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(54) **FASTENING ELEMENT, METHOD FOR BINDING A PLURALITY OF SHEETS WITH FASTENING ELEMENT, AND DEVICE FOR BINDING A PLURALITY OF SHEETS WITH THE SAME**

BEFESTIGUNGSELEMENT, VERFAHREN ZUM BINDEN MEHRERER BÖGEN MIT DEM
BEFESTIGUNGSELEMENT UND VORRICHTUNG ZUM BINDEN MEHRERER BÖGEN DAMIT

ELEMENT D'ATTACHE, PROCEDE D'ASSEMBLAGE D'UNE PLURALITE DE FEUILLES UTILISANT
CET ELEMENT D'ATTACHE ET DISPOSITIF D'ASSEMBLAGE D'UNE PLURALITE DE FEUILLES
UTILISANT CE PROCEDE

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Description

[0001] The present invention relates to a fastening element, a method for binding a plurality of sheets with a fastening element, and a device for binding a plurality of sheets with the same.

[0002] It is known fastening elements which serve to bind a plurality of sheets and which appear at most in the form of a U-shaped channel element which is used alone or inserted into the cover. When the sheets are inserted into this element it is mechanically bended on both sides while maintaining the sheets inside the fastening element.

[0003] Inconveniences of using known fastening elements and an associated method for binding are as follows:

not very reliable fastening of the sheets to be bound, as they are often held by two smooth surfaces only which are brought closer to each other while bending the fastening element, and while transporting the sheets to be bound in a vertical position they tend to displace in the fastening element, unsatisfactory aesthetics of a cover ridge, as on both sides of the cover ridge there are formed irregular hollows which are traces of interaction of deforming elements. As a consequence, repeatability of a cover shape is lacking, and any copy obtained differs in appearance from the other.

[0004] The known devices for binding a plurality of sheets with known fastening elements have most often a pair of jaws which deform both sides of a fastening element when a certain force is applied.

[0005] The object of the present invention is to provide a construction of a fastening element, a method for binding, and a device, due to which reliably fastening the sheets to be bound may be obtained, and at the same time an improvement of aesthetics of a cover and a repeatability of a shape of any copy may be provided, with a binding method and a device used to this end make it possible to simplify technical means used.

[0006] According to the invention this object is achieved by means of a channel-shaped fastening element, one vertical side wall of which is bended in its upper part at an angle close to the right angle to constitute over a length of this wall a crosspiece with a width which is significantly less than dimensions of the remaining walls of the fastening element. The fastening element is provided with stops secured to a horizontal base and/or vertical side wall and/or both vertical side walls in a small distance from the both ends of the fastening element. Preferably, the vertical side wall has a height greater than that of the first side wall.

[0007] A method for binding a plurality of sheets with a fastening element comprises placing the sheets to be bound into the fastening element in such a way that their edges intended for binding rest on a plane base, and only

the second side wall is subject to deformation to be brought closer to the crosspiece.

[0008] A device for binding a plurality of sheets with a fastening element is provided with a fixed L-shaped bed as well as a deforming element which may move over a lower part of the fixed bed. Preferably, the fixed bed is situated obliquely to the base. The deforming element has on the opposite face side of a deforming edge a sloping edge and between a driving element and the deforming element there is provided a wedge-shaped intermediate element.

[0009] By using the fastening element according to the invention a reliability of fixing the sheets to be bound is achieved, which is obtained by the pressure of the second vertical side wall against the crosspiece. The crosspiece obtained by bending an upper part of the first vertical side wall prevents the deformation of this wall. As a consequence, one non-deformed side is obtained which is a front of the cover and has a shape repeatable in any copy to be bound, with no traces of interaction of a deforming force. The stops prevent to displace the bound sheets in the cover.

[0010] By using the inventive method for binding a possibility for simplifying a construction of a device for binding is achieved as only one set of moving elements which serve to deform one vertical side wall of the fastening element is necessary. The wall of the fastening element, which is not deformed, is supported by the fixed bed having a smooth surface and maintains its shape.

[0011] The inventive fastening element, method for binding a plurality of sheets with this element, and device for binding a plurality of sheets with the fastening element will become clear from the detailed description with reference to the appended drawing, in which:

Fig. 1 is a cross-sectional view showing the exemplary fastening element,
Fig. 2 is a cross-sectional view of the fastening element after deformation of the wall during the operation of binding a plurality of sheets,
Fig. 3 is a view of a section of the exemplary fastening element,
Fig. 4 is a view of the exemplary device for binding a plurality of sheets with the fastening element, with a packet of sheets placed in the fastening element, and
Fig. 5 and 6 are a view of sections of the exemplary fastening elements.

[0012] The fastening element according to the invention is in the form of a channel, one vertical side wall 1 of which is bended in its upper part at an angle approaching the right angle to form over the whole length of this wall a crosspiece 2 with a width which is significantly less than dimensions of the remaining walls of the element. The horizontal base 3 of the element passes through mild roundings into the side walls. The width of the base 3 depends on thickness of the packet of sheets intended

to be bound. The fastening element is provided with stops 11 secured to the horizontal base 3 and/or the vertical side wall 1 and/or 4 in a small distance from the both ends of the fastening elements, which prevent the displacement of the bound sheets inside the cover. Preferably, the second vertical side wall 4 has a height which is greater than that of the first vertical side wall 1.

[0013] The device according to the invention has in an exemplary embodiment a fixed bed 5 with a L-shaped cross section, which width is adjusted to the dimensions of the packet of sheets to be bound. Preferably, the bed 5 is situated obliquely to the horizontal base 6 in such a way that this part of the cover of the sheet packet placed in the fastening element, which will not be deformed, rests supported by the longer arm of the "L", and the horizontal base 3 of the fastening element rests on the shorter arm of "L". In such a way, the sheets subject to binding rest under influence of their weight on the longer arm of "L" of the bed 5 and do not require additional supporting. The deforming element 7 is provided on the opposite side of the deforming edge with an oblique edge 8 intended to cooperate with a wedge-shaped intermediate element 9 which transfers a force indispensable to deform the wall 4 of the fastening element and derived from the driving element 10. Cooperation of the driving element 10, intermediate element 9, and deforming element 7 prevents an excessive force to be exerted on the wall 4 by changing the direction of action of a part of deforming force towards the displacement of the intermediate element 9 along the oblique edge 8 of the deforming element 7.

[0014] To bind a plurality of sheets they are inserted into the fastening element in such a way that their edges intended to be bound rest on the horizontal base 3, the fastening element, alone or fixed in the cover, is placed on the bed 5, such that the first vertical side wall 1 of the fastening element be stably supported by a smooth wall of the bed 5, and on the opposite side the deforming element 7 is displaced to the second vertical side wall 4 while applying a force from the movable driving element 10.

Claims

1. A fastening element for binding a plurality of sheets with a channel-like cross-section, consisting of a horizontal base (3), a first vertical side wall (1) and a second vertical side wall (4), the first side wall (1) being bended in its upper part at an angle approaching an right angle, the bended part constituting over a whole length of this wall a crosspiece (2) with a width which is significantly less than the dimensions of the remaining walls, the element comprises further stops (11) at a small distance from both of its ends which are secured to the horizontal base (3) and/or to the first vertical side wall (1) and/or the second vertical side wall (4).

2. A fastening element as claimed in claim 1, wherein the second vertical side wall (4) has a height greater than that of the first side wall (1).
3. A method for binding a plurality sheets with a fastening element according to claim 1, comprising placing the sheets to be bound in this element in such a way that their edges intended to be bound rest on a plane base, wherein the second vertical side wall (4) is exclusively subject to deformation such that it is brought closer to the first side wall (1).
4. A device for binding a plurality of sheets with a fastening element, which device has a fixed bed arranged obliquely in relation to the base, **characterized in that** the fixed bed (5) has a L-shape in cross section and the device comprises a deforming element (7) which may move over a lower part of the fixed bed (5).
5. A device as claimed in claim 4, **characterized in that** the deforming element (7) is provided on the opposite face side of the deforming edge with an oblique edge (8) and the device is provided with a wedge-shaped intermediate element (9) between an element transferring a deforming force (10) and the deforming element (7).

Patentansprüche

1. Befestigungselement zum Binden mehrerer Bogen mit einem kanalartigen Querschnitt, bestehend aus einem horizontalen Bodenabschnitt (3), einer ersten vertikalen Seitenwand (1) und einer zweiten vertikalen Seitenwand (4), wobei die erste Seitenwand (1) in ihrem oberen Bereich unter einem annähernd rechten Winkel gebogen ist und das gebogene Teil über die Länge dieser Wand einen Quersteg bildet, dessen Breite wesentlich kleiner als die Abmessungen anderer Wände ist, wobei das Befestigungselement darüber hinaus in einem geringen Abstand von seinen beiden Enden angeordnete Anschläge aufweist, welche an dem horizontalen Bodenabschnitt (3) und/oder an der ersten vertikalen Seitenwand (1) und/oder an der zweiten vertikalen Seitenwand (4) befestigt sind.
2. Befestigungselement nach Anspruch 1, wobei die zweite vertikale Seitenwand (4) eine Höhe aufweist, die größer als die Höhe der ersten Seitenwand (1) ist.
3. Verfahren zum Binden mehrerer Bogen mit dem Befestigungselement nach Anspruch 1, in welchem die zu bindenden Bogen in diesem Befestigungselement derart angeordnet werden, daß ihre zum Binden vorgesehenen Ränder auf einem ebenen Bodenabschnitt aufliegen, wobei nur die zweite verti-

kale Seitenwand (4) der Verformung unterworfen wird, derart, daß diese zur ersten Seitenwand (1) angenähert wird.

4. Vorrichtung zum Binden mehreren Bogen mit dem Befestigungselement, welche ein schräg in bezug auf eine Grundplatte angeordnetes feststehendes Gestell aufweist, **dadurch gekennzeichnet, daß** das feststehende Gestell (5) das L-förmige Querschnitt aufweist und daß die Vorrichtung ein Verformungselement (7) aufweist, welches sich oberhalb des unteren Teils des feststehenden Gestells (5) bewegen kann. 5
5. Vorrichtung nach Anspruch 4, **dadurch gekennzeichnet, daß** das Verformungselement (7) auf der der stirnseitigen Verformungskante gegenüberliegenden Seite eine schräg verlaufende Kante (8) aufweist und daß die Vorrichtung ein keilförmiges Zwischenelement (9) aufweist, welches zwischen dem Verformungskraftübertragungselement (10) und dem Verformungselement (7) angeordnet ist. 10 15 20

situé obliquement par rapport à la base, **caractérisé en ce que** le banc fixe (5) présente une section transversale de "L" et le dispositif compris un élément de déformation (7) qui peut se mouvoir au-dessus de la partie inférieure du banc fixe (5).

5. Dispositif selon la revendication 4, **caractérisé en ce que** l'élément de déformation (7) présente du côté opposé de l'arête frontale de déformation une arête oblique et le dispositif compris un élément intermédiaire (9) en forme d'une coin entre l'élément transmettant une force de déformation et l'élément de déformation (7).

Revendications

1. Élément d'attache destiné à relier une pluralité de feuilles de section transversale de canal, comprenant une base horizontale (3), une première paroi verticale laterale (1) et une seconde paroi verticale laterale (4), la première paroi laterale étant recourbée dans sa partie supérieure sous l'angle approximé de l'angle droit, et la partie recourbée constituant dans la longueur totale de cette paroi une traverse (2) dont la largeur est considérablement inférieure que des dimensions de parois restées, l'élément compris en outre des limiteurs (11) placés dans une petite distance de ses deux extrémités, qui sont fixés à la base horizontale (3) et/ou à la première parois verticale laterale (1) et/ou à la seconde parois verticale laterale (4). 25 30 35 40
2. Élément d'attache selon la revendication 1, **caractérisé en ce que** la seconde parois verticale laterale (4) présente l'hauteur plus grande que celle de la première parois laterale (1). 45
3. Procédé d'assemblage d'une pluralité de feuilles utilisant l'élément d'attache selon les revendications 1, qui consiste à placer des feuilles reliées dans cet élément de sorte que leurs arêtes destinées à relier se reposent sur une base plate, dans lequel à une déformation est soumise exclusivement la seconde parois verticale laterale (4) de sorte qu'elle soit approximée à la première parois laterale (1). 50 55
4. Dispositif destiné à relier une pluralité de feuilles utilisant l'élément d'attache, qu'il présente un banc fixe

Fig.1

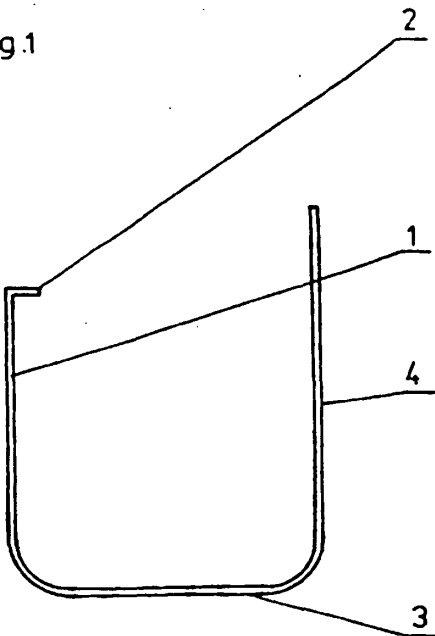


Fig.2

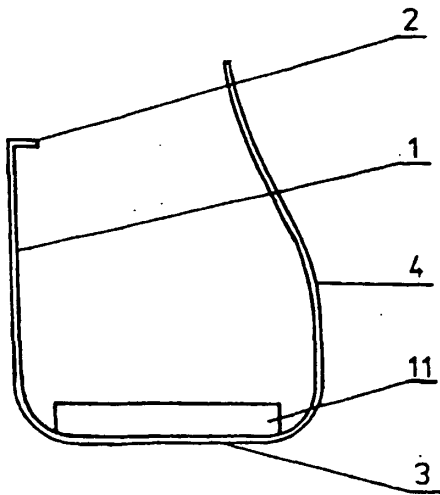
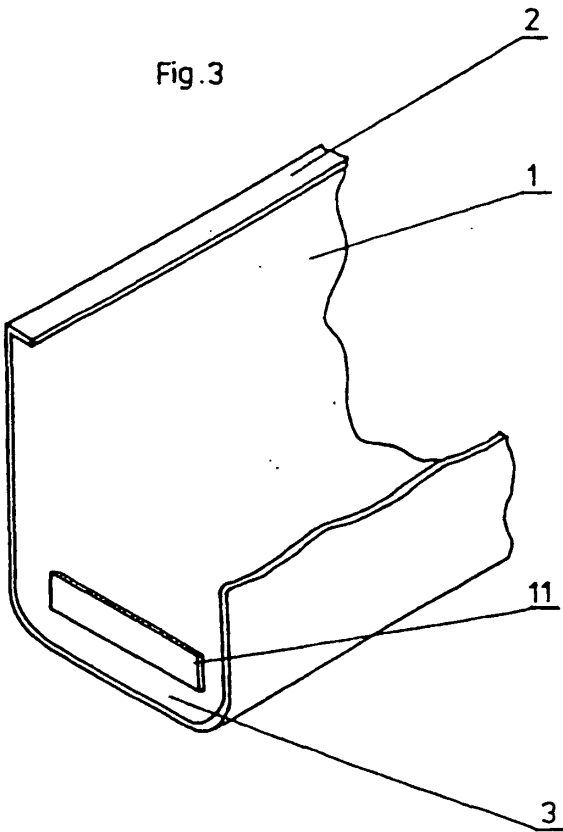


Fig.3



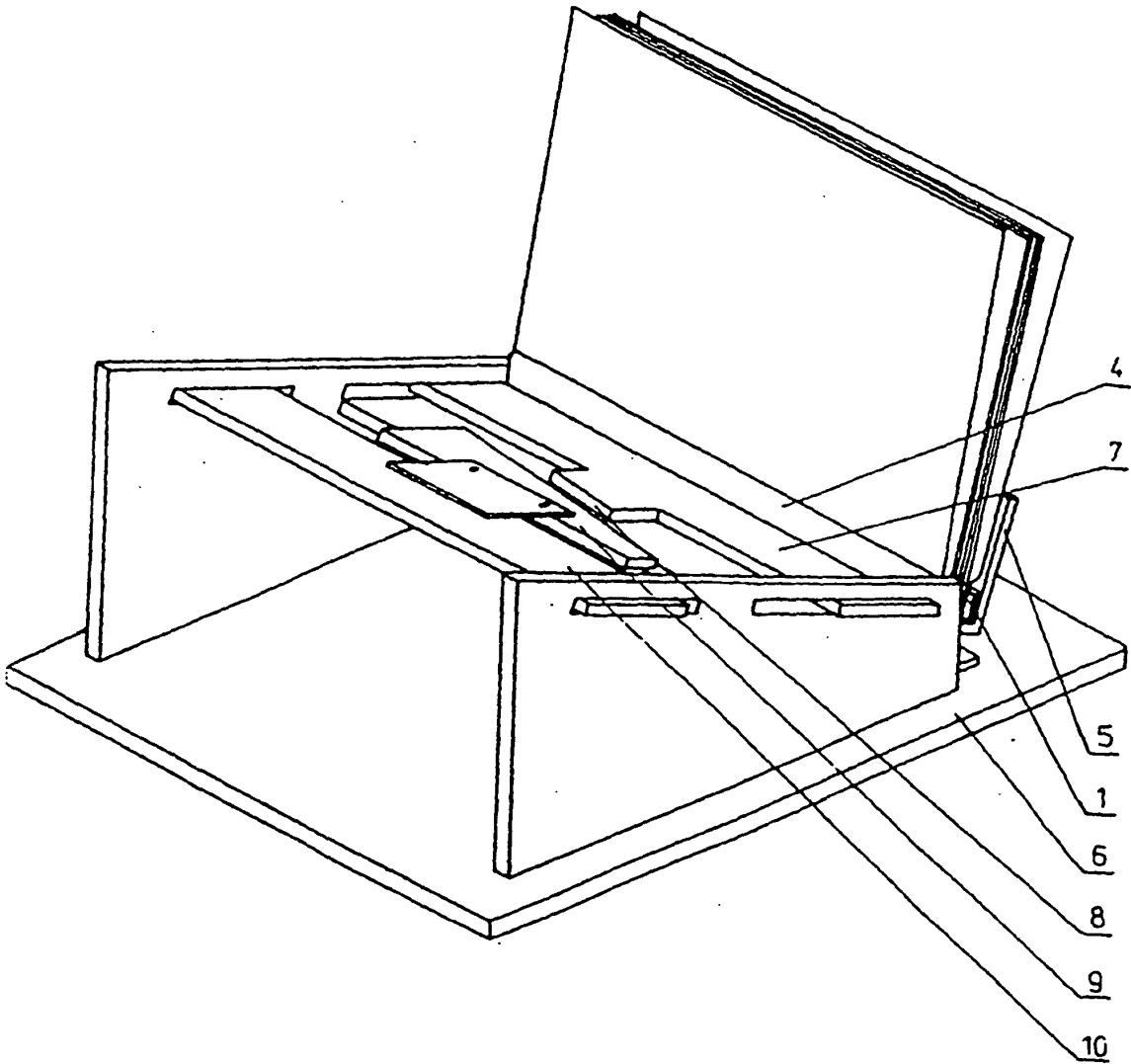


Fig. 4

Fig. 5

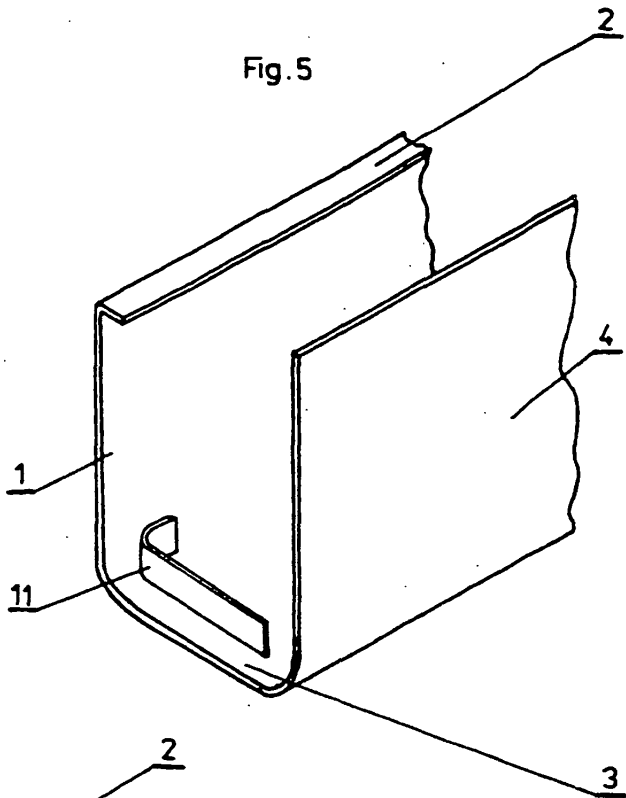


Fig. 6

