technical problem is one of realizing the significance of and the advantages afforded by choosing distance differences between the first coupling parts associated with the first picture-carrying panel and the second coupling parts associated with the second picture-carrying panel which are greater than 10% and normally smaller than 60%, and also in realizing that in normal cases, the difference in distance shall lie between 5 and 30%.

It will also be seen that a technical problem resides in realizing the advantages that are afforded by producing respective panels from plastic sheet material that has a square or rectangular surface extension, and by forming the first and/or the second part of respective two-part coupling devices from strip material which is fastened to the rear side of said panel with the aid of fastener means.

Another technical problem in this regard is one of realizing the significance of using a fastener means which has the form of Velcro® tape, magnetic strip or double-sided adhesive tape, or alternatively to use an elastic and springy fastener means in the construction of a picture or text display unit of the aforesaid kind which can be readily assembled and

readily dismantled.

It will be seen that another technical problem resides in the significance of giving the first and the second parts of the coupling device the form of a bendable or flexible plastic strip whose bendability is greater than the bendability or flexibility of the picture-carrying panel, therewith to enable the plastic strip to be bent to a small radius of curvature without being deformed plastically to a greater extent than the material of said panel.

It will also be seen that a technical problem resides in realizing those advantages that are afforded when, in the assembled state of said two sheet-like panels, the outwardly facing picture or text displaying surface of a first panel is slightly concave in one plane, normally a horizontal plane, while the outwardly facing picture or text display surface of the other panel is convex and has bottom edge surfaces which extend between said edge parts of the two panels such as to support the structure on a flat underlying supportive surface.

It will also be seen that a technical problem resides in realizing the consequences of and the advantages afforded by making the one panel more rigid or stiffer than the other panel, so as to be able to change the external shape of an assembled display unit.

A further technical problem is one of realizing the advantages that are afforded when a display unit of the aforesaid kind is comprised of more than two picture-carrying panels.

Another technical problem is one of realizing the advantages that are afforded when the parts of said coupling device can be orientated in a direction which deviates from a parallel orientation.

Another technical problem resides in seeing the benefits of forming the two parts of respective coupling devices from mutually coactable strips, Velcro® tapes, permanently magnetized strips, double-sided adhesive tape or like means attached in a known manner to respective picture-carrying panels.

It will also be seen that a technical problem resides in providing a construction in which a first panel will present a flat, or at least a generally flat display surface while using the characteristic features of the construction described in the aforementioned Swedish patent application.

It will also be seen that a technical problem resides in the ability to provide simple coupling means which despite the necessary attachments being located at a given distance from one edge surface are able to provide this possibility.

Another technical problem is one of realizing the significance of using adhesive tape as said coupling devices, and also to realize the significance of adapting the point of attachment of said adhesive tape so that solely the display surface of the first panel will be flat or have an adapted curvature.

Another technical problem resides in realizing that the second coupling parts of respective two-part coupling devices may have the form of two pivotally connected magnetic strips of which one is fixed to the edge surface of the first panel and one is adapted for coaction with a magnetic strip fixed adjacent to the edge surface of the second panel.

It will also be seen that a technical problem is one of realizing the dimensioning rules that are required for a coupling device to provide a flat display surface on solely the first panel.

Another technical problem is one of realizing that in order to obtain a simple unit construction, the first panel, i.e. the flat panel, should be provided with an edge-orientated strip, such as a magnetic strip, prior to assembly, and that during assembly, the edge part of the second panel should be allowed to support against said magnetic strip and then serve as a support for attachment means and said edge as the second panel is bent.

Another technical problem is one of realizing the significance of using coupling devices which stand in precise relationship with one another, such as separate magnetized strips having only one single relevant, specific position of mutual attraction.

Another technical problem is one of providing a coupling device which is so elastic as to afford requisite compression when rolling-up a panel of lower elasticity, and corresponding expansion when unrolling said panel, and vice versa, without the coupling device loosening from the panel.

SOLUTION

With the intention of solving one or more of the aforesaid technical problems, the present invention takes as its starting point an easily assembled and easily dismantled picture or text display unit which is comprised of at least two sheet-like panels whose outer defining surfaces may be quadratic or rectangular in shape with the exception of the upper edge surfaces and/or side surfaces, when judged to be suitable.

According to the invention, first parts of two-part coupling devices are each fastened adjacent a respective edge of two mutually opposing edge parts of a first panel, and the second parts of said two-part coupling devices are each fastened adjacent a respective edge of two mutually opposing edge

parts of the second panel, wherein the horizontal distance between the coupling parts associated with the first panel differs from the horizontal distance between the second coupling parts of respective coupling devices associated with the second panel.

According to proposed embodiments that fall within the scope of the inventive concept, each of the first coupling parts defines a gap, with the gaps defined by the two coupling parts associated with the first panel facing towards one another.

Each of the second coupling parts also defines a gap, with the gaps defined by said two second coupling parts associated with the second panel facing away from each other.

According to the present invention, it is necessary for the difference in the between the first coupling parts and the second coupling parts to be greater than 10% and preferably less than 60%, normally between 15 and 30%.

According to one embodiment of the invention, respective picture or text-carrying panels have the form of plastic sheets and the first and/or second parts of respective coupling devices have the form of a strip attached to said panels with the aid of a fastener means.

In this regard, the fastener means may have the form of Velcro® tape, magnetized strip, double-sided adhesive tape or the like, and the fastener means will preferably be slightly elastic and springy.

According to another embodiment of the invention, the first and the second coupling parts may have the form of a flexible plastic strip whose bendability or flexibility is greater than the flexibility of respective panels. The two coupling parts of coupling device may have the form of Velcro® tape,

magnetized strip, double-sided adhesive tape or the like.

The stiffness of one picture-carrying panel may conveniently be greater than the stiffness of the other panel.

According to the invention, the display unit is structured so that when two picture-carrying panels are brought together and fastened to one another by means of said two-part coupling devices, the outwardly facing surface of one panel will have a slightly concave curvature in a defined plane, such as a horizontal plane, and the outwardly facing surface of the other panel will have a convex curvature with bottom edge surfaces that extend between said edge parts of the two panels so as to support against an underlying supportive surface.

The invention also relates to the sheet-like panels in a dismantled state of the picture or text display unit, with said one or said second parts of respective coupling devices being bendable to a cylindrical shape, wherein the height or length of the cylinder thus formed corresponds to the width of respective panels.

The invention also enables the cross-sectional shape of the unit to be changed by using three or more different or similar picture-carrying panels and/or by changing the orientation of the coupling parts of respective coupling devices.

In accordance with the invention, there extends between the first coupling parts associated with the first panel and the second coupling parts associated with the second panel a fastener device by means of which the first panel can be given a flat or generally flat display surface.

According to preferred embodiments that lie within the scope of the inventive concept, said fastener device has the form

of an adhesive tape whose one edge part is fastened to the second panel and whose other edge part is fastened to a magnetic strip on the first panel.

In addition, the edge surface of the second panel is adapted to rest supportingly against the first panel adjacent an edge-related magnetic strip.

According to one preferred embodiment, said device is comprised of said second coupling part in the form of two pivotally connected magnetic strips, of which one is fastened to the first panel adjacent its edge surface, and one is adapted for coaction with a magnetic strip fastened adjacent the edge surface of the second panel.

The length and the thickness of said two magnetic strips are chosen in relation to the thickness and stiffness of respective panels, such that one panel will obtain a flat display surface.

The two magnetic strips will preferably be identical with regard to cross-section and length.

ADVANTAGES

The advantages primarily afforded by and characteristic of an inventive picture or text display unit reside in the ease in which a few, two or more, sheet-like panels can be assembled to form the unit while being held together by coupling devices, and which can be just as easily dismantled. The panels may be made from a material which will enable the panels to be readily bent or flexed in the absence of any plastic deformations that may have a deleterious effect on the external shape of the assembled units, since when assembled the panels are intended to curve in a direction perpendicular to any such deformation.

Further advantages that are afforded by an inventive picture or text display unit reside in the provision of conditions which enable a flat, or generally flat, display surface to be obtained on the first panel with the aid of an especially configured device coacting between the coupling parts of a two-part coupling device, even when the panels are made from a readily bendable or flexible material.

The primary characteristic features of an inventive picture or text display unit are set forth in the characterizing clause of Claim 1.

BRIEF DESCRIPTION OF THE DRAWINGS

An inventive easily assembled and easily dismantled picture or text display unit will now be described with reference to embodiments thereof at present preferred and also with reference to the accompanying drawings, in which

Figure 1 is a perspective view of an assembled picture or text display unit comprising two panels;

Figure 2 is a horizontal sectional view of the unit shown in Figure 1;

Figure 3 is an enlarged view of one of many two-part coupling devices that can be used in accordance with the invention;

Figure 4 illustrates how one or more panels can be rolled-up to be stowed away and/or transported;

Figure 5 illustrates a completely dismantled unit which is

rolled to a cylinder form with the panels inserted in a cylindrical packaging device for postal dispatch;

Figure 6 comprises three views A-C which illustrate changes in the cross-sectional shape of the unit when the two coacting panels have mutually different degrees of stiffness

Figure 7 shows three views A-C which illustrate different changes in the cross-sectional shape of the unit when choosing different distances between the points of attachment of two mutually coacting and similarly rigid panels;

Figure 8 shows four views A-D which illustrate different changes in the cross-sectional shape of the unit when choosing different distances between the edges of a panel and the attachment points of two mutually coacting and similarly rigid panel;

Figure 9 is a perspective view of one embodiment of two stable units formed by two panels and an intermediate, separate panel;

Figure 10 is a perspective view of one embodiment which includes the use of a permanently magnetized strip or tape which participates in coupling together two unit-forming panels and which also participates in coupling an adjacent separate panel;

Figure 11 is a perspective view of a unit formed from three mutually coacting and similarly rigid panels;

Figure 12 is a perspective view of a unit formed by four similarly rigid and similarly dimensioned, mutually coacting panels;

Figure 13 is a perspective view of a unit formed by four similarly rigid panels, of which one pair of panels have different dimensions to the other pair of panels;

Figure 14 is a perspective view of a unit formed by five picture-carrying panels;

Figure 15 is a sectional view of one edge part of a display unit, with the edge of one panel fastened to the second panel, and showing a device whereby the first panel is given a completely flat display surface;

Figure 16 illustrates correspondingly an alternative embodiment of said device and also illustrates initial coaction between the edge parts of the first panel and the second panel and the first and second parts of a two-part coupling device associated therewith;

Figure 17 illustrates the coaction of the embodiment shown in Figure 16 significant to the invention, and also shows a coaction with an adjacent unit; and

Figure 18 is a perspective view which illustrates the coacting embodiment of Figure 17 more clearly.

DESCRIPTION OF EMBODIMENTS NOW PROPOSED

Figure 1 is a perspective view of a picture or text display unit 1 in an assembled state, said unit comprising two sheet-like panels, i.e. a first panel 10 and a second panel 20.

The first panel 10 has an outwardly facing surface 10a on which a desired picture or text can be mounted.

The second panel has an outwardly facing surface 20a onto which a picture or text can be mounted, similar to the surface 10a.

The first panel 10 has an inwardly facing surface 10b, and the second panel 20 has an inwardly facing surface 20b.

The first panel 10 has a rectangular surface extension of width "b", corresponding to 70 cm, and a height "h" corresponding to 2 m.

The second panel 20 has a width "b1" corresponding to 85 cm and a height "h" corresponding to 2 m, and has also a rectangular surface extension or shape.

Both panels 10, 20 are produced from one and the same material have mutually the same stiffness and thickness.

The first and the second panels are held together by a first coupling device 2 which extends along the edge parts 10d and 20d of respective panels, and a second coupling device 3 which extends along respective edge parts 10e and 20e of said panels.

Since the coupling devices 2 and 3 are mutually identical, and are beneficially identical, only the coupling device 3 will be described in detail, with reference to Figure 3.

As will be seen from the drawing, one part 31 of a two-part coupling device 3 is fastened to the rear side 10b of two mutually opposing edge parts 10d and 10e of the first panel 10. Second parts 32 of the two-part coupling device 3 are fastened to the rear side 20b on two mutually opposing edge parts 20d and 20e of the second panel 20.

The distance b' between the two coupling parts 31, 31' associated with the first panel 10 differs from the distance

b1' between the two second coupling parts 32, 32' associated with the second panel 20.

In the illustrated case, this difference in distance is greater than 10% and less than 60%, normally between 15 and 30%.

In the case of the embodiment illustrated in Figure 1 and 2, the difference in distance is about 20%.

The distance "c" between the coupling device and the edge 10e' of the first panel 10 is, in practice, between 5 and 30% of the width "b" of the panel 10.

In the illustrated case, the edge 20e' of the second panel 20 terminates just short of the edge 10e', although it may project beyond said edge 10e' to some extent, which is determined from case to case.

One part of the two-part coupling device has, in the illustrated case, the form of a strip which forms a gap 31a, with the gaps for the two parts 31, 31' associated with the first panel 10 (the narrower panel) facing towards each other.

The second coupling part 32 also has the form of a strip which forms a gap 32a, with the gaps for the two second coupling parts 32, 32' associated with the second panel 20 (the broader panel) facing away from each other.

Respective panels 10 are comprised of plastic sheet and the first and/or the second part of respective coupling devices are comprised of a strip 31b, 32b, which is fastened to the panels with the aid of respective fastener means 31c and 32c.

When the panel has a height extension of 2.0 m and a width of 0.7 m and when the width of the rear panel is 20% greater than the width of the front panel (0.8 m), the panel will

conveniently have a thickness of from 0.2-1.0 mm.

The panel will preferably have an elastic modulus where E = 2,000-5,000 MPa.

By way of comparison, it can be mentioned that PVC has an E-modulus = 3,200 MPa and a PVC-panel has a thickness of 0.5 mm, the panel will have properties that will enable it to be bent or flexed in the manner decreed by the invention. Greater thicknesses and/or higher elasticity moduli may be preferable.

A "print" on electrostatic paper can be baked in with a hot-laminate-polyester + polyethylene having a thickness of 0.25 mm on the front and the rear sides to form such a panel. The base material may then have a thickness slightly greater than 0.5 mm and a combined E-modulus desired (somewhat stiffer than PVC).

The fastener means and/or one or both coupling parts of the two-part coupling device may consist in a double-sided adhesive tape, a Velcro® tape, a permanently magnetized strip or some like device.

It is particularly preferred that the fastener means is comprised of an elastically resilient material.

According to one preferred embodiment in this regard, there is conveniently used in some applications an adhesive tape which is provided with a double-adhesive plastic foam as the fastening means for one or the other of said coupling parts of respective coupling devices.

The first parts and the second parts of the two-part coupling device are comprised of bendable strips 31b, 32b, such as plastic strips, wherein the plastic strips have a bendability or flexibility which exceeds the flexibility of the first

panel 10 or the second panel 20.

In view of the desire to provide display units that can be easily assembled and easily dismantled and the requirement of using display panels whose stiffness enables the panels to be rolled-up into appropriate tubular shapes, the invention proposes a number of different dimensioning possibilities for readily changing the cross-sectional shape of the unit, in accordance with Figure 2.

A first possibility is to give the first and the second display panels 10, 20 the same degree of rigidity, E-modulus, and the same thickness therewith obtaining a cross-sectional shape essentially corresponding to that shown in Figure 2, particularly when the coupling devices 2, 3 are fitted at the locations shown in Figure 2.

Another possibility is to make the first panel 10 more rigid, or stiffer, than the second panel 20.

The change in configuration afforded hereby is shown in Figure 6A to Figure 6C.

A third possibility is for the second panel 20 to be more rigid, or stiffer, than the first panel 10.

By altering the distance between the coupling devices 2, 3, with regard to the second panel 20, for instance, different cross-sectional shapes are obtained, as illustrated in Figure 7A to Figure 7C, and a change in cross-sectional shape can also be achieved by positioning the coupling devices 2 and 3 at different distances from the edge parts 10e' and 10e'.

This is shown in more detail in Figure 8A to Figure 8D.

There is nothing to prevent the coupling device 2 from being located at a first distance and the coupling device 3 being

located at a different distance, i.e. a second distance, from the edge part of a respective panel, wherewith the coupling device 2 may be located closer to or further away from the edge part 10d' than the spacing of the coupling device 3 in relation to the edge part 10e', or vice versa.

As will be seen particularly from Figure 1, when the display unit 1 is assembled, the outwardly facing surface 10a of the first display panel 10 will be slightly concave in a horizontal plane, while the outwardly facing surface 20a of the second panel 20 will be convex with the lower edge surfaces 10', 20' of the panel extending in a flat state between the edge parts 10d', 10e' and rest against a flat supportive surface 6.

In the illustrated case, the outer limitation lines of the display panels 10 and 20 define a rectangular surface.

These limitation lines, or defining lines, may, of course, have any desired form, however.

However, the limitation lines that face towards the supportive surface 6 shall be configured to enable the panels 10 and 20 to be supported against the supportive surface so as to form a stable unit, unless otherwise desired.

Figure 4 shows the possibility of rolling-up a dismantled display panel 10 and storing the panel in its rolled-up state. In this case, the base material of the panel 10 and the coupling devices 31, 31' applied thereto will all be bent to a cylindrical form.

Correspondingly, the display panel 20 can be rolled-up to form a slimmer cylinder, and the two cylinders can then be inserted one into the other in a specially designed packaging or transport tube 7, shown in Figure 5.

Figure 6 is intended to illustrate and describe more clearly those changes, or deformations, in the cross-sectional shape of the unit that are achieved when the stiffness of the front panel 10 and the stiffness of the rear panel 20 vary, with the rear panel 20 having a width which is 20% larger than the width of the front panel 10 and the attachment points of the coupling devices 2, 3 being centered from the outer edges at a distance corresponding to 20% of the width of the front panel.

In the Figure 6A embodiment, the front panel 10 is twice as rigid as the rear panel 20, while in the Figure 6B embodiment, the front panel 10 and the rear panel 20 have the same stiffness, while in the case of the embodiment shown in Figure 6C, the stiffness, or rigidity, of the front panel 10 is half that of the rear panel 20.

Figure 7 is intended to illustrate the deformation or change in cross-sectional shape, of the unit when the ratio of the distances from the parts of the coupling devices (the width) on the front panel 10 and the rear panel 20 vary, but when the front panel 10 and the rear panel 20 have mutually the same stiffness and are fastened at the same distance from the edge part.

For instance, Figure 7A illustrates an embodiment in which the width of the rear panel 20 is 10% greater than the width of the front panel, while 7B shows an embodiment in which the width of the rear panel 20 is 20% greater than the front panel 10, and Figure 7C shows an embodiment in which the width of the rear panel 20 is 30% greater than the width of the front panel 10.

Figure 8 is intended to describe the changes in shape that derive from the position of the points of attachment of the coupling parts of said coupling device, and also to show the significance of this position with regard to the deformation

achieved when the two front and rear panels 10, 20 have mutually the same stiffness.

In this regard, Figure 8A illustrates the cross-sectional shape that is achieved when the coupling parts are positioned at the outermost ends, although this may result in a somewhat flimsy and less robust construction.

Figure 8B shows the coupling parts attached at a slight distance from the edge (5% of the width), at which point the stiffening tension forces begin to take effect in the display panels.

In the case of the Figure 8C illustration, the attachment points are placed inwardly from the edge at a distance corresponding to 20% of the width, such as to produce an arch, which is considered suitable in a number of applications. Figure 8D shows the attachment points located inwardly of the edge at a distance corresponding to 30% of the width, although in this case the resultant arch is too large for practical purposes.

Figure 9 is intended to show the possibility of fastening a permanently magnetized strip to the rear side of the front panel edge, with the aid of an adhesive material or magnetic strip.

This enables similar units to be added one to the other. Figure 9 illustrates two display units constructed in accordance with the inventive concept, these units supporting or carrying a single further display panel 30 which lacks "back" stiffening means.

It is also shown that the coupling parts of the coupling device 2, 3 can be mutually convergent, to provide varying stability in the vertical direction.

Figure 10 is a perspective view of the construction shown in Figure 9, using permanently magnetized strips as coupling devices 2, 3 and a similar, edge-related strip 100.

Figure 11 is a perspective view of one embodiment of an inventive display unit which comprises three mutually identical panels 10, 20 and 30. Figure 12 shows a display unit having four mutually identical panels 10, 20, 30 and 40, while Figure 13 shows a unit construction comprising four panels 10, 20, 30 and 40 with pairs of panels having mutually different dimensions.

Figure 14 is a perspective view of a display unit comprising five panels 10, 20, 30, 40 and 50.

It will be seen that as a result of the variation afforded by the different panel configurations and different panel stiffnesses, and also as a result of the various locations at which the coupling devices 2, 3 can be attached, every possible combination given in the present document is possible within the scope of the inventive concept.
Figure 15 is a sectioned side view of first edge parts of two mutually coacting panels, a first panel 10 and a second panel 20, when these panels are joined to form a unit.

Figure 15 also illustrates how the display surface of the first panel 10 can be made flat, and shows the first coupling part 31 of a two-part coupling device 3 located adjacent the edge surface.

The second part 32 of the two-part coupling device 3 has the form of adhesive tape 32a, whose one edge part 32a' is fastened to the second panel 20 at a distance from the edge surface 201, and whose other edge part 32a" is fastened to a magnetic strip 31a' which is fastened adhesively to the first panel 10, adjacent its edge surface 101.

The edge surface 201 of the second panel 20 is therewith intended to rest against the rear side of the first panel 10, against the magnetic strip 31a'.

Figures 16 and 17 illustrate an alternative embodiment in which said device is formed by virtue of the first coupling part 31 having the form of two pivotally connected magnetic strips 310, 311, of which a first magnetic strip 310 is fastened to the first panel adjacent its edge surface 101, and the second strip 311 is adapted for coaction with a magnetic strip 33a' fastened on the edge surface 201 of the second panel 20.

Figure 17 is intended to show the position that occurs when the first panel 10 coacts with the second panel 20 with the aid of a two-part coupling device according to Figure 16, said panels 10, 20 having essentially the same stiffness or rigidity.

The length and the thickness of the two magnetic strips shall be chosen in relation to the thickness and the stiffness of respective panels, so that the first panel 10 will obtain a flat display surface 10'.

The magnetic strips 310, 311 and the magnetic strip 33a' have mutually the same cross-section and length and have a polarization such that said strips (311 and 33a') will be able to coact with one another in a manner to obtain a precisely located position, as shown in the Figure.

An adhesive tape 312 is provided to hold the magnetic strips 310 and 311 together and to form a hinge 313 therebetween. It will be understood that the width of the tape 312 can be adapted so that the edge surface 101 of the first panel 10 will lie in plane with the general extension of the panel 10.

The tape 312 is thus fastened in a manner which will enable

it to straighten or incline the edge surface of the first panel 10.

It will be seen from Figure 17 that the magnetic strip 33a' of the second panel 20 is distanced from the edge 201 such that the tape 312 will counteract any torque that is generated and provide a straight front surface 10'.

It will be noted that the magnetic strip 33a' is fastened to the second panel 20 at a distance "a" from the edge surface 201. (See Figure 16.)

The embodiment shown in Figure 17 has also been supplemented with a further holding device 315 in the form of a magnetic strip. This magnetic strip 315 is able to coact with holding means in the form of a magnetic strip 310 positioned along the edge surface 101 of the first panel 10, and corresponding holding means in the form of a magnetic strip 310' positioned along the edge surface 101' of an adjacent panel 10", therewith positioning the two panels in one and the same plane or permitting the panels to be angled in relation to one another.

Figure 18 is a perspective view of one end section of the embodiment shown in Figure 17. The reference numeral 315 identifies a magnetic strip which can be rolled-up and which when in a rolled-up state functions to couple together two separate display units, each having an edge-related magnetic strip, wherein the parts or panels (10, 10", 20, 20') of the unit may also be capable of being rolled-up.

It will be understood in this regard that the adhesive tape 312 may not be too thick, since a thick tape is not only stiff and needs to be highly resilient in order to return from a rolled state to a flat state, but also weakens the magnetic attraction forces.

The polarization of the magnetic strips 315, 310 and 310' shall conform to the earlier described polarization and provide a predetermined side-related orientation.

It will be understood that the invention is not restricted to the illustrated and described exemplifying embodiments thereof, and that modifications can be made within the scope of the inventive concept as defined in the following Claims.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. An easily assembleable and easily dismantleable picture or text display unit which includes at least two, first and second, sheet-like panels which are mutually fastenable edge-to-edge by the use of edge related two-part coupling devices whereby first parts of said two-part coupling devices are arranged at the two mutually opposing edge portions of the first panel and second parts of the two-part coupling devices are arranged at the mutually opposing edge portions of the second panel and that the distance between said first coupling parts associated with the first panel differs from the distance between the second coupling parts associated with the second panel when said panels are dismantled, wherein said first parts and said second parts are formed as separate strip arrangements, onto said first sheet-like panel and adjacent its edge parts are said one parts of said two-part coupling devices attached at a predetermined distance from the edge portion, onto said second sheet-like panel and adjacent its edge parts are said second parts of said two-part coupling devices attached at a predetermined distance from the edge portion and in an assembled position of said sheet-like panels said first and second parts of the two-part coupling devices are interacting with each other.

2. A display unit according to Claim 1, wherein said first coupling part of respective coupling device defines a gap, and the gaps of said first coupling parts associated with said first panel are facing towards one another.

3. A display unit according to Claim 1, wherein said second coupling part of respective coupling device defines a gap, and the gaps of said second coupling parts associated with said second panel are facing away from one another.

4. A display unit according to Claim 1, wherein said difference in distances is greater than 10% and smaller than 60%, normally between 15 and 30%.

5. A display unit according to Claim 1, wherein respective panel is comprised of plastic sheets, and respective first and/or second parts of

respective coupling device have the form of a strip, which is fastenable to said panel with the aid of fastener means.

6. A display unit according to Claim 1 or Claim 5, wherein said fastener means is comprised of a double-sided adhesive tape, a Velcro tape, a magnetic strip or some equivalent means.

7. A display unit according to Claim 1, 5 or 6, wherein said fastener means is elastic and springy.

8. A display unit according to Claim 1, wherein said first and said second coupling parts are comprised of a flexible plastic strip.

9. A display unit according to Claim 1 or Claim 8, wherein said plastic strip is more chosen flexible than the used panel.

10. A display unit according to Claim 1, wherein the first panel is chosen stiffer than the second panel, or vice versa.

11. A display unit according to any one of the preceding claims, when in an assembled state, wherein an outwardly facing surface of said first panel is slightly concave in one plane (a horizontal plane), and an outwardly facing surface of said second panel is convex and both panels exposing bottom edge portions, which extend between said edge parts and which support against an underlying supportive surface.

12. A display unit according to any one of the preceding claims, when in an dismantled state, wherein the stiffness, or rigidity, of said panels and said first or said second coupling devices can be readily rolled-up to a cylinder form.

13. A display unit according to Claim 12, wherein the cylinder form has a height or length dimension corresponding to the width of said panel.

14. A display unit according to Claim 1, wherein said unit comprises only two mutually connected panels.

15. A display unit according to Claim 14, wherein the coupling parts of said coupling device are mutually convergent.

16. A display unit according to Claim 1, wherein said unit is comprised of two or more panels.

17. A display unit according to Claim 1, wherein two stable units are arranged to support an intermediate panel.

18. A display unit according to Claim 1, 8 or 9, wherein the first and/or the second part of the coupling device consists/consist in double-sided adhesive tape, a Velcro tape, permanently magnetized strip or some equivalent means.

19. An easily assembleable and easily dismantleable picture or text display unit which includes at least two sheet-like panels, of which a first panel is fastenable to one edge of the second panel, wherein first part of respective two-part coupling device are fastenable to two mutually opposing edge parts of the first panel at a distance from the edges of said edge parts, wherein second parts of said two-part coupling devices are fastenable to the two mutually opposite edge parts of the second panel at a distance from the edges of said edge parts, and wherein the distance between the first coupling parts associated with the first panel differs from the distance between the second coupling parts associated with the second panel when said panels are dismantled, wherein said first parts and said second parts are formed as separate strip arrangements, onto said first sheet-like panel and adjacent its edge parts are said one parts of two-part coupling devices attached at a predetermined distance from the edge portion, onto said second sheet-like panel and adjacent its edge parts are said second parts of said two-part coupling devices attached

at a predetermined distance from the edge portion and there extends, between the first coupling parts associated with the first panel and the second coupling parts associated with the second panel, a device which functions to give said first panel a flat, or at least a generally flat, display surface.

20. A unit according to Claim 1 or Claim 19, wherein said device has the form of an adhesive tape whose one edge part is fastened to the second panel and whose other edge part is fastened to a magnetic strip.

21. A unit according to Claim 1, 19 or Claim 20, wherein the edge surface of the second panel is adapted to rest against the first panel adjacent a magnetic strip.

22. A unit according to Claim 1 or Claim 19, wherein the first part of each said coupling device has the form of two pivotally connected magnetic strips of which one is fastenable to the first panel adjacent one edge surface thereof and one is adapted for coaction with a magnetic strip fastenable adjacent an edge surface of the second panel .

23. A unit according to Claim 19 or Claim 22, wherein the length and the thickness of said two magnetic strips are chosen in relation to the thickness and the stiffness of respective panels such that the first panel will obtain a flat display surface.

24. A unit according to Claim 22, wherein the two magnetic strips have the same cross-section and length.

25. A unit according to Claim 19, wherein one of the panels is provided with a holding device positioned along one edge surface of said panels, wherein the

holding device is adapted for a firm but readily releasable coaction with a holding device belonging to an adjacent panel of an adjacent display unit.

DATED this 7th day of November, 1997

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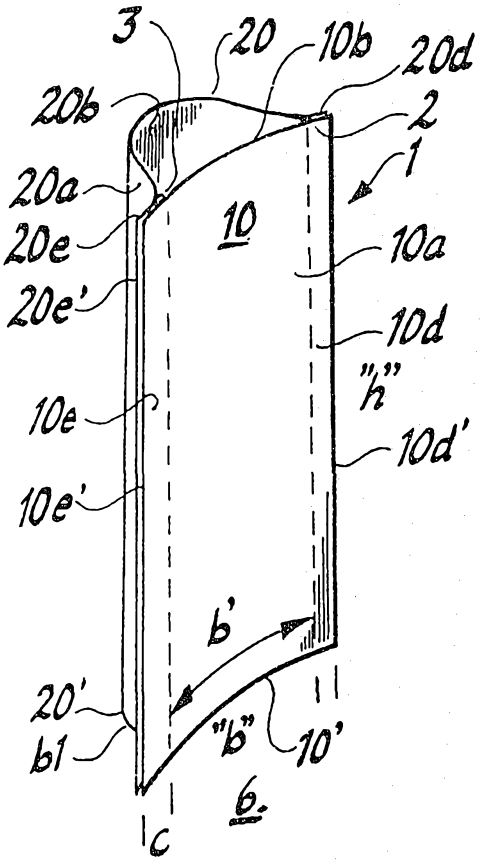


Fig.1.

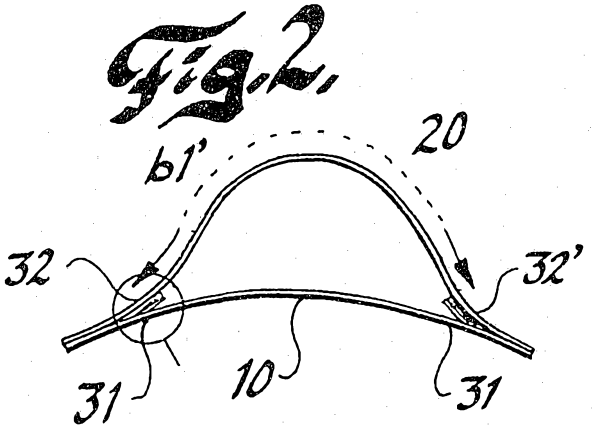


Fig.2.

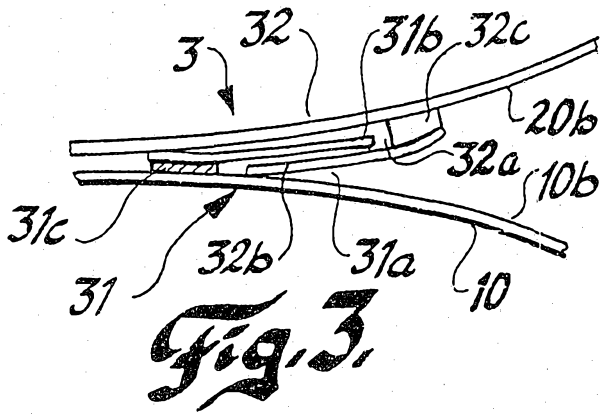


Fig.3.

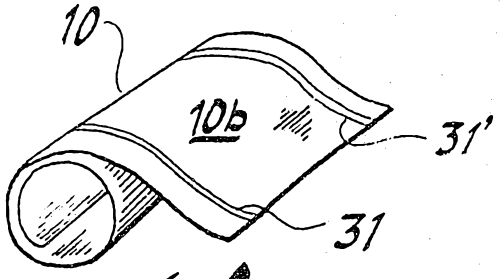


Fig.4.

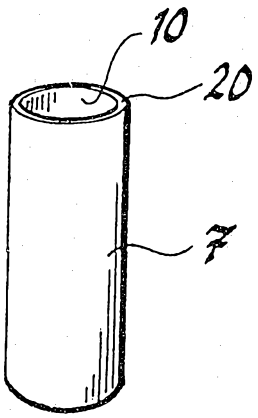
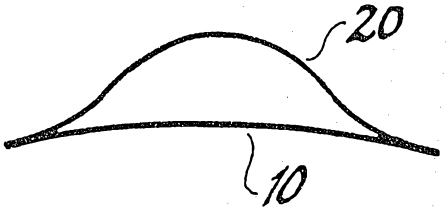


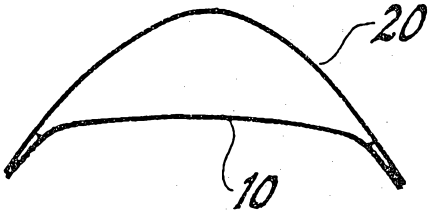
Fig.5.



A

Fig. 6.

B



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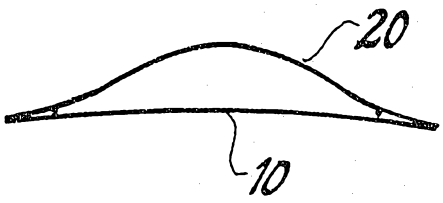
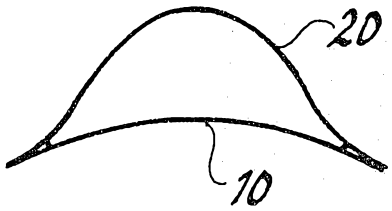


A

Fig. 7.



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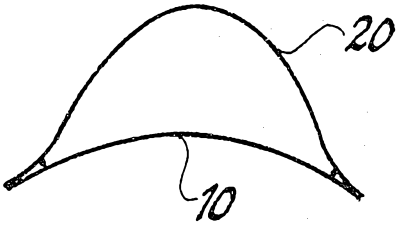

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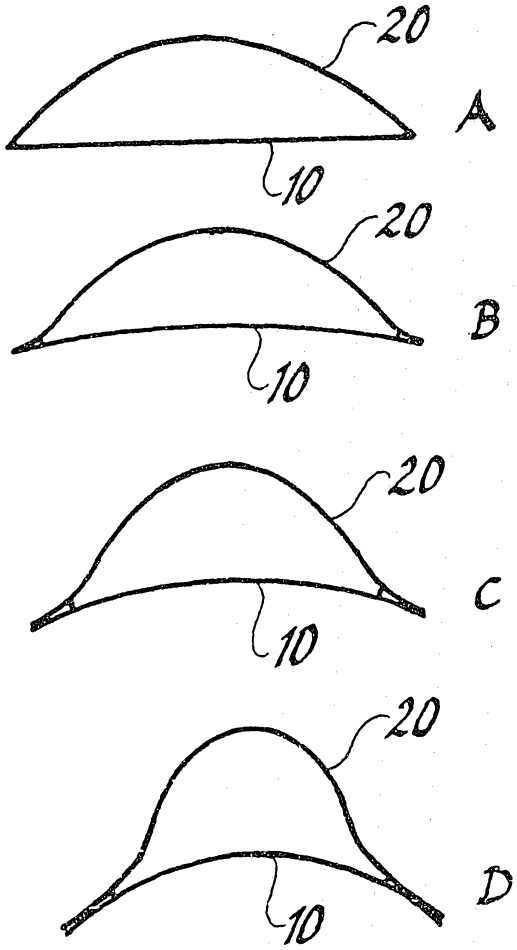

Fig. 8.

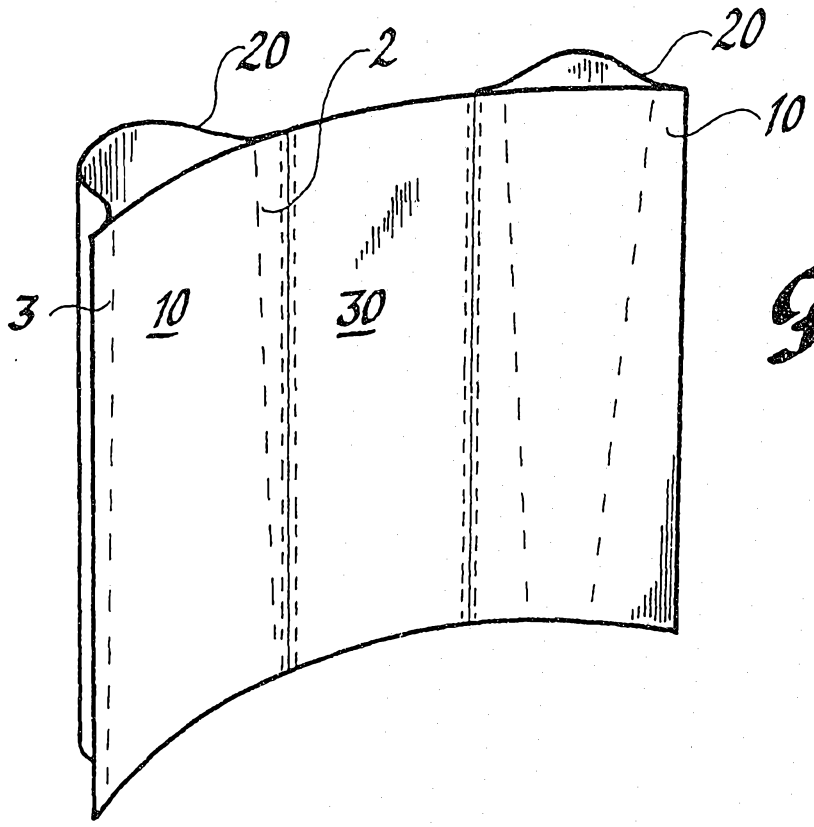

Fig. 9.

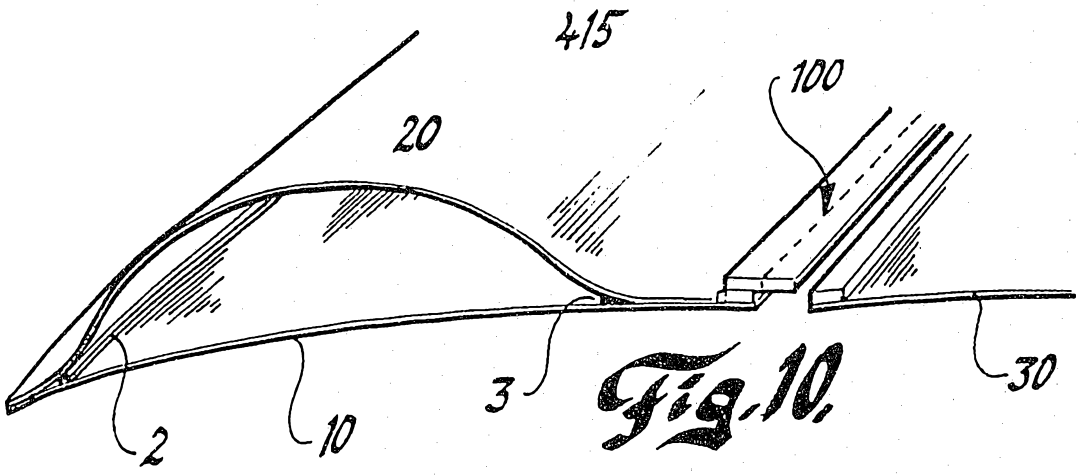

Fig.10.

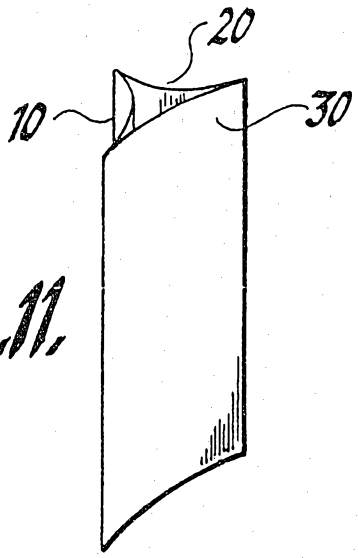

Fig.11.

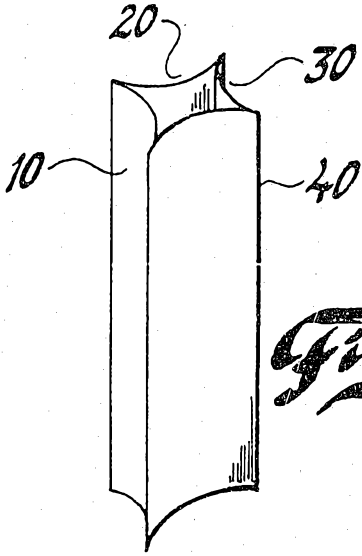

Fig.12.

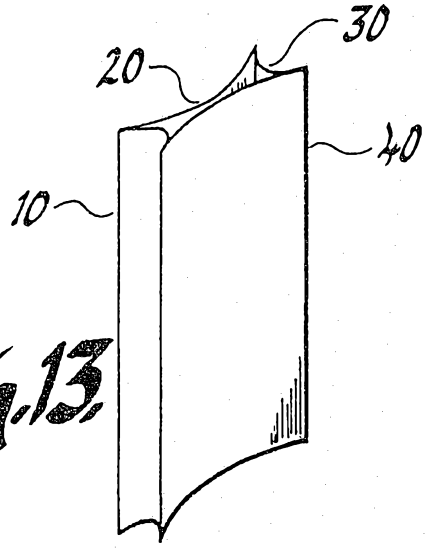

Fig.13.

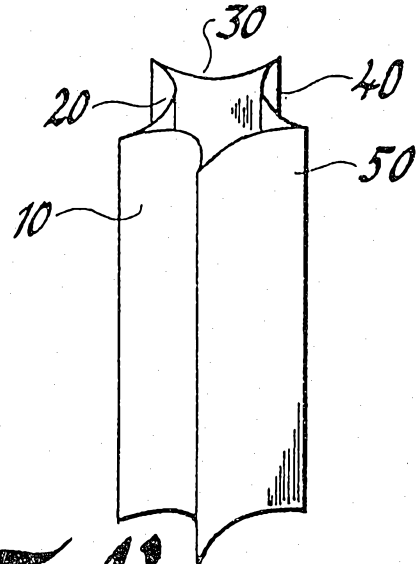

Fig.14.

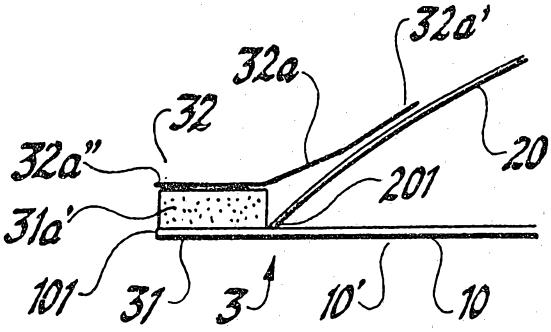

Fig.15.

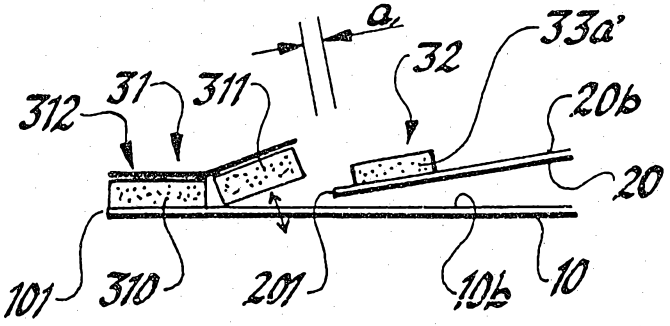

Fig.16.

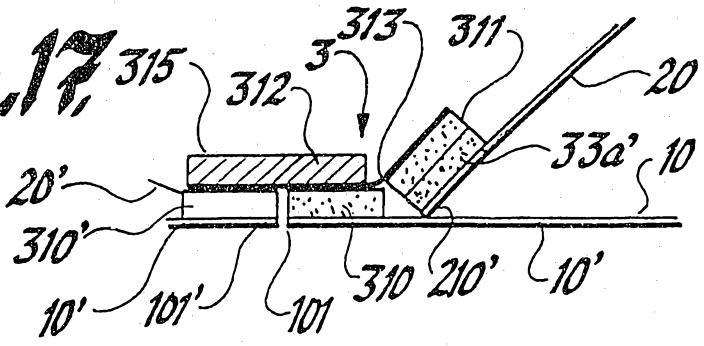

Fig.17.

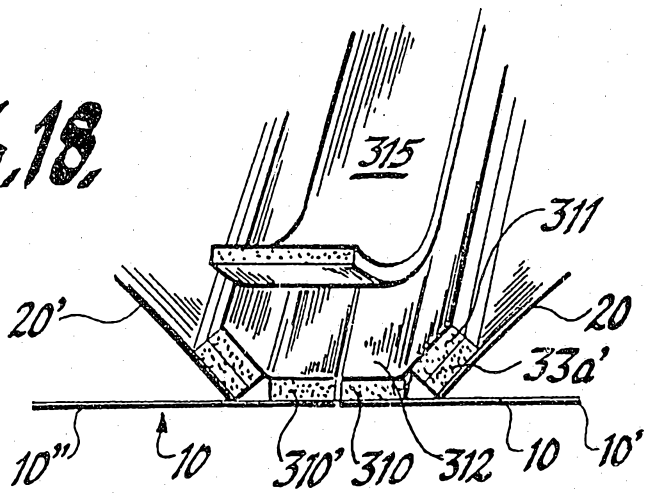

Fig.18.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 95/00606

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: G09F 15/00, G09F 1/00, G09F 1/10, G09F 1/12
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)

IPC6: G09F, A47F

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

SE,DK,FI,NO classes as above

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2172734 A (U. KAMMLER ET AL), 24 Sept 1986 (24.09.86)	1-8,10, 12-14,16-18, 19,25
Y		11,15
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Y	DE 2504171 B2 (EISELT, J.), 5 April 1979 (05.04.79)	11,15
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A	US 2934846 A (E.L. STEIN), 3 May 1960 (03.05.60)	19
	--	
A	US 2160724 A (J.A. FLETCHER), 30 May 1939 (30.05.39)	1-19
	--	

[X] Further documents are listed in the continuation of Box C. [X] See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
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"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 such 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
15 Sept 1995	21-09-1995
Name and mailing address of the ISA/ Swedish Patent Office Box 5055, S-102 42 STOCKHOLM Facsimile No. +46 8 666 02 86	Authorized officer Christer Wendenius Telephone No. +46 8 782 25 00

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 95/00606

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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INTERNATIONAL SEARCH REPORT
Information on patent family members

28/08/95

International application No.
PCT/SE 95/00606

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GB-A- 2172734	24/09/86	DE-A,C,C 3506815 DE-A- 3531015	02/01/86 12/03/87
DE-B2- 2504171	05/04/79	NONE	
US-A- 2934846	03/05/60	NONE	
US-A- 2160724	30/05/39	NONE	
EP-A2- 0152147	21/08/85	SE-T3- 0152147 NL-A- 8400431	 02/09/85