(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 452 271 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
01.09.2004 Bulletin 2004/36

(51) Int Cl.[7]: **B24B 23/04**, B24D 15/04

(21) Application number: **04251042.0**

(22) Date of filing: **25.02.2004**

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

(30) Priority: **25.02.2003 GB 0304252**

(71) Applicant: **YKK Europe Limited**
London EC1V 8AN (GB)

(72) Inventors:
- **Akashi, Shunji, YKK (UK) Limited**
  London EC1V 8AN (GB)
- **Kato, Hisanori, YKK France S.a.r.l.**
  59471 Seclin Cedex (FR)

(74) Representative:
Luckhurst, Anthony Henry William
MARKS & CLERK,
57-60 Lincoln's Inn Fields
London WC2A 3LS (GB)

(54) Support plates for sanders

(57) A sander 2 has a plurality of sanding plates 4 which are held side by side and are relatively moveable so that longitudinal edges 10 of the plates can adopt a contour of an article 8 to be sanded. Hooks 20 of a hook and loop fastener are formed on the longitudinal edges of a plurality of the plates 4, the longitudinal edges forming a support surface 12 for attachment thereto of a sheet of abrasive material 14. The plate thickness is chosen to suit the preferred hook dimension. Directional hooks are preferred, and the spacing and position of the hooks may be chosen to provide a desired hook pattern on the stack. Hooks may be provided on two edges of a plate, so that the plate can be reversed.

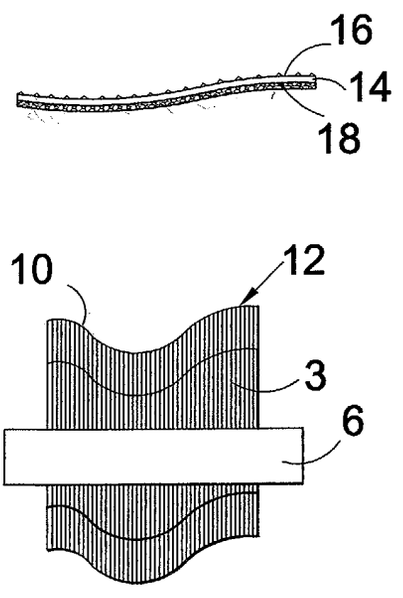


Fig.2

EP 1 452 271 A1

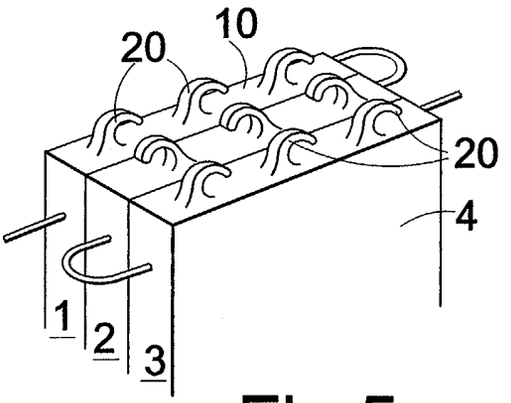


Fig.5

Description

[0001] The present invention relates to sanders and in particular to support plates for supporting a sheet of abrasive material in a sander.

[0002] Illustrated in Figure 1 is a sander 2 having a block 3 formed by a plurality of support plates 4 held in a frame 6, The support plates are thin sheets of plastics material which slide relative to one another within the frame 6. The sander is particularly useful for sanding a profile 8 such as for a skirting board, architrave, picture frame or beading. The exposed plates 4 are pushed against the profile 8 to slide the plates 4 relative to one another and so the support surface 12 of the block 3, formed by the longitudinal edges 10 of the plates 4, adopts the contour of the profile. A clamp mechanism (not shown) may be provided to clamp the plates in the relevant profile.

[0003] A sheet of abrasive material 14 is then attached to the surface 12, i.e. to cover the longitudinal edges 10 of the plates 4. The sander may be used manually, but an electrically operated sander is also possible.

[0004] The present invention is concerned with a system for attaching the abrasive sheet to the sheet edges 10.

[0005] The edges themselves could be formed of abrasive material. However, although the support plates themselves may be quite thin, typically 1mm, it is difficult to obtain a smooth surface across the width of the profile 8, the support surface 12 is stepped. Thus it is desirable to secure a sheet of abrasive material across the plate edges 10.

[0006] The present invention is concerned with a sander having a plurality of sanding plates which are held side by side and relatively moveable so that longitudinal edges of the plates can adopt a contour of an article to be sanded, in which hooks of a hook and loop fastener are formed on the longitudinal edges of a plurality of the plates. A sheet of abrasive paper has a loop type backing surface which engages with the hooks. The loop type backing surface may be formed, for example, by using a woven loop material, a plush pile, or a non-woven material which can be engaged by the hooks, as well known in the art.

[0007] Aspects of the invention are set forth in the accompanying independent claims.

[0008] The hooks may be provided on a longitudinal edge of all the plates, or only some of the plates. Also the hooks may be provided on two edges of a plate, typically opposed edges, so that the plate can be reversed for use when the hooks on one edge become damaged or worn.

[0009] For some profiles the contour formed by the block surface may have a relatively steep gradient in some regions, making it difficult to ensure that the abrasive sheet is held securely by the hooks.

[0010] Also the paper will be subject to shearing forces primarily to and fro in the longitudinal direction of the plates, but it may occasionally be subject to shear across the width of the plate.

[0011] Preferably the hooks are integrally moulded on the plate edge. Moulded hooks are well known in the art, and the hooks may take various shapes. For example, crook-shaped or J-shaped hooks such a described in EP-A-464753, mushroom hooks such as described generally in WO9204839, or the novel L-shaped hook shapes described in EP-A-811332.

[0012] While all such hook shapes will provide some degree of efficiency, we believe that particular patterns of hook orientation, hook size, and hook location should be used in order to provide greater efficiency of adherence of the abrasive sheet and greater resistance to wear of the hooks. It is desirable to inhibit movement of the abrasive sheet lengthways and across the width of the support plates.

[0013] Thus in a preferred aspect, the longitudinal edges of the plate members are provided with directional hooks. By directional hook we mean a hook which has a shear and or peel strength which is substantially dependent on the direction of shear or peel, such as a crook-shaped or J-shaped hook or the L-shaped hook of EP-A-811332. The directional hooks may be arranged so that hooks are oriented in different directions across the support surface. This may be achieved by orienting hooks on a single plate in different directions. In one preferred form the hooks are oriented to face or point longitudinally of the plate edge, a first hook or group of hooks facing in one direction along the plate edge and a second hook or group of hooks facing in the opposite direction. In another preferred form the hooks are oriented transversely of the longitudinal edge, a first hook or group of hooks facing in one direction along the plate edge and a second hook or group of hooks facing in the opposite direction.

[0014] The hooks on a plate may all face in one direction, and the plates are then stacked together so that hooks face in different directions when the support surface is viewed as a whole. Preferably means is provided to ensure that plates are oriented appropriately when being stacked, for example by having cooperating formations on the plates or linking the plates together with a cord or the like.

[0015] The hooks on adjacent plates may be staggered relative to one another, or aligned in the width direction of the stack of plates. Also, arrays of hooks may extend only part way along the plate edges and stop different distances from the end of the plates.

[0016] Some blank plates, i.e. having no hooks, may be provided, although it is particularly preferred that all the plates have hooks on a longitudinal edge.

[0017] We believe that it is desirable to tailor the hook size and spacing between hooks to the nature of the loop or other material backing on the abrasive sheet. Hence the thickness of the material sheet should match the desired spacing of the hooks in the width direction

of the stack of sheets.

[0018] Thus one aspect of the invention provides a method of manufacturing a sander comprising a plurality of relatively movable support plates, in which hooks are provided on edges of the plates for engagement with a backing layer of a sheet of abrasive material, and in which the preferred centre to centre spacing of the hooks is determined and the sheet thickness is selected to match the centre to centre spacing.

[0019] To allow for steeply sloping profiles, a plate may have a rebate formed along the comer of the plate at the edge carrying the hooks. A rebate may be provided along both comers of the edge, forming a tongue.

[0020] The hooks are formed on the protruding edge.

[0021] In another particularly preferred form, the hook is a mushroom type hook having a pair of mushrooms, one on top of the other. This provides for an extended height hook, with strong engagement of the loops.

[0022] The hooks may be moulded on an insert forming an edge of the plate, allowing a cheaper less wear resistant material to be used for the plate body.

[0023] The hooks are subject to considerable pressure and high temperature during use, and so it is preferred to use low height moulded hooks, typically less than 1mm high, preferably between 0.4 and 0.8 mm high. Also a high density of hooks is preferred, typically greater than about 50 per cm^2, and preferably about 100 hooks per cm^2.

[0024] Preferably the centre to centre spacing of hooks along an edge of a plate member is about equal to the width of the plate member. Preferably the thickness of a crook portion of a hook is between about 0.15 and 0.7 times the thickness of the plate member, and preferably about 0.2 to 0.5 times the thickness of the plate, more preferably about $1/3^{rd}$.

[0025] In use, the hooks will be subject to considerable crushing force and heat generation.

[0026] In one aspect of the invention we provide a raised portion on the plate edge. The raised portion preferably projects form the edge for substantially at least the height of the hooks, and preferably a short distance higher than the hooks. The raised end helps to protect the hooks adjacent the end form being crushed. The end hooks are likely to be subject to higher temperatures or pressures than the central hooks. The raised portion may be provided on only one end of the plate edge, but is preferably provided on both ends.

[0027] Raised portions may also be provided partway along the plate edge, among the hooks.

[0028] In another aspect of the invention, the sander is provided with side plates having a plain edge, that is no hooks. Such plates may also be provided between hook bearing plates. The plates may be dimensioned so as to have a height equal to or slightly greater than the overall height of a hook bearing plate.

[0029] To help reduce the temperature of the plates at the hook region during sanding, facing areas of the plates may be recessed to reduce the contact between the plates.

[0030] Preferably the hooks are provided with a supporting rib which extends up the stem of the hook. Such hook shapes are shown in EP-A-464753 for example. Typically the rib will be as high as the crook tip of a crook shaped hook, but various arrangements are possible as known to those in the art.

[0031] Preferably the overall width of the hook including the ribs is less than the thickness of the plate, preferably more than half the plate thickness, and preferably between about 0.6. and 0.8 times the width of the plate.

[0032] The invention will be further described by way of example with reference to the accompanying drawings, in which:

Figure 1 illustrates a sander utilising relatively movable support plates;
Figure 2 illustrates the sander of Figure 1 incorporating an embodiment of the present invention;
Figure 3 illustrates a plate with a first arrangement of hooks forming an embodiment of the invention;
Figures 4a and 4b shows several plates of Figure 3, linked together to form a desired pattern when stacked;
Figure 5 is a perspective view of an arrangement formed from the plates of Figure 3;
Figure 6 shows a plate with another arrangement of hooks forming an embodiment of the invention;
Figure 7 shows a plate with yet another arrangement of hooks forming an embodiment of the invention;
Figure 8 shows a stack of plates with yet another arrangement of hooks forming an embodiment of the invention;
Figure 9 shows a plate with hooks provided on a moulded insert;
Figures 10a and 10b show embodiments of the invention with hooks on two edges of a plate;
Figure 11 shows another arrangement of hooks forming an embodiment of the invention;
Figure 12 shows the plates of Figure 11 formed into a stack;
Figures 13a and 13b show the plate thickness relative to hook spacing in accordance with the invention;.
Figures 14a and 14b show plates having a reduced thickness edge region;
Figure 15 shows a plate having a projection at an end of an edge bearing hooks;
Figure 16 shows another embodiment of a plate having projections thereon;
Figure 17 is a cross-section through a stack of plates, with some plates having a raised edge;
Figure 18 shows a view of a preferred hook shape;
Figure 19 shows an end view of Figure 18, and Figure 20 shows a plate with a recessed surface.

[0033] Referring to Figure 2, a sheet 14 of abrasive

material has a layer 16 of abrasive bonded to a layer of loop material 18. Such sheets of abrasive material are well known in the art. The sheet 14 is to be mounted on support surface 12, following the contour of the surface. For this purpose, hooks are provided on the exposed longitudinal edges 10 of the support plates 4. The support plates 4 are typically 1mm thick, perhaps 50mm long and a stack of 70 plates may be used. The plates are shown here in enlarged scale for ease of illustration.

[0034] For simplicity of illustration, the hooks in some of the drawings are enlarged relative to the plate. In practice, a typical plate may be 70 mm to 100 mm long, I mm thick, and have hooks at 1 to 2 mm centre to centre spacing along the plate edge.

[0035] Figure 3 is an enlarged view of an edge 10 of a plate 4, with hooks 20 integrally moulded on the plate edge 10. Techniques for moulding hooks on relatively rigid substrates are well known in the art.

[0036] In Figure 3, the hooks 20 are crook shaped hooks and face in the same direction, of arrow A. That is to say the crook points in the direction of arrow A, along the longitudinal edge 10 of plate 4. When assembling plates 4 together to form block 3 it is desirable to form a consistent pattern of hooks on the support surface 12. For example, it may de desirable to ensure that all the crook shaped hooks of the block face in a common direction, or for hooks on adjacent plates to face in opposite directions. Typically the hooks are less than 1mm high and have a centre to centre spacing of 2mm or less, hence it is difficult to see the orientation of the hooks. The plates may be marked and/or numbered to show the desired orientation or position of the plates in the formed block.

[0037] One way of assisting assembly of the plates 4 into block 3 is to mould the plates onto a cord, as shown in Figure 4, ensuring the relative orientation of the plates as they are assembled. The plates may also have co-operating projections and elongate apertures, extending in the direction of relative movement of the plates, to ensure correct orientation on assembly.

[0038] Referring to figure 6, hooks 20 on a single plate face in opposite directions. The hooks may be formed in groups, as shown, the hooks of a group facing in a common direction, or adjacent hooks may face in opposite directions.

[0039] On the support surface 12 of the assembled block or stack of plates 4, the hooks form an array and the spacing and relative orientation of the hooks across the array forms a distinctive pattern. This pattern can be varied by one skilled in the art to adjust the performance of the hooks in attaching the abrasive material and resisting wear of the hooks.

[0040] Referring to Figure 7, the crook shaped hooks 20 face laterally, across the width of the plate edge 10. In Figure 7, adjacent hooks face in opposite directions, but they may formed in groups facing in a common direction, or with all the hooks facing in the same direction, as in Figures 3 to 6. Again the plates may be assembled to achieve a desired hook pattern on support surface 12, as seen in Figure 8.

[0041] Referring to Figure 9, the hooks 20 are formed on an insert 26 of relatively hard, high melting point plastics material to provide for greater resistance to the heat and pressure generated during a sanding operation. The outer body 28 of the plate 4 is formed of softer, less expensive plastics material.

[0042] Referring to Figure 10a, the plates 4 may have hooks 20 on opposite longitudinal edges 10, so that the plates can be reversed when the hooks on one edge are worn. It is also possible to provide a different hook pattern and/or hook size on the plate edges, as in Figure 10b. It may be desirable to use a first pattern of hooks for attaching abrasive sheet material for rough sanding work, and a second pattern for fine sanding.

[0043] Referring to Figures 11 and 12, hook free spaces 30, 32 are provided at opposite ends of the plate 4, the spaces being of different length. This may be desirable to achieve a lower density of hooks at the ends of the support surface, or to assist with orienting the plates during assembly, for example, or providing for hooks of adjacent plates to be staggered.

[0044] Reference has been made in particular to directional hooks, such as crook-shaped or J-shaped hooks. The L-shaped hook of EP-A-811332 is also a directional hook, which may be used. However, relatively non-directional hooks or symmetrical, where a substantial variation in peel strength or shear strength is not expected depending on the direction of peel or shear, such as mushroom shaped hooks may be used in many of the designs described above.

[0045] Referring to Figures 13a and 13b, we believe the centre to centre spacing of the hooks, together with the hook size, is a determining factor in achieving good adhesion or capture of the abrasive material and also good resistance to wear. Thus the hook dimensions and centre to centre spacing P is first determined, and this then fixes the plate thickness T, where P=T. Figure 13 a shows mushroom type hooks. Hooks can be asymmetrically positioned on the plate edge, as in Figure 13b.

[0046] Referring to Figures 14a and 14b, a rebate 40 is formed in the plate major surface 42 at the edge 10. The rebate may be formed in one or both major surfaces of the plate 4. It is believed that this arrangement assists with securing the abrasive material when there is a steeply sloping profile, as seen in Figure 14b.

[0047] Referring to Figure 15, the edge 10 of a plate 4 has projections 50 formed at each end of the row of hooks 20, preferably at the ends of the plate edge 10. Projections 50 are preferably the same thickness as the plate proper. Projections 50 preferably extend at least as high as the hooks 20, and preferably are higher than the hooks by a small amount. Typically a hook may be 0.6 mm high and the projections 0.7 to 1 mm high, for example.

[0048] Referring to Figure 16, projections 52, similar to projections 50, are provide mid way along a row of

hooks 20.

[0049] Referring to Figure 17, plates 4' having a plane edge (no hooks) may be provided at the sides of the stack of plates. Plates 4' may also be provided intermediate the stack of plates. Preferable, the overall height of a plate 4' is equal to or a little greater than the height of a plate 4 including the hooks 20.

[0050] Figures 18 and 19 show a preferred crook-shape moulded hook 20 having side ribs 56 supporting the stem 57. Ribs 56 extend up to the level of the free end 58 of the crook portion 60. The overall thickness D, including ribs 56, is preferably between 0.6 to 0.8 times the plate thickness T. Ribs 56 may each be of less thickness than the crook portion, and typically will be 0.2 mm thick, and stem portion 57 will be about 0.3 mm.

[0051] Referring to Figure 20, this shows a cross-section through a plate 4" which has a recess 62 formed in the centre of the main body portion 64, so that adjacent plates will touch only at side regions 66 and the upper and lower edge regions 68. A recess could be provided in only one face of the body portion 64. Various recess shapes or patterns may be used to reduce the contact area between adjacent plates. The depth of a recess is preferably about 10 to 30 percent, preferably about 20 per cent of the overall plate thickness.

[0052] From the foregoing discussion it will be appreciated that various modifications may be made to the described embodiments. It is desired to include all such modifications as fall within the scope of the accompanying claims.

Claims

1. A method of manufacturing a sander, the sander comprising a plurality of relatively movable support plates and hooks provided on edges of the plates for engagement, in use, with a backing layer of a sheet of abrasive material, in which the desired spacing of the hooks is determined and the plate thickness is selected to match the spacing.

2. A method as claimed in claim 1, in which hooks are provided on a longitudinal edge of all the plates.

3. A method as claimed in claim 1 or 2, in which the hooks are directional hooks and are arranged so that hooks are oriented in different directions across the support surface formed by the respective edges of the plates.

4. A method as claimed in claim 3, in which the hooks are oriented transversely of the plate edge, a first hook or group of hooks facing in one direction along the plate edge and a second hook or group of hooks facing in the opposite direction.

5. A method as claimed in any one of claims 1 to 14 in which means is provided to ensure that plates are oriented appropriately when being stacked together.

6. A method as claimed in any one of claims 1 to 5, in which the hooks on adjacent plates are staggered relative to one another.

7. A method as claimed in any one of claims 1 to 6, in which the hooks stop different distances from the respective ends of the plate.

8. A method as claimed in any one of claims 1 to 7, in which plates having no hooks are provided.

9. A method as claimed in any one of claims 1 to 8, in which a plate has a rebate formed along the comer of the plate at the edge carrying the hooks.

10. A method as claimed in claim 9, in which a rebate is provided along both comers of the edge, forming a tongue and the hooks are formed on the protruding edge of the tongue.

11. A sander having a plurality of sanding plates which are held side by side and are relatively moveable so that longitudinal edges of the plates can adopt a contour of an article to be sanded, in which hooks of a hook and loop fastener are formed on the longitudinal edges of a plurality of the plates, the longitudinal edges forming a support surface for attachment thereto of a sheet of abrasive material, wherein hooks are provided on two edges of a plate.

12. A sander having a plurality of sanding plates which are held side by side and are relatively moveable so that longitudinal edges of the plates can adopt a contour of an article to be sanded, in which hooks of a hook and loop fastener are formed on the longitudinal edges of a plurality of the plates, the longitudinal edges forming a support surface for attachment thereto of a sheet of abrasive material, wherein the hooks are directional hooks.

13. A sander having a plurality of sanding plates which are held side by side and are relatively moveable so that longitudinal edges of the plates can adopt a contour of an article to be sanded, in which hooks of a hook and loop fastener are formed on the longitudinal edges of a plurality of the plates, the longitudinal edges forming a support surface for attachment thereto of a sheet of abrasive material, wherein the hooks on adjacent plates are staggered relative to one another.

14. A sander having a plurality of sanding plates which are held side by side and are relatively moveable so that longitudinal edges of the plates can adopt a

contour of an article to be sanded, in which hooks of a hook and loop fastener are formed on the longitudinal edges of a plurality of the plates, the longitudinal edges forming a support surface for attachment thereto of a sheet of abrasive material, wherein the hooks on adjacent plates are aligned in the width direction of the stack of plates.

15. A sander having a plurality of sanding plates which are held side by side and are relatively moveable so that longitudinal edges of the plates can adopt a contour of an article to be sanded, in which hooks of a hook and loop fastener are formed on the longitudinal edges of a plurality of the plates, the longitudinal edges forming a support surface for attachment thereto of a sheet of abrasive material, wherein hooks extend only part way along the edge of a plate.

16. A sander having a plurality of sanding plates which are held side by side and are relatively moveable so that longitudinal edges of the plates can adopt a contour of an article to be sanded, in which hooks of a hook and loop fastener are formed on the longitudinal edges of a plurality of the plates, the longitudinal edges forming a support surface for attachment thereto of a sheet of abrasive material, wherein a plate has a rebate formed along the comer of the plate at the edge carrying the hooks.

17. A sander as claimed in claim 16, in which a rebate is provided along both comers of the edge, forming a tongue and the hooks are formed on the protruding edge of the tongue.

18. A sander having a plurality of sanding plates which are held side by side and are relatively moveable so that longitudinal edges of the plates can adopt a contour of an article to be sanded, in which hooks of a hook and loop fastener are formed on the longitudinal edges of a plurality of the plates, the longitudinal edges forming a support surface for attachment thereto of a sheet of abrasive material, wherein the hooks are provided on an insert forming an edge of the plate.

19. A sander having a plurality of sanding plates which are held side by side and are relatively moveable so that longitudinal edges of the plates can adopt a contour of an article to be sanded, in which hooks of a hook and loop fastener are formed on the longitudinal edges of a plurality of the plates, the longitudinal edges forming a support surface for attachment thereto of a sheet of abrasive material, wherein a raised portion is provided on the longitudinal edge of a plate, adjacent the hooks.

20. A sander as claimed in claim 19, wherein the height of the raised portion is at least equal to the height of the hooks.

21. A sander as claimed in claim 20, wherein the height of the raised portion is greater than the height of the hooks.

22. A sander having a plurality of sanding plates which are held side by side and are relatively moveable so that longitudinal edges of the plates can adopt a contour of an article to be sanded, in which hooks of a hook and loop fastener are formed on the longitudinal edges of a plurality of the plates, the longitudinal edges forming a support surface for attachment thereto of a sheet of abrasive material, wherein the sander is provided with side plates having a plain edge.

23. A sander as claimed in claim 43, wherein the plain plates are dimensioned so as to have a height equal to or slightly greater than the overall height of a hook bearing plate.

24. A sander having a plurality of sanding plates which are held side by side and are relatively moveable so that longitudinal edges of the plates can adopt a contour of an article to be sanded, in which hooks of a hook and loop fastener are formed on the longitudinal edges of a plurality of the plates, the longitudinal edges forming a support surface for attachment thereto of a sheet of abrasive material, wherein an area of a plate facing an adjacent plate has a recess to reduce the contact area between the plates.

25. A sanding plate for a sander as defined in any one of claims 11 to 24.

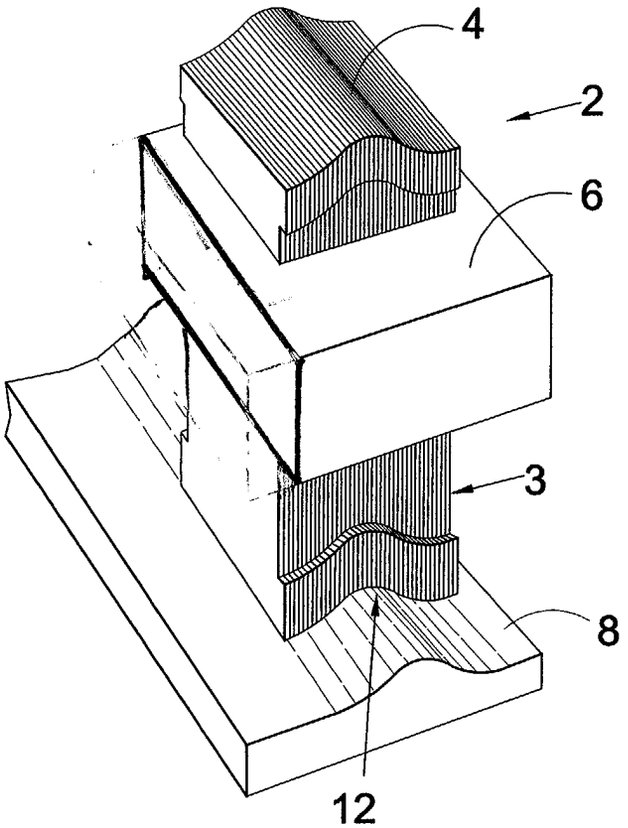


Fig.1

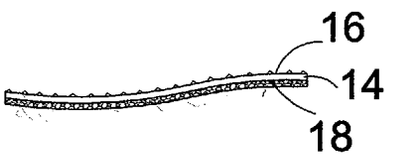
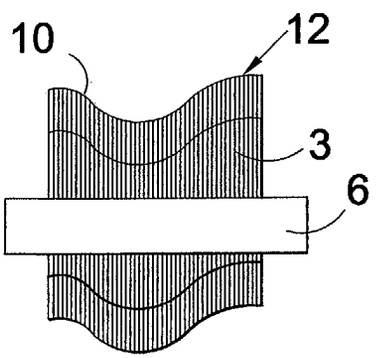


Fig.2



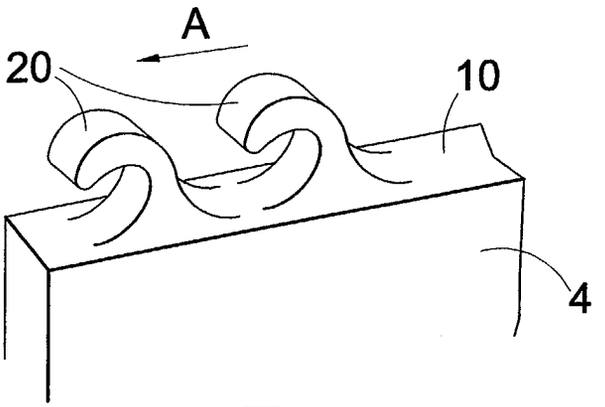


Fig.3

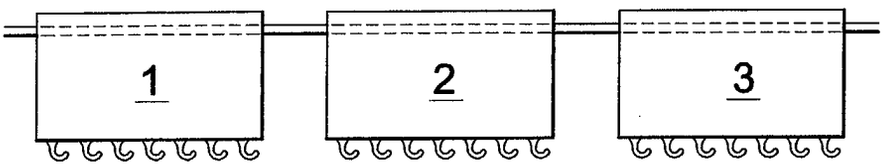


Fig.4

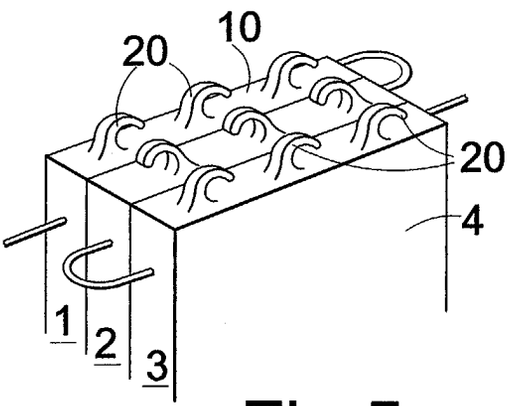


Fig.5

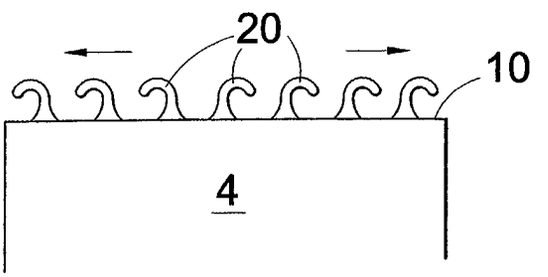


Fig.6

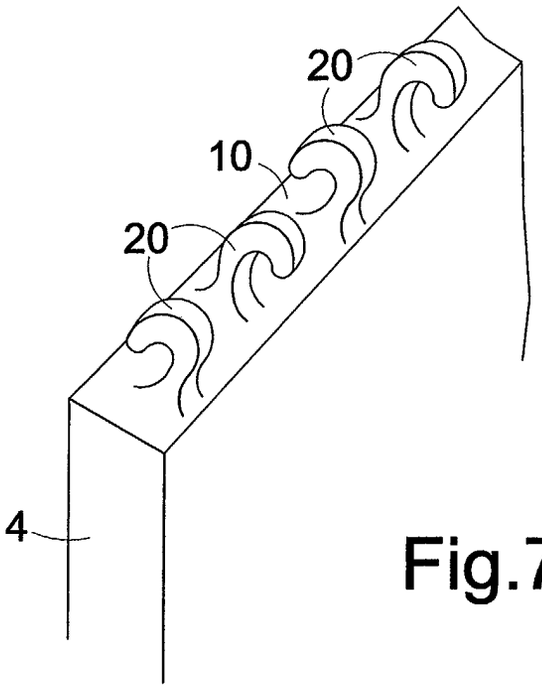


Fig.7

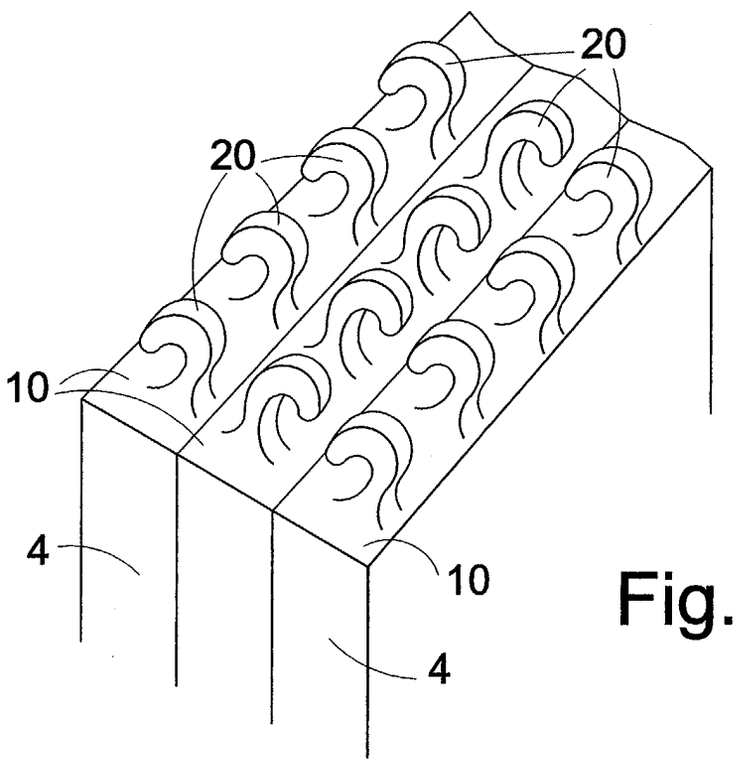


Fig.8

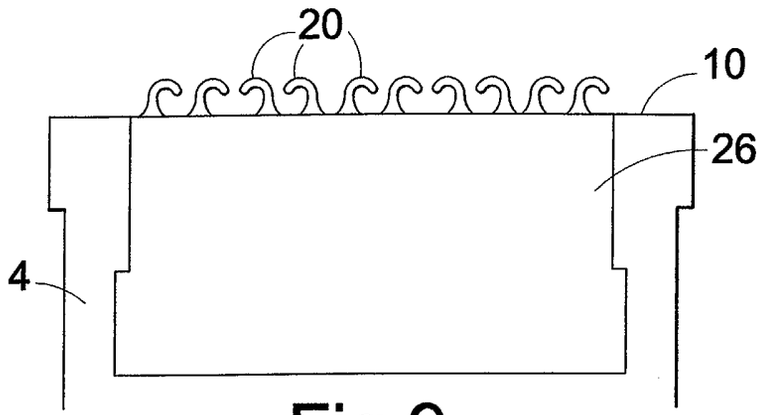


Fig.9

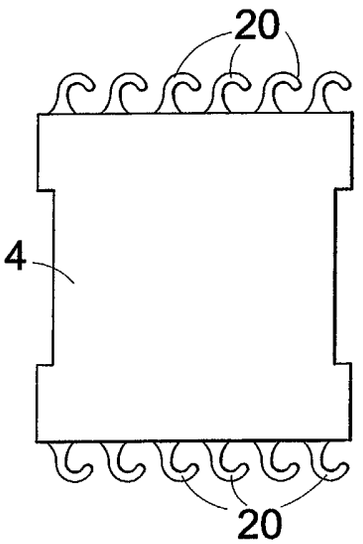


Fig.10a

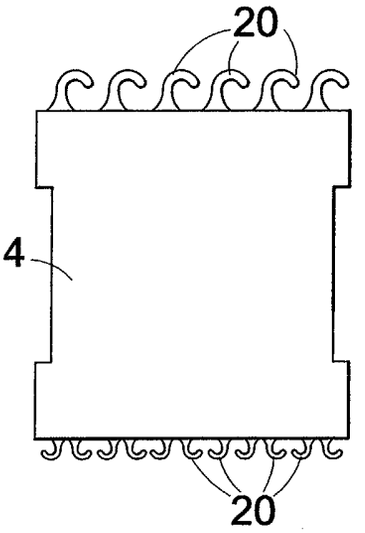


Fig.10b

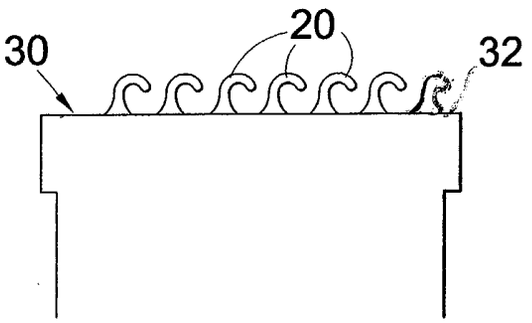


Fig.11

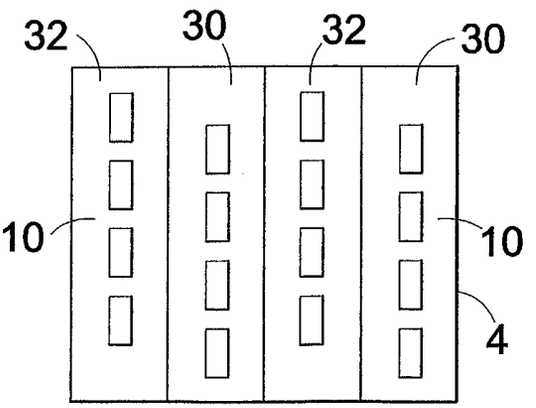


Fig.12

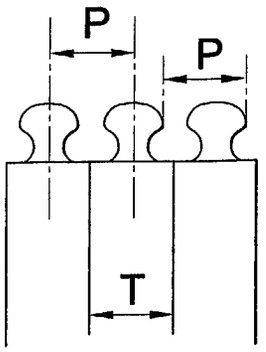


Fig.13a

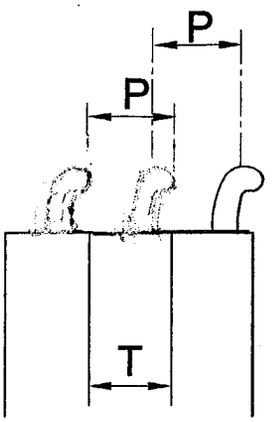


Fig.13b

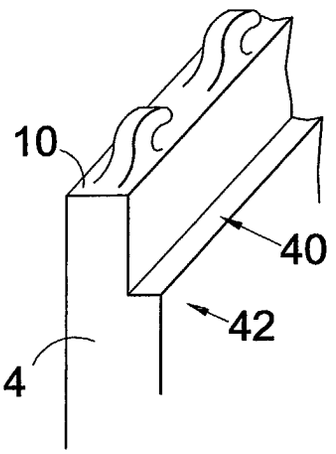


Fig 14a

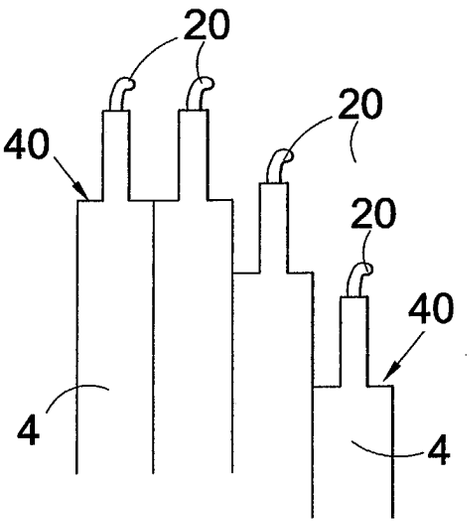


Fig 14b

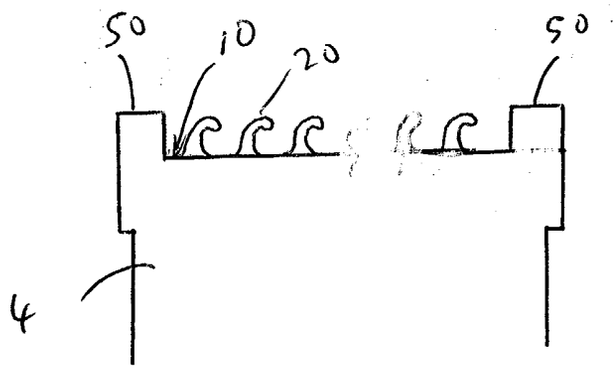


Fig 15

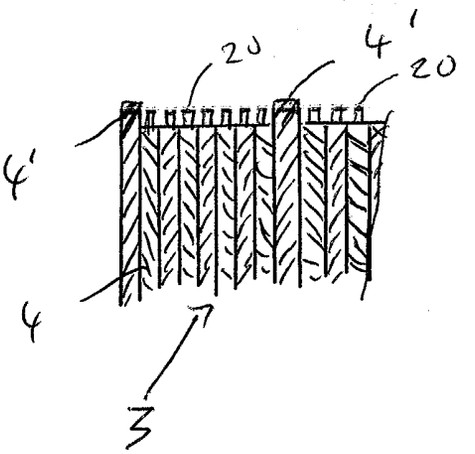


Fig 17

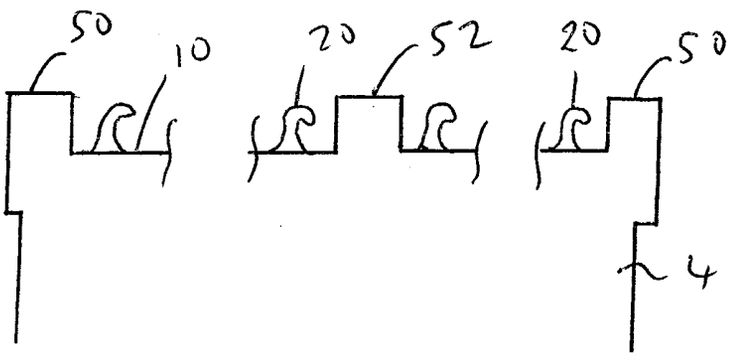


Fig 16

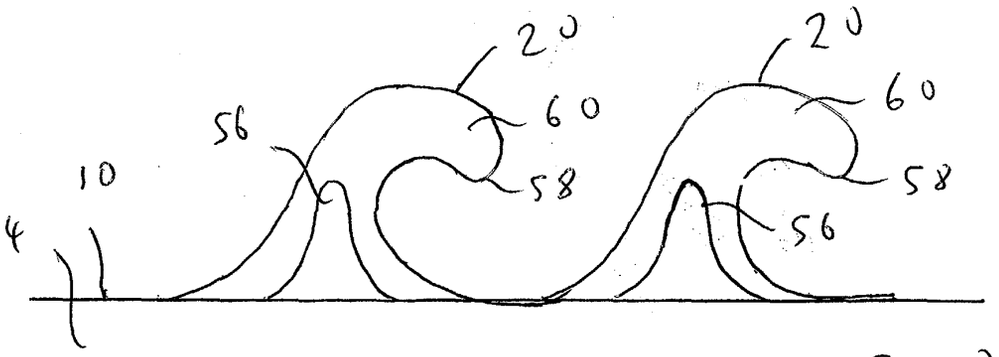


Fig 18

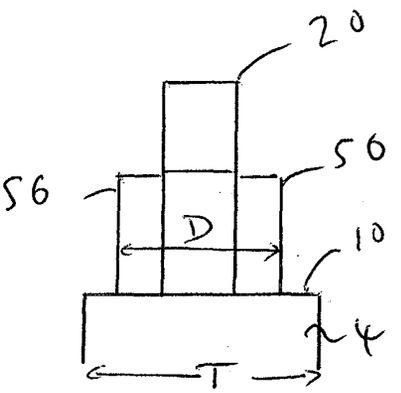


Fig 19

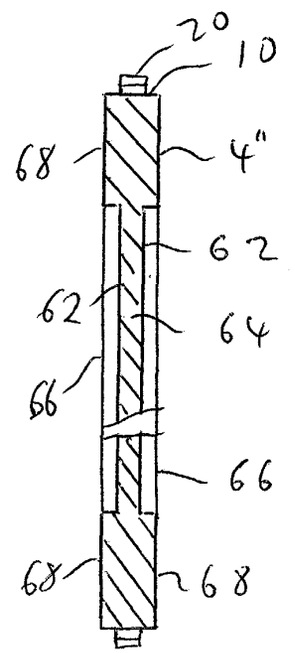


Fig 20

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 04 25 1042

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	WO 02/055267 A (FISCHER JOSEF ; MERLIN TECHNOLOGY GMBH (AT)) 18 July 2002 (2002-07-18) * paragraph '0009!; figure 1 *	1,11-16, 18,19, 22,24	B24B23/04 B24D15/04

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

B24B
B24D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	21 June 2004	Eschbach, D

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

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 04 25 1042

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

21-06-2004

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 02055267 A	18-07-2002	AT 4231 U2	25-04-2001
		WO 02055267 A1	18-07-2002
		DE 20220232 U1	20-03-2003
		EP 1351801 A1	15-10-2003

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82