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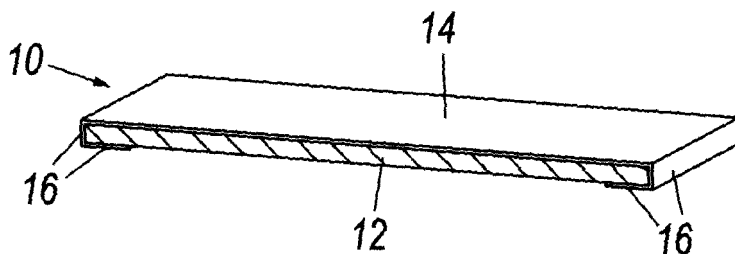
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(54) **Facing and/or paving elements with metal surface**

(57) The elements (10; 20; 30; 40; 50) for facing internal and/or external walls and for forming internal and/or external pavings, and having an at least partly metal surface, each comprise: a support element 1(12;

42; 52); a sheet metal covering (14; 24; 34; 44) which covers all or part of the support element (12; 42; 52); and means (16; 26) for fixing the covering (14; 24; 34; 44) to the support element (12; 42, 52).



**Fig. 1**

## Description

**[0001]** The present invention relates to those elements used for facing internal and/or external walls and for forming internal and/or external pavings. Elements of this type are for example ceramic or terracotta tiles, cement-based tiles, marble and/or more generally natural stone slabs, or slabs of rigid synthetic material.

**[0002]** Pavings and facings are already known consisting of metal slabs (in particular aluminium, stainless steel, brass or copper) fixed to a support structure or surface in various ways (for example by screws). These slabs normally have plan dimensions which are decidedly greater than those of conventional ceramic tiles. They must also have a thickness such as to prevent their warping during handling and in particular during installation. Their thickness depends on the type of metal and the slab dimensions, and is at least some millimetres, so that an individual slab normally has a weight which makes it difficult or indeed impossible to handle by a single operator. Its weight is in any event decidedly greater than that of a conventional ceramic tile. The result is that installing these metal slabs is burdensome and requires more than one operator. A consequence is that pavings and facings obtained in this manner are decidedly more costly than the traditional ones.

**[0003]** An object of the present invention is to provide facing and/or paving elements which enable metal surface facings and/or pavings to be obtained which do not present the aforesaid drawbacks.

**[0004]** Known metal pavings are normally smooth and do not present reliefs and/or recesses, not because they cannot be produced, but for cost reasons. In this respect, the metal slabs would require machining which would result in decidedly higher costs.

**[0005]** Another object is therefore to provide facing and/or paving elements the metal surface of which can present reliefs and/or recesses and in particular high-reliefs and/or bas-reliefs.

**[0006]** A further object is to provide facing elements the surface of which is only partly of metal, the rest of the surface consisting of a non-metallic material suitable for facing and/or paving elements.

**[0007]** The aforesaid objects are attained by the facing and/or paving elements according to the present invention, each element comprising:

- a support element having substantially the same plan dimensions as the facing and/or paving element to be obtained;
- a sheet metal covering which covers the whole or part of the surface of the support element;
- means for fixing the metal covering to the support element.

**[0008]** The fixing means are for example a suitable adhesive interposed between the sheet metal covering and the support element. The adhesive does not have to cov-

er the entire inner surface of the sheet metal covering, it being normally sufficient to provide the adhesive in only a few regions, provided that this ensures rigid fixing of the sheet metal covering to the support element.

**[0009]** Said fixing means can also be in the form of simple hook-like turn-overs involving all or part of the corresponding edges of the relative support element, such as to lock the sheet metal covering to the support element. Gluing can also be provided in addition to said hook-like turn-overs.

**[0010]** Normally the sheet metal covering has the smallest possible thickness (for example from 2 to 5 tenths of a millimetre), depending on the use for which the paving or facing obtained by the elements of the present invention is intended.

**[0011]** In particular, if it is known that the this paving or facing is to be subjected to considerable wear, it can be conveniently decided to use metal covering sheets of greater thickness (but always considerably less than that of the metal slabs already used for this purpose).

**[0012]** The small thickness of the metal covering sheet means that it becomes easy to make it adhere to the surface of the support element if this surface presents reliefs and/or recesses (which are easy to obtain for example on a support element consisting of a ceramic tile). In this manner facing and/or paving elements can be obtained with a metal surface presenting the same reliefs and/or recesses.

**[0013]** The outer surface of the metal covering sheet can also be treated (for example enamelled, anodised or treated with acids) to obtain particular effects.

**[0014]** The support element can also have different forms. It can be of rectangular or square plan in particular, but can also be triangular or more generally polygonal (as can conventional tiles), and can also include more complicated shapes provided they are suitable to form a paving or facing, possibly also using, together with facing and/or paving elements of the present invention, conventional tiles to obtain particular effects.

**[0015]** The invention will be more apparent from the ensuing description of some embodiments thereof provided by way of example. In this description reference is made to the accompanying drawings, in which:

Figure 1 is a perspective view of a part of a first embodiment of the facing and/or paving element of the invention of square or rectangular plan shape, this part having been obtained by sectioning said element on a vertical plane parallel to an element edge; Figure 2 is similar to Figure 1, but represents a second embodiment of the element of the invention; Figure 3, also similar to Figure 1, represents a third embodiment of the element of the invention; Figure 4 is a perspective view of a fourth embodiment of the element of the invention; Figure 5 is similar to Figure 4, but represents a fifth embodiment.

**[0016]** The facing and/or paving element 10 visible in Figure 1 (of which only a part is shown, that part not shown being essentially similar to that shown but disposed symmetrically) comprises a support element 12, and a sheet metal covering 14. The support element 12 is preferably of a material suitable for forming conventional facing and/or paving elements. In particular, it conveniently consists of a ceramic, terracotta or cement-based tile, but could also be a wooden or chipboard block, or of any material suitable for the purpose, for example a rigid plastic slab. As can be seen from Figure 1, in the specific example the sheet metal covering 14 covers the entire upper surface of the support element 12, and is turned over through 90 degrees once along all four edges of the support element 12 (including those not visible in Figure 1) and a second time to also involve a small part of the peripheral region of the lower face of the support element 12. As will be apparent, the four double turned edges of the sheet metal covering 14, indicated by 16, also act as said means for fixing the covering 14 to the support element 12, however they can also rest against a suitable adhesive previously applied between the support element 12 and the sheet metal covering 14, at least in determined regions, to ensure that the covering 14 adheres to the support element 12. As already stated, the covering 14 can be of any metal or metal alloy reducible into sheet, and in particular stainless steel, copper, brass, aluminium, while in particular cases gold, silver or platinum, or their alloys, can be used.

**[0017]** If the element of the invention is to be used for wall facing (in which case there would normally be no wear), the outer face of the sheet metal covering can undergo treatment to improve or vary its appearance, such as anodization or treatment with acids.

**[0018]** As the sheet metal covering 14, as stated, is normally as thin as possible to reduce the weight and cost of the element 10, it will also be apparent that if the support element 12 is made such as to present reliefs and/or recesses on its upper surface (for example such as the so-called "pre-grooved" or "structured" ceramic tiles) and in particular high-relief or bas-relief figures (such as a flower or star), the metal sheet can be easily made to adhere to this latter such that the surface of this latter also reproduces the same high-relief and/or bas-relief figure.

**[0019]** The facing and/or paving element 20 of Figure 2 differs from the element 10 of Figure 1 merely in that the sheet metal covering 24 presents single turn-overs 26 which extend over the relative four edges of the support element 12 only for a part of the height of this latter. In this case it is normally necessary for the covering 24 to be glued (at least in some regions) to the support element 12, to prevent separation between the two.

**[0020]** Figure 3 shows a facing and/or paving element in which the support element 12 is completely surrounded (also on its lower face) by a sheet metal covering 34, in the manner of a box. This embodiment can be useful if the elements 30 are used for example as separation el-

ements, with a double exposed surface.

**[0021]** The sheet metal covering can also involve only a part of one surface of the facing and/or paving element of the present invention. Figures 4 and 5 show two embodiments of this type. In particular in the element 40 of Figure 4, of square plan shape, only part of its upper surface is covered by a sheet metal covering 44, of square shape, centered on the support element 42 to leave a peripheral band 43 free in the manner of a frame. Preferably, at the sheet metal covering 44 the support element presents a recess of the same shape and plan dimensions as the covering 44. In this manner, when the covering 44 has been glued in position, the elevation of the upper face of this latter is substantially the same as that of the surrounding frame-shaped part 43. In this case the sheet metal covering 44 is conveniently glued to the support element 42 (a particularly convenient solution if the support element 42 is of ceramic). Evidently the opposite could also be the case, i.e. only said frame-shaped part could be covered with sheet metal, while leaving free that central part which in Figure 4 is covered by sheet metal 44.

**[0022]** Again in Figure 5 the upper surface of the facing element 50 is not completely covered by the sheet metal covering. This latter is formed from several parts, each of square or rectangular shape, which are indicated overall by 54. These parts can also consist of different metals, and are glued onto the support element 52 to form a determined pattern. Again in this case the support element 52 can conveniently comprise, at the various parts of the covering 54, relative recesses of shape, plan dimensions and depth equal to those of said covering.

**[0023]** Especially in the case of the embodiments of Figures 1-3, the support element can conveniently be of a low-value material (for example based on cement or low-cost rigid plastic), with a significant saving.

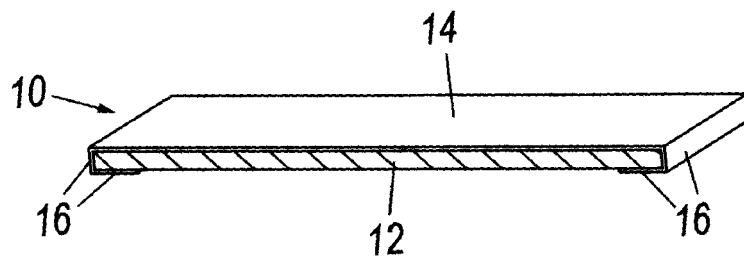
## Claims

1. Elements (10; 20; 30; 40; 50) for facing internal and/or external walls and for forming internal and/or external pavings, each element (10; 20; 30; 40; 50) comprising:
  - support element (12; 42, 52) having substantially the same plan dimensions as the facing and/or paving element (10; 20; 30; 40; 50) to be obtained;
  - a sheet metal covering (14; 24; 34; 44) which covers the whole or part of the surface of the support element (12; 42; 52);
  - means (16, 26) for fixing the sheet metal covering (14; 24; 34; 44) to the support element (12; 42, 52).
2. Facing and/or paving elements (10; 20; 30; 40; 50) as claimed in claim 1, wherein the fixing means com-

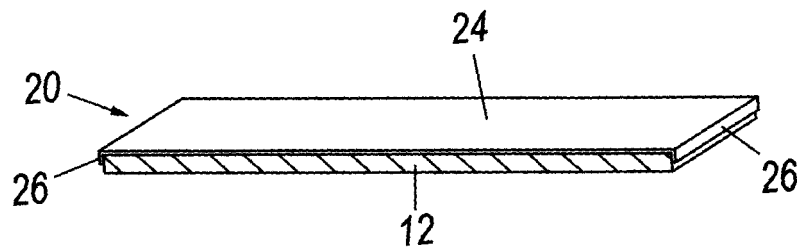
prise or exclusively consist of a suitable adhesive interposed between the sheet metal covering (14; 24; 34; 44) and the support element (12; 42; 52).

3. Facing and/or paving elements (10; 20; 30; 40; 50) as claimed in claim 2, wherein the adhesive involves only part of the inner surface of the sheet metal covering (14; 24; 34; 44), provided that this ensures rigid fixing of the sheet metal covering to the support element (12; 42; 52). 5  
10
4. Facing and/or paving elements (10; 20; 30; 40; 50) as claimed in claim 1, wherein the fixing means comprise turn-overs (16; 26) on the sheet metal covering (14; 24; 34; 44) which involve all or part of the corresponding edges of the relative support element (12; 42; 52). 15
5. Facing and/or paving elements (10; 20; 30; 40; 50) as claimed in claim 4, wherein the fixing means comprise only one turn-over. 20
6. Facing and/or paving elements (10; 20; 30; 40; 50) as claimed in claim 4, wherein the fixing means comprise a double turn-over (16), in the manner of a hook. 25
7. Facing and/or paving elements (10; 20; 30; 40; 50) as claimed in claim 1, wherein the sheet metal covering (14; 24; 34; 44) has a thickness between 2 and 5 tenths of a millimetre. 30
8. Facing and/or paving elements (10; 20; 30; 40; 50) as claimed in claim 1, wherein the outer surface of the sheet metal covering (14; 24; 34; 44) is treated to obtain particular effects. 35
9. Facing and/or paving elements (10; 20; 30; 40; 50) as claimed in claim 1, wherein the support element (12; 42; 52) presents reliefs and/or recesses on its surface, the sheet metal covering adhering to that surface in such a manner as to reproduce the same reliefs and/or recesses. 40
10. Facing and/or paving elements (10; 20; 30; 40; 50) as claimed in claim 1, wherein the support element (12; 42; 52) is a ceramic or terracotta tile, a cement-based tile, a marble or natural stone slab, a wooden or chipboard block, or a rigid plastic slab. 45  
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11. Facing and/or paving elements (10; 20; 30; 40; 50) as claimed in claim 1, wherein the sheet metal covering (14; 24; 34; 44) is of stainless steel, or of aluminium, copper, brass, gold or silver or their alloys. 55
12. Facing and/or paving elements (10; 20; 30; 40; 50) as claimed in claim 11, wherein the sheet metal covering (54) is formed of different parts.

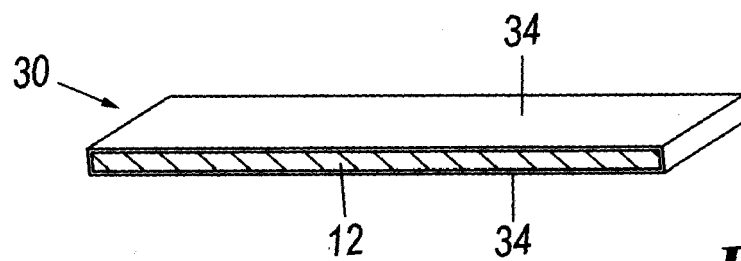
13. Facing and/or paving elements (10; 20; 30; 40; 50) as claimed in claim 12, wherein all or some of the parts of the sheet metal covering (54) are formed of different metals.



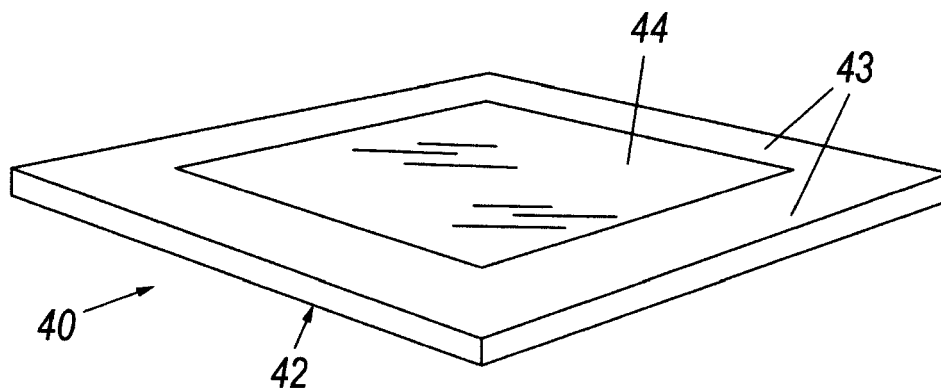
**Fig. 1**



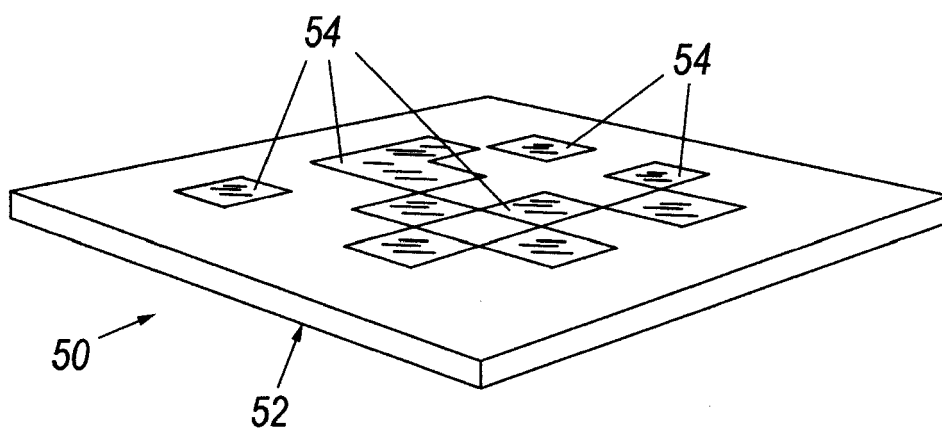
**Fig. 2**



**Fig. 3**



**Fig. 4**



**Fig. 5**



European Patent  
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# EUROPEAN SEARCH REPORT

Application Number  
EP 07 11 6019

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 101 23 126 A1 (HORN HANS-JOACHIM [DE]) 14 November 2002 (2002-11-14) * the whole document *	1-5,7-12	INV. E04F15/02 E04F13/12
X	DE 90 06 759 U1 (WESTAG & GETALIT AG, 4840 RHEDA-WIEDENBRUECK, DE) 23 August 1990 (1990-08-23) * the whole document *	1-3,7, 10,11	
A	----- * the whole document *	4-6	
X	DE 20 2006 001427 U1 (BECKER PHILIPP [DE]) 13 April 2006 (2006-04-13) * the whole document *	1,4,6,7, 10,11	
X	EP 0 675 228 A (PERMESANG CLAUS DIPL ING [DE] PETEC SA [LU]) 4 October 1995 (1995-10-04) * the whole document *	1,2, 10-13	
X	GB 2 336 609 A (GIBSON GARY STUART [GB]; DANIELS DAVID ROBERT [GB]) 27 October 1999 (1999-10-27) * the whole document *	1,2,8-11	
X	EP 1 359 265 A (METEX FLOORING SYSTEMS LTD [GB]) 5 November 2003 (2003-11-05) * the whole document *	1,2,8, 10,11 9	E04F E01C
A	----- * the whole document *		
X	DE 299 16 675 U1 (DOBLER DIETMAR [DE]; ZIMMERMANN PETER [DE]) 5 January 2000 (2000-01-05) * claims 1-4,9-11; figure 1 *	1,2,10, 11	
The present search report has been drawn up for all claims			
Place of search <b>Munich</b>		Date of completion of the search <b>14 December 2007</b>	Examiner <b>Leher, Valentina</b>
<b>CATEGORY OF CITED DOCUMENTS</b> 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	

1 EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 07 11 6019

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
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14-12-2007

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 10123126 A1	14-11-2002	NONE	
DE 9006759 U1	23-08-1990	NONE	
DE 202006001427 U1	13-04-2006	NONE	
EP 0675228 A	04-10-1995	AT 222623 T CA 2145823 A1 DE 4410982 A1	15-09-2002 01-10-1995 05-10-1995
GB 2336609 A	27-10-1999	NONE	
EP 1359265 A	05-11-2003	GB 2388128 A US 2003205018 A1	05-11-2003 06-11-2003
DE 29916675 U1	05-01-2000	NONE	