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(54) IMAGE DISPLAY APPARATUS

(71) Applicant: The Shadow Gap Company LLP,

Glasgow (GB)

- (72) Inventor: **Brendan Vallar**, Glasgow (GB)
- (73) Assignee: The Shadow Gap Company LLP, Glasgow (GB)

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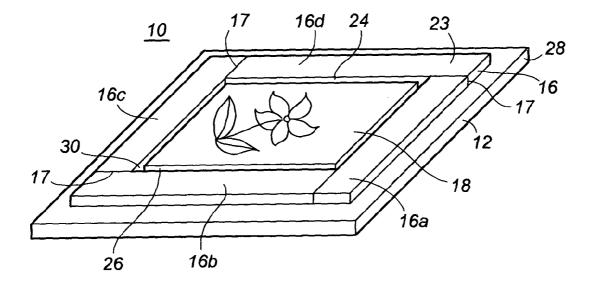
Oct. 22, 2011 (GB) GB 1118241.7

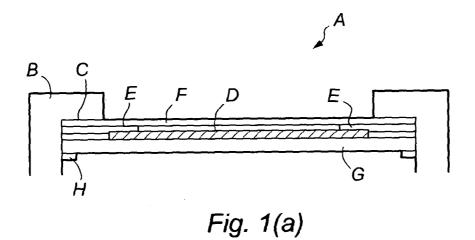
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(57) ABSTRACT

An image display apparatus (10) comprising a backing panel (12), one or more first raised portions (14) located on the backing panel (12), each first raised portion (14) having an image (18) for display secured thereto; one or more second raised portions (16) located on the backing panel (12), each second raised portion (16) including a mounting panel (20), each mounting panel (20) having at least one inner edge (24) arranged to surround a perimeter of each first raised portion (14) such that the image (18) is located within, and spaced apart from said mounting panel (20) to create a channel (30) therebetween, where in said mounting panel (20) is formed from two or more panel components (20a, 20b, 20c, 20d).





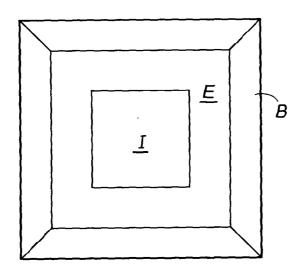


Fig. 1(b)

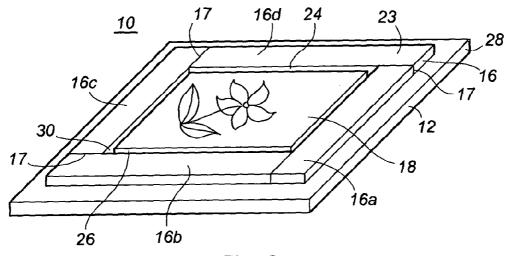
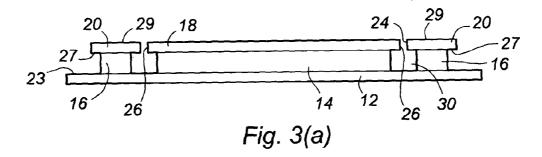


Fig. 2



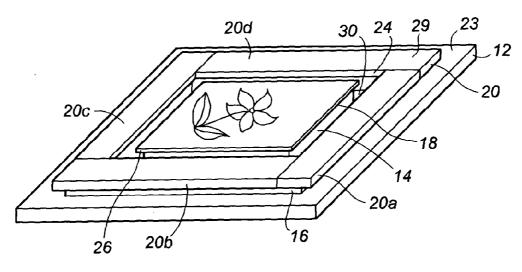


Fig. 3(b)

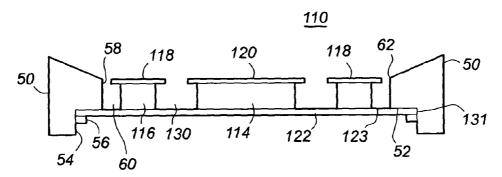
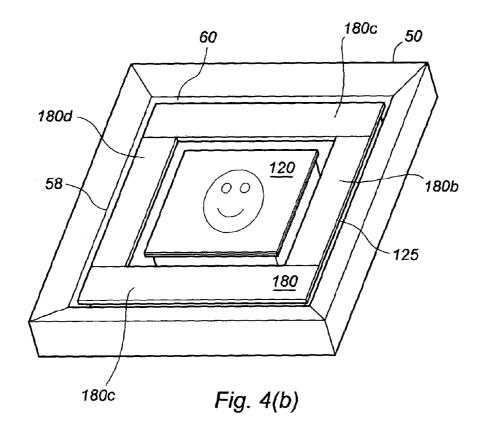
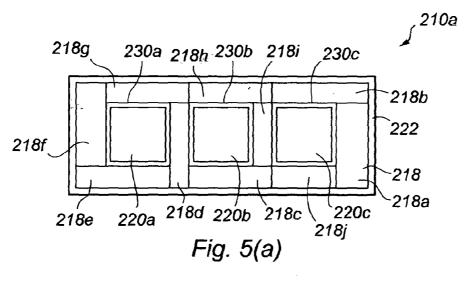
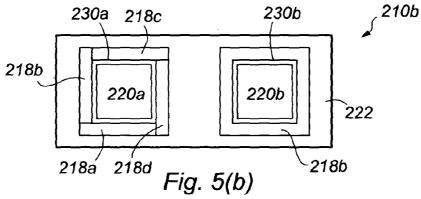


Fig. 4(a)







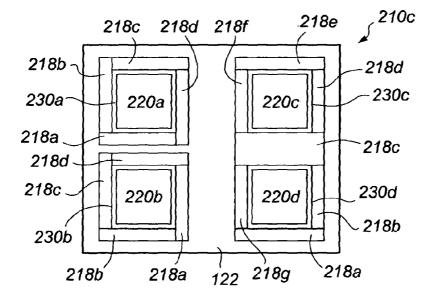


Fig. 5(c)

IMAGE DISPLAY APPARATUS

[0001] The present invention relates to image display apparatus and more specifically to improved apparatus for mounting an image for display purposes, for preventing the copying of a displayed image and also for minimising waste and cost of construction of the image display apparatus.

[0002] It is commonplace to mark important events in the lives of friends and relatives by having a professional photographer record these events on film or digitally. This film is subsequently developed in a laboratory, or by the photographer, and appropriate prints are chosen for mounting in a framing arrangement in order that they may be put on display. Such a framing arrangement can be seen in FIGS. 1a and 1b where the constituent parts of the framing arrangement are shown. Such framing arrangements have become the standard method of securing a photograph for display.

[0003] Traditionally, there are two methods of framing images. Firstly, a frame goes over the outer edge of the image and the image is framed by the inner edge of the frame.

[0004] Secondly, the frame is provided with additional elements such as a mounting sheet and glass.

[0005] FIGS. 1a and 1b show an example of a prior art image framing arrangement A. FIG. 1a is a cross sectional side view of the arrangement and shows a frame B with a flange C. An image D and mounting sheet E are held between a glass piece F and backing panel G, the backing G being held in place with clips H at the bottom and by the flange C of the frame B at the top; in addition, all items except the image abut against the side of the frame B below and perpendicular to the flange C The image is secured to the mounting sheet E with adhesive and the inner perimeter of the mounting sheet E defines and image area I where the image is viewable. Frames of this type require the image to be rear mounted which involves much skill in properly aligning the image and ensuring that the final product is dust free. Additionally, they can easily be disassembled and the image may be removed and illegally copied.

[0006] UK Patent GB 2424832B describes an image display apparatus which includes a frame and a support member having a raised portion upon which an image, such as a photograph, can be mounted. Securing means are provided for securing the frame to the support member such that the frame surrounds the raised portion. The area of the raised portion may be smaller than the inner area of the frame to provide a gap between the frame and the raised portion, to give the impression of the image floating in the frame. The image may be secured to the raised portion by an adhesive layer to prevent removal for copying. A method for front mounting an image in a frame is also disclosed.

[0007] This prior art image display apparatus has advantages over the traditional frame of FIGS. 1a and 1b by providing a front loading picture frame in which it was easier to centre the image; created a shadow gap between the frame and the image to make the image appear to be floating, and aided in preventing copying as the image was secured in the frame.

[0008] An alternative improved image display apparatus can be found in PCT/GB2011/051466. This image display apparatus provides a front loading picture frame in which the picture being mounted can be easily centred, with the display apparatus creating a shadow gap to make the image appear floating whilst having the image enhancement of a traditional mounting sheet.

[0009] However, the image display apparatus of GB2424832B and PCT/GB2011/051466 have a major disadvantage in that these prior art arrangements require use of an entire sheet of platform material to be used to create an external surround which has a central void. In making each display apparatus, a substantial amount of material must be removed from the initial sheet of material in order for the central void to be created. This removed material is then simply disposed of as waste. This process is uneconomical and environmentally unfriendly.

[0010] It is therefore an object of the present invention to provide an image display apparatus which obviates or mitigates at least one of the foregoing problems.

[0011] According to a first aspect of the invention there is provided an image display apparatus, the apparatus comprising a backing panel, one or more first raised portions located on the panel, each first raised portion having an image for display secured thereto; one or more second raised portions located on the panel, each second raised portion including a mounting panel, each mounting panel having at least one inner edge arranged to surround a perimeter of each first raised portion such that the image is located within, and spaced apart from said mounting panel to create a channel therebetween, wherein said mounting panel is formed from two or more panel components.

[0012] In this way, the mounting panel can be formed of two or more panel components meaning multiple mounting panels can be obtained from a single sheet of suitable material. This minimises waste created during the construction of each image display apparatus. This not only minimises cost associated with material used to manufacture the image display apparatus but it also makes the manufacture process more environmentally friendly. In addition, the channel created between the first raised portion and the assembled mounting panel and second raised portion will create a shadow gap which means that the image provided on the first raised portion will appear to be floating thus accentuating the image. As the image display apparatus is front loaded, the image display apparatus also aids in preventing illegal copying.

[0013] Preferably, said two or more panel components are abutted together to form at least one of said mounting panels. By abutting the panel components together any visible join lines created by the assembly of the panel components to form a mounting panel are minimised.

[0014] Preferably, said mounting panel and panel components are formed of a rigid durable material. In this way, the image display apparatus is robust. Each mounting panel may be formed from a sheet of plastic such as Perspex®. Alternatively, said mounting panel and panel components are formed from a sheet of metal such as aluminium. Suitable materials such as plastics and solid resin are easy to cut and handle while being rigid and their edges may be polished to provide an aesthetically pleasing, clean appearance. Such polished edges may also enable a closely coupled abutment of two panel components thus minimising the visibility of any join between two panel components.

[0015] In an embodiment, at least one of said second raised portions is formed of two or more of the panel components. In this way, the second raised portions form the mounting panels which saves on materials.

[0016] Preferably, at least one of said second raised portions is formed of two or more component portions.

[0017] In this way, the second raised portions can be formed or two or more component portions meaning multiple second raised portions can be obtained from a single sheet of suitable material. This minimises waste created during the construction of each image display apparatus.

[0018] Preferably, said two or more component portions are abutted together to form at least one of said second raised portions. By abutting the component portions together any visible join lines created by the assembly of the component portions to form a second raised portion are minimised. Alternatively, as the second raised portions may not be visible, these portions may be separated to provide only suitable support to the number of mounting panel components used.

[0019] Preferably, said second raised portions and component portions of said second raised portions are formed of a rigid durable material. In this way, the image display apparatus is robust. Each second raised portion may be formed from a sheet of plastic such as Perspex®. Suitable materials such as plastics and solid resin are easy to cut and handle while being rigid and their edges may be polished to provide an aesthetically pleasing, clean appearance. Such polished edges may also enable a closely coupled abutment of two component portions this minimising the visibility of any join between two component portions.

[0020] Preferably each image is arranged to overhang the edge of the first raised portion. This increases the apparent floating effect.

[0021] The image may be secured to a sheet of clear Perspex ®. By locating the image behind a sheet of clear plastic, the image is protected without requiring a sheet of glass.

[0022] Preferably each mounting panel is arranged to overhang the second raised portion. This further increases the apparent floating effect created as well as further minimizing the visibility of any join lines created by the abutment of two or more component portions of the second raised portion.

[0023] Preferably, the backing panel is formed of a rigid durable material. In this way, whilst the mounting panel is formed of two or more panel components, the apparatus is robust and can be used without a frame. Optionally, the apparatus includes a frame, the frame being secured to the backing panel and sized to provide a channel between the outer edge of the second raised portion and the inner edge of the frame.

[0024] Furthermore, the channel created removes the necessity for a mounting panel to be cut to a close level of tolerance to meet the outer edge of the frame thus further reducing costs and simplifying production.

[0025] The backing panel may be formed of a sheet of plastic such as Perspex, such materials are easy to cut and handle while being rigid. Optionally, the backing panel may be formed from a sheet of metal such as aluminium. Sheet metal is easy to cut and handle while being rigid. All of these materials are such that the edges can be polished to provide an aesthetic clean appearance.

[0026] Advantageously, the backing panel is formed of at least a partially reflective material. A reflective backing panel material further accentuates the floating effect of the image by increasing the apparent depth of the channel.

[0027] Embodiments of the present invention will now be described, by way of example only, with reference to the accompanying drawing of which:

[0028] FIGS. 1(a) and 1(b) are illustrations of a prior art image display apparatus with FIG. 1(a) being a cross sectional view and FIG. 1(b) being a perspective view;

[0029] FIG. 2 is an illustration of a perspective view of a partially assembled image display apparatus according to a first embodiment of the present invention;

[0030] FIGS. 3(a) and 3(b) are illustrations of an image display apparatus according to a second embodiment of the present invention with FIG. 3(a) being a cross sectional view and FIG. 3(b) being a perspective view;

[0031] FIGS. 4(a) and 4(b) are illustrations of a third embodiment of the present invention with FIG. 4(a) being a cross sectional view and FIG. 4(b) being a perspective view; and

[0032] FIGS. 5(a)-5(c) are illustrations of further embodiments of the present invention viewed from the front.

[0033] Reference is initially made to FIG. 2 of the drawings which illustrates a partially assembled image display apparatus, herein referred to as the image display apparatus base assembly 8, having a backing panel 12, a first raised portion 14 and a second raised portion 16 and an image for display 18. According to a first embodiment of the invention, the second raised portion 16 is formed of a plurality of component portions, in this case four component portions 16a-16d respectively.

[0034] Image 18 is a photograph or other work of art which requires to be displayed. The image 18 is located upon platform 14. The image 18 may be located behind a sheet of clear plastic such as Perspex®. The technique for securing an image to Perspex® is known to those skilled in the art. This protects the image 18, while still providing the advantages of front loading. The clear Perspex® may be considered as the platform 14, with the image 18 below the platform 14. Preferably, the covered image is located upon a separate platform 14

[0035] In this embodiment, the platform 14 has a length and breadth which matches that of the image 18. It is then simple to locate the image 18 upon the upper surface 22 of the platform 14. Typically there will be an adhesive layer on the surface 24 which is exposed before the surface is affixed thereupon. This provides a first raised portion 14 having an upper surface 22 upon which is secured an image 18 for display. Once affixed the image 18 cannot be removed for copying purposes. Beneficially, the image 18 is effectively "front loaded" as the apparatus 10 faces the user to mount the image 18.

[0036] The platform 14 is a raised section, in this embodiment it is substantially square, but it may be of any two dimensional shape, such as rectangular, circular or oval. The platform 14 is affixed to a backing substrate 12 which is a large flat panel, typically of similar shape to platform 14. The platform 14 is a box affixed to the substrate 12, or may be integral with the substrate 12, to provide an upper surface 24 which sits proud and away from the surface 23 of the substrate

[0037] Located around the first platform 14, is a second platform 16. Platform 16 is substantially ring-shaped or annular to surround the first platform 14. It has an inner edge 24 and an outer edge 25. The second platform 16 is also of a box like construction to provide an upper surface 27 raised above the upper surface 23 of the substrate 12.

[0038] The second platform 16 is, in this case, affixed to substrate 12 and, as can be seen, is formed of a plurality of component portions 16a-16d. The component portions 16a-16d are secured to the substrate 12 and arranged so that they abut against one another at joints 17 to create a single raised platform 16 of the desired shape. In this case, component

portions 16a-16d are all equal sized rectangular shaped portions which, when arranged together create an annular square shape. The use of component portions 16a-16d means that the waste material created when manufacturing the second platform 16 is minimised as a plurality of the component portions 16a-16d can be cut from a single sheet of material therefore avoiding the waste created when a void is cut from a sheet of material to form a single, one piece, annular shape. In turn, the reduction in waste reduces the cost to manufacture of the image display apparatus.

[0039] The component portions 16a-16d are made of rigid durable material. The component portions 16a-16d are, in this case, cut from a sheet of Perspex® which is a rigid plastic material which, when cut in thicknesses of more than 2 mm, can provide substantial ruggedness while still being easy to cut with simple cutting tools such as a saw. Once cut, the Perspex° edges can be smoothed and polished before being abutted against one another therefore minimizing the appearance of joints 15. When constructed in this way, the component portions 16a-16d can be considered as panel components of the mounting panel, effectively the second raised portions include the mounting panel, and a separate mounting panel is not required.

[0040] The inner edge 24 of the second platform 16 follows the perimeter 26 of the image 18 and the first platform 14 to entirely enclose the first platform 14. The shape of the inner edge 24 substantially matches the shape of an outer edge 26 of the image and the first platform 14. However, the edges 24, 26 do not meet and a space or gap 30 is left there between. Ideally, the gap 30 is of uniform width. A base 31 of the gap 30 exposes the surface 23 of the substrate 12.

[0041] The substrate 12 is made of rigid durable material. This is distinct from the card and cardboard traditionally used, as these materials would degrade quickly as they are exposed in use and do not have the traditionally glass cover to protect them. The substrate 12 is, in this case, cut from a sheet of Perspex®. Perspex° is a rigid plastic material which in 2-3 mm thickness provides a substantial ruggedness while still being able to be cut using simple cutting tools such as saws. Once cut, the Perspex° edges can be smoothed and polished. Alternatively the substrate 12 may be formed from a metal sheet such as aluminium. This also provides a highly rugged and durable backing to support the other components of the apparatus 10. The use of Perspex® allows the surface 23 of the substrate 12 to have a colour selected by the user. The surface 23 may also be polished to provide a partially reflective surface 23. Use of a polished metal gives a mirrored surface 23 which is highly reflective.

[0042] The gap 30 gives the effect that the image 18 is floating. Additionally, the upper surface 27 of the second platform 16 will appear to float but also appear distinct from the image 18 so as to aesthetically enhance and frame the image 18. By choosing a colour, or a variety of colours for the component portions 16a-16d, based on the colours in the image 18, the image 18 is further enhanced in the same fashion as would be provided by a mounting panel in a traditional picture frame.

[0043] The floating appearance of the second portion 16 is further enhanced by a spacing being provided between the outer edge 25 of the second portion 16 and the outer edge 28 of the substrate 12. By exposing a perimeter of substrate surface 23 around the second portion 16 this acts to frame the second portion 16 and, due to the difference in heights, the depth creates an impression that the second portion 16 is

floating. The floating effect can be enhanced if the substrate surface 23 is reflective or mirrored.

[0044] The substrate 12 acts as a backing panel to support the component parts of the image display apparatus base assembly 8. As the substrate 12 is rigid and durable, the assembled image display apparatus 10 can be directly mounted upon a wall.

[0045] In FIGS. 3(a) and 3(b) there is shown an image display apparatus 10, formed on the base arrangement 8 illustrated in FIG. 2, comprising a mounting panel 20 located on or secured to the upper surface 27 of the second platform 16.

[0046] The mounting panel 20 is formed of a plurality of component panel pieces, in this case four panel pieces 20(a)-(d) thus providing the benefits in terms of waste reduction and cost minimisation found associated with the modular construction of the second platform 16 described above with reference to FIG. 2.

[0047] The mounting panel pieces 20(a)-(d) are made of rigid durable material. This is distinct from the paper and card traditionally used as these materials would degrade quickly as they are exposed in use and do not have the traditional glass cover to protect them. The mounting panel pieces 20(a)-(d) are, in this case, cut from a sheet of Perspex®. Perspex® is a rigid plastic material which in 2-3 mm thickness provides a substantial ruggedness while still being able to be cut using simple cutting tools such as saws. Once cut, the Perspex® edges can be smoothed and polished before being abutted against one another therefore minimizing the appearance of joints 19.

[0048] Alternatively the mounting panel pieces 20(a)-(d) may be formed from a metal sheet such as aluminium. The use of Perspex® allows the surface 29 of the mounting panel 20 to have a colour selected by the user. The surface 29 may also be polished to provide a partially reflective surface 29. Use of a polished metal gives a mirrored surface 29 which is highly reflective.

[0049] The inner edge 24 of the mounting panel 20 follows the perimeter of the image 18 and the first platform 14 to entirely enclose the first platform 14. The shape of the inner edge 24 substantially matches the shape of an outer edge 26 of the image and the first platform 14. However, the edges 24, 26 do not meet and a space or gap 30 is left therebetween. Base 31 of the gap 30 exposes surface 23 of the substrate 12.

[0050] Accordingly, each second raised portion 16 and mounting panel 20 have at least one inner edge 24 arranged to surround a perimeter 26 of each first raised portion 14 such that each first raised portion 14, is located within, and spaced apart from the second raised portion 16 and mounting panel 20 to create a channel 30 therebetween.

[0051] In a preferred embodiment, the upper surface of the image 18 and the surface 29 of the mounting panel 20 are arranged to project from the surface 23 of the substrate 12 by the same distance. This provides a uniform projected surface to the apparatus 10. The gap 30 gives the effect that the image 18 is floating. Additionally, the upper surface 29 of the mounting panel 20 will appear to float but also appear distinct from the image 18 so as to aesthetically enhance and frame the image 18. By choosing a colour for the panel 20 based on the colours in the image 18, the image 18 is further enhanced in the same fashion as would be provided by a mounting panel in a traditional picture frame.

[0052] The floating appearance of the panel 20 is further enhanced using techniques which have been described with reference to the upper surface 27 of the second platform 16 detailed above.

[0053] Whilst it will be appreciated that panel 20 may be cut to fit the upper surface 27 of second platform 16 exactly, as can be seen in the illustrated embodiment, the raised portions 14, 16 do not extend to meet the edges of the image 18 and the mounting panel 20 respectively. Thus the outer edge 26 of the image 18 now overhangs the surface 22 of the platform 14. Similarly, the inner edge 24 and the outer edge 25 of the panel 20 overhang the upper surface 27 of the second raised portion 16. As the mount panel 20 is formed of a single piece of material in this embodiment, the overhang of the mounting panel 20 over second raised portion 16 further ensures that any visible joins 17 caused by the arrangement of component platforms 16a-16d in forming second platform 16 are obscured from general view. By making the panel 20 of a rigid, durable, material, the overhanging portions are less likely to be damaged. To provide a similar rigidity to the image 18, a supporting panel (not shown) can be located between the image 18 and the first raised platform 14, the supporting panel being sized to match the area of the image 18 so that it is fully supported.

[0054] Reference is now made to FIGS. 4(a) and 4(b) which illustrate a third embodiment of the invention wherein the image display apparatus 110 similar to that described with reference to FIGS. 3(a) and 3(b) is provided with a frame 50. Frame 50 is of a know type as described in relation to the prior art shown in FIG. 1. In cross section, the top, bottom and sides of the frame 50 are provided by a moulding having a substantially rectangular form. In the embodiment described, the height of the moulding decreases from the outer edge of the moulding to the inner edge, although this may be altered to alter the appearance of the frame 50.

[0055] A recess 54 is provided in the frame 50 within which the second raised portion 116 is arranged. The inner edge 58 of the frame 50 is selected to extend to correspond with an inner edge 26 of the second raised portion 116. This then creates a gap 160 between the inner edge 58 of the frame 50 and the second raised portion 116 which exposes the surface 123 of substrate 122. The presence of gap 30 accentuates the image 120 and gives the appearance of image 40 floating within the frame 50. As with the previous described embodiments, second raised portion 16 may be formed of a plurality of component portions thus enabling a plurality of component portions to be cut from a single sheet of material. In this embodiment, the mounting panel 180 is also formed of a plurality of component panel portions, in this case four, namely 180a-180d.

[0056] Various numbers of images can be used upon a backing panel and surrounded with various numbers of second raised portions or mounting panels. The second raised portions or mounting panels can be formed of a plurality of component portions which are arranged to abut together to give the appearance of discreet second raised portions or mounting panels. Illustrations of example embodiments are shown in FIGS. 5(a) to 5(c).

[0057] In each embodiment, images 220 are enclosed by mounting panels 218 mounted on second raised portions (not shown) to provide a gap 230 therebetween. In this way, each of the images 220 have the illusion of floating. Each mounting panel 218 is formed of a plurality of panel components 218a . . . 218n which are arranged to abut together to provide a

discreet mounting panel 218. The use of panel components 218n in the assembly of mounting panel 218 ensures that waste created when producing the second raised portions is minimized.

[0058] In FIG. 5(a), three images 220a-220c are displayed in a linear arrangement with a common mounting panel 218 which is formed of component portions 218a-218j. In FIG. 5(b), two image, 220a, 220b are displayed, each having a mounting panel 218 which is formed of component portions 218a-218d. In FIG. 5(c) four images 220a-220d are displayed. In this arrangement two of the images 2220a, 220b each have their own mounting panel 218 each of which is formed of component portions 218a-218d while other images 220c, 220d share a mounting panel 218 which is formed of component portions 218a-218e.

[0059] The principal advantages of the present invention are that it provides an image display apparatus which can be front loaded, prevents the image being copied and removed, provides the illusion of the image appearing to float, may enhance the image by way of a coloured surround or mounting panel which may also appear to float and wherein the surround, or second raised portion may be manufactured in a way which minimises waste and reduces production costs.

[0060] A further advantage of at least one embodiment of the present invention is that it provides an image display apparatus which does not require a frame for presentation by a frame may be used if so desired.

[0061] Yet a further advantage of the present invention is that it provides an image display apparatus which uses new materials in the form of plastics and metals in a way in which production costs are minimised and waste produced is also minimised yet while benefiting from the use of rugged materials that mean there is no requirement for a glass cover to protect the image and display apparatus arrangement.

[0062] It will be appreciated to those skilled in the art that various modifications may be made to the invention herein described without departing from the scope thereof. For example, whilst throughout the embodiments, the second raised portion is described as being formed of a plurality of component portions it may instead be formed from a single piece of suitable material. It is noted that an effect of this can be created by forming the second raised portion from a layered structure and scoring lines though a top layer to provide the panel components. Alternatively, the second raised portion may be formed of separated component portions which are spaced apart as they will not be seen if made small enough. In addition, while it is assumed that the component portions of the second raised portion, or the mounting panel are of uniform colour, they may instead comprises a selection of colours and/or have a surface which is textured. Additionally, while the image is shown as a photograph or drawing, any 2D or 3D image could be used with the apparatus, particularly as a glass cover is not required. Also, the shapes of the edges of the image and the second raised portion and mounting panel need not be square, rectangular, oval or circular but may equally be of a free form or an alternative geometric shape so long as a shadow gap is left between the image and the second raised platform or mounting panel.

- 1. An image display apparatus comprising:
- a backing panel;
- one or more first raised portions located on the panel, each first raised portion having an image for display secured thereto;

one or more second raised portions located on the panel, each second raised portion including a mounting panel; each mounting panel having at least one inner edge arranged to surround a perimeter of each first raised portion such that the image is located within, and spaced apart from said mounting panel to create a channel therebetween.

wherein said mounting panel is formed from two or more panel components.

- 2. An image display apparatus as claimed in claim 1 wherein said two or more panel components are abutted together to form at least one of said mounting panels.
- 3. An image display apparatus as claimed in claim 1 wherein said mounting panel and panel components are formed of a rigid durable material.
- **4**. An image display apparatus as claimed in claim **1** wherein said mounting panel and panel components are formed from a sheet of plastic.
- 5. An image display apparatus as claimed in claim 1 wherein said mounting panel and panel components are formed from a sheet of metal.
- 6. An image display apparatus as claimed in claim 1 wherein at least one of said second raised portions is formed of two or more component portions.

- 7. An image display apparatus as claimed in claim 1 wherein each image is arranged to overhang the edge of the associated first raised portion.
- **8**. An image display apparatus as claimed in claim **1** wherein each mounting panel is arranged to overhang the edge of the associated second raised portion.
- **9**. An image display apparatus as claimed in claim **1** wherein the backing panel is formed of a rigid durable material.
- 10. An image display apparatus as claimed in claim 1 wherein the apparatus is further provided with a frame, the frame being secured to the backing panel.
- 11. An image display apparatus as claimed in claim 10 where the frame is sized to provide a channel between an outer edge of the second raised portion and an inner edge of the frame.
- 12. An image display apparatus as claimed in claim 1 where the backing panel is formed of a sheet of plastic.
- 13. An image display apparatus as claimed in claim 1 where the backing panel is formed from a sheet of metal.
- 14. An image display apparatus as claimed in claim 1 wherein the backing panel is formed of at least a partially reflective material.

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