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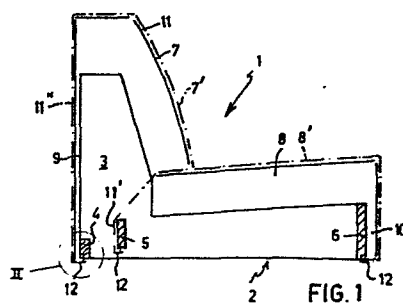
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⑤④ **A method and device for tensioning and fixing covering material on an object, particularly a seat.**

⑤⑦ The invention relates to a method and a device for tensioning and fixing upholstery material to an object, particularly seat furniture, a recess being provided in the object. According to the invention a strip of more rigid material is attached to the free edge of the upholstery material and the strip with a portion projecting from it is fixed into the recess while exerting tensioning forces on the upholstery material. The invention further relates to a pre-fabricated cover (11) particularly for seat furniture.

At the free edge of the cover is attached a tensioning element (13), a portion (15) of which extending therefrom at an angle with respect to the portion (14) attached to the cover (11).



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METHOD AND DEVICE FOR TENSIONING AND FIXING UPHOLSTERY MATERIAL
TO AN OBJECT, ESPECIALLY A SEAT.

The invention relates to a method for fixing and tensioning upholstery material to an object, a recess being provided in the object.

- 5 Such a method is known from Dutch patent application 71 15295
which has been laid open to public inspection. With this known
device the free edges of the upholstery material to be fixed and
tensioned, are clamped between two possibly thickened
longitudinal edges of one U-shaped section or two strip-shaped
10 sections being positioned opposite to each other, which
longitudinal edges press forcibly against each other. The edges
of the upholstery material are pressed between the longitudinal
edges of the section or sections for instance by means of a blunt
upholstery needle, which is a very time-consuming and therefore
15 expensive job, as the edges of the upholstery material each time
can be inserted over a small distance only between the longitudinal
edges of the section. Besides, this job has to be done by a skilled
worker, as the upholstery material has to be manually tensioned
each time before being inserted between the longitudinal edges of
20 the section and a layman would inevitably tension the upholstery
material unequally.

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The invention aims at removing the above described objections against the known method.

5 This object is reached in that according to the invention a strip of more rigid material is attached to the free edge of the upholstery material which is cut off to measure, and that thereupon the strip with a portion projecting from it is fixed into the recess while exerting tensioning forces on the upholstery material.

10 By application of these measures a great time-saving can be obtained, as the upholstery material can be previously manufactured to the desired measure, its free edge can be mechanically attached to the fixing strip and the fixing strip with the part projecting from it can easily be manually positioned into the recess in the
15 object. In this way it is possible for e.g. chairs, benches and the like, which are supplied for instance by a furniture factory, to supply new upholstery covers pre-manufactured in the factory, which can be applied easily and quickly by the owner of the piece of furniture himself without any implements. With the method
20 according to the invention the upholstery material cannot possibly be unequally tensioned, as the tensioning force which is to be exerted is determined in the factory beforehand by the measure the upholstery material is cut to and by the place of attaching the fixing strip of more rigid material. Furthermore a thorough
25 washing of the upholstery cover is possible between times, as the upholstery cover can easily be removed and applied again.

It appeared from tests that if the method according to the invention is applied, a time-saving of 80 to 90 per cent can be
30 obtained with respect to another known method for tensioning and fixing upholstery material to furniture, in which the upholstery material is manually tensioned bit by bit and is fixed with the aid of staples. As with the above described method according to

Dutch patent application 71 15295 the upholstery material also has to be manually tensioned bit by bit and has to be pressed between the longitudinal edges of the section, an equal, if not greater time-saving can be obtained with the method according to the
5 invention with respect to that last mentioned known method, as with that last mentioned known method also the time for positioning and attaching the section or sections must be taken into account.

With a preferred embodiment of the method according to the invention
10 a T-section is applied as the strip of more rigid material, the body of which is pressed into the recess under exertion of frictional forces and the free edge of the upholstery material is stitched to the flag on that side of the body which is turned away from the direction in which the tensioned upholstery material
15 extends from the T-section.

The T-section of more rigid material can be very easily manually pressed with the body into the recess. The stitching of the free edge of the upholstery material to the flag of the T-section can
20 be done mechanically very quickly and cheaply, while by stitching the free edge of the upholstery material on that side of the body which is turned away from the direction in which the tensioned upholstery material extends from the T-section, a particularly easy way of tensioning the upholstery material is reached.

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The invention also relates to a device for fixing and tensioning upholstery material to an object, which device is provided with a tensioning element and with which a recess for fixing and tensioning the upholstery material is applied.

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With the known device according to Dutch patent application 71 15295 the tensioning element comprises a U-shaped section or two strip-shaped sections, the longitudinal edges of which press

forcibly against each other. The U-sections are fixed into a recess or to the head face of the object and the strip-shaped sections are positioned opposite to each other above a groove in the object. One or more free edges of the upholstery material are clamped

5 between the longitudinal edges of the section, which may be provided with a round, bead-shaped thickening. With this known device the material is only held by the clamping force between the longitudinal edges of the section, so that the clamping force depends on the thickness of the upholstery material. If for instance

10 an arm-chair or bench is provided with upholstery material in this known way, the upholstery material will, after some time, depending on more or less intensive use of the piece of furniture, be pulled away between the longitudinal edges of the section, because each time someone takes a seat on such a piece of furniture, the

15 upholstery is tensioned stronger and with this known fastening of the upholstery material this inevitably leads to a loose and/or pleating upholstery material, which has to be fixed over and over again in the above described way.

20 The above described disadvantage of the known device is removed, in that according to the invention the tensioning element is attached over the entire length of the free edge of the upholstery material to be fixed and is provided with a portion projecting at an angle therefrom, which is resiliently deformably clamped in the

25 recess, which is made directly into the object.

As the free edge of the upholstery material to be fixed is attached over its entire length to the tensioning element, and the tensioning element with the portion projecting therefrom is clamped

30 resiliently deformable into the recess, the upholstery does not become looser and does not show pleats when for instance the arm-chair is normally used, because the free edge of the upholstery material is fastened over its entire length to the tensioning

element, the portion of which projecting at an angle therefrom is clamped into the recess and in its plane is not or substantially not subjected to tensile forces, so that the projecting portion is not pulled from the recess and the
5 upholstery remains always tightly tensioned.

With a preferred embodiment of the device according to the invention the tensioning element comprises a T-section of flexible synthetic material, the flag of which is stitched to the free edge
10 of the upholstery material and the body of which, which can be clamped in the recess, is provided on at least one side with at least one barb-shaped member extending in longitudinal direction, which is inclined in opposite direction with respect to the inserting direction and the greatest thickness of the body being
15 greater than the width of the groove-shaped recess.

This embodiment of the tensioning element entails an easy and quick fixing and tensioning of the upholstery material, which can easily be carried out by laymen, so that a thorough washing of the
20 upholstery between times and replacement by new upholstery could be done by laymen without any difficulty.

According to the invention the free edge of the upholstery material is stitched to the flag on that side of the body of the
25 T-section, which is turned away from the direction in which the upholstery material extends from the T-section.

By application of this feature the section is covered by the upholstery material and by this method of fixing of the upholstery
30 material it is also reached, that the tensioning force of the upholstery material on the stitching seam on the T-section is at least partly taken up by the flag of the T-section.

The invention finally also relates to a pre-fabricated upholstery cover for objects, especially chairs and the like.

5 The pre-fabricated upholstery cover according to the invention is characterized in that over the entire length of the free edge of the upholstery cover to be fixed, a tensioning element is attached, a portion of which projects at an angle from the portion attached to the upholstery cover.

10 According to the invention the tensioning element of the upholstery cover is a T-section, the flag of which on one side is attached to the free edge of the upholstery material and the body of which is provided on at least one side with at least one longitudinally extending barb-shaped member, which is inclined in opposite
15 direction away from the free edge of the body.

The method and device according to the invention as well as the pre-fabricated upholstery cover can especially be applied to seat furniture, provided with a trunk or frame, preferably made of
20 wood, as into this material a groove-shaped recess can be easily milled, but the trunk may also be made of synthetic material or metal or another natural or synthetic material, into which the groove is milled then, molded in the injection mold or achieved in another way.

25 The method and device according to the invention as well as the pre-fabricated upholstery cover can, of course, also be applied to other objects, e.g. tables, car- and airplane chairs and benches, which must be provided with an upholstery.

30 Although the frame or the trunk of seat furniture or other objects, provided with an upholstery cover, is usually provided with foam-rubber sheets or sheets made of synthetic foam material and

stuffing pieces, over which the upholstery is tensioned, this is not absolutely necessary; if a relatively thick upholstery material is used, this could be sufficient in some cases.

- 5 The invention will be further elucidated with reference to the drawings with an embodiment.

Figure 1 is a schematic section of a bench or arm-chair to which the invention is applied and

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Figure 2 shows a detail II of figure 1 on a larger scale.

- The bench or arm-chair 1, drawn in figure 1 is provided with a frame or trunk 2, comprising two side panels 3 which are tightly connected to each other by longitudinal or cross beams 4, 5 and 6, such that a non-deformable frame is obtained. Between the side panels 3 obviously extra stiffening and/or support beams or support sheets (not drawn) could still be applied for instance to support the foam-rubber or synthetic foam rubber back and seat cushions 7 and 8, which are supported by webs (not shown), tensioned in transverse and longitudinal direction between the side panels 3 and between the stiffening and support beams. To the back side of the piece of furniture a foam rubber or synthetic foam rubber sheet 9 can still be applied to cover the frame on that side too, while also the beams 6 and the side panels 3 on the outer side can be provided with such a sheet 10.

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About the seat an upholstery cover 11 is positioned, which is tensioned and fixed in the following way, vide figure 2.

The upholstery cover 11 could comprise one piece of leather, synthetic material, textile or other material, cut off on moulds to the right measure and stitched at the necessary places to bring

the cover into the right shape. Before the cover 11 is placed on the furniture 1, a T-section 13, made of synthetic material, is stitched over the entire length of the peripheral hem or free edge 12. The T-section 13 is provided with a flag 14 and a body 15.

5 The peripheral hem or free edge 12 of the upholstery cover 11 is stitched to the flag 14 of the T-section along a seam 16 on that side of the body 15 which is turned away from the direction in which the upholstery material 11 extends from the T-section 13, as appears from figure 2. The advantage thereof is, that on one

10 side the T-section 13 is covered by the material 11, and on the other side, which is still more important, that at least a part of the tensioning force of the upholstery cover 11 is absorbed by the flag 14 itself and therefore this tensioning force never has to be absorbed entirely by the stitching seam 16.

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The body 15 of the T-section 13 has a fir-tree-shaped cross-section, barb-shaped members or ribs 17 being formed, the operation and function of which will be further elucidated in the following.

20 The T-section 13 is applied along the entire periphery of the free edge hem 12 of the cover 11, thus along the lower side of the frame beams 4 and 6 as well as along the lower side of both side panels 3 and moreover along the lower side of the frame beam 5, in order to be able to tension the front back flap 7' and the seat flap 8' and

25 to fix them. Therefore, the front back flap 7' and the seat flap 8' of the cover 11 are stitched on their free edges to a tensioning strip 11', the free edge of which in its turn is provided with a T-section 13 of synthetic material in the above described way, which can be pressed with its body 15 into a recess in the lower

30 face of the frame beam 5 in the way as described in the following.

The tensioning and fixing of the cover 11 on the lower face of the frame beam will be described now with the aid of figure 2, but this

description of course also applies to the fastening of the cover to the side panels 3 and to the longitudinal beams 5 and 6.

- In order to fix the upholstery cover 11 a groove 18 is milled into the lower face of the frame beam 4 over the entire length, the width of which is smaller than the greatest thickness of the body 15 of the T-section 13, including the barb shaped hooks 17, at least one of which is applied to one side of the body 15.
- 10 The cover 11 is tensioned by smoothing it by hand downwards over the rear back panel, the V-shaped free edge of the body 13 being positioned in front of the entrance of the groove 18. If the upholstery cover is sufficiently tensioned, the T-section is manually pressed with the body 15 into the groove against the
- 15 frictional force. The body of the T-section 13 is sufficiently tightly fixed in the groove 18 in this way, because if for instance someone pulls at the upholstery material in the direction of the arrow 19 in figure 2, no or at the most only a relatively small force is exerted in outward direction on the body 15 of the T-
- 20 section 13. The barbed hook-shaped ribs 17 bite as it were into the wood of the groove walls.

The invention is not restricted to the above described application of the T-section 13. Instead of that, also an L-shaped section

25 in the shape of angle steel could be applied.

Furthermore the "body" of the T- or L-section can be smooth and can be fixed in the groove 18 with or without the aid of a non-setting adhesive. If a slightly resilient and/or flexible synthetic

30 material is used for the fixing section, the thickness of the "body" of the section, which must be positioned into the groove 18, can in this case also be equal to or somewhat greater than the width of that groove 18.

Also, it is not necessary for the "body" of the T- or an L-section to be perpendicular to the "flag", but it can also enclose a sharp or even an obtuse angle therewith.

- 5 The free edge or hem 12 of the upholstery cover 11 can also be stitched to the flag on the other side of the body of the T-section or another section or for instance be attached with an adhesive if this is preferred for some reason or another or if one is obliged to do so under certain circumstances.

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CLAIMS:

1. Method for fixing and tensioning upholstery material to an object, a recess being made in the object, characterized in that a strip of more rigid material is attached to the free edge of the upholstery material which is cut off to measure, and that there-
5 upon the strip with a portion projecting therefrom is fixed into the recess while exerting tensioning forces on the upholstery material.
2. Method according to claim 1, characterized in that a T-section
10 is applied as the strip of more rigid material, the body of which is pressed into the recess under exertion of frictional forces and that the free edge of the upholstery material is stitched to the flag on that side of the body which is turned away from the direction in which the tensioned upholstery material extends from
15 the T-section.
3. Device for fixing and tensioning upholstery material to an object, which device is provided with a tensioning element and with which a recess for fixing and tensioning of the upholstery material
20 is applied, characterized in that the tensioning element (13) is attached over the entire length of the free edge (12) of the upholstery material to be fixed and is provided with a portion (15) projecting at an angle therefrom, which is resiliently deformably

clamped in the recess (18) which is made directly into the object (1).

4. Device according to claim 3, characterized in that the
5 tensioning element comprises a T-section (13) of flexible synthetic material, the flag (14) of which is stitched to the free edge (12) of the upholstery material (11) and the body (15) of which, which can be clamped into the recess (18), is provided on at least one side with at least one longitudinally extending barb shaped member
10 (17), which is inclined in opposite direction with respect to the inserting direction and the greatest thickness of the body being greater than the width of the groove-shaped recess.

5. Device according to claim 4, characterized in that the free
15 edge (12) of the upholstery material (11) is stitched to the flag (14) on that side of the body (15) of the T-section (13), which is turned away from the direction in which the upholstery material extends from the T-section.

20 6. Pre-fabricated upholstery cover for objects, especially seat furniture and the like objects, characterized in that over the entire length of the free edge (12) of the upholstery cover (11) to be fixed a tensioning element is attached, a portion (15) of which projects at an angle from the portion, attached to the
25 upholstery cover (11).

7. Upholstery cover according to claim 6, characterized in that the tensioning element is a T-section (13), the flag of which on one side is attached to the free edge (12) of the upholstery material
30 and the body (15) of which is provided on at least one side with at least one longitudinally extending barb-shaped member (17), which is inclined in opposite direction away from the free edge of the body (15).

8. Method for fixing and tensioning upholstery material to an object, substantially as described in the specification.

5 9. Device for fixing and tensioning upholstery material to an object, substantially as described in the specification and/or indicated in the drawings.

10 10. Pre-fabricated upholstery cover for objects, especially seat furniture and the like objects, substantially as described in the specification and/or indicated in the drawings.

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