

Description

The present invention relates to a load-bearing structure particularly for indoor flooring or outdoor paving.

The construction of indoor flooring nowadays usually entails preparing a foundation in which the ducting for water and electric lines must be laid and embedded beforehand.

This known method therefore requires the preliminary study of the water and electric system and the laying of all the associated ducting at a solid base prepared beforehand; said ducts must then be embedded for example by a casting of cement-like material.

One of the many drawbacks of this solution is the fact that during the construction of the building said ducting, particularly the electrical ducting, is exposed for some time (at least until the laying of said ducting is completed) and is therefore subject to crushing both by treading on it and by the passing of the wheels of wheelbarrows or other tools over them.

Moreover, once the thin ducting covering slab has been cast, the flooring cannot be laid immediately because said casting must be able to dry appropriately.

Only after this condition also has been met it is possible to lay parquet, tiles or fitted carpeting.

Among the other drawbacks, mention can be made, in the case of indoor flooring, of the considerable weight of the thin base slabs, which force a preliminary calculation of the load of the floors.

As regards instead the optional use of outdoor paving, said paving is usually built by using thin cement or inert slabs laid over sand or cement and this requires a long time and entails high costs; these components are also heavy and therefore require suitable tools or means to transport them.

The aim of the present invention is to solve the above technical problems, eliminating the drawbacks of the cited prior art and thus providing an invention which allows to lay indoor flooring or outdoor paving quickly and easily.

Within the scope of this aim, an important object is to provide an invention in which said laying can occur even without a preliminary laying of water and electric ducting, of course with the option of subsequently laying said ducting quickly and easily.

Another important object is to provide an invention that allows to obtain an indoor flooring or outdoor paving which is stable over time and safe in use.

Another important object is to provide an invention which is structurally simple and easy to industrialize.

Another object is to provide an invention which has low manufacturing costs and allows to produce indoor flooring or outdoor paving at an overall cost which is lower than in the cited prior art.

This aim, these objects and others which will become apparent hereinafter are achieved by a load-bearing structure for supporting panels or coverings or

for use as outdoor paving, characterized in that it is constituted by a modular body which is provided with leveling means which can be activated from the upper surface, said body being internally provided with a grid-like structure with connected compartments for ducting, means being provided for the removable locking of a plurality of bodies and/or panels arranged side by side, said locking means being actuatable from the upper surface of said bodies.

Further characteristics and advantages of the present invention will become apparent from the following detailed description of a particular but not exclusive embodiment, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

figure 1 is a top view of a load-bearing structure;
figure 2 is a detail view of the corner of a modular body;
figure 3 is a sectional view, taken along the plane III-III of figure 2;
figure 4 is a sectional view, taken along the plane IV-IV of figure 1;
figure 5 is a sectional view, taken along the plane V-V of figure 1;
figure 6 is an axonometric view of a leveling means;
figure 7 is an axonometric view of four of said modular bodies arranged mutually side by side together with a means for removably locking them;
figures 8, 9 and 10 illustrate said removable locking means for the modular bodies in a first side view, in a top view and in a second side view;
figure 11 is a view, similar to figure 7, of the arrangement of a panel on top of a plurality of mutually locked modular bodies;
figure 12 is a view, similar to figure 7, of the use of a different means for the removable locking of a plurality of bodies for outdoor pavings or for covering said pavings by means of tiles or fitted carpeting or parquet;
figures 13, 14 and 15 are views, similar to those of figures 8, 9 and 10, of the locking means of figure 12;
figure 16 is a sectional view, taken along the plane XVI-XVI of figure 1.

With reference to the above figures, 1 designates a load-bearing structure for supporting panels or coverings, designated by the reference numeral 2, or for outdoor pavings.

Said load-bearing structure is constituted by a modular and load-bearing body 3 for supporting the panels or coverings 2 for indoor and outdoor use.

Said body 3 can be formed for example by using recycled and recyclable material for cost containment.

Each body 3 is provided with a flat upper surface 4 and, at the corners 5, with a recess or depression 6 whereat first through holes 7 are formed at right angles.

Means for leveling said body can be arranged

within said first holes 7 and can be activated from the upper surface 4 thereof; said means are constituted by a suitable screw 8 provided with a head 9 which can be arranged on a stable plane 10 and with a threaded stem 11 which can be inserted in a complementarily threaded seat formed at said first holes 7.

Activation of the screw 9 from the upper surface 4 of the body 3 is allowed because at the end of the stem 11 there is provided a seat 12, for example for an Allen screw, or a slot for inserting a complementarily shaped screwdriver or other tool.

On each body 3 there are also provided second through holes 13, which are proximate to the outer perimetric edge 14 and approximately at the center of each body.

Below the upper surface 4, each body 3 is provided with partitions 15 which form a grid-like structure and have a shape forming, in a downward region, a plurality of connected compartments 16 whereat it is possible to pass ducting which is not shown in the figures.

Furthermore, the load-bearing structure 1 comprises means for the removable mutual locking of a plurality of bodies 3 or of panels or coverings 2 arranged side by side; said means can be activated from the upper surface 4 of each body 3.

Said removable locking means are constituted by a suitable coupling 17 which can be positioned at, and is shaped complementarily to, a suitable seat which is formed by arranging side by side a plurality of bodies 3 at a corner 5; said seat is formed by the presence of the mutually adjacent recesses or depressions 6.

The coupling 17 is thus constituted by a plate 18 which is provided, in a downward region, with four bridges 19 located at the corners and arranged along the diagonals; said bridges are essentially shaped like an inverted U, the wings 20a, 20b whereof can be arranged at complementarily shaped guides 21 formed on the portion of the body 3 whereon the first through holes 7 are located; said guides 21 are parallel to the laterally adjacent outer perimetric edge 14 of the body 3 and merge at a region adjacent to the corner 5.

On the opposite side with respect to the bridges 19, again at the corners and along the diagonals, four tabs 22 arranged in a cross-like configuration protrude above the plate 18; their function is to allow, as shown in figure 11, to position and lock between two of said tabs the corresponding sides of a panel or of a covering 2.

The height of the tabs 22 is such that they can protrude, once the coupling 17 has been inserted, beyond the upper surface 4 of the body 3, by an extent which is equal to the thickness of the panel or covering 2.

As an alternative, if the load-bearing structure must be used for a paving for example for outdoor use or to allow the laying of tiles or fitted carpeting or parquet, as shown in figure 2, the coupling 17 is similar to the one shown in figure 7 as regards the presence of the plate 18 and of the bridges 19, except for the tabs 22.

In this manner, it is possible to obtain a flat surface

for laying tiles or fitted carpeting or parquet.

As an alternative, the load-bearing structure can be wall-mounted in order to form a ventilated structure.

It has thus been observed that the invention has achieved the intended aim and objects, a load-bearing structure having been provided which allows to form a surface for obtaining an indoor flooring or outdoor paving and, at the same, an underlying cellular region for the passage of cables and/or ducting and/or radiating panels; furthermore, said structure can be quickly and easily laid as flooring, avoiding and indeed replacing conventional thin slabs and thus providing faster and shorter laying times, saving time as regards the accessibility and/or walkability of the spaces.

Moreover, said structure, thanks to the particular use of the couplings, allows to inspect at all times and in any point the area underlying the indoor flooring or outdoor paving.

Said structure also allows to achieve a significant weight reduction, since it is possible to use lower thicknesses for the panel and/or the finishing covering; said reductions can be on the order of one third in the case of wood panels and of approximately four fifths in comparison with panels made of inert material, and this also entails global cost reduction.

The structure can also be used for outdoor pavings since it is made of materials which are not affected by the weather conditions.

The invention is of course susceptible of numerous modifications and variations, all of which are within the scope of the same inventive concept.

Thus the materials and the dimensions that constitute the individual components may also be the most pertinent according to specific requirements.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A load-bearing structure for supporting panels or coverings or for use as outdoor paving, characterized in that it is constituted by a modular body (3) which is provided with leveling means (8) which can be activated from the upper surface (4), said body (3) being internally provided with a grid-like structure (15) with connected compartments (16) for ducting, means (17) being provided for the removable locking of a plurality of bodies (3) and/or panels (2) arranged side by side, said locking means (17) being actuatable from the upper surface (4) of said bodies (3).
2. A structure according to claim 1, characterized in

that said body (3), preferably formed by using recycled and recyclable material, comprises a flat upper surface (4) and, at the corners (5), a recess or depression (6) whereat first through holes (7) are formed at right angles.

3. A structure according to claims 1 and 2, characterized in that means (8) for leveling said body (3) can be arranged within said first holes (7) and can be activated from said upper surface (4) of said leveling means, said levelling means being constituted by a suitable screw (8) provided with a head (5) which can be arranged on a stable plane and a threaded stem (11) which can be inserted in a complementarily threaded seat formed at said first holes (7).
4. A structure according to claims 1 and 3, characterized in that the activation of said screw (8) from said upper surface (4) of said body (3) is allowed because at the end of said stem (11) there is provided a seat (12), for example for an Allen screw or a slot for the insertion of a complementarily shaped screwdriver or other tool.
5. A structure according to claims 1 and 4, characterized in that on each one of said bodies (3) there are also provided second through holes (13), which are proximate to the outer perimetric edge and approximately at the center of each body (3).
6. A structure according to claims 1 and 5, characterized in that below said upper surface (4) of each one of said bodies (3) there are partitions (15) forming a grid-like structure, said partitions (15) having a configuration which forms, in a downward region, a plurality of connected compartments (16) at which ducting can be passed.
7. A structure according to claims 1 and 6, characterized in that said load-bearing structure (1) comprises locking means (17) for the removable mutual locking of a plurality of bodies (3) or of panels or coverings (2) arranged side by side, said locking means (17) allowing activation from said upper surface (4) of each one of said bodies (3), said removable locking means being constituted by a suitable coupling (17) which can be arranged at, and is shaped complementarily to, a suitable seat obtained by arranging side by side a plurality of bodies at one of said corners, said seat being formed by the presence of said mutually adjacent recesses or depressions (6).
8. A structure according to claims 1 and 7, characterized in that said coupling (17) is constituted by a plate (18) having, in a downward region and at said corners, four bridges (19) which are arranged along

the diagonals and are essentially shaped like an inverted U, the wings (20a-20b) whereof can be arranged at complementarily shaped guides (21) formed on the portion of said body (3) on which said first through holes (7) are located, said guides (21) being parallel to said laterally adjacent outer perimetric edge of said body (3) and merging at a region which is adjacent to said corner.

9. A structure according to claims 1 and 8, characterized in that four tabs (22) arranged in a cross-like configuration protrude above said plate (18) on the opposite side with respect to said bridges (19), again at said corners and along the diagonals, the function of said tabs (22) being to allow to position and lock, between two of said tabs (22), the corresponding sides of one of said panels or coverings (2).
10. A structure according to claims 1 and 9, characterized in that the height of said tabs (22) is such that they can protrude, once said coupling (17) has been inserted, beyond said upper surface (4) of said body (3), by an extent which is equal to the thickness of said panel or covering (2).
11. A structure according to one or more of the preceding claims, characterized in that when used outdoors or to allow to lay tiles or fitted carpeting or parquet, said coupling (17) is constituted by said plate (18) and by said bridges (19) except for said tabs (22), in order to have a flat surface for laying tiles or fitted carpeting or parquet.
12. A structure according to one or more of the preceding claims, characterized in that it is wall-mounted in order to create a ventilated structure.









