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(54) **SHAPE CONFORMING SURFACE COVERING**

FORMSCHLÜSSIGE OBERFLÄCHENBEDECKUNG

REVETEMENT DE SURFACE POUVANT EPOUSER LA FORME DE CETTE SURFACE

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Description

[0001] The present invention relates to a shape conforming surface covering useful for covering a boat or yacht deck, said surface covering being made of a flexible plastic or resin material that can be laid in curved formations, like PVC, having a colour and lustre imitating the grain effect of a wooden material like teak, mahogany, pine, Oregon pine, redwood, etc., and which, at the upper surface of the covering, is roughened, for instance sanded or filed, so as to imitate any unique grain effect of wooden material, in which

- the surface covering is made up by plank strips,
- in which the surface covering is formed with caulking strips intermediate each pair of planks, and
- in which the planks are of a colour and lustre imitating the colour and grain structure of a wooden material, and the caulking strips are of a different colour, preferably a dark colour.

[0002] The surface covering according to the invention is formed by strips of a flexible material and is adapted for being laid in slightly curved formation where necessary, and it is generally intended to imitate a type of deck made by teak, mahogany, Oregon pine etc. and which is sometimes formed with narrow seams by a rubber type material, which is normally of a contrasting colour, often black.

[0003] There are in use many surface coverings, many of which are made of straight planks with a version of the present invention easily being usable. Some applications, however, require conformity to curved shapes of the covering base. A typical example is a teak planked deck of a yacht. Such surfaces have to be of a good, non slip character, and have to be at least fairly unaffected by water and have to look attractive. Wood, such as teak has been used for many years, but such wooden material is in many ways impractical and of relatively short lifespan. Curved wooden surfaces necessitate considerable stressing, preparation like adapting of the wooden ribs to any curved surface, fixing by screws, use of sealing compound and regular maintenance, especially scrubbing, oiling and varnishing and the use of pollutant, cleaning chemicals on a regular basis and in large amounts on boat, in particular these chemicals drain into the surrounding water. Curved wooden ribs or planks also involve an inherent spring stress requiring a strong fixation, generally using screws or bolts. Further, the new look of a teak deck is lost within weeks, and the whole deck requires major work or replacement in four to six years on average.

[0004] Ecologically this invention does not require the cutting down of trees and is recyclable. The invention can take the place of tropical hardwoods used throughout the world in many applications.

[0005] The planks and strips preferably are formed by extrusion of a plastic material and with matching locking means along the longitudinal edges thereof, preferably groove and tongue means. The planks likewise can be formed with narrow strips of a different colour imitating seams of the type used in applying wooden deck on a yacht. The colours of the described planks and strips can easily be changed in the manufacturing extrusion process.

[0006] The surface covering as assembled, complete or in sections, is fixed to the recipient surface by means of an adhesive, and to this end the planks and strips preferably are formed with a suitable bottom surface facilitating the fixing of the covering. There is no need for using screws or bolts and associated holes because captive springing is not a problem as is normally the case with wooden planking made to confirm with a curvature.

[0007] The surface covering according to the invention can be subjected to various mechanical and manual abrasive techniques for specifically forming the surface of the plastic material such as sanding under specific conditions to provide a surface effect which is extremely similar to that of grained wood both in texture and appearance.

[0008] The surface covering according to the invention is advantageous in several respects over ordinary wooden coverings of similar types:

> it is completely waterproof; it is easily washable to look new every time, even jet washable what is not possible for ordinary wooden coverings since jet washing is damaging the wood grain; it is extremely non slip, it is extremely stain resistant; it is easy to assemble; it can easily be laid in curvature; it can easily be shaped using heat; there is no need for using nails, screws or bolts for fixing same to the recipient; it is throughout a solid or an integral material which can be sanded repeatedly upon need.

[0009] The brochures "Marinedeck 2000" by STAZO Marine Equipment b.v., "Karndean" by Karndean International, Australia and US-A-4,599,841 disclose a shape conforming surface covering as described in the preamble part of claim 1, made of plank strips of a flexible material, which plank strips are laid side by side and have a recess for caulking material.

[0010] In said prior art the caulking is pressed into the recesses for caulking or material and the excess of the caulk is removed by being cut down to the deck or floor level.

[0011] According to the invention the plank strips are formed with matching male and female means at opposite longitudinal edges for interconnecting same aside of each other thereby forming an assembled surface covering an optional length and width, and the caulking strips are formed with a male connection part and the mating edge of the adjacent plank with a female connection part, or vice versa. Thereby there is no need to press caulking material into recesses of the planks and to remove excess of caulks after the deck or floor has been laid.

[0012] Now the invention is to be described in detail by way of examples and with reference to the accompanying drawings, in which:

Figure 1 is a fragmentary perspective view of two plank sections with an intermediate caulking strip; figure 2 shows a similar assembled surface with caulking strips in place between the planks; figure 3 is a section showing a planking assuming a curved shape, and figure 4 shows an assembled surface in a curved format; figure 5a, b, c, d, e, f, g, h, i, and j show cross section examples of methods that can be used to incorporating caulking strips into the surface, figure 5k (1, 2, 3, 4) shows examples of profiles to complete requirement for edgings, cutting out of shapes etc. to comprise a 'system' or compendium of shapes and profiles; figure 6 illustrates various examples of under-surface cross sections; figure 7 illustrates a belt sanding operation; figure 8 illustrates an alternative texturing technique; figure 9 shows an alternative abrasive tool 14a that can be used to produce the wood grain effect surface; figure 10 illustrates an assembled curved section of a surface in plan view; figure 11 illustrates a way of laying the surface.

[0013] Figure 1 shows a surface covering comprising planks 1 and 2 with an intermediate caulking strip 3 between each pair of planks. In the illustrated case the planks 1, 2 are formed with male connection means 4 along one longitudinal edge and female connection means 5 along the opposite longitudinal edge. The caulking strips are formed with equivalent male and female connection means arranged so that a set of planks 1, 2 and intermediate caulking strips 3 provide an integral unit. Adhesives are used in the joint if necessary. Any number of planks 1, 2 can be connected to each other, both with and without intermediate caulking strips 3. The underside of the plank can be formed with a number of recesses 6, which both facilitate a curving of the plank, as illustrated in figure 3, and form a connection means for glue or a similar material by means of which the surface covering is glue connected to surface covering recipient 7, as illustrated in figure 1.

[0014] Both the planks and the caulking strips can be made with different colours, imitating wood like teak, mahogany, pine, Oregon pine, redwood, etc. The caulking strips preferably are made of another colour than the planks, for instance a black colour imitating the rubber material seams in seamed decks of yachts. It also retains its colour far better than its a natural wood alternative.

[0015] Figure 6 illustrates different types of useful under side surface profiles. The cross sections of the various profiles can also include provision for insertion of rigid or injected foam of lighter material to reduce the overall weight, and/or for insulating purposes. The planks 1 and 2 and the caulking strips 3, including the male and female connection means 4, 5 and under surface recesses 6 can be formed in endless lengths by any known process, like injection press extrusion of press moulding. The planks 1 and 2 preferably are formed by a plastic material which is stiff enough for keeping the planks and caulking together as an integral unit, but which can still be formed in a curvature adapted to the curvature of the recipient 7. Planks can be joined in the longitudinal direction as shown with planks 8 and 9 and a cross extending caulking strip 10 in figure 2. The planks can be formed in a curvature preferably using heat from a hot air gun or a hair dryer 11, as indicated in figure 3. Figure 4 fragmentarily shows a curved surface covering consisting of three planks and intermediate caulking strips.

[0016] The planks and the caulking strips can be arranged for interconnection in several ways. In figures 5a and 5e (not part of the invention) is shown that the planks and the caulking strips have straight side edges and are adapted to be connected by glue or by a welding process; figure 5b, c, e and f illustrate interconnection of the planks and the caulking strips by means of male and female connection means, and figure 5d illustrates an interconnection using overlapping portions of the planks and the caulking strips. Figure 5f illustrates that the planks 12 can be co-extruded with a caulking strip 13, whereby, in the illustrated case, the caulking strip 13 is formed with male connection means 4 and the plank 12 is formed with female connection means 5. Figure 5g shows a co-extruded plank and caulking strip with the male connection means in the caulking strip; figure 5h shows an equivalent co-extrusion in which the caulking strip is formed with female connection means. Figure 5i shows an example of how the upper surface joining profile enables a locking process to take place where the edges are prevented from lifting when the product is assembled, with or without the caulking part of the co-extrusion being under compression upon joining. The male and female connection means are provided in the plank parts, and a caulking strip is applied as a narrow strip on top of a part of the male connection means. Figure 5j shows an embodiment where a section of the plank or of the profiles used in particular applications is filled with foam of a light weight material. Other examples of profiles with or without foam filling to requirements for edgings, cutting out of shapes etc. to comprises a system or compendium or shapes and profiles are shown in figure 5k (1, 2, 3, 4).

[0017] In any of the examples the caulking strip could be a softer material than that of the plank to come under compression, captive or otherwise when the product is assembled

[0018] Figure 6 shows a cross section of an extruded plank, in which there are shown, for illustrative purposes, several types of bottom surface recesses

[0019] For giving the planks and the caulking strips a configuration similar to that of wood, the planks are, according to the invention, sanded, for instance using a belt sander 14 a shown in figure 7. The belt sander is brought to attack the plank, specifically using the curved or roller part of the sanding belt, in an angle of for instance 45°

and is moved along the plank in direction shown with the arrow. A rotary wire brush can also be used in specific conditions to produce a desired effect, in required. At the same time as giving the planks a wooden like surface structure said sanding makes the upper surface of the surface covering an extremely non slip structure. The sanding operation can be repeated a great many times, even in the laid surface covering.

[0020] Figure 8 shows an alternative type of sanding the planks, whereby the belt sander acts at an angle of about 60° to the longitudinal direction of the planks. Said angular strokes across the surface will produce individual effects using a power file 15.

[0021] Figure 9 shows diagrammatically how an abrasive rotary tool can be used to produce the wool grain effect on the upper surface of the plank. By changing certain conditions various effects can be obtained like the meeting angle 16 in figure 7, the speed of rotation in figure 9, the coarseness of grit, the direction of stroke 17, which conditions are of importance to react with the formulation of the plastic surface to produce the unique grain effect.

[0022] Figure 10 shows an example of use of a piece of surface covering or a curved border type plank mounted in contact with another cross extending border plank, like a plank sheet of a yacht.

[0023] The assembled surface covering material 18 is glued at the bottom side thereof and laid as shown in figure 11 by rolling the back of the covering material onto the recipient surface 19. Cutting and trimming of the surface covering is readily achieved, for instance with the use of a sharp knife.

REFERENCE NUMERALS

[0024]

1	plank
2	plank
3	caulking strip
4	male connection means
5	female connection means
6	recess
7	recipient
8	plank
9	plank
10	cross caulking strip
11	hot air gun, hair dryer
12	plank
13	caulking strip
14	belt sander
14a	abrasive tool
15	power file
16	angle
17	direction of stroke
18	covering material
19	recipient surface

Claims

1. A shape conforming surface covering useful for covering a boat or yacht deck, said surface covering being made of a flexible plastic or resin material that can be laid in curved formations, like PVC, having a colour and luster imitating the grain effect of a wooden material like teak, mahogany, pine, Oregon pine, redwood, etc, and which, at the upper surface of the covering, is roughened, for instance sanded or filed, so as to imitate any unique grain effect of wooden material, in which

- the surface covering is made up by plank strips (1,2),
- in which the surface covering is formed with caulking strips (3) intermediate each pair of planks (1,2), and
- in which the planks (1,2) are of a colour and luster imitating the colour and grain structure of a wooden material, and the caulking strips are of a different colour, preferably a dark colour,

characterized in

- **that** the plank strips are formed with matching male and female means at opposite longitudinal edges for interconnecting same aside of each other thereby forming, with caulking strips between each pair of planks, an assembled surface covering an optional length and width, and
- **that** the caulking strips (3) are formed with a male connection part and the mating edge of the adjacent plank with a female connection part, or vice versa.

2. A surface covering according to any of the preceding claims, **characterized in that** the planks (1, 2) and the caulking strips are formed with mating interconnection means, preferably a male connection means (4) along one longitudinal edge and a female connection means (5) along the opposite longitudinal edge.

3. A surface covering according to claim 1, **characterised in that** the roughening of the upper surface of the plank (1, 2) is made by sanding, especially using the curved part or roll part of a sanding belt, or a rotary wire brush, thereby imitating the grain effect of a wooden material.

4. A surface covering according to claim 1, **characterized in that** the upper surface of the planks (1, 2) is sanded in the longitudinal direction of the surface covering material such as to roughen the surface to become non-slippery and to imitate the appearance of a wooden material.

5. A surface covering according to claims 3 or 4, **characterized in that** the sanding is made as discrete sanding portions extending at an oblique angle to the longitudinal direction of the plank (1,2).

6. A surface covering according to claim 1, **characterized in that** the planks have required additives including UV protection, fire restrain substances, natural or synthetic fibres.

7. A surface covering according to any of the preceding claims, **characterized in that** the planks are formed with streaks or lines of colour included in the extrusion to further imitate the grain in wood.

8. A surface covering according to any of the preceding claims, **characterized in that** the planks (1, 2) are formed with longitudinal slots (6) at the underside thereof for facilitating forming of curved coverings and for acting as a base for a glue or adhesive material by means of which the surface covering is mounted on a surface recipient (7).

9. A surface covering according to any of the preceding claims, **characterized in that** the planks (1,2) arc partly filled with a rigid material.

10. A surface covering according to any of the preceding claims, **characterized in that** the planks (1.2) are partly filled, from the underside thereof, with a light weight material like a foam material.

Patentansprüche

1. Formanpassbare Flächenabdeckung, verwendbar zur Abdeckung eines Boot- oder Yachtdecks, wobei die Flächenabdeckung aus flexiblem Kunststoff- oder Harzmaterial hergestellt ist, das in gebogenen Formen, wie PVC, gelegt werden kann und Farbe und Glanz aufweist, die den Maserungseffekt von hölzernem Material nachahmen, wie Teakholz, Mahagoni, Kiefer, Oregonkiefer, amerikanisches Rotholz etc., und die an der Oberfläche der Abdeckung angeraut ist, beispielsweise geschmirgelt oder gefeilt, um so dem jeden hölzernen Material eigenen Maserungseffekt nachzuahmen, wobei

- die Flächenabdeckung aus Plankenstreifen (1,2) hergestellt ist,
- die Flächenabdeckung mit abdichtenden Streifen (3) zwischen jedem Paar von Planken (1,2) gebildet ist, und
- die Planken (1,2) eine Farbe und einen Glanz haben, die Maserungsstruktur von hölzernem Material nachahmen, und wobei die abdichtenden Streifen eine andere Farbe, vorzugsweise eine dunkle Farbe, aufweisen,

dadurch gekennzeichnet, dass

- die Plankenstreifen mit zusammenpassenden Nut- und Federmitteln an gegenüberliegenden Längskanten ausgebildet sind, zum Zusammenfügen derselben Seite an Seite, um **dadurch** mit den abdichtenden Streifen zwischen jedem Paar von Planken eine zusammengesetzte Fläche zu bilden, die eine beliebige Länge und Breite abdeckt, und
- die dichtenden Streifen (3) mit einem Feder-Verbindungsteil ausgebildet sind und die zugehörige Verbindungskante der angrenzenden Planke mit einem Nut-Verbindungsteil ausgebildet ist, oder umgekehrt.

2. Flächenabdeckung nach einem der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** die Planken (1,2) und die abdichtenden Streifen mit zusammenpassenden Verbindungsmitteln ausgebildet sind, vorzugsweise Feder-Verbindungsteil (4) entlang einer Längskante und Nut-Verbindungsteil (5) entlang der gegenüberliegenden Längskante.

3. Flächenabdeckung nach Anspruch 1, **dadurch gekennzeichnet, dass** das Aufrauen der Oberfläche der Planke (1,2) durch Schmirgeln erfolgt, vorzugsweise unter Verwendung des gebogenen Teils oder Rollenteils eines Schmirgelbandes oder einer rotierenden Drahtbürste, wobei **dadurch** der Maserungseffekt von hölzernem Material nachgeahmt wird.

4. Flächenabdeclcung nach Anspruch 1, **dadurch gekennzeichnet, dass** die Oberfläche der Planken (1,2) in Längsrichtung des flächenabdeckenden Materials geschmirgelt ist, um so die Fläche anzurauen, so dass sie rutschtfest wird und, um das Erscheinungsbild von hölzernem Material nachzuahmen.

5. Flächenabdeckung nach Anspruch 3 oder 4, **dadurch gekennzeichnet, dass** das Schtnirgeln in diskreten Schmirgelabschnitten erfolgt, die sich in einem schrägen Winkel zur Längsrichtung der Planke (1,2) erstrekken.

6. Flächenabdeckung nach Anspruch 1, **dadurch gekennzeichnet, dass** die Planken notwendige Zusatzstoffe einschließlich UV-Schutz, feuerhemmende Substanzen, natürliche oder synthetische Fasern umfassen.

7. Flächenabdeckung nach einem der vorstehenden Ansprüche **dadurch gekennzeichnet, dass** Farbstreifen oder Farblinien beim Strangpressen in die Planken eingearbeitet werden, um weiter die Maserung von Holz nachzuahmen.

8. Flächenabdeckung nach einem der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** die Planken (1,2) mit Längsschlitzen (6) an der Unterseite ausgebildet sind, um die Bildung von gebogenen Abdeckungen zu fördern und, um als Basis für Klebstoff oder haftendes Material zu dienen, mittels dessen die Flächenabdeckung an einem Flächenempfänger (7) befestigt wird.

9. Flächenabdeckung nach einem der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** die Planken (1,2) teilweise mit steifem Material gefüllt sind.

10. Flächenabdeckung nach einem der vorstehenden Ansprüche, **dadurch gekennzeichnet, dass** die Planken (1,2) teilweise von deren Unterseite mit leichtgewichtigem Material, wie Schaummaterial, gefüllt sind.

Revendications

1. Revêtement de surface se conformant à une forme, utile pour recouvrir un pont de bateau ou de yacht, ledit revêtement de surface étant composé d'un matériau plastique ou résineux souple qui peut être déposé dans des formations courbes, comme du PVC, présentant une couleur et une texture imitant l'effet de grain d'un matériau en bois comme le teck, l'acajou, le pin, le pin de l'Orégon, le séquoia, etc. et qui est, au niveau de la surface supérieure du revêtement, rugosifié, par ponçage ou dépôt par exemple, afin d'imiter un effet de grain unique de matériau en bois, dans lequel

- le revêtement de surface est composé de bandes en planches (1, 2),
- dans lequel le revêtement de surface est formé de bandes de calfeutrement (3) entre chaque paire de planches (1, 2), et
- dans lequel les planches (1, 2) sont d'une couleur et d'une texture imitant la couleur et la structure de grain d'un matériau en bois, et les bandes de calfeutrement sont de couleur différente, de préférence une couleur foncée,

caractérisé en ce que

- les bandes en planches sont formées avec des moyens mâle et femelle assortis sur des bords longitudinaux opposés pour les raccorder mutuellement les unes à côté des autres, formant ainsi, avec des bandes de calfeutrement entre chaque paire de planches, une surface assemblée recouvrant des longueur et largeur facultatives, et **en ce que**
- les bandes de calfeutrement (3) sont formées d'une partie de raccordement mâle et du bord conjugué de la planche adjacente avec une partie de raccordement femelle, ou vice-versa.

2. Revêtement de surface selon la revendication 1, **caractérisé en ce que** les planches (1, 2) et les bandes de calfeutrement sont formées de moyens d'interconnexion correspondants, de préférence un moyen de raccordement mâle (4) le long d'un bord longitudinal et un moyen de raccordement femelle (5) le long du bord longitudinal opposé.

3. Revêtement de surface selon la revendication 1, **caractérisé en ce que** la rugosité de la surface supérieure de la planche (1, 2) est réalisée par ponçage, notamment à l'aide de la partie courbe ou de la partie enroulée d'une courroie abrasive, ou d'une brosse métallique rotative, imitant ainsi l'effet de grain d'un matériau en bois.

4. Revêtement de surface selon la revendication 1, **caractérisé en ce que** la surface supérieure des planches (1, 2) est poncée dans le sens longitudinal du matériau de revêtement de surface afin de rugosifier la surface pour qu'elle ne soit pas glissante et d'imiter l'aspect d'un matériau en bois.

5. Revêtement de surface selon la revendication 3 ou 4, **caractérisé en ce que** le ponçage est réalisé sous forme de parties de ponçage distinctes s'étendant à un angle oblique par rapport au sens longitudinal de la planche (1, 2).

6. Revêtement de surface selon la revendication 1, **caractérisé en ce que** les planches ont nécessité des additifs incluant une protection UV, des substances ignifuges, des fibres naturelles ou synthétiques.

7. Revêtement de surface selon une quelconque des revendications précédentes, **caractérisé en ce que** les planches sont formées avec des stries ou lignes de couleur comprises dans l'extrusion afin d'imiter davantage le grain du bois.

8. Revêtement de surface selon une quelconque des revendications précédentes, **caractérisé en ce que** les planches (1, 2) sont formées avec des fentes longitudinales (6) au verso de celles-ci pour faciliter la formation de revêtements courbes et pour servir de base pour une colle ou un matériau adhésif grâce auquel le revêtement de surface est installé sur une surface de destination (7).

9. Revêtement de surface selon une quelconque des revendications précédentes, **caractérisé en ce que** les planches (1, 2) sont en partie remplies avec un matériau rigide.

10. Revêtement de surface selon l'une quelconque des revendications précédentes, **caractérisé en ce que** les planches (1, 2) sont en partie remplies, à partir du verso de celles-ci, avec un matériau léger, comme un matériau en mousse.

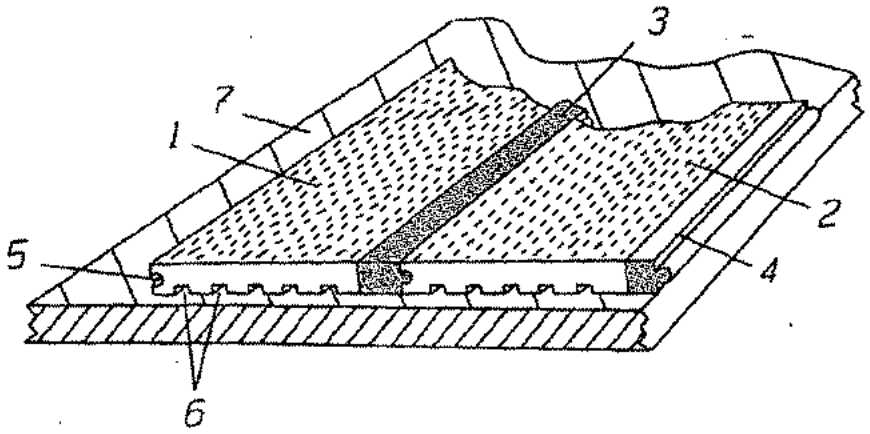

Fig. 1

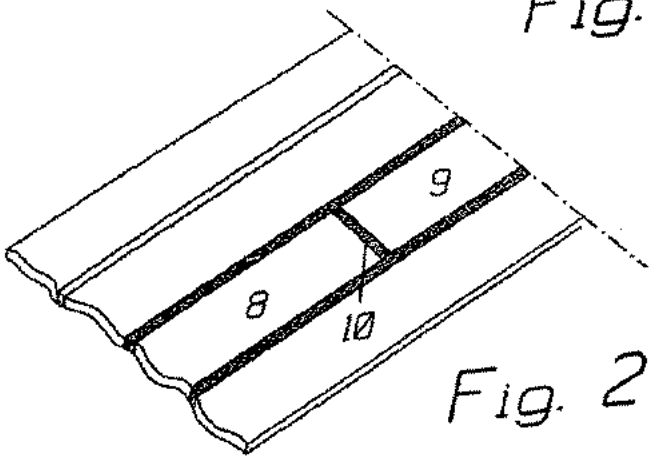

Fig. 2

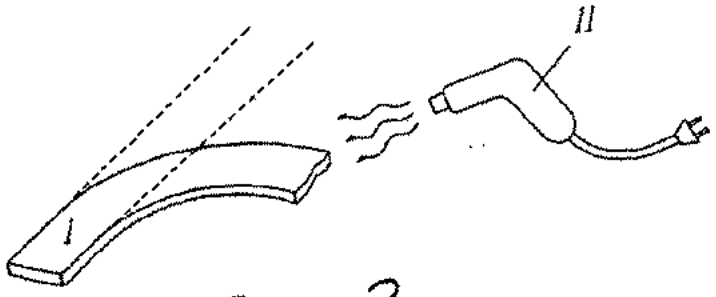

Fig. 3

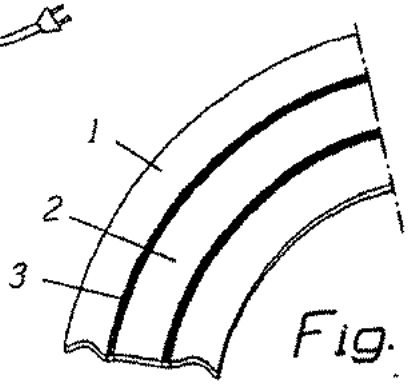

Fig. 4

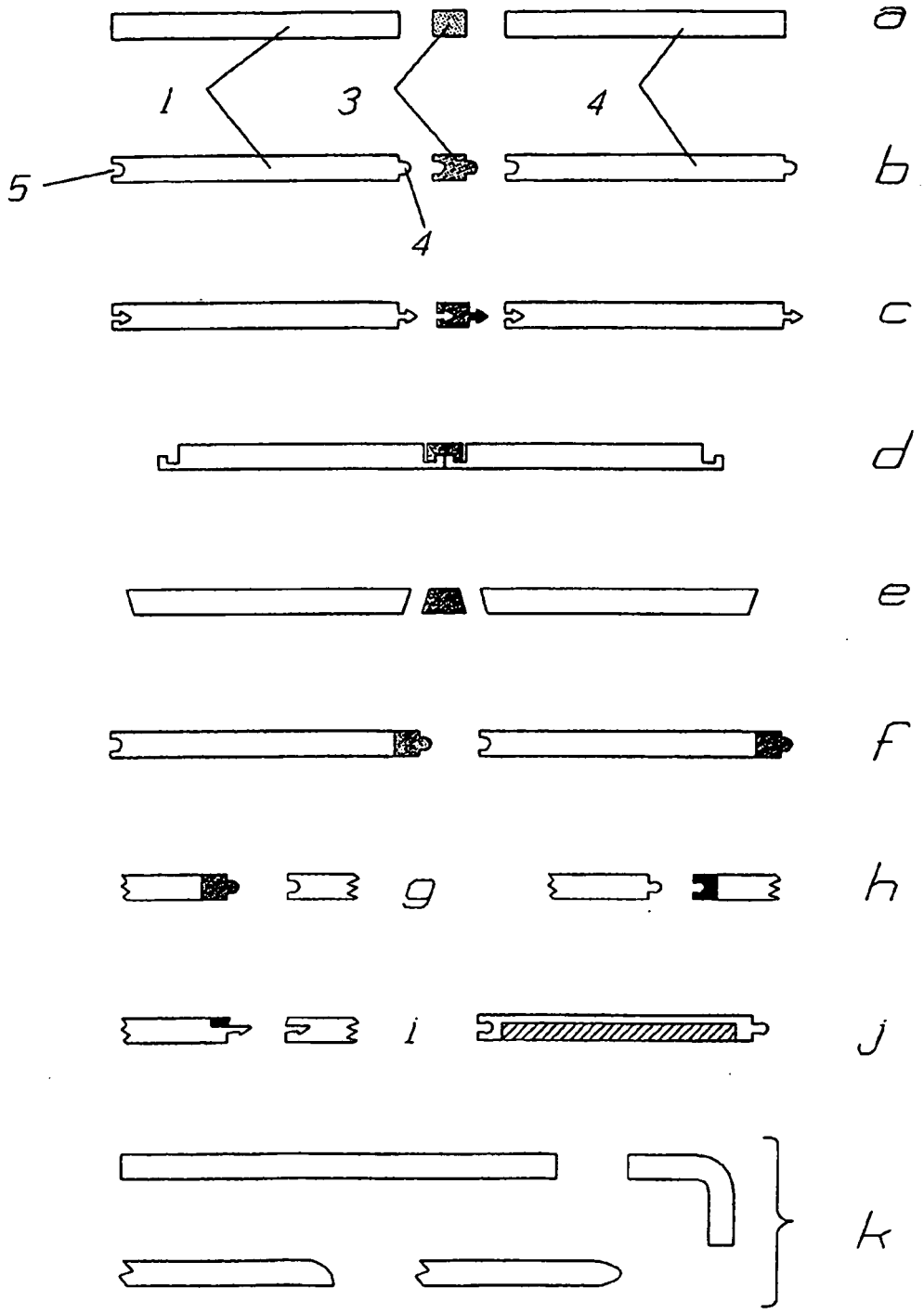

Fig. 5

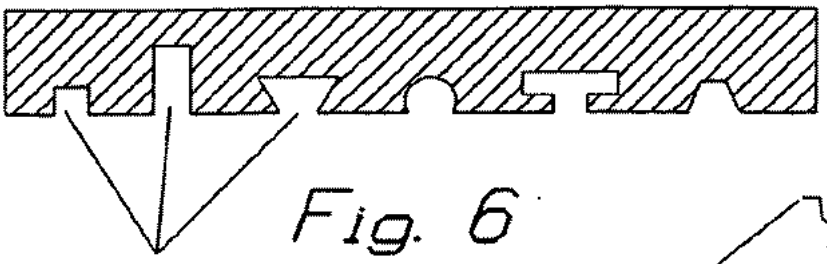

Fig. 6

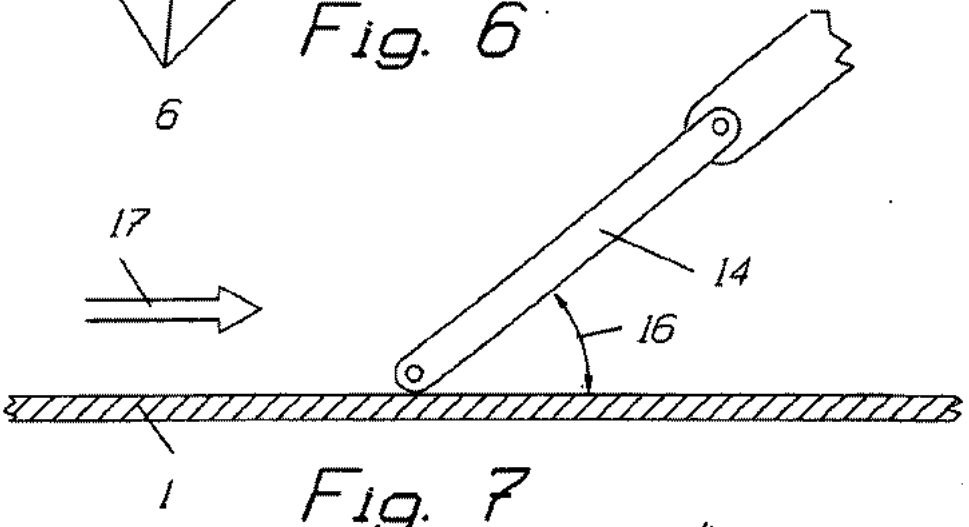

Fig. 7

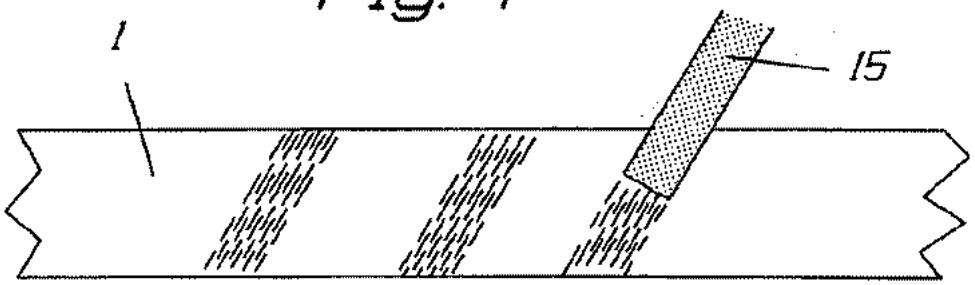

Fig. 8

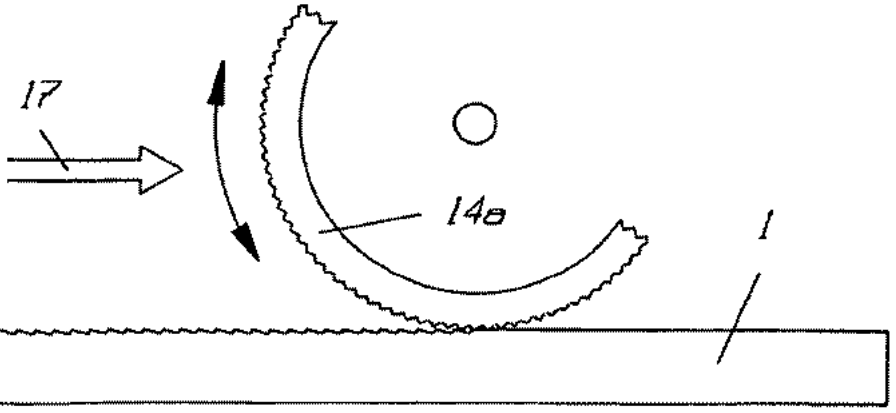

Fig. 9

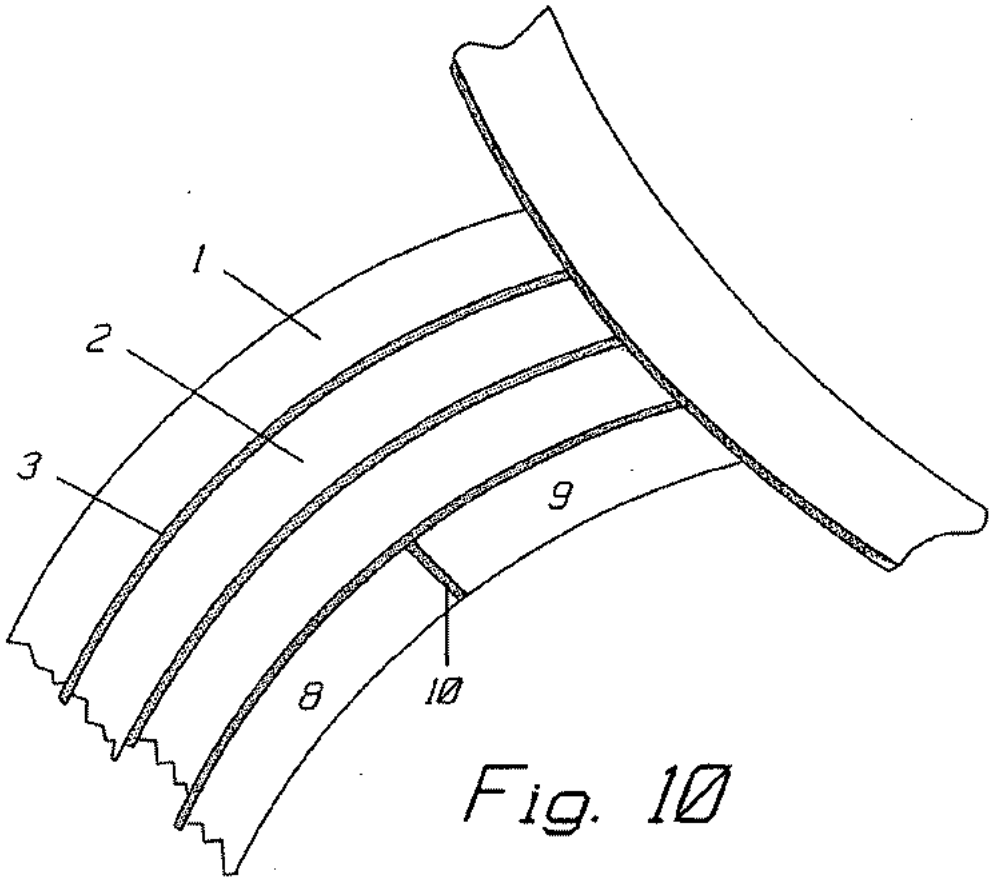

Fig. 10

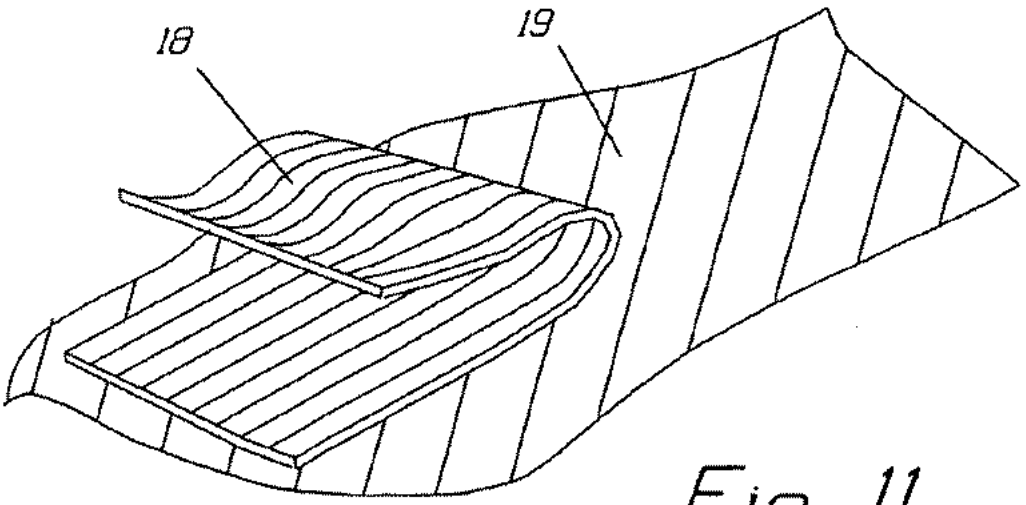

Fig. 11

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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