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

(11) Publication number: **0 122 720**
A1

(12) # EUROPEAN PATENT APPLICATION

(21) Application number: **84301755.9**

(22) Date of filing: **15.03.84**

(51) Int. Cl.³: **E 04 F 19/02**
E 04 F 19/04

(30) Priority: **15.03.83 GB 8307163**

(43) Date of publication of application:
24.10.84 Bulletin 84/43

(84) Designated Contracting States:
BE DE FR IT NL SE

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(54) **Sealing member.**

(57) A sealing member has a first limb (10) provided with a first surface (40) capable of securing to a first surface (26) through the intermediary of an adhesive (41,42), the first limb (10) having a flexible sealing lip (15) which sealingly engages the first surface (26). The first limb (10) is substantially rigid and has between its ends a second limb (18) extending therefrom, the second limb (18) being provided with a flexible sealing lip (20).

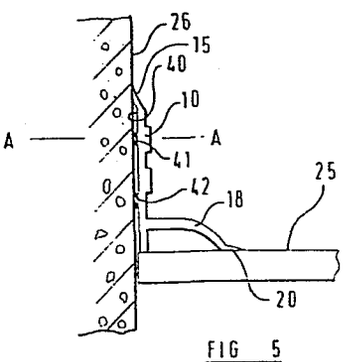

FIG 5

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Title: "Sealing Member"

Description of Invention

The present invention relates to a sealing and/or edging member of a form to seal or otherwise close a joint between two surfaces extending at an angle to each other.

The invention has particular application to sealing surfaces which are likely to be subjected to the presence of liquids for example sealing the gap between a bath, sink or basin and an adjacent wall. The sealing member of the present invention is also suitable for closing the gap between a kitchen working surface and an adjacent wall to prevent liquid and/or small particles of food entering any gap between such a working surface and adjacent walls.

Sealing members for the above mentioned purposes have been proposed and are in use to close the gap between two surfaces extending substantially at right angles to each other.

However, the sealing members available are, in some cases, even though effective, of cumbersome and expensive construction and may also be aesthetically unacceptable. Other known sealing members are made from a flexible material which is prone to easy and permanent distortion preventing satisfactory sealing engagement from being maintained between the two surfaces.

It is an object of the present invention to provide an improved sealing member which overcomes or substantially reduces the above mentioned problems.

According to one aspect of the present invention we provide a sealing member comprising a first limb having upper and lower boundaries between which boundaries extends at least along part thereof a first face capable of attachment to a first surface and a second face from the latter of which extends intermediate said boundaries a second limb having an outer end capable of engagement with a second surface characterised in that said first limb is made from a substantially rigid material.

Preferably a substantial part of said second limb is substantially rigid.

Preferably said first limb is provided with a flexible sealing lip on at least one of said boundaries.

Said first limb may be provided with two flexible sealing lips each extending beyond a respective upper and lower boundary.

Preferably said second limb is provided at its outer end with a flexible sealing lip.

The first limb though substantially rigid is conveniently of small thickness, that is the distance between said first face and said second face, is preferably less than 5 millimetres and conveniently approximately 3 millimetres. Conveniently said first limb may have a tapered cross section, being thicker adjacent the junction with said second limb and thinner adjacent the upper boundary where it adjoins said flexible sealing lip.

The provision of a substantially rigid but thin first limb not only provides a sealing member which is aesthetically pleasing in use but it also enables at least part of said first limb to be covered for example by ceramic tiles without deflecting such tiles from their intended position parallel to the wall on which they are mounted. Conveniently, the second limb presents an abutment surface or a boundary to such covering such as ceramic tiling.

Preferably said sealing member is formed from a plastics material and conveniently may be made by an extrusion process, the or each flexible sealing lip being formed simultaneously by either substantially decreasing the thickness of the material used for said limbs to provide a flexible sealing lip for one or more boundaries of said limbs and/or otherwise changing or treating the composition of the material in the regions where the flexible lip is desired.

Conveniently the or each flexible sealing lip is formed simultaneously with the limbs by a co-extrusion process wherein the material from which the limbs are made is different from the material from which the or each flexible sealing lip is made.

The securing of the sealing lips to the limbs takes place during extrusion of the material while the material is in a soft state.

Preferably the limbs of the sealing member are made from a plastics material and convently they are made from new U.P.V.C..and the sealing lips are preferably also made from a plastics material which may be P.V.C.. preferably having nitrile rubber additives.

The provision of substantially rigid limbs provided with flexible sealing lips ensuring that when the sealing member is secured in a sealing position the rigidity of the limbs enables the sealing lips to be firmly and sealingly engaged with the surfaces to be sealed.

The sealing member of the present invention by the provision of the substantially rigid and planar first limb enables the strip to be securely fastened to a surface for example a wall and, when provided with a flexible sealing strip extending beyond its upper boundary such sealing strip may make sealing engagement with the wall. The second limb which is preferably substantially rigid and may have a sealing lip at its outer end enabling said sealing lip to be firmly positioned in sealing engagement with said second surface.

Since the second limb extends from the first limb between the boundaries, the first limb presents first face parts of said first surface on both the upper and lower sides of said second limb thereby minimising the possibility of impact on said second limb causing the first limb to become released from said first surface.

It is another object of the present invention to provide a new or improved method of attaching a sealing member to a surface.

According to another aspect of the invention we provide a method of securing a sealing member to a surface comprising the steps of positioning a pliable adhesive between said surface and said sealing member applying a force between said surface and said sealing member sufficient to cause said pliable adhesive to engage said surface and said sealing member along substantially the whole length of adjacent surface portions of said sealing member and said surface.

Preferably said method of securing the sealing member to said surface includes a step in which the force applied between the sealing member and said surface causes said adhesive to flow into any discontinuity in said surface such that after securing the sealing member to a non-planar surface the thickness of said adhesive between the sealing member and the surface is non-uniform.

Preferably the sealing member comprises a first substantially rigid limb having upper and lower boundaries between which boundaries extends at least along part thereof a first substantially planar face capable of attachment to a first surface and a second face from which extends immediate said boundaries, a second limb having an outer end capable of engagement with a second surface.

Preferably said sealing member includes any or all of the preferential features afore-described.

According to a further aspect of the present invention to provide in combination a sealing member comprising a first limb having upper and lower boundaries between which boundaries extends at least along part thereof a first face capable of attachment to a first surface and a second face from which extends intermediate said boundaries a second limb having an outer end capable of engagement with the said second surface characterised in that said first limb is made from a substantially rigid material and in that a pliable adhesive is provided through the intermediary of which said first face can be attached to said first surface.

Preferably said pliable adhesive comprises a butyl rubber adhesive and conveniently may be in the form of an elongated strip.

Preferably two or more of said strips of butyl rubber adhesive are provided and are secured to said first substantially planar face in relative spaced relationship.

The adhesive means in combination with the sealing member provides a considerable improvement over known combination of adhesive and sealing member, since not only is the sealing member capable of effecting good sealing engagement with one or more surfaces, but the pliable adhesive is capable of flowing after application of pressure between the sealing member and the surface to which it is to be secured, thus effecting a secure bond between the sealing member and said surface along the entire length of the sealing member or at least along substantially the whole length thereof.

Not only does the pliable adhesive affect a secure attachment to the sealing member to the said surface but also because of its capability of flowing into discontinuities or irregularities itself provides a further sealing engagement between the sealing member and the surface.

The application of two strips of adhesive by means of which the sealing member is secured to the surface ensures stable securement of the sealing member to the surface.

The pliable adhesive is preferably one which is non-hardenable thus minimising or eliminating the occurrence of cracks or separation either from the sealing member or the surface to which it is attached.

The invention will now be described in more detail by way of example only with reference to the accompanying drawings wherein:-

FIGURE 1 is a cross-section through one embodiment of sealing member of the present invention;

FIGURE 2 is a perspective view of the sealing member shown in Figure 1 sealing the gap between a wall and the bath;

FIGURE 3 is a sectional view of the sealing member shown in Figure 1 providing a seal between two surfaces; and

FIGURE 4 is a perspective view of a further installation of the sealing member shown in Figure 1.

FIGURE 5 is a cross-section of the sealing member shown in Figures 1 to 4 secured by spaced strips of pliable adhesive;

FIGURE 6 is a section along the line A-A in Figure 5.

Referring firstly to Figure 1, the sealing member comprises a first limb 10 having an upper boundary 11 and a lower boundary 12.

The first limb 10 has a first face 13 and a second face 14. The thickness of the first limb 10 between the faces 13 and 14 is preferably less than 5 millimetres and particularly may be about 3 millimetres though the material from which the sealing member is made from UPVC compound enables the first limb 10 to be substantially rigid.

A plastics material which has been found to be particularly suitable is a UPVC compound made by ICI and sold under the Trade Mark WELVIC grade R7/570. The tensile strength of which is 50.3 MN/m^2 Extending beyond the upper boundary 11 of limb 10 is a flexible sealing lip 15. The sealing lip 15 may comprise a p.v.c.material having nitrile rubber additives. The sealing lip 15 is made thinner than the limb 10 and may possess sufficient flexibility to enable it to bend and mould itself to irregularities may possess sufficient flexibility to enable it to and mould itself to irregularities in a surface to which the first limb 10 is to be secured.The sealing lip 15 is preferably formed simultaneously with the formation of first limb 10 and second limb 18 by a co-extrustion process. Alternatively, the sealing lip 15 may be later secured to the limb 10 or may be otherwise mechanically or chemically treated to impart the desired flexibility therein.

The sealing lip 15 extends from the first limb 10 in a direction away from the second face 14 so that when the first limb 10 is secured to a surface the flexible sealing lip 15 will be deformed and by its own resilience urged against the surface to which the first limb 10 is secured.

The first face 13 of the first limb 10 is substantially planar but may if desired include small corrugations or other small deformities to enhance the bonding of adhesive compounds to enable the first limb 10 to be secured to a surface.

The second face 14 may be provided with ridges such as those shown at 15 or channels or other decorative patterns as desired.

Extending from the second face 14 of the first limb 10 is a second limb 18 which is formed of the same material from which the first limb 10 is made and is substantially rigid. At the end 19 of second limb 18 is formed a flexible sealing lip 20 substantially the same as the flexible sealing lip 15 provided on the first limb 10.

Referring now to Figure 2, the sealing member is shown secured to a wall 21 a first limb 10 being secured to the wall 21 by any suitable method for example double-sided adhesive tape, one side of which is secured to face 13 of first limb 10 and the other side to the wall 21 or any suitable adhesive may be used, the sealing lip 15 being deformed so that it is urged by its own resilience into contact with the wall 21. Similarly the sealing lip 20 provided on second limb 18 is also deformed and thus by its own resilience urged into contact with the second surface 22 which in this case is the rim of a bath.

Since both the first limb 10 of the second limb 18 are substantially rigid the sealing lips 14 and 20 are maintained in sealing engagement with the wall 21 and rim 22 of the bath respectively. The sealing member thus provides not only aesthetically pleasing appearance to close the gap between the bath and the wall but also a highly effective seal to prevent water, from a shower for example running down the wall 21 and through the gap 23 between the wall 21 and bath 22.

Referring now to Figure 3 the sealing member shown in Figure 1 is illustrated providing a seal between a work surface 25 and wall 26. In this application the first limb 10 is shown secured to the wall 26 by double-sided adhesive tape 27 having a first adhesive side 28 secured directly to the face 13 of first limb 10 and a second adhesive side 29 which is secured to the wall 26. Double-sided adhesive tape such as that shown at 27 enables the sealing member to be effectively and simply secured to any surface.

Once again the substantially rigid second limb 18 ensures that its sealing lip 20 makes sealing engagement with the work surface 25.

It can be seen in Figure 3 that the lower boundary 12 of first limb 10 is positioned adjacent the upper surface of the work surface 25, the length of that part of the first limb 10 below second limb 18 may be so dimensioned that when the lower boundary 12 abuts or is adjacent to the upper surface of the work surface 25 or any other surface with which it is desired to make sealing engagement, the flexible sealing lip is deformed by an optimum amount to ensure long lasting sealing engagement with the surface 25.

Such a provision makes it possible for the sealing member to be secured in position by unskilled persons, the sealing member being position easily in its correct position.

Referring now to Figure 4, a further benefit of the sealing member of the present invention is illustrated in its use both as a sealing member and a finishing strip.

Because of the substantially rigid nature of the first limb 10 and the small dimension between first and second faces 13 and 14 respectively it is possible for a wall 30 having ceramic tiles 31 secured thereto to have affixed thereto the sealing member of the present invention. The tiles 31 being continued over that part of the first limb 10 that extends extends above the second limb 18. Because of the thickess of cement normally used to correctly affix ceramic tiles 31 to a wall 30, the thickness of the first limb 10 of the sealing member will make an imperceptable difference to the general flatness of the wall 30 thereby not detracting from the attractive appearance of the tiles 31. Furthermore, the second limb 18 provides a neat boundary to the lower edge 32 of tiles 31.The first limb 10 may be tapered from a thicker region adjacent the junction with second limb 18 to a thinner region adjacent sealing lip 15.

The sealing member thus not only provides an effective seal to prevent water and/or food particles for example entering a gap between a surface 33 and a tiled wall 30, it also provides aesthetically pleasing and functional boundary to the lower edge 32 of the tiles 31.

Referring now to Figures 5 and 6 of the sealing member shown in Figure 5 is the same as the sealing member shown in Figures 1 to 4 and comprises a first limb 10 having an upper boundary 11 a lower boundary 12 a first face 13 and a second face 14. The upper boundary 11 of the first limb 10 has a flexible sealing lip 15 a second limb 18 is provided with a flexible sealing lip 20. The sealing member is secured to the surface 40 by means of two spaced strips of pliable adhesive 41 and 41 such as a butyl rubber adhesive. The adhesive strips 41 and 42 adhere to the surface 40 and to the first face 13 of the sealing member.

The adhesive strips 41 and 42 may be of any desirable cross-section and conveniently may be round however when pressure is applied between the sealing strip and the surface 40, the adhesive will be squashed and flow so as to take up the shape shown in Figure 5.

The strips 41 and 42 may be supplied with the sealing strip and provided in relatively spaced relationship on a backing tape of coated paper, plastics film or the like. To secure the strips 41, 42 to the securing member the strips 41 are offered up to the first face so that they are "sandwiched" between the sealing member and backing tape the latter then being removed to leave the sealing member with adhesive strips 41,42 attached thereto in relatively spaced relationship.

The pliable adhesive 41 and 42 is particularly beneficial when securing the sealing member to a non-planar surface since the adhesive will flow into cavities and irregularities provided in such a surface.

Figure 6 is a cross-section along the lines A-A shown in Figure 5 and illustrates the non-uniform thickness of the adhesive strip 41 subsequent to the application of pressure between the surface 40 and the sealing member.

Not only does the ability of the adhesive to flow provide good and secure engagement between the sealing strip and the surface 40, but furthermore, it provides an additional seal between the surface 40 and the sealing member itself.

It will be appreciated that the dimensions and the shape of the first and second limbs of the sealing member of the present invention may be changed to suit particular applications and the sealing member may be made from any suitable material and may comprise a composition of different materials.

The features disclosed in the foregoing description, or the following claims, or the accompanying drawings, expressed in their specific forms or in terms of a means for performing the disclosed function, or a method or process for attaining the disclosed result, or a class or group of substances or compositions, as appropriate, may, separately or any combination of such features, be utilised for realising the invention in diverse forms thereof.

CLAIMS:

1. A sealing member comprising a first limb (10) having upper and lower boundaries (11, 12) between which boundaries extends at least along part thereof a first face (13) capable of attachment to a first surface (21) and a second face (14) from the latter of which extends intermediate said boundaries (11, 12) a second limb (18) having an outer end (19) capable of engagement with a second surface characterised in that said first limb (10) is made from a substantially rigid material.

2. A sealing member as claimed in claim 1 characterised in that a substantial part of said second limb (18) is made from a substantially rigid material.

3. A sealing member as claimed in claim 1 or claim 2 characterised in that said first limb (10) and/or second limb (18) is provided with a flexible sealing lip (15, 20) adjacent said boundaries (11, 19).

4. A sealing member as claimed in any one of the preceding claims characterised in that both said first limb (10) and a substantial part of said second limb 18 are made from a substantially rigid plastics material.

5. A sealing member as claimed in claim 4 said first limb (10) and/or said second limb (18) are provided with a flexible sealing lip (15, 20) and in that the or each flexible sealing lip (15, 20) is formed simultaneously with said limbs (10, 18) by a co-extrusion process and in that the material from which the limbs (10, 18) are made is different from the material from which the or each flexible lip (15, 20) is made.

6. A sealing member as claimed in claim 5 characterised in that the first and second limbs (10, 18) are made from a UPVC and the or each sealing lip (15) (20) is made from a PVC having a nitrite rubber additive.

7. A sealing strip as claimed in any one of the preceding claims characterised in that said first limb (10) has a thickness of less than 5 mm.

8. In combination a sealing member comprising a first limb (10) having upper and lower boundaries (11,12) betweenwhich boundaries extends at least along part thereof a first face (13) capable of attachment to a first surface and a second face from which extends intermediate said boundaries (11, 12) a second limb (18) having an outer end (19) capable of engagement with the said second surface characterised in that said first limb (10) is made from a substantially rigid material and in that a pliable adhesive (41, 42) is provided through the intermediary of which said first face can be attached to said first surface.

9. The combination as claimed in claim 8 characterised in that said pliable adhesive comprises a butyl rubber adhesive.

10. The combination as claimed in claim 8 or claim 9 characterised in that two strips (41, 42) of adhesive are provided and in that means are provided to enable securement of said strips (41, 42) to said first face in relative spaced relationship.

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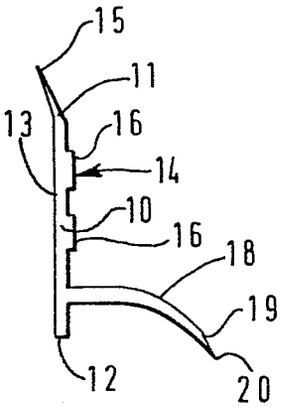
FIG 1



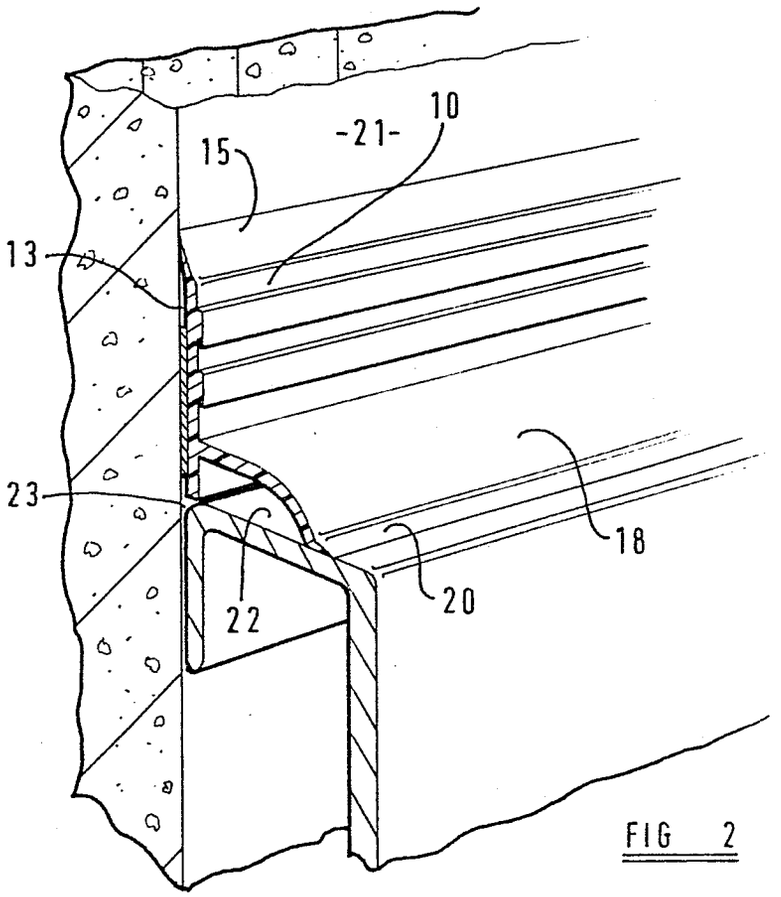


FIG 2

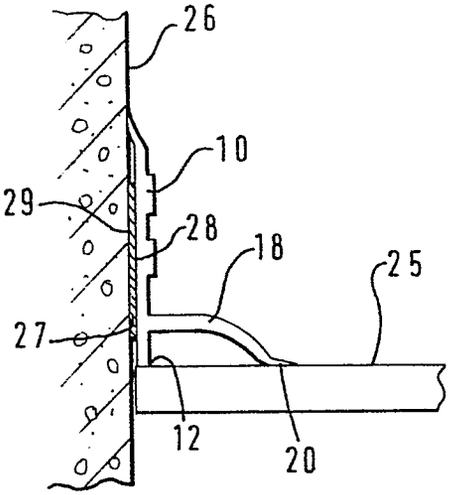


FIG 3

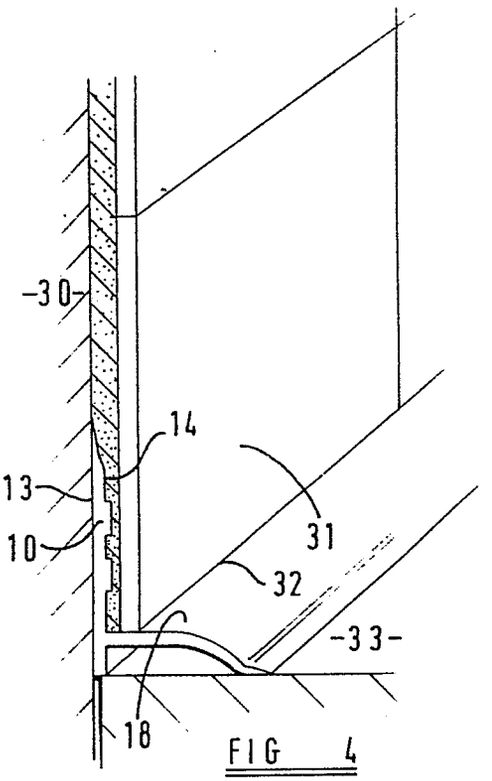


FIG 4

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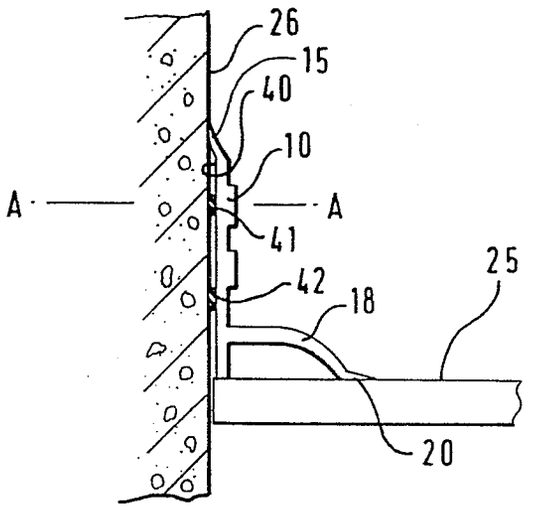

FIG 5

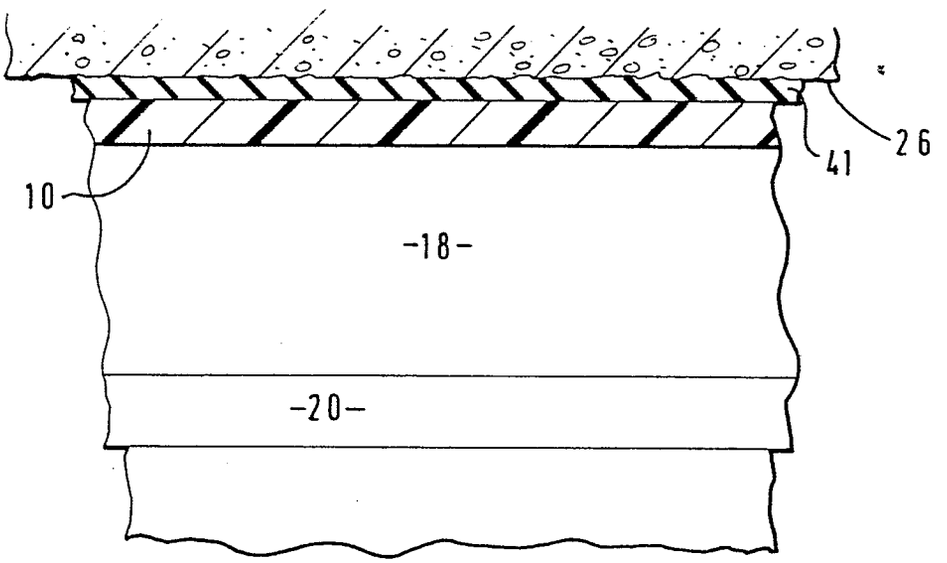

FIG 6

European Patent Office

EUROPEAN SEARCH REPORT

0122720
Application number

EP 84 30 1755

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. ³)
X	DE-A-2 912 030 (HOFSTETTER) * Whole document *	1-5	E 04 F 19/02 E 04 F 19/04
Y		7,8,10	
A		6	

Y	US-A-4 214 414 (WENDT) * Column 3, line 45 - column 4, line 2; figure 2 *	7	

Y	US-A-3 408 250 (FINEFROCK) * Column 2, lines 63-72; column 3, lines 1-35; figures *	8,10	

Y	US-A-3 200 547 (JOHNSON) * Column 3, lines 3-75; column 4, lines 1-26; figures *	8	TECHNICAL FIELDS SEARCHED (Int. Cl. ³) E 04 F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	27-06-1984	PERROTTA A.

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
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E : earlier patent document, but published on, or after the filing date
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