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(71) Applicant: **Orama Fabrications Ltd**
Somercotes, Derbyshire DE55 4RF (GB)

(72) Inventors:
- **Trevor, Bruce Wyndham**
Beeston, Nottingham (GB)
- **Crabtree, Michael Anthony**
Overlane Park, Belper, DE5 0EX (GB)

(74) Representative: **Singleton, Jeffrey et al**
Eric Potter Clarkson
St. Mary's Court
St. Mary's Gate
Nottingham NG1 1LE (GB)

(54) Work surfaces

(57) A method of manufacturing a work surface having at least one postformed edge, the method comprising the steps of:

i) adhering a laminate to a core to form the actual work surface;

ii) forming a groove in the underside of the core:

iii) dispensing a curable synthetic material into the groove;

iv) adhering the laminate around the postformed edge and onto the underside of the core so that it at least partially overlaps the groove;

v) curing the synthetic material in the groove; and

vi) forming a drip groove in the cured synthetic material.

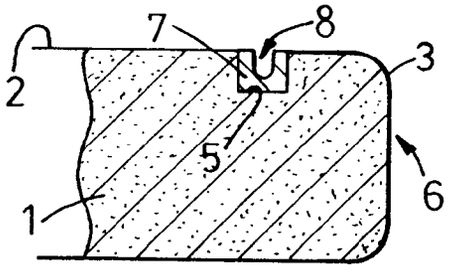

Fig. 10

EP 0 707 813 A2

Description

This invention relates to work surfaces and a method of producing such surfaces.

The invention will be discussed primarily in relation to kitchen work tops for convenience but it is to be understood that the invention is much more broadly applicable to work surfaces in general for domestic or industrial use. For example, the invention is applicable to work surfaces in bathrooms, cloakrooms and utility rooms.

Many kitchen work tops still have a straight (vertical) front edge to which typically is applied a strip of laminated material complementary to that applied to the core material (typically chipboard) and providing the actual work surface. Other work tops have so-called "postformed" front edges providing a curvilinear front edge around which the laminate forming the work surface is taken to provide a continuous surface. With both of these work tops, problems will eventually arise in that liquids flow to the junction between the edging or surface laminate and the core material and get under the laminate which then begins to peel.

For convenience, the surface material will be referred to as the "laminate" throughout the specification and claims, but it is to be understood that this material can be of any desired form and not necessarily a laminated material.

This problem has been overcome to a large extent by providing a drip groove on the underside of the work top. However, in time, it is still known for the laminate to peel as a result of entry of moisture at the junction between the laminate and the drip groove.

It is further known, as evidenced by DE-A-33 08 947, to fill the known drip groove with a synthetic plastics material which may be preformed or sprayed into the groove during the manufacturing process, the material then being allowed to cure. Thus, with either of these two approaches, the drip groove infill is fully cured before the surface laminate is applied with the result that any bond between the laminate and infill can be suspect, leading to ingress of moisture and laminate peeling.

EP-A-0,234,192 discloses an improvement over this previous process by way of adhering the laminate to the core material so that it at least partially overlaps the drip groove, and then filling the drip groove with the synthetic plastics material which then cures in contact with the underside of the laminate.

According to one aspect of the invention there is provided a method of manufacturing a work surface having at least one postformed edge, the method comprising the steps of :

i) adhering a laminate to a core to form the actual work surface;
ii) forming a groove in the underside of the core;
iii) dispensing a curable synthetic material into the groove;
iv) subsequently adhering the laminate around the postformed edge and onto the underside of the core so that it at least partially overlaps the groove;
v) curing the synthetic material in the groove; and
vi) forming a drip groove in the cured synthetic material.

The laminate may be adhered to the postformed edge of the core prior to the dispensing step, the laminate then being adhered to the underside of the core and at least partially overlapping the core groove after the dispensing step.

The curing step may be effected by subjecting the synthetic material to a stream of gas, preferably air, and preferably at ambient temperature or below.

According to another aspect of the invention there is provided a method of manufacturing a work surface having at least one postformed edge, the method comprising the steps of :

i) adhering a laminate to a core to form the actual work surface;
ii) forming a groove in the core material at the front edge of the core and on the underside of the core:
iii) adhering the laminate around the postformed edge and onto the underside of the core so that it at least partially overlaps the groove;
iv) dispensing a curable synthetic material into the groove;
v) curing the synthetic material in the groove; and
vi) forming a drip groove in the cured synthetic material.

The curing step may be effected as before by subjecting the synthetic material to a stream of gas, preferably air, and preferably at ambient temperature or below.

The step of forming a groove on the underside of the core may be performed at the corner of the undersurface and postformed edge, or inset from that corner, depending on the precise nature of the postformed edge. For example, if the postformed edge has a curved corner both at the transition with the face of the work surface and the transition with the underside of the work surface (i.e. a 180° profile), then the groove will be set back from the front edge. However, if the postformed edge has only a curved corner at the transition with the face of the worksurface (i.e. a 90° profile) then the groove can be positioned at the corner between the postformed edge and the underside of the worksurface.

According to each aspect of the present invention the method is preferably carried out with the core underside uppermost.

In accordance with any aspect of the invention, the method may comprise the further step of adhering a backing material on the underside of the core. The backing material may be a foil, for example a melamine-resin-impregnated kraft paper. Alternatively, the backing material may be a laminate.

In accordance with any aspect of the invention, the

laminate may be a melamine and/or phenolic resin based laminate.

In its simple form, the invention is considered to reside in the method defined in Claim 11 hereof, optionally including the further step of Claim 12 hereof.

Work surfaces constructed in accordance with the present invention will now be described in greater detail, by way of example, with reference to the accompanying drawings, in which :-

Figures 1-10 illustrate diagrammatically the manufacturing steps giving rise to a first embodiment of the invention, and

Figures 11-20 illustrate diagrammatically the manufacturing steps giving rise to a second embodiment of the invention.

Referring first to Figures 1-10, these illustrate the manufacturing steps to produce a 180° profile worksurface, which steps comprise :-

1. Taking a sheet of chipboard (or other material) to form the core 1 of the worksurface and, using a double-end tenoner machine, edge profiling and sizing the core (Figure 1). The core 1 is shown reversed, i.e. with its final underside, uppermost.

2. Coating the uppermost surface of the core 1 with adhesive and, using a foil laminator machine, laying a foil 2 on the uppermost surface which provides the final underside of the worksurface with a protective, moisture-resistant coating (Figure 2). The foil 2 may be a melamine-resin-impregnated kraft paper foil or a laminate such as used, for example, in Step 3 below.

3. Coating the underside of the core 1 with adhesive and laying the core onto a laminated material (laminate) 3, and pressing at 65°C for 45 seconds (Figure 3). The laminate 3 may be a melamine and/or phenolic resin based synthetic plastics laminate.

4. Using a postformer machine, fielding the uppermost surface of the core 1 to generate a rebate 4, typically 25 mm wide and 0.8 mm deep (Figure 4).

5. Using the postformer machine, cutting a groove 5 along the length of the core 1, applying adhesive to the edge 6 of the core and to the back of that part of the laminate 3 which extends beyond the core, and applying hot air to the adhesive coating (Figure 5).

6. Heating the laminate 3 to its formability temperature (150°C in the present case) and, using the postformer, taking the laminate through 90°, thus adhering it to the edge of the core 1 (Figure 6). It should be noted that the formability temperature will depend on the following factors:

the radius of the profile;
the type of laminate being used;
the thickness of the laminate; and
the speed at which the laminate is being run through the machine.

7. Dispensing a curable synthetic material 7, for example a polyurethane, into the groove 5 and heating the remaining unadhered part of the laminate 3 to its formability temperature and postforming it through a further 90° to complete the postformed edge of the work surface, with the laminate now partially overlapping the groove 5 and in so doing, pressing into the resulting bead 7 (Figure 7). This gives the basis of an excellent bond between the bead 7 and laminate 3. The curable synthetic material may be a two-part catalysed polyurethane resin or similar.

8. Fast-curing the bead 7 by blowing air onto the bead, preferably compressed air which is at or below ambient temperature (Figure 8).

9. Forming a generally semi-circular drip groove 8 in the cured bead 7 to a depth of approximately 3 mm by cutting through the laminate 6, simultaneously making the bead flush with the uppermost surface of the core (Figure 9).

10. Using compressed air, blowing out dust and residue from the drip groove 8 (Figure 10).

Turning now to Figures 11 to 20, this second embodiment is manufactured essentially in the same way as the first embodiment described above using, for example, the same materials, but with certain differences to accommodate the 90° profile nature of this embodiment, as will be explained.

The core 1 is formed with a 90° profile edge using a double-end tenoner machine as before (Figure 11) and a foil laminator machine used to adhere a pre-impregnated paper foil 2 to the uppermost surface of the core 1 which, again, will form the underside of the finished product. In this embodiment, the foil 2 overlaps the edge of the core 1 (Figure 2). The laminate 3 is applied to the underside of the core 1 as in step 3 above (figure 13) and then the foil 2 is trimmed flush with the edge of the core 1 (Figure 14) using a postformer. The postformer is again used to provide a groove 5 at the corner between the edge of the core 1 and its presently uppermost surface, as opposed to be inset from this corner as in the first embodiment (Figure 15). This is because the laminate is not taken around this corner into the uppermost surface of the core 1 in a 90° profile worksurface. Furthermore, the groove is triangular in end view, as opposed to U-shaped as in the first embodiment, because it must not break into the edge of the core 1. The groove is 8 mm wide and 4 mm deep at its maximum depth.

The remaining steps depicted in Figure 16 to 20 are similar to steps 6 to 10, respectively of the first embodiment and will not be repeated here.

It is seen as important that the groove 5 in the core 1 is entirely open prior to the dispensing step so that it

can be overfilled, to a small extent, with curable material in order to ensure contact between the material and the subsequently overlaid laminate 3. This provides an excellent bond between the two components which is essential if ingress of moisture is to be prevented, resulting in peeling of the laminate 3.

Claims

1. A method of manufacturing a work surface having at least one postformed edge, the method comprising the steps of :

   i) adhering a laminate to a core to form the actual work surface;
   ii) forming a groove in the underside of the core:
   iii) dispensing a curable synthetic material into the groove;
   iv) subsequently adhering the laminate around the postformed edge and onto the underside of the core so that it at least partially overlaps the groove;
   v) curing the synthetic material in the groove; and
   vi) forming a drip groove in the cured synthetic material.

2. A method according to claim 1, wherein the laminate is adhered to the postformed edge of the core prior to the dispensing step, the laminate then being adhered to the underside of the core and at least partially overlapping the core groove after the dispensing step.

3. A method according to claim 1 or 2, wherein the groove is inset from the corner of the undersurface and postformed edge.

4. A method of manufacturing a work surface having at least one postformed edge, the method comprising the steps of :

   i) adhering a laminate to a core to form the actual work surface;
   ii) forming a groove in the core material at the front edge of the core and on the underside of the core:
   iii) adhering the laminate around the postformed edge and onto the underside of the core so that it at least partially overlaps the groove;
   iv) dispensing a curable synthetic material into the groove;
   v) curing the synthetic material in the groove; and
   vi) forming a drip groove in the cured synthetic material.

5. A method according to any of the preceding claims, wherein the curing step is effected by subjecting the synthetic material to a stream of gas.

6. A method according to claim 5, wherein the gas is air.

7. A method according to claim 5 or 6, wherein the gas is at ambient temperature or below.

8. A method according to any of the preceding claims and comprising the further step of adhering a backing material on the underside of the core.

9. A method according to claim 8, wherein the backing material is selected from a foil, a melamine-resin-impregnated kraft paper, and a laminate.

10. A method according to any of the preceding claims, wherein the laminate is a melamine and/or phenolic resin based laminate.

11. A method of manufacturing a work surface having at least one postformed edge, the method comprising the step of:

    i) adhering a laminate to a core to form the actual work surface;
    ii) forming a groove in the underside of the core;
    iii) dispensing a curable material into the groove;
    iv) subsequently conforming the laminate to the postformed edge and the underside of the core so that part of the laminate projects into the region of the curable material; and
    v) curing the curable material.

12. A method according to claim 11 including the step of forming a drip groove in the cured material.

13. A work surface as produced by the method of any of the preceding claims.

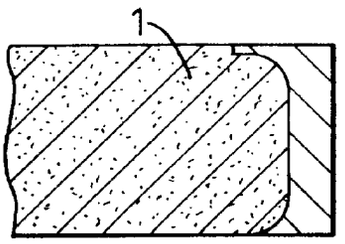

Fig. 1

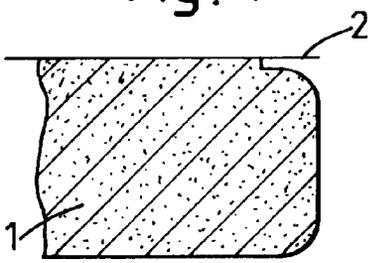

Fig. 2

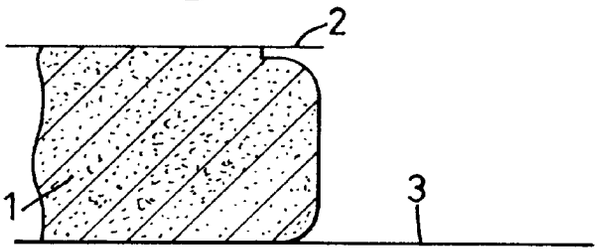

Fig. 3

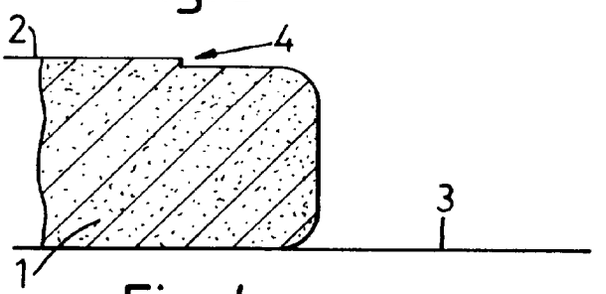

Fig. 4

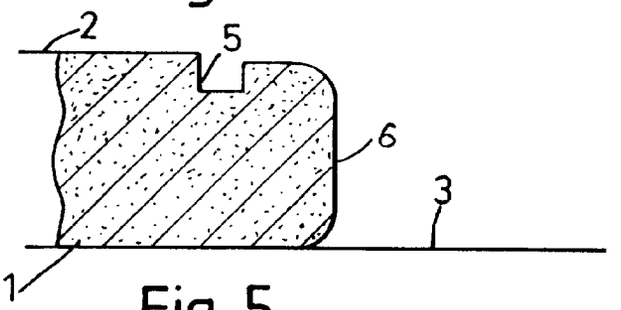

Fig. 5

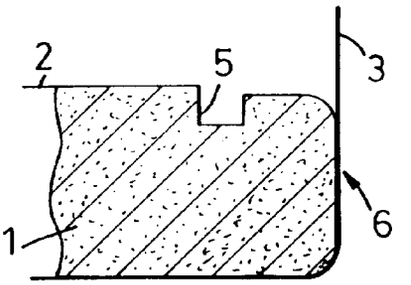

Fig. 6

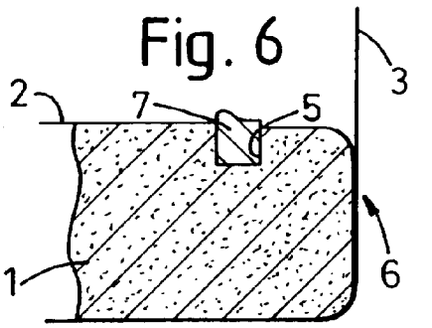

Fig. 7

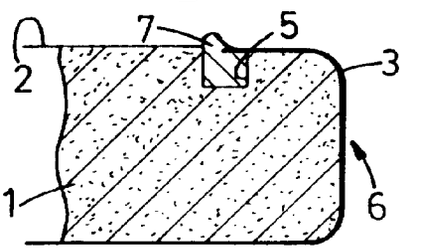

Fig. 8

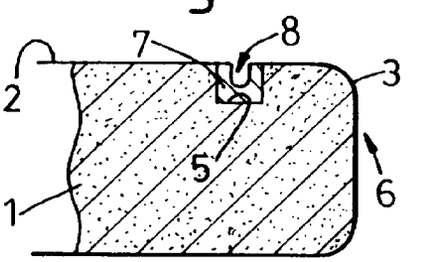

Fig. 9

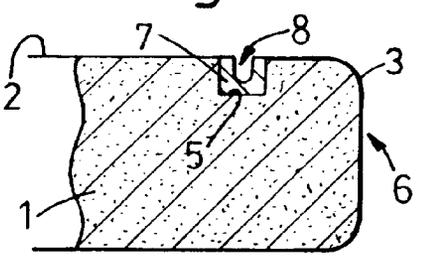

Fig. 10

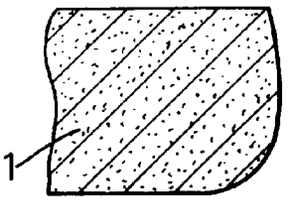

Fig. 11

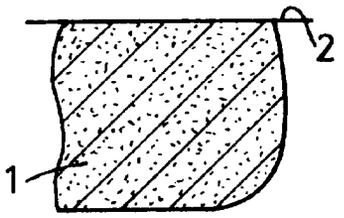

Fig. 12

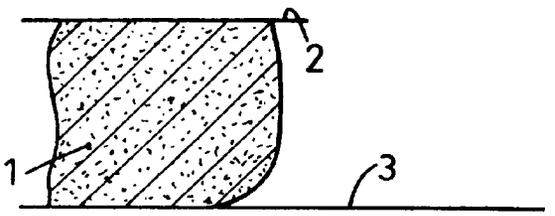

Fig. 13

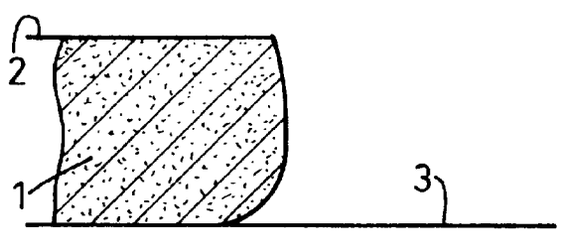

Fig. 14

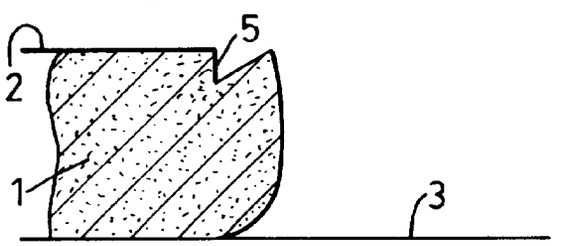

Fig. 15

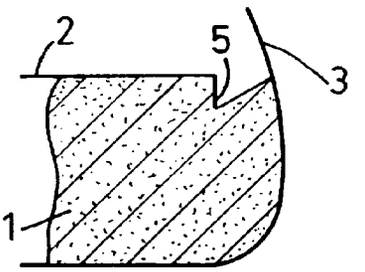

Fig. 16

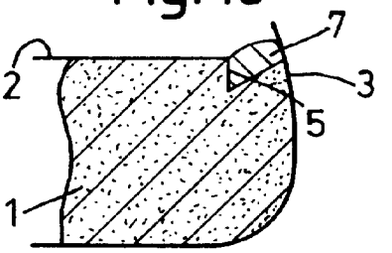

Fig. 17

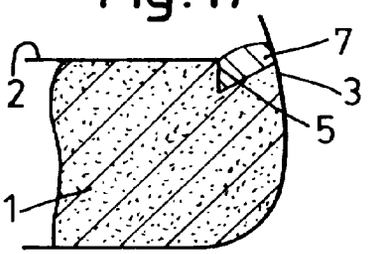

Fig. 18

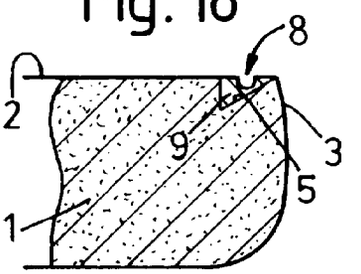

Fig. 19

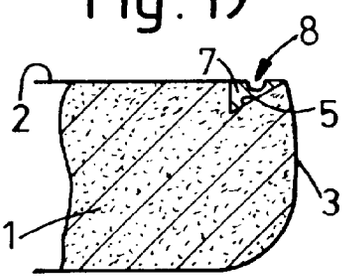

Fig. 20