

## **FLOOR**

The present invention concerns a floor comprising boards assembled on a framework comprising joists, said boards and joists  
5 comprising on each of their lateral sides at least one lateral groove, said boards being connected to the joists by means of coupling members, each coupling member comprising a first wing arranged to engage in the lateral groove in the joist and a second wing arranged to engage in the lateral groove in the board, the first and the second wing being offset  
10 height-wise with respect to one another and connected to each other by an upright, said second wing consisting of two parts that extend either side of the upright in a first and second direction substantially opposite to one another.

Such floors are known and marketed by the company  
15 Ectors B.V.B.A. in Sint-Truiden under the brand name Zero-Connect. These floors are for example used on terraces. In order to put such a floor in place, the joists are first spread out on the ground or a roof. Next, the boards are fixed to the joists by means of coupling members. The first wing of the coupling member engages in the joist whilst the second  
20 wing engages in the board. The floor can thus be constructed without having to screw or nail, which makes assembly easy and quick and also facilitates dismantling.

One drawback of the known floors is that the coupling member does not allow a solid anchorage in the joist. This is because  
25 the first wing is only short in length and rests only on a small surface area. This can then give rise to detachment of the coupling member not only during assembly, which interferes with the assembly, but also when the floor is laid, which interferes with the reliability of the construction.

The aim of the invention is to implement a floor where the  
30 connection between the joists and the boards is more reliable and causes fewer problems during assembly of the floor.

To that end, a floor according to the invention is

characterized in that said first wing consists of two parts that extend either side of the upright in the same plane extending in a third direction substantially perpendicular to the first and the second direction. The fact that the first wing comprises two parts makes it possible to make a connection with the joist which extends over a larger surface area. A more reliable connection both during assembly and over time is thus obtained. Moreover, since the first wing extends substantially perpendicular to the second, the connection is made in opposite planes, which makes the disengagement of the coupling member substantially more difficult when the floor is laid.

A first preferential embodiment of a floor according to the invention is characterized in that the two parts of the second wing are situated in line with one another. This makes it possible to balance the connection between two adjacent boards.

A second preferential embodiment of a floor according to the invention is characterized in that each wing part is formed by a wing having a biplanar geometry. The biplanar geometry makes it possible to give the wing a certain elasticity and thus facilitates its insertion into the lateral groove.

Preferably each wing comprises a lug on its front face. The presence of a lug reinforces the engagement in the lateral groove.

A third preferential embodiment of a floor according to the invention is characterized in that said upright extends beyond the plane in which the second wing is situated. Thus a space is created between two adjacent boards.

A fourth preferential embodiment of a floor according to the invention is characterized in that the framework comprises a mounting arranged for raising the floor with respect to ground on which the mounting is placed, said mounting being provided with an intermediate component arranged to position the joist with respect to the mounting. The mounting makes it possible to level the floor with respect to the ground.

Preferably the joist is provided with another longitudinal groove and the intermediate component is provided with perforations so that, when the joist is placed on the mounting, said other groove and the perforations are situated at the same height. This facilitates the fixing of the mounting and joists.

The invention will now be described in more detail with the help of the drawings that depict one embodiment of a floor according to the invention. In the drawings :

Figure 1 illustrates a detailed view of a portion of a floor assembled on a mounting;

Figure 2 shows a detailed view of a coupling member;

Figure 3 shows a sectional view through a joist;

Figure 4 shows a sectional view through a board; and

Figure 5 is a detailed view of the intermediate component assembled on the head of a mounting.

In the drawings, the same reference has been allocated to the same element or a similar element.

The floor 1 according to the invention, illustrated in Figure 1, comprises a series of boards 3 disposed on joists 2. The connection between boards and joists is implemented by means of coupling members 4. Each coupling member 4 is disposed between two adjacent boards 3 and engages in these two boards. The coupling member also engages in the joist 2. The latter can be placed on a mounting 6 with the help of an intermediate component 5. It must however be noted that the use of mountings is not essential for the implementation of a floor according to the invention. The mountings are an optional solution that is used either if it is wished to raise the level of the floor with respect to the ground on which it is placed or if the ground is sloping or uneven and it is wished to have the floor at the same level.

Fixing of the boards to the joists is carried out by means of coupling members illustrated in Figure 2. Each coupling member 4 comprises a first wing 9-a and 9-b that forms the end of the foot 7 of the

member. The first wing consists of two parts 9-a and 9-b that extend in the same plane either side of an upright 8 placed substantially perpendicular with respect to the foot 7. The two parts 9-a and 9-b of the first wing are separated by a space 15 having a width that corresponds to that of the upright 8.

The coupling member also comprises a second wing 11, 12 that is offset height-wise with respect to the first wing. The second wing comprises a first part 11 and a second part 12 separated from one another by the upright 8. The first part 11 extends in a first direction (arrow a) and the second part 12 in a second direction (arrow b) that are substantially opposite to one another and perpendicular with respect to the upright. As for the first and second directions, these are substantially perpendicular to a third direction (arrow c) along which the first wing 9 extends.

The wings, upright and foot are preferably formed from a single piece, preferably made from synthetic material that prevents rust. Of course other materials can be used, such as steel or wood.

Each wing 9, 11, 12 preferably has a biplanar geometry formed by the fins 9-c and 9-d, respectively 11-c and 11-d, 12-c and 12-d. The fins thus obtained are then separated height-wise by a space 13. Each fin preferably comprises a lug 10 on its front face. The lug preferably has a rounded front that extends substantially perpendicular with respect to the plane of the wing. The biplanar geometry gives the wing more elasticity, thus facilitating assembly in the boards or the joist and improving the grip after assembly.

The upright extends beyond the plane in which the second wing is situated thanks to a projection 16. This makes it possible to leave a distance, equal to the thickness of the projection, between two adjacent boards.

As illustrated in Figures 1, 3 and 4, the joist 2 comprises on each of its lateral sides a first groove 18 and preferably a second groove 19. Each board 3 comprises on each of its lateral sides a groove 20.

The grooves 18, 19 and 20 extend preferably over the entire length of the joist or board, which facilitates the fitting of the coupling member. The grooves 18 and 20 have a geometry substantially in the shape of an omega ( $\Omega$ ) comprising a back part wider than the input part.

5 In order to assemble the floor according to the invention, the joists are first applied either directly on the ground or on a roof, or on mountings 6 disposed previously. After positioning of the joists, the coupling members are inserted by means of their first wings 9 into the first groove 18 in the joist. Of course it is also possible to first apply the  
10 first wings and then position the joists. The elasticity obtained by the biplanar geometry facilitates the insertion of the first wing into the groove 18. As for the lug 10, this will cooperate with the  $\Omega$ -shaped geometry of the groove in order to engage in the widest part. The rounded front of the lug will facilitate insertion into the groove. Finally, after insertion, the  
15 elasticity of the wings will cause a return of the wings to the rest state, thus applying a force to the inside of the groove making it possible to hold the first wing firmly in place in the groove and guaranteeing a reliable connection between joist and coupling member.

Next the boards are disposed on the joists and indeed in  
20 such a way that floor and joists are in directions substantially perpendicular to one another. The groove 20 in the board is pushed against the second wing in such a way that the latter is inserted into the groove 20. Of course the thickness of the board and the position of the groove are chosen so as to correspond to the positioning of the second  
25 wing on the coupling member. The biplanar and omega-shaped geometry produces the same advantages as those described previously for the joist.

Since the second wing comprises two parts that extend either side of the upright, the coupling member makes it possible to fix  
30 two adjacent boards to the joist. Moreover, since the first and second wings extend in directions perpendicular to one another, a possible movement of the boards will have no effect on the fixing of the coupling

member to the joist.

As illustrated in Figures 1 and 5, the boards and joists can be assembled on mountings 6 by means of an intermediate component 5, itself fixed to the mounting, for example by means of a pin 26. The intermediate component is provided with perforations 25 applied on uprights 27 that delimit a first channel arranged in order to be passed through by a joist. The perforations are placed at a height such that, when the joist is placed on the mounting, the groove 19 and the perforations are situated at the same height. Thus, the joist can be fixed to the intermediate component and therefore to the mounting by inserting for example pins into the perforations and the groove 19.

The intermediate component also comprises a first 23 and a second 24 recess for receiving one end of a joist. The recesses are positioned opposite each other and perpendicular with respect to the channel.

**CLAIMS**

1. Floor comprising boards (3) assembled on a framework comprising joists (2), said boards and joists comprising on each of their lateral sides at least one lateral groove (18, 20), said boards being connected to the joists by means of coupling members (4), each coupling member comprising a first wing (9) arranged to engage in the lateral groove in the joist and a second wing (11, 12) arranged to engage in the lateral groove in the board, the first and the second wing being offset height-wise with respect to one another and connected to each other by an upright (8), said second wing consisting of two parts that extend either side of the upright in a first and second direction substantially opposite to one another, wherein said first wing consists of two parts that extend either side of the upright in the same plane extending in a third direction substantially perpendicular to the first and the second direction.

2. Floor as claimed in claim 1, wherein the two parts of the second wing are situated in line with one another.

3. Floor as claimed in claim 1 or 2, wherein each wing part is formed by a wing having a biplanar geometry.

4. Floor as claimed in one of claims 1 to 3, wherein each wing comprises a lug (10) on its front face.

5. Floor as claimed in one of claims 1 to 4, wherein said upright extends beyond the plane in which the second wing is situated.

6. Floor as claimed in one of claims 1 to 5, wherein the framework comprises a mounting (6) arranged for raising the floor with respect to ground on which the mounting is placed, said mounting being provided with an intermediate component arranged to position the joist with respect to the mounting.

7. Floor as claimed in claim 6, wherein the joist is provided with another longitudinal groove and the intermediate component is provided with perforations so that, when the joist is placed on the mounting, said other groove and the perforations are situated at the same

height.

8. Floor as claimed in claim 6 or 7, wherein the intermediate component comprises a first channel arranged in order to be passed through by a joist, and a first and second recess, said recesses  
5 being arranged for receiving one end of a joist and being positioned opposite each other and perpendicular with respect to the channel.