



(11) **EP 1 757 449 A2**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
28.02.2007 Bulletin 2007/09

(51) Int Cl.:
B41F 15/36^(2006.01)

(21) Application number: **06010344.7**

(22) Date of filing: **19.05.2006**

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI
SK TR**
Designated Extension States:
AL BA HR MK YU

(30) Priority: **19.05.2005 IT BO20050352**

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(54) **Locking fastener for screen printing frames**

(57) In consists of an angular element (1) having level surfaces (2, 3) of interface between the angular elements and the beams. Said level surfaces (2, 3) are angulated in such a way to form an angle (4) different to the right angle and with a transversal stiffener (5) so to permit the maintenance of the angulations of the surfaces (2, 3) under loading. Onto said surfaces holes (6) are present

to permit the passing of fixing elements (7) to the beams (8) and to inside holes (9) of the same beams corresponding to the holes (6) and to obtain at the assembling a closed structure (10) with arched beams (8) having concavity inward of the structure.

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Description

[0001] In the proceeding of screen printing matrices of printing are used called frames. These frames consist of a metallic or wood border onto which is fixed and/or stuck, after to be put in tension, a polyester, nylon or other fabric. It is known that in the field of the frames for screen printing has particular importance the disposition of the elements that form the frame. In the known art said frames for screen printing are assembled or welded and they have principally the shape of a square or rectangular border. Said utilizations provide the perpendicularity of the elements forming the frame. The screen printing is a proceeding in that the printing matrices, the frames, consist of polyester, nylon or similar fabrics from which the ink pressed to the doctor blade, or squeezer, oozes in the free meshes of the stretched weft onto the frame and said ink makes a deposit onto the support where the printing is actuated. The polyester, nylon or similar fabric is fixed to the border with high tensions so to determine the deformation of the border to which it is fixed or stuck. This deformation is present both during the tension phase of the fabric than during the removing of the frame from the tension apparatuses. Deforming the border, also the weft of the fabric placed in tension on the frame comes to be modified changing consequently the geometry and the performance of the printing of the frame. The deformation of the border of the frame has like direct consequence the lost of tension of the fabric and so of the correct disposition of the fibres of the weft. In the conventional frames for screen printing there is consequently a not homogeneous passing of ink in the meshes of the weft with consequent lost of quality of the printing. The invention refers to a new particular frame for screen printing having bond parts of the frame elements able to obtain and to maintain the uniform and correct tension of the fibres of the weft, so to let pass the ink in homogeneous way into the meshes of the fabric that forms the printing matrix. Having a regular passing of ink into the meshes of the fabric the definition and the printing quality are improved. The invented locking fastener provides an angular element of union of the beams essentially with an angle different to the right angle. In a preferred embodiment the union and the interface surfaces with the beams are angulated each other with angles of eightyeight and/or eighty-nine point five degrees, so to avoid, with the structure already assembled before putting in tension the border, the perpendicularity of the elements forming the border, and to have, instead, a border with beams curved outward of the same structure. This disposition of the beams, obtained by means of the invented constraint element, permits to put in tension the beams with arch elastic deformation, called preloading, with concavity inward of the structure so to be orthogonal each other when the polyester, nylon or similar fabric is fixed, with tensions so to bring again the beam in rectilinear and permanent position for contrast to the fabric tension. Consequently also the fibres and in particular the meshes of the fabric

have a regular disposition, with homogeneous spaces between the fibres and perpendicular each other and a homogeneous tension. In this way the printing matrix let to pass the ink pushed to the doctor blade with uniformity in the provided points with a better definition and precision of the printing. In the principal embodiment the invented locking fastener consists of an angular element 1, having level surfaces 2 and 3, of interface between the angular elements and the beams. The level surfaces 2 and 3 are angulated in such a way to form an angle 4 different to the right angle. In this embodiment said angle is both of eighty-eight than of eighty-nine point five degrees, but its constitution changes in relation to the loads to which is subject. For particular high tensions of the fabric fixed to the frame or for frames of big dimension said angle may decrease of some degrees. At the contrary it is provided with wider degrees, near at the ninety degrees, for low tensions of the polyester, nylon or similar matrix, or for small dimensions of the frame. It is also provided the contemporary used of angles of different degree to obtain the preloading more suitable to the dimension and to the shape of the frame. The angulation is so determined in such a way that the beams put to the tension of the fabric was rectilinear. The angular element 1 is, moreover, equipped with a transversal stiffener 5 so to permit the maintenance of the angulations of the surfaces 2 and 3 under loading. Onto said surfaces holes 6 are realised so to permit the passing of fixing elements 7 to the beams 8. To realize the assembling of the angular elements 1 to the beams 8 these last have holes 9 inside the same beams corresponding to the holes 6. Ending the assembling, jointed the angular elements 1 with the beams 8 by means of the fasteners 7, a closed structure 10 is obtained with the arched beams that, in the subsequent phase of apposition of the fabric, are deformed assuming the rectilinear configuration, so avoiding the arched disposition with outward concavity typical of the previous realizations and that determines distortions in the wefts and in the meshes where the ink passes. Possible known realizations of frames for screen printing obtained with welding with angle different to ninety degree, in structural and dimensional analogies, have not the same strength and the uniform distribution of the tensions obtained with the constraint elements of the invention such as the welding is not able to have the same characteristics of strength and uniformity of tensions that come to form during the assembling. The invented locking fastener is illustrated in a merely and not limiting way in the drawings of sheets 1, 2, 3 and 4. In sheet 1 figure 1 is perspective view of the locking fastener for frames of screen printing. In sheet 2 figure 2 is top view of the same element. Figure 3 is lateral view of the same element. Sheets 3 and 4 are instead views of assembled frames for screen printing. In particular in sheet 3 figure 4 is view of a square frame for screen printing assembled before fixing the fabric. In sheet 4 figure 5 is view of a rectangular frame not having still fixed the fabric.

Claims

1. Locking fastener for screen printing frames **characterized in** the fact to consist of an angular element (1), having level surfaces (2, 3) of interface between the angular elements and the beams and with said level surfaces (2, 3) angulated in such a way to form an angle (4) different to the right angle and with a transversal stiffener (5) so to permit the maintenance of the angulations of the surfaces (2, 3) under loading and having onto said surfaces holes (6) to permit the passing of fixing elements (7) to the beams (8) and to inside holes (9) of the same beams corresponding to the holes (6) and to obtain at the assembling a closed structure (10) with arched beams (8) having concavity inward of the structure.

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2. Locking fastener for screen printing frames, according to claim 1, **characterized in that** the angular element (1) joints the beams essentially with an angle (4) different to the right angle to put in tension the beams with arch elastic deformation, with concavity inward of the structure (10), and such to be orthogonal each other when the polyester, nylon or similar fabric is fixed when the tensions of the fabric are such to bring again the beams (8) of the screen printing frame in rectilinear and permanent position.

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3. Locking fastener for screen printing frames, according to claims 1 and 2, **characterized in that** the angular elements (1), having level surfaces (2, 3), may be angulated in such a way to form angles (4) with different dimension to have beams (8) with arch elastic deformation before fixing the fabric onto the frame and with different degrees of the angles (4) that are determined on the base of the dimension and of the shape of the frame in such a way that the beams under tension from the fabric are rectilinear.

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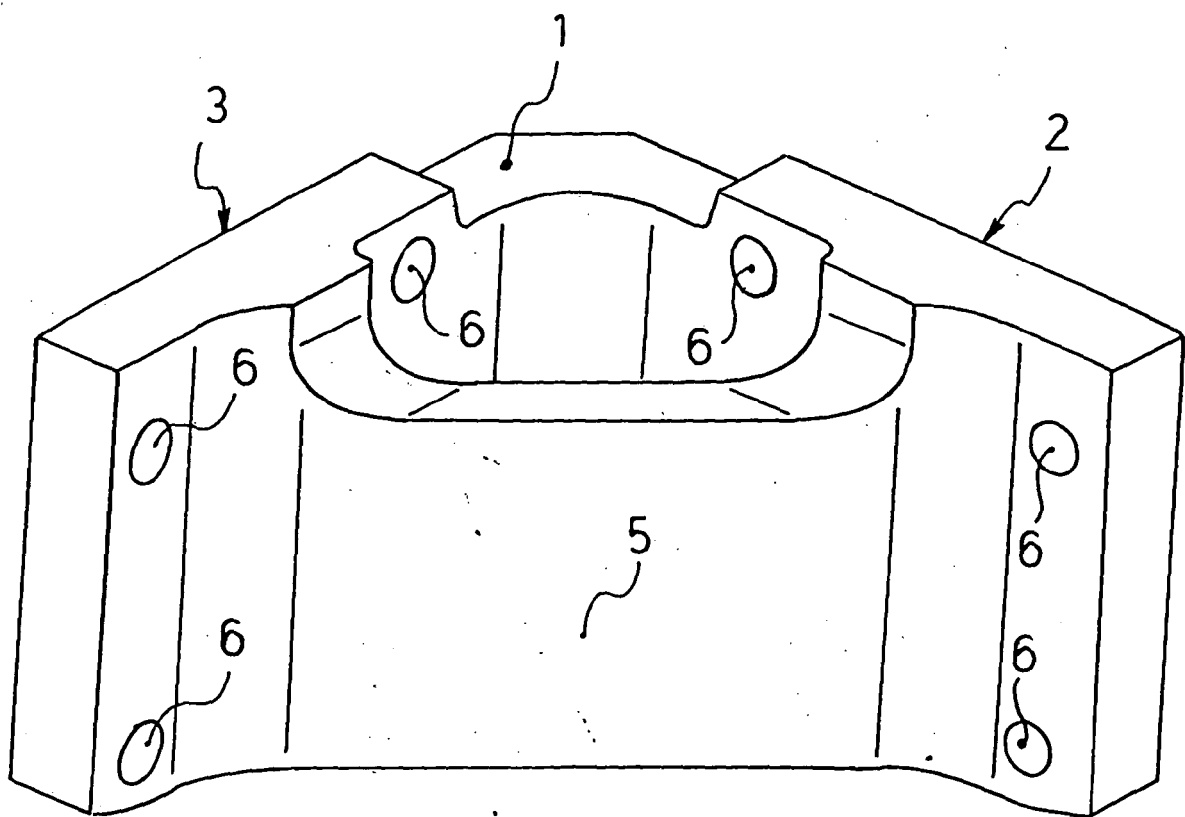


Fig.1

Fig.2

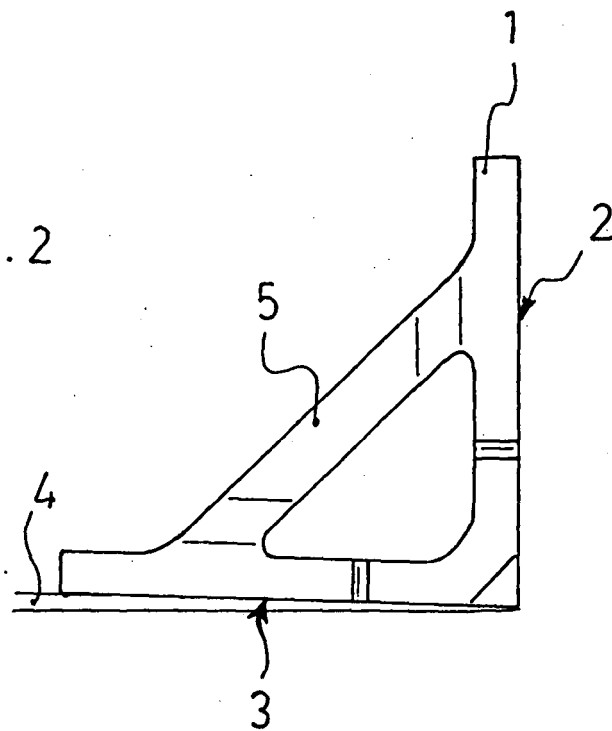
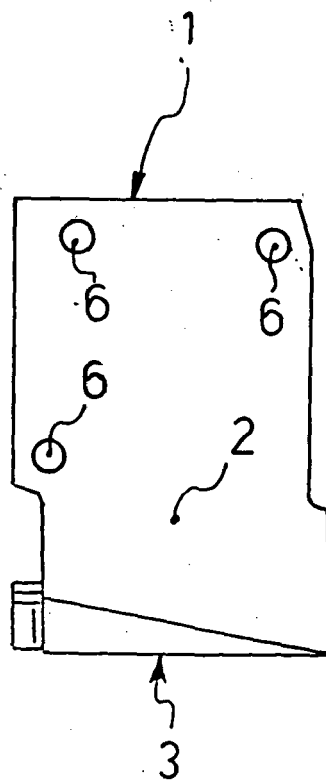


Fig.3



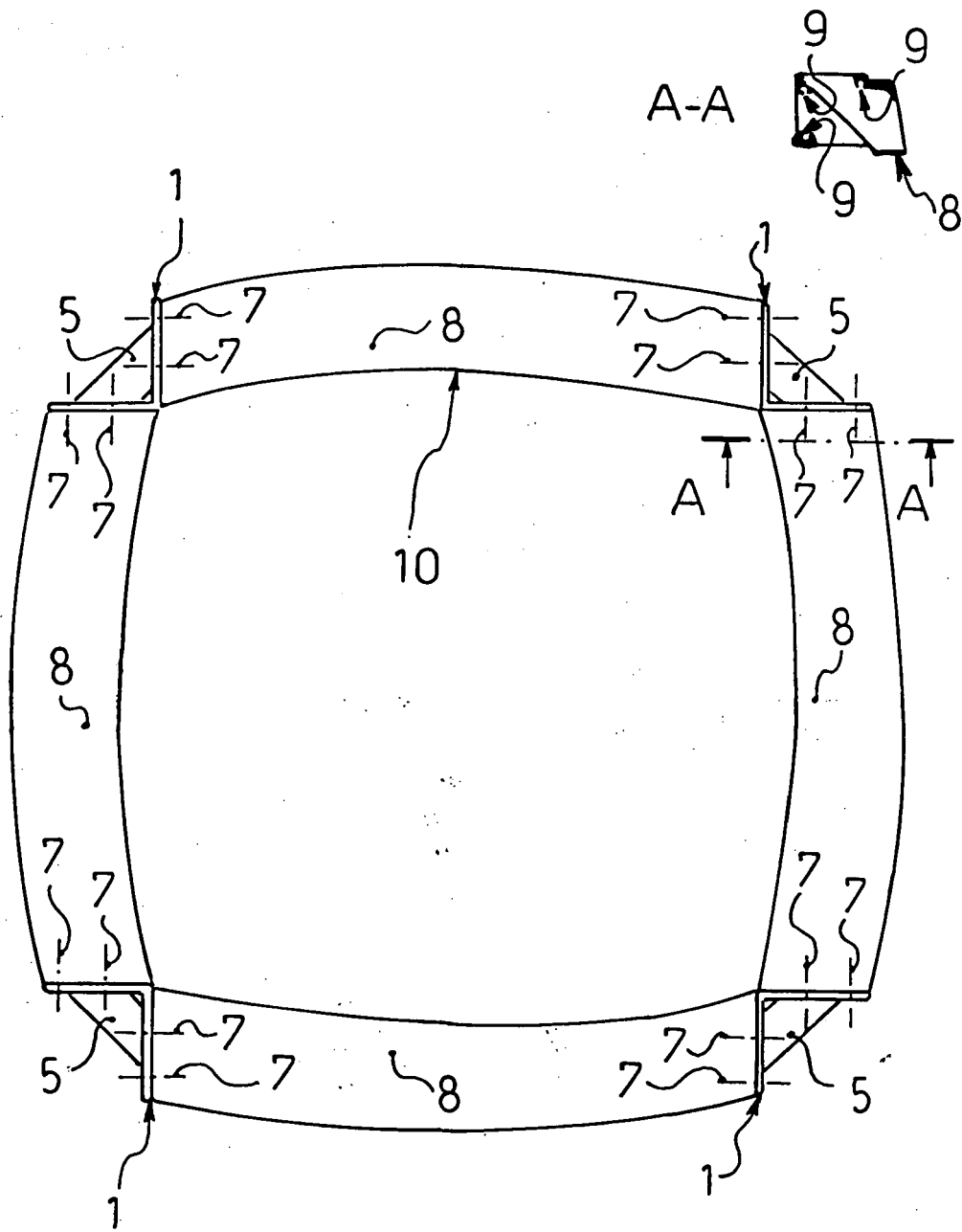


Fig.4

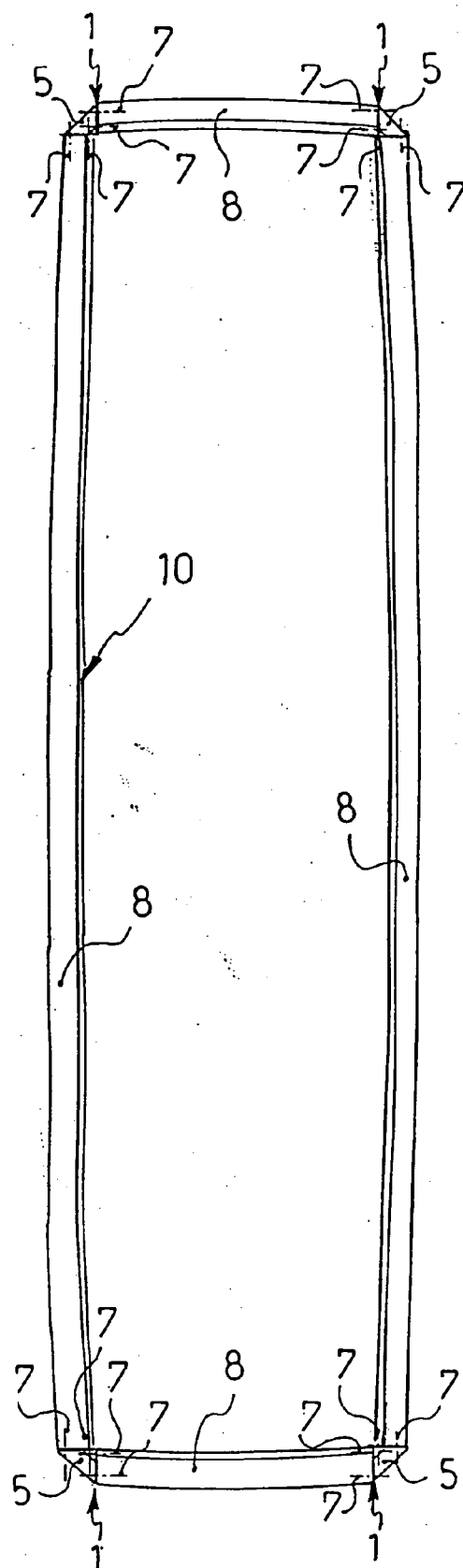


Fig. 5