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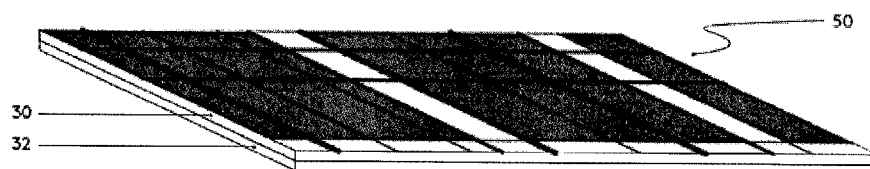


FIG. 5

(57) Abstract: There is disclosed an architectural artisanal panel (50) comprising a first artisanal glass panel member (30) having an artisanal surface formed thereon and at least a second panel member (32) mounted to a surface of the first artisanal glass panel member (30), said surface being opposite to the artisanal surface. The second panel member (32) is sufficient to enhance the strength of the first glass panel member (30) to enable the architectural artisanal panel (50) to be used in a construction environment whilst maintaining the aesthetic qualities of the first panel member.



ARTISANAL GLASS PANELS AND METHODS OF MAKING THE SAME

RELATED APPLICATIONS

The present application claims priority from Australian provisional patent
5 application no. 2017902262 filed on 14 June 2017, the entire contents of which
are incorporated herein by reference.

FIELD OF INVENTION

The present invention relates generally to artisanal glass panels and methods of
making artisanal glass panels, and in particular, artisanal glass panels and
10 methods of making artisanal glass panels that have sufficient strength properties
for use in a variety of architectural installations.

BACKGROUND OF THE INVENTION

Glass has long been a popular material that is easy to mould into a variety of
items which may have numerous applications in everyday life. In general, glass
15 is considered a non-crystalline amorphous solid that has practical, technological
and decorative uses, or any combination of these uses.

Other than drinking receptacles, one of the most common uses of glass is in the
building industry where glass is often used, with great effect, in functioning as a
barrier that allows light to pass therethrough. This may be achieved through the
20 application of glass in a window frame or door design, where a glass panel is
framed by a window or door frame, to function as a barrier or screen between
rooms or between a room and the outdoors. Using glass in such an application
takes advantage of the optical transparent properties of glass, to provide a barrier
through which one can see into or out of a building or room.

25 For many years glass has been used in buildings such as churches, homes and the
like, to harness the effect of light as it passes through different types or colours of
glass. Historically leadlight glass has been the most popular form of assembling
different types/colours of glass in a pattern or decorative form whereby individual
glass pieces are connected using lead beading to form the overall structure.
30 However, such an assembled form of glass pieces is relatively fragile and cannot
be used in most commercial applications without significant reinforcement, such
as placing layers of safety glass around the leadlight glass. Such reinforcement
methods, whilst successful, significantly reduces the aesthetic of such glass,

which is its fundamental purpose. Mosaic glass and other artisanal glasses also suffer from the same structural problems as they are largely applicable for smaller, framed applications and not larger scale applications where greater forces are present and acting on the glass.

5 Nevertheless, there is a requirement in the construction space for large glass panels that function to provide an aesthetic effect, such as that traditionally provided by stained glass, and which may also provide a degree of privacy. For the sake of privacy, various means have been developed to use glass panels in a manner whereby it is no longer totally optically transparent, yet still enables light
10 to pass therethrough. For this purpose opaque or frosted glass panels have been developed which may allow light to pass therethrough such that light can enter into a room for lighting purposes, but which distorts the image to prevent an observer from clearly seeing through the glass. Such glass panels are typically formed with safety glass having an adhesive or other decorative film applied on
15 one side which performs image distortion. However, such glass panels are significantly less attractive than leadlight windows and other artisanal glass applications as they are generally very flat glass panels with no, or minimal, texture or surface variation and offer minimal visual interest.

Thus, there is a need to provide artisanal glass panels and methods of making
20 such panels in commercial building applications which are able to provide panels of large enough sizes and strength for application in such an environment thus providing a more aesthetically pleasing environment with all of the safety benefits of conventional safety glass.

The above references to and descriptions of prior proposals or products are not
25 intended to be, and are not to be construed as, statements or admissions of common general knowledge in the art. In particular, the above prior art discussion does not relate to what is commonly or well known by the person skilled in the art, but assists in the understanding of the inventive step of the present invention of which the identification of pertinent prior art proposals is but
30 one part.

STATEMENT OF INVENTION

The invention according to one or more aspects is as defined in the independent claims. Some optional and/or preferred features of the invention are defined in the dependent claims.

35 Accordingly, in one aspect of the invention there is provided an architectural

artisanal panel comprising:

a first artisanal glass panel member having an artisanal surface formed thereon; and

5 at least a second panel member mounted to a surface of the first artisanal glass panel member, said surface being opposite to the artisanal surface;

wherein the second panel member is sufficient to enhance the strength of the first glass panel member to enable the architectural artisanal panel to be used in a construction environment whilst
10 maintaining the aesthetic qualities of the first panel member.

In one embodiment, the first artisanal glass panel member is formed from a sheet of glass having textures and/or components applied to the artisanal surface thereof. The artisanal surface of the first artisanal glass panel member may be formed by applying textures and/or components to a surface of the sheet of glass
15 and heating the glass sheet to cause the textures and/or components to fuse to the surface of the glass sheet to create said artisanal surface. The textures and/or components applied to the artisanal surface of the sheet of glass may comprise any one or more of glass pieces, glass noodles, glass stringers, glass beads, decorative elements, stones, sand, crushed glass, grit or flakes and other elements
20 which fuse to the surface of the glass sheet when heated. The artisanal surface of the first artisanal glass panel member may be further formed by painting, stencilling or printing the surface of the sheet of glass panel prior to heating.

In another embodiment, the first artisanal glass panel member is formed from a plurality of pieces of glass joined together. The plurality of pieces of glass may
25 be arranged in a pattern and are joined together through fusing the glass pieces in a kiln to form the first artisanal glass panel member.

In one embodiment, the second panel member has an artisanal surface formed thereon.

The second panel member may be a glass panel member that is mounted to the
30 first artisanal glass panel member by way of an adhesive. The second panel member may be adhered to the first artisanal glass panel member by a lamination process.

The second panel member may be adhered to the first artisanal glass panel member by an adhesive interlayer formed therebetween. The adhesive interlayer
35 may have an artisanal effect applied thereto to further enhance the aesthetic qualities thereof. The artisanal effect applied to the adhesive interlayer may

include applying a cloth or graphic print to the interlayer surface.

Accordingly, in another aspect of the invention there is provided a method of forming an architectural artisanal panel, comprising;

- forming an artisanal first glass sheet;
- 5 processing the artisanal first glass sheet to form a first artisanal panel member;
- mounting a second panel member to a surface of the first artisanal panel member; and
- forming the architectural artisanal panel comprising combined said
- 10 first artisanal panel member and said second panel member.

In one embodiment, the step of forming the artisanal first glass sheet may comprise applying embellishments or decorative pieces to a surface of a glass sheet in a decorative manner, the embellishments or decorative pieces comprising any one or more of glass pieces, glass noodles, glass stringers, glass beads,

15 decorative elements, stones, sand, crushed glass, grit or flakes to a surface of the first glass sheet in a decorative manner.

In another embodiment, the step of forming the artisanal first glass sheet comprises arranging individual glass pieces in a decorative form.

In another form, the step of forming the artisanal first glass sheet may comprise

20 applying glass paint or ink to a surface of a glass sheet in a decorative manner.

The step of processing the artisanal first glass sheet to finish the artisanal surface comprises firing the artisanal first glass sheet in a kiln to fuse any embellishments or decorative pieces to the surface thereof.

The step of forming the artisanal first glass sheet may comprise applying glass

25 paint or ink to a surface of a glass sheet in a decorative manner.

The step of processing the artisanal first glass sheet to finish the artisanal surface may comprise firing the artisanal first glass sheet in a kiln to fuse any embellishments or decorative pieces to the surface thereof.

The step of processing the artisanal first glass sheet comprises firing the

30 individual glass pieces arranged in said decorative form in a kiln such that the glass pieces fuse together to form the first artisanal panel member.

The step of mounting a second panel member to a surface of the first artisanal panel member may comprise laminating the second panel member to the first

artisanal panel member.

The step of mounting a second panel member to a surface of the first artisanal panel member may comprise forming a bonding interlayer between the second panel member and the first artisanal panel member. This step may comprise a
5 further step of enhancing the bonding interlayer between the second panel member and the first artisanal panel member by applying a layer of cloth or a graphic print to the interlayer.

The step of forming the architectural artisanal panel may comprise a step of finishing the combined first artisanal panel member and said combined second
10 panel member to use as an architectural artisanal panel in a building construction.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention may be better understood from the following non-limiting description of preferred embodiments, in which:

15 Fig. 1 is a top perspective view of a glass sheet for forming the glass artisanal panel in accordance with an embodiment of the present invention;

Fig. 2 is a top perspective view of glass sheet of Fig. 1 with an artisanal pattern applied to a surface thereof;

20 Fig. 3 is a top perspective view of the glass sheet of Fig. 2 prior to entering a kiln to form an artisanal glass layer;

Fig. 4 is a top perspective view of the artisanal glass layer formed in Fig. 3;

Fig. 5 is a top perspective view of an artisanal glass panel formed in accordance with a first embodiment of the present invention;

25 Fig. 6 is a top perspective view of an artisanal glass panel formed in accordance with a second embodiment of the present invention; and

Fig. 7 is a top perspective view of an artisanal glass panel formed in accordance with a third embodiment of the present invention.

DETAILED DESCRIPTION OF THE DRAWINGS

30 Preferred features of the present invention will now be described with particular

reference to the accompanying drawings. However, it is to be understood that the features illustrated in and described with reference to the drawings are not to be construed as limiting on the scope of the invention.

The present invention will be described below in relation to artisanal glass panels
5 having an artisanal glass element capable of being used in a building structural environment. It will be appreciated that the term, artisanal glass element, refers to any form of glass created by artistic craftsmanship where artistic flair and skills are employed to make the artisanal glass element in a non-traditional or non-mechanised way. Such an element may be made as a glass layer or layers or
10 as a partial glass layer, to incorporate a custom design by any combination of processes, including, but not limited to: assembling different glass pieces (in terms of colour, texture, special effects) into single or multiple layers; applying glass noodles, stringers, beads, decorative elements, crushed glass, grit or flakes to a surface of a glass panel; applying glass paint or inks to create the custom
15 artisanal glass piece; and fusing the final assembly together to create the artisanal panel structure. The formation of the artisanal glass element may be formed by any variety of ways and may also include screen printing and etching practices as understood by those skilled in the art.

Referring to Fig. 1, a glass sheet 10 is shown for forming an artisanal glass
20 element in accordance with an embodiment of the present invention. The glass sheet 10 has sufficient dimensions to form part of a partition wall or similar structure in a building.

As is shown in Fig. 2, the glass sheet 10 is then customised to form an artisanal element in a desired form, by placing glass noodles 12 and stringers 14 over the
25 surface of the glass sheet 10. As previously discussed, other pieces of glass (not shown) may be placed over the surface of the glass sheet 10 and the glass sheet may be painted, stencilled, screen printed 16, to assume a desired pattern and texture in accordance with the artistic freedom of the creator.

Once assembled, the glass sheet 10 is then placed into a kiln 20 for firing as
30 shown in Fig. 3. During the firing process, the embellishments and decorative pieces, such as glass pieces or fragments, noodles 12, stringers 14 and glass paint 16, become fused with the glass sheet to form an artisanal glass layer 30 as shown in Fig. 4. Any colours applied to the glass sheet 10 will become fused and finished in the artisanal glass layer 30 which will depict the final design and
35 aesthetic arrangement of the artisanal glass panel 50 to be installed in the building structure.

In an alternative embodiment of the present invention, rather than starting with a glass sheet 10, the glass sheet 10 may be formed from multiple elements as part of the artistic process. In this regard, multiple glass pieces may be cut into different length strips and arranged into patterns. The glass pieces may comprise
5 strips of 3mm in width, as well as a variety of other different configurations and the glass pieces may vary in type, shape, colour and thickness and may be arranged in a variety of different patterns, such as triangular, square and other non-symmetric shapes. These arrangement of pieces can then be placed into a kiln or oven to fuse the pieces together to form the artisanal glass layer 30.

- 10 In a variation of this embodiment, the glass pieces forming the artisanal glass layer 30 may comprise a mixture of pieces of flat glass sheets and glass strips stacked on their sides, such that when they are fused together in the kiln or oven, the combined pieces form a three-dimensional glass layer 30 having an irregular surface that may be employed to diffuse light or as a decorative feature.
- 15 The manner in which the artisanal glass layer 30 may be transformed into the artisanal glass panel 50 is depicted in Figs. 5 – 7.

In Fig. 5, the artisanal glass layer 30 is adhered to a second piece of glass 32 via a conventional process such as an adherence process or a lamination process. The second piece of glass 32 may be another glass sheet 10 that is cut to an
20 appropriate size, and may alternatively be a toughened glass sheet; safety glass; acrylic panel or a second artisanal glass layer 30.

In Fig. 6, the artisanal glass panel 50 is formed by laminating the artisanal glass layer 30 to a second piece of glass 32 or acrylic via an interlayer 36 formed therebetween. The interlayer 36 could be a layer of cloth or graphic printed
25 interlayer to further enhance the aesthetic appeal of the artisanal glass panel 50. Similarly, the second piece of glass 32 may be another glass sheet 10 that is cut to the appropriate size, a toughened glass sheet or a second artisanal glass layer 30.

In Fig. 7, the artisanal glass panel 50 is formed by subjecting the artisanal glass layer 30 to one or more toughening processes to increase the strength of the
30 artisanal glass layer 30. These processes could include applying controlled thermal or chemical treatments to the glass. Such tempering treatments can function to place the outer surface of the artisanal glass layer 30 into compression and the inner surfaces in tension such that the artisanal glass layer 30 becomes physically and thermally stronger. In this process, the original glass sheet 10 that
35 is made to form the artisanal glass layer 30 may have a thicker dimension or may comprise multiple sheets fused together.

Irrespective of the manner in which artisanal glass panel 50 has been formed, the final product is able to be used in a variety of construction applications and satisfies the various codes required for glass panels to be used in such applications. As the artisanal glass layer 30 forms a surface of the artisanal glass
5 panel 50, the unique patterns and textures of the artisanal glass layer 30 are able to be exposed and presented for maximal aesthetic effect. The colours and patterns made in the body of the panel 50 are also able to reflect and alter the passage of light emitted onto the panel 50 and passing through the panel 50. As
10 such, the final architectural artisanal panel 50 is able to be employed in a variety of different applications and environments to enhance the artisanal craftsmanship required to form the panel 50.

Throughout the specification and claims the word “comprise” and its derivatives are intended to have an inclusive rather than exclusive meaning unless the
15 contrary is expressly stated or the context requires otherwise. That is, the word “comprise” and its derivatives will be taken to indicate the inclusion of not only the listed components, steps or features that it directly references, but also other components, steps or features not specifically listed, unless the contrary is expressly stated or the context requires otherwise.

It will be appreciated by those skilled in the art that many modifications and
20 variations may be made to the methods of the invention described herein without departing from the spirit and scope of the invention.

The claims defining the invention are as follows:

1. An architectural artisanal panel comprising:
 - a first artisanal glass panel member having an artisanal surface formed thereon; and
 - at least a second panel member mounted to a surface of the first artisanal glass panel member, said surface being opposite to the artisanal surface;
 - wherein the second panel member is sufficient to enhance the strength of the first glass panel member to enable the architectural artisanal panel to be used in a construction environment whilst maintaining the aesthetic qualities of the first panel member.
2. An architectural artisanal panel according to claim 1, wherein the first artisanal glass panel member is formed from a sheet of glass having textures and/or components applied to the artisanal surface thereof.
3. An architectural artisanal panel according to claim 1, wherein the first artisanal glass panel member is formed from a plurality of pieces of glass joined together.
4. An architectural artisanal panel according to claim 2, wherein the artisanal surface of the first artisanal glass panel member is formed by applying textures and/or components to a surface of the sheet of glass and heating the glass sheet to cause the textures and/or components to fuse to the surface of the glass sheet to create said artisanal surface.
5. An architectural artisanal panel according to claim 4, wherein the textures and/or components applied to the artisanal surface of the sheet of glass comprise any one or more of glass pieces, glass noodles, glass stringers, glass beads, decorative elements, stones, sand, crushed glass, grit or flakes and other elements which fuse to the surface of the glass sheet when heated.
6. An architectural artisanal panel according to claim 4, wherein the artisanal surface of the first artisanal glass panel member is further formed by painting, stencilling or printing the surface of the sheet of glass panel prior to heating.
7. An architectural artisanal panel according to claim 3, wherein the plurality of

pieces of glass are arranged in a pattern and are joined together through fusing the glass pieces in a kiln to form the first artisanal glass panel member.

8. An architectural artisanal panel according to claim 1, wherein the second panel member has an artisanal surface formed thereon.
9. An architectural artisanal panel according to claim 1 or claim 8, wherein the second panel member is a glass panel member that is mounted to the first artisanal glass panel member by way of an adhesive.
10. An architectural artisanal panel according to claim 1 or claim 8, wherein the second panel member is adhered to the first artisanal glass panel member by a lamination process.
11. An architectural artisanal panel according to claim 1 or claim 8, wherein the second panel member is adhered to the first artisanal glass panel member by an adhesive interlayer formed therebetween.
12. An architectural artisanal panel according to claim 11, wherein the adhesive interlayer has an artisanal effect applied thereto to further enhance the aesthetic qualities thereof.
13. An architectural artisanal panel according to claim 12, wherein the artisanal effect applied to the adhesive interlayer includes applying a cloth or graphic print to the interlayer surface.
14. A method of forming an architectural artisanal panel, comprising;
 - forming an artisanal first glass sheet;
 - processing the artisanal first glass sheet to form a first artisanal panel member;
 - mounting a second panel member to a surface of the first artisanal panel member; and
 - forming the architectural artisanal panel comprising combined said first artisanal panel member and said second panel member.
15. A method according to claim 14, wherein the step of forming the artisanal first

glass sheet comprises applying embellishments or decorative pieces to a surface of a glass sheet in a decorative manner, the embellishments or decorative pieces comprising any one or more of glass pieces, glass noodles, glass stringers, glass beads, decorative elements, stones, sand, crushed glass, grit or flakes to a surface of the first glass sheet in a decorative manner.

16. A method according to claim 14 or 15, wherein the step of forming the artisanal first glass sheet comprises applying glass paint or ink to a surface of a glass sheet in a decorative manner.
17. A method according to claim 14, wherein the step of forming the artisanal first glass sheet comprises arranging individual glass pieces in a decorative form.
18. A method according to claim 15 or claim 16, wherein the step of processing the artisanal first glass sheet to finish the artisanal surface comprises firing the artisanal first glass sheet in a kiln to fuse any embellishments or decorative pieces to the surface thereof.
19. A method according to claim 17, wherein the step of processing the artisanal first glass sheet comprises firing the individual glass pieces arranged in said decorative form in a kiln such that the glass pieces fuse together to form the first artisanal panel member.
20. A method according to claim 14, wherein the step of mounting a second panel member to a surface of the first artisanal panel member comprises laminating the second panel member to the first artisanal panel member.
21. A method according to claim 14, wherein the step of mounting a second panel member to a surface of the first artisanal panel member comprises forming a bonding interlayer between the second panel member and the first artisanal panel member.
22. A method according to claim 21, wherein the method may include a further step of enhancing the bonding interlayer between the second panel member and the first artisanal panel member by applying a layer of cloth or a graphic print to the interlayer.

23. A method according to any one of claims 14 to 22, wherein the step of forming the architectural artisanal panel comprises a step of finishing the combined first artisanal panel member and said combined second panel member to use as an architectural artisanal panel in a building construction.

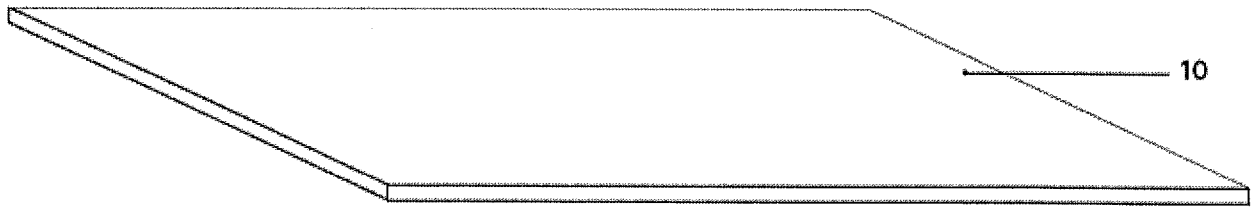


FIG. 1



FIG. 2

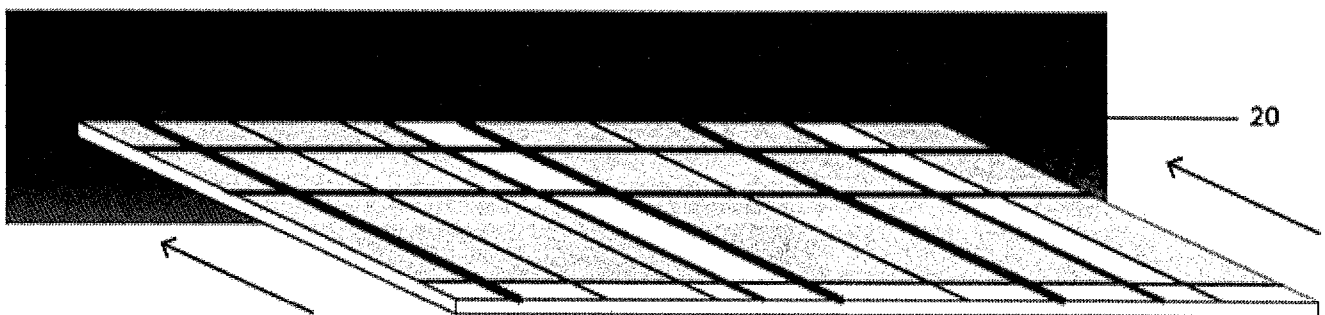


FIG. 3

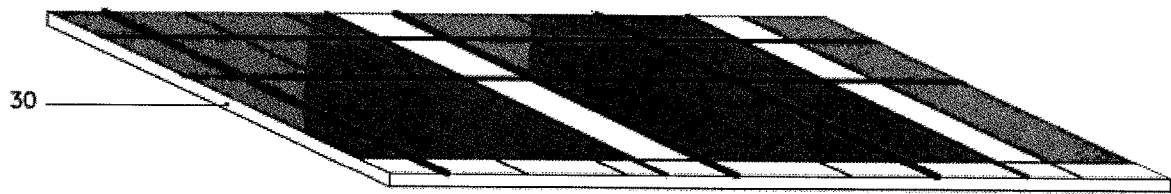


FIG. 4

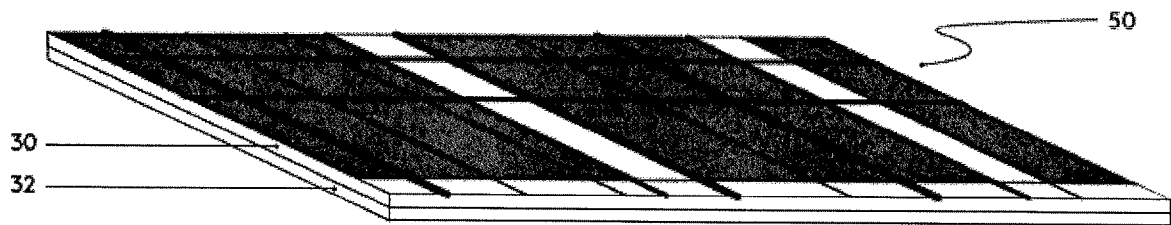


FIG. 5

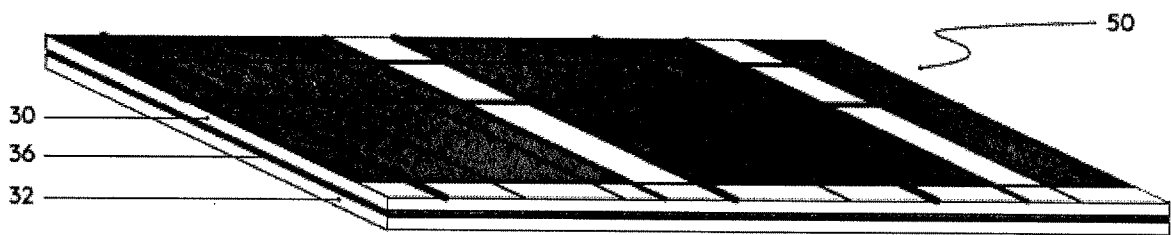


FIG. 6

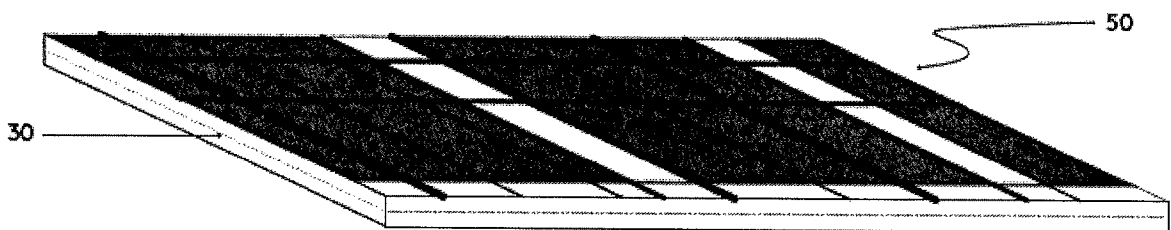


FIG. 7

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU2018/000096

A. CLASSIFICATION OF SUBJECT MATTER

B32B 17/06 (2006.01) E06B 3/66 (2006.01) B44C 5/04 (2006.01) B32B 7/12 (2006.01)

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)

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

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

Databases: EPODOC, WPIAP, PATENW, Google Patents, TXTE (cluster)

IPC/CPC: E06B3/[00,66,6604], B32B37/[04,18], B32B17[00,06,10807,10009,10247], B44C5/[04,0407] C03C15, B44C1, B32B38/14, B44F1/06, B32B9/002, B32B2315/08, B32B7/[04,10,12].

Keywords: ARTISAN, ADHESIVE, HEAT, CLOTH, INTERNAL, FUSE, SUPERIOR, STRENGTH, EMBELLISHMENT, INK, DESIGN, ETCH or the like in various combinations.

Cited/Citing of relevant documents.

Inventor/Applicant name search conducted on Espacenet, AusPat, and internal databases provided by IP Australia.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
	Documents are listed in the continuation of Box C	



Further documents are listed in the continuation of Box C



See patent family annex

* "A"	Special categories of cited documents: document defining the general state of the art which is not considered to be of particular relevance	"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
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"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"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
"O"	document referring to an oral disclosure, use, exhibition or other means	"&"	document member of the same patent family
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Date of the actual completion of the international search
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INTERNATIONAL SEARCH REPORT		International application No.
C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		PCT/AU2018/000096
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3460303 A (ALGRAIN et al.) 12 August 1969 Fig 1, 2; Column 2, 4; Abstract	1 - 5, 7 - 15, 17 - 23
X	US 2006/0127611 A1 (HUNTER) 15 June 2006 Fig 1; [0005, 0034, 0041, 0042]	1 - 23
X	ES 2050610 A1 (COGLASS S L) 16 May 1994 Fig 1, 2, 5; Page 1, 5, 6 (Espacenet Translation)	1 - 23
X	DE 202013101895 U1 (DERIX GLASSTUDIOS GMBH & CO KG) 05 June 2013 Fig 1, 2, [0004, 0010, 0021] (Espacenet Translation)	1 - 5, 7 - 15, 17 - 23
A	US 2004/0194866 A1 (FELDMAN) 07 October 2004 [0004]	4 - 5, 7, 15, 18, 19
A	WO 2014/140984 A1 (MAZZANTI et al.) 18 September 2014 Fig 1a, [36]	12, 13, 22

INTERNATIONAL SEARCH REPORT		International application No.	
Information on patent family members		PCT/AU2018/000096	
This Annex lists known patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.			
Patent Document/s Cited in Search Report		Patent Family Member/s	
Publication Number	Publication Date	Publication Number	Publication Date
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