

⑮



Europäisches Patentamt
European Patent Office
Office européen des brevets

⑪ Publication number:

0 168 247
B1

⑫

EUROPEAN PATENT SPECIFICATION

④⑤ Date of publication of patent specification: **28.03.90**

⑤① Int. Cl.⁵: **E 04 F 15/024**

②① Application number: **85304925.2**

②② Date of filing: **10.07.85**

⑤④ **An improved access floor structure.**

③③ Priority: **10.07.84 GB 8417605**

④③ Date of publication of application:
15.01.86 Bulletin 86/03

④⑤ Publication of the grant of the patent:
28.03.90 Bulletin 90/13

⑧④ Designated Contracting States:
AT BE CH DE FR GB IT LI LU NL SE

⑤⑥ References cited:
FR-A-1 454 115
FR-A-1 554 826
FR-A-2 018 614
FR-A-2 315 586
GB-A-1 430 232
GB-A-2 130 615

⑦③ Proprietor: **Thorsman & Co. (U.K.) Limited**
Thor House Yarrow Mill
Chorley Lancashire (GB)

⑦② Inventor: **Salter, Brian Vaughan**
113 Griffin Street
Blackburn, Lancashire (GB)

⑦④ Representative: **Lyons, Andrew John et al**
ROYSTONS 531 Tower Building Water Street
Liverpool L3 1BA (GB)

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid (Art. 99(1) European patent convention).

Courier Press, Leamington Spa, England.

EP 0 168 247 B1

Description

This invention relates to an access floor structure of the type including one or more floor panels.

In known access floor structures, the panels are usually supported at or adjacent to each corner on pedestals so that the floor panels are supported by the pedestals in spaced-apart relationship from a main structural floor of a building, thus enabling mains services, such as electrical cables, to be disposed therebeneath.

It is necessary for the floor panels in use to be capable of supporting loads which are placed thereon and it is desirable for the floor panels to have good sound and thermal insulation properties in addition to being fire resistant and having a wear resistant surface.

Known floor panels have been formed of steel fabrications which whilst having good structural properties, wear resistance, and fire resistance, suffer from the disadvantage of having relatively poor thermal and sound insulation properties.

It is also known to provide floor panels formed of materials such as chipboard. However, although this type of panel has good sound and thermal insulation properties, such panels under load have been known to deform due to the adhesive and wood particles from which the board is usually formed, moving or creeping producing a permanent deformation during the working life of such panels. In addition, where such panels are subjected to moisture, it is found that the panels warp to such an extent that they become unusable, and the object of this invention is to provide an access floor structure including panels in which the above disadvantages of the known panels are alleviated.

According to this invention, there is provided an access floor structure including one or more floor panels comprising a plane laminar panel member and a sheet metal panel disposed in touching contact with the lower surface of the plane laminar panel member, the sheet metal panel having one or more elongate continuous ribs or channels formed therein extending across the full width of said metal panel, characterised in that the upper surface of the plane laminar panel has a sheet of metal supported thereon, the edges of the panel being provided with separate strips having outwardly flared upper edges and the edges of the sheet of metal being turned under to overlie said flared upper edges of the edge strips.

Preferably the flared upper edge of the edge strips and the overlying edge of the sheet metal panel are contiguous.

Preferably, metal support beams connected to and extending transversely of the ribs and channels in the metal panel are provided on opposite sides of the panel.

The edge strips of the panel preferably enclose the metal support beams.

Preferably, the plane laminar panel member is formed of a wood composite material such as chipboard.

A preferred embodiment of this invention will now be described, by way of example only, with reference to the accompanying drawings, of which:

Figure 1 is a perspective view of a floor panel of an access floor structure; and

Figure 2 is a partly sectioned diagrammatic perspective view of one corner of the floor panel.

Referring now to the drawings, a full or partial access floor structure comprises one or more floor panels indicated generally at 10 which is supported at or adjacent to each corner thereof on pedestal units (not shown) so that the or each floor panel 10 is disposed in spaced-apart relationship from a main structural floor surface of a building (not shown) thus enabling mains services such as electrical cables, to be disposed therebeneath.

Each floor panel 10 comprises a plane rectangular laminar panel member 12 formed of a wood composite material such as, chipboard or the like. A sheet metal panel 14 is mounted in touching contact with the lower surface of the panel member 12 so that loads imposed on the panel member 12 are borne by the panel 14. The bending stresses and shear loads on the panel member 12 are thus carried by the panel 14 and the panel member 12 is primarily subjected in use to only compression loading.

The panel 14 has a plurality of spaced-apart channels 16 formed therein to increase the strength thereof, the channels 16 extending across the full width of the panel 14. Two metal support beams 18 are mounted on opposite sides of the panel 14 and are welded thereto so as to extend transversely of the channels 16. The load on the panel 10 is thus carried by the channels 16 and the support beams 18 to the corners of the panel 10 which are located on the pedestal units (not shown) of the access floor structure.

The upper surface of the panel member 12 has a sheet of metal 20 mounted thereon to provide a wear resistant surface and the edges of the sheet 20 are folded downwardly to connect with substantially L-shaped metal edge strips 22. The edge strips 22 are disposed at each edge of the panel 10, and the horizontal flanges of these strips engage under the marginal portions of the panel 10, so that they enclose the metal support beams, and provide additional structural support.

Although it is envisaged that the panel 14, the beams 18, the sheet 20 and the strips 22 will preferably be formed of mild steel, it will be appreciated that these components could be formed of other metals without departing from the scope of this invention as defined in the appended claims.

The formation of the floor panel 10 from a combination of metal and wood composite provides a floor panel which is of high strength by utilisation of the advantageous properties of the wood composite when subjected to compression loading in combination with the advantageous properties of the metal channel configurations of the panel 14 together with the metal support

beams 18 in resisting bending stresses and shear loading. Furthermore, the good sound and thermal insulation properties of wood composite are also combined in this floor panel with the wear resistance and fire resistance properties of the metal components thereof to provide an access floor structure and particularly a floor panel therefor in which the disadvantages of the known panels hereinbefore referred to are alleviated.

Claims

1. An access floor structure including one or more floor panels (10) comprising a plane laminar panel member (12) and a sheet metal panel (14) disposed in touching contact with the lower surface of the plane laminar panel member, the sheet metal panel having one or more elongate continuous ribs or channels (16) formed therein extending across the full width of said metal panel, characterised in that the upper surface of the plane laminar panel (12) has a sheet of metal (20) supported thereon, the edges of the panel being provided with separate edge strips (22) having outwardly flare upper edges and the edges of the sheet of metal (20) being turned under to overlie said flared upper edges of the edge strips.

2. An access floor structure as claimed in Claim 1, characterised in that the flared upper edge of the edge strips and the overlying edges of the sheet metal are contiguous.

3. An access floor structure including one or more floor panels according to Claim 1 or 2, characterised in that metal support beams (18) are connected to and extend transversely of the ribs or channels in the metal panel (14) on opposite sides of the panel.

4. An access floor structure including one or more floor panels according to Claim 3, characterised in that the edge strips (22) enclose the metal support beams (18).

5. An access floor structure including one or more floor panels according to any one of the preceding claims, characterised in that the plane laminar panel member (12) is formed of a wood composite material.

6. An access floor structure including one or more floor panels according to Claim 5, characterised in that the wood composite material is chipboard.

Patentansprüche

1. Zugängliche Bodenstruktur mit einer oder mehreren Bodenplatten (10), die eine ebene Bodenplatte (12) und eine Metallblechplatte (14) in Kontakt mit der Unterseite des ebenen laminierten Bodenteils aufweisen, wobei in der Metallblechplatte eine oder mehrere längliche durchgehende Rippen oder Kanäle (16) geformt sind, die sich über die ganze Breite der Metallebene erstrecken, dadurch gekennzeichnet, daß: die Oberfläche der ebenen laminaren Platte

(12) ein Metallblech (20) trägt; die Kanten der Platte separate Kantenstreifen (22) mit sich nach oben erweiternden Oberkanten besitzen, wobei die Kanten des Metallblechs (20) so abgebogen sind, so daß sie auf den sich weitenden Oberkanten der Kantenstreifen aufliegen.

2. Zugängliche Bodenstruktur nach Anspruch 1, dadurch gekennzeichnet, daß die sich weitende Oberkante der Kantenstreifen und die aufliegenden Kanten des Metallblechs aneinanderstoßen.

3. Zugängliche Bodenstruktur mit einer oder mehreren Bodenebenen gemäß Anspruch 1 oder 2, dadurch gekennzeichnet, daß Metallträger (18) mit den Rippen oder Kanälen in der Metallplatte (14) verbunden sind und sich quer dazu auf beiden Seiten der Platte erstrecken.

4. Zugängliche Bodenstruktur mit einer oder mehreren Bodenebenen gemäß Anspruch 3, dadurch gekennzeichnet, daß die Kantenstreifen (22) die Metallträger (18) einschließen.

5. Zugängliche Bodenstruktur mit einer oder mehreren Bodenplatten gemäß einem der vorangegangenen Ansprüche, dadurch gekennzeichnet, daß das ebene laminare Bodenteil (12) aus einem hölzernen Verbundmaterial besteht.

6. Zugängliche Bodenstruktur mit einer oder mehreren Bodenplatten gemäß Anspruch 5, dadurch gekennzeichnet, daß das hölzerne Verbundmaterial Spanplatte ist.

Revendications

1. Une structure de plancher d'accès comprenant un ou plusieurs panneaux de plancher (10) comprenant un organe de panneau (12) laminaire plan et un panneau en feuille métallique (14) disposé en contact touchant avec la surface inférieure de l'organe de panneau laminaire, le panneau en feuille métallique ayant un ou plusieurs nervures ou canaux (16) continus allongés formés dedans, s'étendant en travers de toute la largeur dudit panneau métallique,

caractérisée en ce que la surface supérieure du panneau laminaire plan (12) a une feuille de métal (20) supportée dessus, les bords du panneau étant munis de bandes de bord (22) séparées ayant des bords supérieurs faisant saillie vers l'extérieur et les bords de la feuille de métal (20) étant tournés en-dessous pour recouvrir lesdits bords supérieurs saillants des bandes de bord.

2. Une structure de plancher d'accès telle que revendiquée à la revendication 1, caractérisée en ce que le bord supérieur saillant des bandes de bord et les bords recouvrant de la feuille de métal sont contigus.

3. Une structure de plancher d'accès comprenant un ou plusieurs panneaux de plancher selon la revendication 1 ou 2, caractérisée en ce que des poutres de support (18) métalliques sont reliées aux nervures et canaux et s'étendent transversalement à eux dans le panneau métallique (14) sur des côtés opposés du panneau.

4. Une structure de plancher d'accès compre-

nant un ou plusieurs panneaux de plancher selon la revendication 3, caractérisée en ce que les bandes de bord (22) entourent les poutres de support (18) métalliques.

5. Une structure de plancher d'accès comprenant un ou plusieurs panneaux de plancher selon l'une quelconque des revendications 1 précédentes, caractérisée en ce que l'organe de pan-

neau (12) laminaire Plan est formé d'un matériau composite de bois.

6. Une structure de plancher d'accès comprenant un ou plusieurs panneaux de plancher selon la revendication 5, caractérisée en ce que le matériau composite de bois est un panneau d'agglomérés.

10

15

20

25

30

35

40

45

50

55

60

65

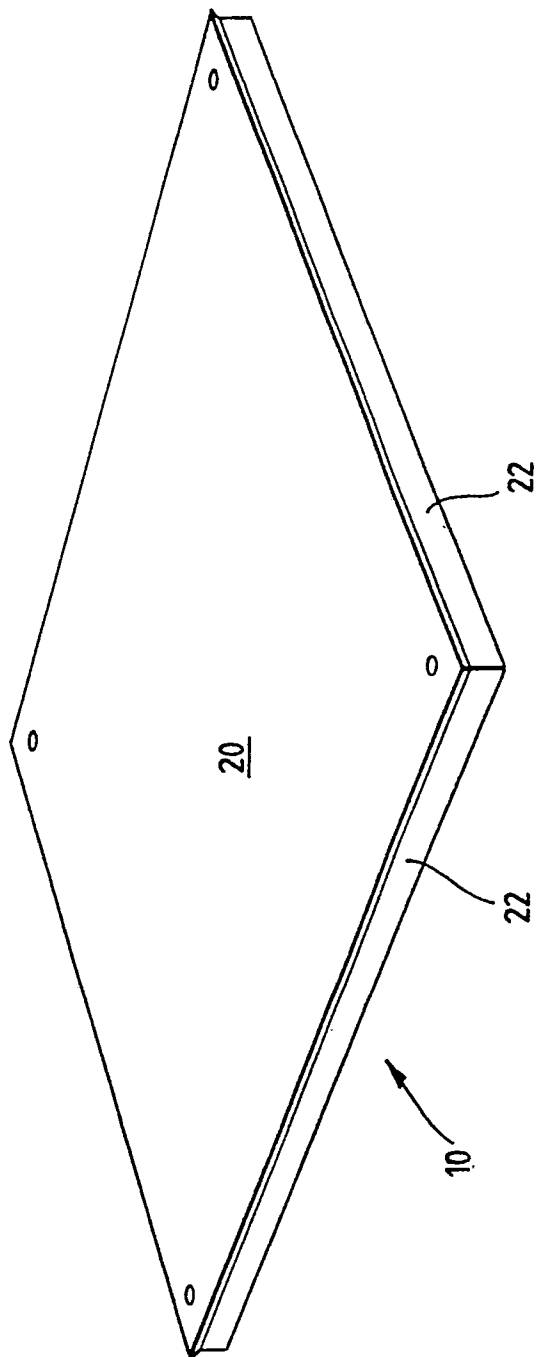


Fig.1.

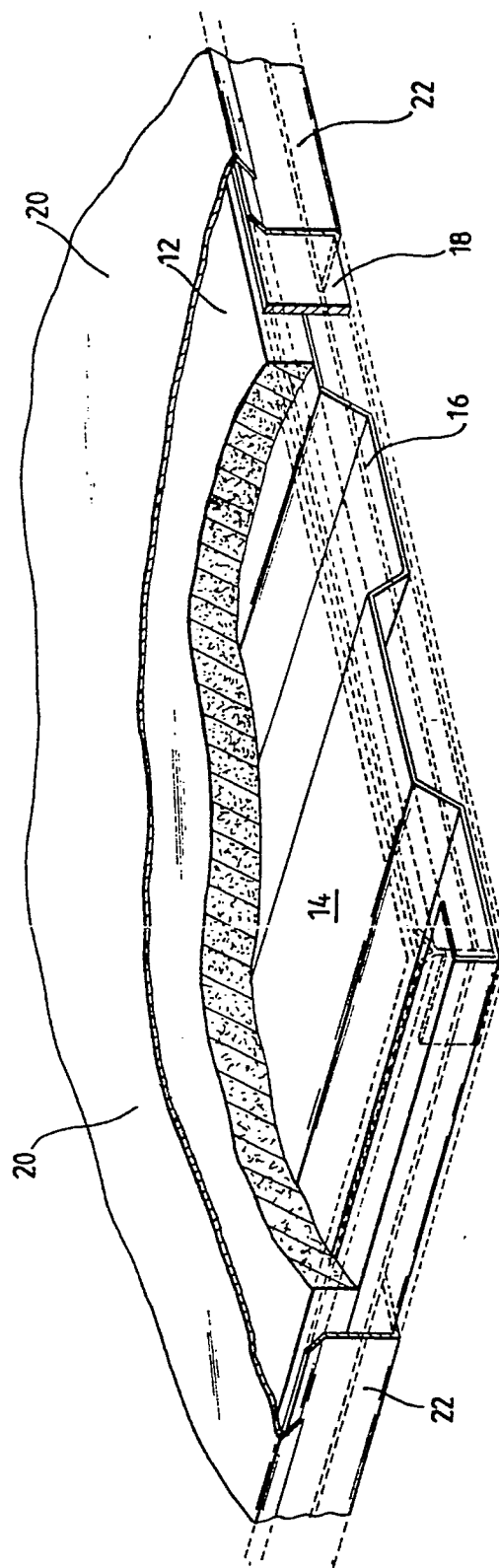


Fig.2.