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(54) **Panels made of fabric stretched between metal section bars**

(57) The invention pertains to the field of systems for forming panels made of fabric stretched between metal section bars, panels which are used for false ceilings, dividing walls, advertising panels, panels for lighted signs or other purposes.

It comprises a structural section bar (1) provided with a cavity (1a) able to house a series of casks (4) integral with a series of elastic clips (3) united to a ribbon which is heat-sealed to the fabric (2) of the sheet.

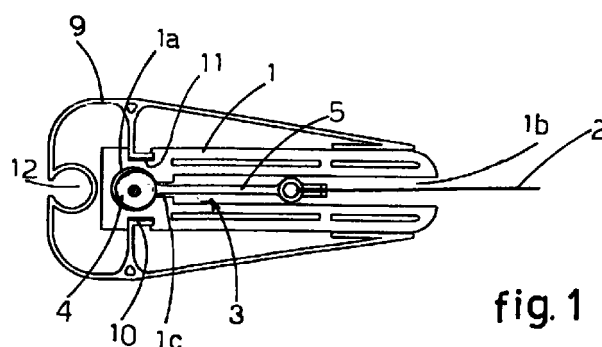


fig. 1

Description

[0001] The present invention relates to a series of elements for creating panels made of fabric stretched between metal section bars and to the method for uniting said elements to the fabric.

[0002] Fabric panels have their main application in the creation of false ceilings, divider walls in stands, advertising panels, panels for lighted signs, projection screens and other purposes.

[0003] Several systems are known for joining a fabric to a metal section bar; the simplest and most traditional one is to fasten eyelets to the edge of the fabric and to insert elastic strings into said eyelets and wind them around the metal section bar. This method is aesthetically quite questionable and furthermore there is no continuous connection between fabric and section bar, but only in points, thereby favouring the formation of undesired creases or undulations in the fabric.

[0004] According to another system, the fabric is joined to the profile by riveting or clinching, with the consequence that it is impossible to adjust for any slack in the sheet due to the inevitable lengthening of the fabric.

[0005] Other systems, mainly used to create panels employed in lighted signs, provide for clipping the fabric by means of clips which are inserted in appropriate aluminium section bars provided with a plurality of notches that can lock said clips in various positions to effect the tightening action.

[0006] With these systems, too, there is no automatic adjustment for the slack if the fabric lengthens, but it is necessary to act manually on the clips to move them in correspondence with the lower notches.

[0007] The aim of the present invention is to eliminate the aforesaid drawbacks and to make available a series of elements for creating panels that are easy to mount, aesthetically pleasing and with self-tightening fabric in any point to guarantee that the panel always has a perfectly planar appearance.

[0008] Said aim is fully achieved by the series of elements for creating panels made of fabric stretched between metal section bars, constituting the subject of the present invention, which is characterized by the content of the claims set out below.

[0009] In the achievement of the specified aims also concurs the method for uniting said elements to the fabric, method which is also characterized by the content of the claims set out below.

[0010] In particular, the series of elements is characterized in that it comprises a structural section bar presenting an inner cavity, communicating with the exterior, wherein are housed small casks of elastic clips provided with elastic stems which in turn are united to a ribbon that is fastened to the fabric.

[0011] The method provides for obtaining a plurality of elastic clips united to the fabric by the injection of elastic plastic material into a mould into which an edge of said ribbon is also inserted.

[0012] This feature and others besides shall become more readily apparent from the description that follows, of a preferred embodiment illustrated, purely by way of non limiting example, in the accompanying drawing table, in which:

- Figure 1 shows a cross section of the series of elements concurring in the creation of the panel;
- Figure 2 shows a plurality of elastic clips for anchoring the fabric to a metal section bar;
- Figures 3 and 4 show two views, respectively front and side, of an elastic clip at twice the scale of Figure 2.

[0013] With reference to the figures, the number 1 indicates a structural section bar made of aluminium able to form a frame of a panel in a fabric 2.

[0014] The structural section bar 1 has a cavity with 1a with substantially circular cross section, communicating with a slit 1b through a channel 1c.

[0015] The number 3 globally indicates an elastic stable that comprises a small cask 4, substantially cylindrical, connected through an elastic stalk or stem 5 to a set of tweezers 6.

[0016] The diameter of the small cask is slightly smaller than the diameter of the cavity 1a to allow for its easy sideways insertion in order to affix the elastic clips to the structural section bar 1.

[0017] The elastic clips 3 are positioned along the peripheral edge of the fabric 2 at a mutual distance of about fifteen millimeters and are united to the fabric in correspondence with the tweezers 6, with the interposition of a ribbon 8, which will be described more thoroughly in the subsequent description of the method.

[0018] All casks 4 of the clips 3 are mutually connected by a cord 7 to facilitate the insertion of the casks into the cavity 1a of the structural section bar.

[0019] The number 9 indicates an aluminium section bar constituting a covering body of the structural section bar; said body is coupled by means of tongues 10 to the structural profile which is provided with seats 11 for the insertion of said tongues.

[0020] The covering body is provided, along the outer surface opposing the slit 1b, with a circular seat 12 for the insertion of cylindrical elements for connecting another contiguous panel, not shown herein.

[0021] The method, which also constitutes the subject of the present invention, refers to the formation of the elastic clips and to their union to the fabric.

[0022] The method provides for the formation of a ribbon 8 comprising a band 8a made of polyester or equivalent synthetic material and a band 8b made of mixed polyester and PVC material, or in any case of another easily heat-sealed material.

[0023] The band 8a of the ribbon 8 thus formed is inserted simultaneously with the cord 7 between the two shells of a mould that comprises the prints of a group of elastic clips, for instance ten clips.

[0024] Once band and cord have been inserted between the shells, the mould is closed and an elastic plastic material, for instance a thermoplastic elastomer, is injected. The insertion operation is carried out in such a way that the cord 7 is situated substantially at the center of the casks 4 and the band 8a between the tweezers 6.

[0025] Preferably, but not exclusively, the elastomer employed is HYTREL (Du Pont registered trademark).

[0026] After completing the injection, the two shells of the mould can be opened and the ribbon and the cord can be advanced by one step to proceed with a new injection of a group of elastic clips.

[0027] A ribbon is thereby created whereto the elastic clips for anchoring a sheet to the structural section bar are securely fastened.

[0028] At this point, it is necessary to unite the ribbon 8 with the fabric 2 and this union is obtained by superposing the edge of the fabric to the band 8b comprising also PVC filaments and subjecting said band to a high frequency sealing-pressing operation that causes the PVC filaments to melt and said filaments to penetrate into the superposed fabric.

[0029] Obviously, modifications and variations can be provided, for instance the casks of the elastic clips 3 can assume a spherical or substantially spherical shape, and the union of the ribbon 8 with the fabric 2 could be effected also with the use of adhesives, without thereby departing from the scope of the claims set out below.

Claims

1. A series of elements for creating panels made of fabric stretched between metal section bars, characterized in that it comprises:

a structural section bar (1) presenting a cavity (1a) communicating with the exterior by means of a channel (1c);

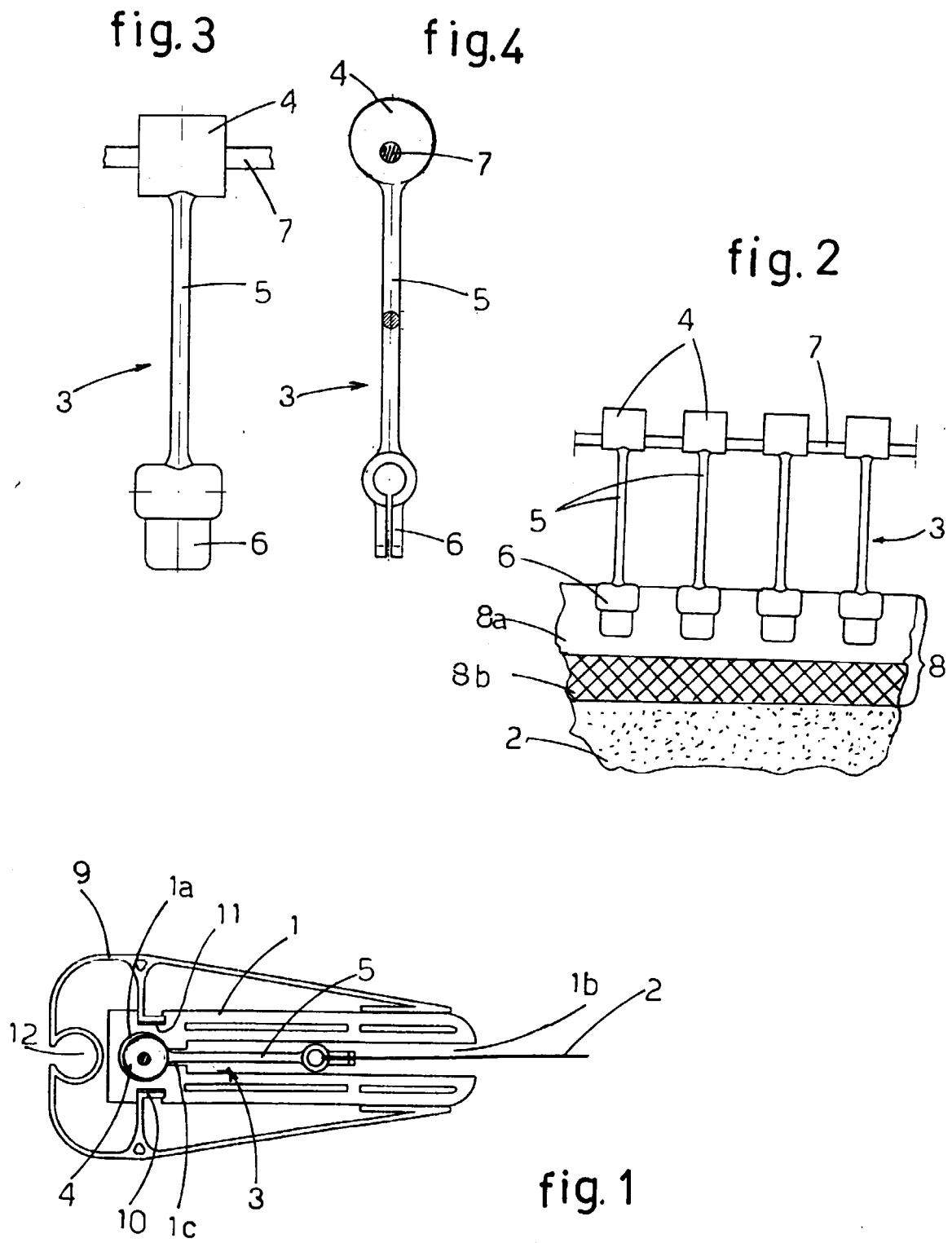
a series of elastic clips, each comprising a cask (4) able to be inserted into the cavity (1a) of the structural section bar, an elastic stem (5) able to pass through the channel (1c) and able to connect said casks with a set of tweezers (6);
a ribbon (8) inserted between the tweezers (6) of the series of elastic clips and whereto the fabric of the panel is fastened.

2. A series of elements as claimed in claim 1, characterized in that it comprises a cord (7) that mutually joins all casks (4).

3. A series of elements as claimed in claim 1 characterized in that the ribbon (8) comprises two bands (8a) and (8b), the band (8a) is made of synthetic material and the band (8b) comprises, in addition to the synthetic material of the band (8a), also fila-

ments made of an easily heat-sealed material.

4. A series of elements as claimed in the previous claims characterized in that it comprises a body (9) for covering the structural section bar, able to be snap-inserted on the structural section bar itself.
5. A method for uniting the fabric of the elements of the series as claimed in the previous claims, characterized in that it comprises the following phases:
 - inserting the band (8a) the ribbon (8) and the cord (7) between two shells of a mould that comprises a plurality of prints of the clips (3) so that the cord (7) is substantially at the center of the casks and the band (8a) between the tweezers (6);
 - closing the mould and injecting elastic plastic material;
 - opening the shells of the mould and advancing the ribbon and the cord by one step.
6. A method as claimed in claim 5 characterized in that it comprises a phase whereby the fabric superposed to the band (8b) of the ribbon (8) is subjected to high-frequency heat sealing.
7. A method as claimed in claim 5 characterized in that the elastic plastic material employed in the injection into the mould is a thermoplastic elastomer.
8. A method as claimed in claims 5 and 7, characterized in that the elastic plastic material employed in the injection into the mould is HYTREL (Du Pont registered trademark).





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EUROPEAN SEARCH REPORT

Application Number
EP 00 83 0272

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X	EP 0 834 414 A (NIPPON SHEET GLASS CO LTD) 8 April 1998 (1998-04-08)	1	G09F15/00
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The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.7) G09F A63B G03B
Place of search THE HAGUE		Date of completion of the search 13 July 2000	Examiner Demeester, J
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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