

Description

The invention relates to a transportable module shaped as a rectangular box having a floor panel, a roof panel, long side-wall panels and short side-wall panels, of which panels at least the floor panel and the long side-wall panels are hinged to each other, which box contains furthermore the other parts and panels for constructing a building having a floor space consisting of the surface of said floor panel and the surfaces of the long side-wall panels folded out into the horizontal position.

Such a module is known from the Dutch Patent Application 7600978, which is laid open to public inspection. The long side-wall panels of this prior art transportable module can be folded out pivoting around the horizontal axis of the hinge connection to the floor panel enlarging in this way the floor space, whereas the short side-wall panels can pivot upon a horizontal axis positioned near their upper edge or upon a vertical axis to constitute a side-wall in line with the shorter side-wall. Said shorter side-wall panels can be constructed out of two panels, folded together, both of which can be folded out around a separate axis, i.e. said mentioned horizontal axis respectively vertical axis.

If said panels are folded out after positioning the box onto a supporting base, then many actions are necessary to construct an all around closed building using the remaining parts which were contained in said box.

It is also known from the above-mentioned publication to turn the long side-wall panels outwards by pivoting around a horizontal shaft positioned near the upper edge, in which case said side-wall panels are constituting an extension of the roof. In that case, however, the floor is missing and said floor should be constructed out of separate parts.

The object of the invention is to provide a transportable module which is constructed out of panels in such a way that after a folding out procedure the building is almost ready.

Said object is according to the invention in principle reached in that the long side-wall panels are at or near their upper- respectively outer edges hinged to at least a second long panel, which in the folded out position can constitute a side-wall of the building, which second panel and/or the next panel is at or near the other edge hinged to a third panel, which is with its upper edge hinged to said roof panel. There are therefore at least three long panels near the long side-walls inside said box, which three long panels are hinged together and of which the outer panel is connected to the floor panel and of which the inner panel is connected to the roof panel. Said panels are practically adjacent to each other when folded together. If said panels are folded out, then the outer side-wall panels are forming an extension of the floor, the second panel is constituting the long side-walls of the building and the third panel is forming an extension of the roof, especially a sloping part of said roof.

If more than three panels are used, if for instance the second panel itself is constructed out of a number of panels, which are hinged together or telescopically connected to each other, then the construction can be such that the various panels can form part of the floor or the side-wall respectively the side-wall or the roof as desired.

The construction is preferably embodied such, that the roof panel of the box is adjustable in vertical direction. One can thereby not only realize a change in height of the building, but one can furthermore position the second and third panel under an angle of approximately 180°, in which case the second and third panel are constituting highly sloping side-walls.

Preferably the adjustable roof panel has profile metals at its corners guided into respectively onto vertical profile metals at the corners of the box. The result thereof is that the roof panel will maintain its correct position above the floor panel. The function of said profile metals can be taken over by hydraulic cylinders. Also screwed spindles are conceivable.

It can be furthermore advantageous, especially in the embodiment with the adjustable roof panel, to construct the third panel out of two sections which are slidable in relation to each other. Therefore said third panel can be extended in width respectively in height direction. It can be preferred to make one of the sections out of transparent material respectively to use transparent material therein, so that roof windows are created.

It is remarked, that from the U.S. Patent 3,296,752 a collapsible building is known comprising a roof panel and a side-wall panel, which are hinged together and which can be transported to the place of destination in the collapsed situation. A hoisting crane is necessary to convert this construction into a building.

An advantage of the various embodiments of the module according to the invention is now that for the construction respectively for the collapsing operation no separate hoisting means are necessary.

The invention will now be explained in more detail with reference to the drawings.

Figure 1 illustrates a perspective view of the transportable module in the form of a collapsed box.

Figure 2 illustrates a sectional view of the box in Figure 1.

Figure 3 illustrates the box in a partly folded out situation.

Figure 4 illustrates a sectional view of the ultimately obtained building.

Figure 5 illustrates the same box as in Figure 1, however, with an adjustable roof.

Figure 5a is a sectional view through the box of Figure 5.

Figure 6 is a perspective view of the box of Figure 5, partly folded out.

Figure 6a illustrates a sectional view of Figure 6.

Figure 6b illustrates a further stage in the folding out procedure.

Figure 7 illustrates a perspective view of a further stage of the folding out procedure and illustrates with dashed lines the situation at maximum height of the adjustable roof panel.

Figure 7a illustrates a sectional view through a variant of Figure 7.

Figure 8 illustrates a perspective view of the obtained building.

Figure 8a illustrates a sectional view through the building of Figure 8.

The box illustrated in Figure 1 has a floor respectively a roof of which the width is for instance 2.4 meter, which dimension is chosen taking road transport into account. The box can be compared with a usual container. The height of the box is 2.60 meter and the length of the box may be 6 meters, 9 meters, 12 meters or 15 meters.

The box illustrated in Figures 1 until 4 has a floor panel 1, first side-wall panels 2 and 3, second side-wall panels 4 and 5 and third side-wall panels 6 and 7 and furthermore a roof panel 8.

The first panels 2 respectively 3 are at 9 respectively 10 hinged to the floor panel 1.

The second side-wall panels 4 and 5 are at 11 respectively 12 connected to the upper edges of the first panels 2 respectively 3.

The third side-wall panels 6 respectively 7 are at 13 respectively 14 connected to the second panels 4 respectively 5 and are furthermore at 15 respectively 16 hinged to the roof panel 8.

After releasing the not illustrated locking devices the side-wall panels can be folded out and Figure 3 illustrates an intermediate stage during this folding out procedure of the panels 2 and 3, whereby the panels 4 and 5 are taken along. Said panels ultimately reach the position illustrated with dashed lines in Figure 3, from which position the second panels 4 respectively 5 are pivoted vertically upwards whereby the third panels 6 respectively 7 are forming part of the roof. This upwards pivoting of the panels 4 respectively 5 and 6 respectively 7 is only possible in case the roof panel 8 can be displaced in vertical and/or horizontal direction and the hinged connections allow sufficient freedom of movement.

In the embodiment of Figure 4 further locking means are necessary to provide sufficient solidity in transversal direction, which can be realized in a known way using struts or making use of narrow side-walls which can have in a known way a number of panels which can be folded out, although these narrow side-walls can provide sufficient strength themselves for instance the box has an inner frame extending along the edges of the box.

If the roof panel 8 after folding out the panels 4 until 7 is again connected to the shorter side-walls respectively to this framework, then a sufficient solidity is already obtained.

If the shorter side-walls are constructed out of a number of adjoining panels rotatable around vertical axes, for instance at the position of the edges 17 and 18, then these panels can be con-

nected to the second panels 4 and 5.

Figure 4 illustrate the third panels 6 and 7 in a somewhat sloping position, which can be easily realized by a correct position adjustment and correct dimensioning of these panels respectively the positioning of the hinges.

The second panels 4 respectively 5, forming the side-walls, do not have to be exactly vertical.

Figure 5 illustrates a similar box as in Figure 1, however, comprising now a roof panel 19, which is adjustable in vertical direction because it has at the corners profile metals 20, which are slidably guided into not illustrated vertical profile metals of a framework.

Figure 5a illustrates the corresponding sectional view differing only from Figure 2 in that the innermost or third panels 6', 7' have an upper telescoping section 21 respectively 22.

Figure 6 illustrates the partly folded out situation with the roof panel in the elevated position, whereby the corresponding sectional view is illustrated in Figure 6a.

Figure 6b illustrates the position which can be obtained when the first panels 2', 3' have reached the completely horizontal position. The same situation is also illustrated in Figure 7.

From the position illustrated in Figure 7 respectively 6b the second and third panels 4', 5' respectively 6', 7' can be rotated upwards to the position illustrated with normal lines in Figure 7a, whereby the roof panel 19 is in the highest position, which situation is illustrated in Figure 7 with the dashed lines 23, 24.

As will be clear from Figure 7a, a very high building can be realized by using sloping side-walls.

As is illustrated in Figures 8 and 8a it is, however, also possible to position the second panels 4' and 5' vertically or nearly vertically whereby the third panels 6' and 7' with the telescoping parts 21, 22 are positioned in a light sloping configuration forming a roof.

Also in these embodiments the front and rear walls can be realized using panels which are separately contained into the box or using panels which can be folded out and are attached to the shorter side panels.

Instead of foldable panels, which are in principle known from the above-mentioned Dutch Application 7600978, it is also conceivable to use telescopically extendable panels.

In this way it is possible to construct a large building which, as is indicated in Figure 8 by dashed lines, can be enlarged by adding a second box.

Claims

1. Transportable module shaped as a rectangular box having a floor panel (1), a roof panel (8), long side-wall panels (2, 3) and short side-wall panels (4, 5), of which panels at least the floor panel (1) and the long side-wall panels (2, 3) are hinged to each other, which box contains furthermore the other parts and panels (6, 7) for con-

Figure 7 illustrates a perspective view of a further stage of the folding out procedure and illustrates with dashed lines the situation at maximum height of the adjustable roof panel.

Figure 7a illustrates a sectional view through a variant of Figure 7.

Figure 8 illustrates a perspective view of the obtained building.

Figure 8a illustrates a sectional view through the building of Figure 8.

The box illustrated in Figure 1 has a floor respectively a roof of which the width is for instance 2.4 meter, which dimension is chosen taking road transport into account. The box can be compared with a usual container. The height of the box is 2.60 meter and the length of the box may be 6 meters, 9 meters, 12 meters or 15 meters.

The box illustrated in Figures 1 until 4 has a floor panel 1, first side-wall panels 2 and 3, second side-wall panels 4 and 5 and third side-wall panels 6 and 7 and furthermore a roof panel 8.

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The third side-wall panels 6 respectively 7 are at 13 respectively 14 connected to the second panels 4 respectively 5 and are furthermore at 15 respectively 16 hinged to the roof panel 8.

After releasing the not illustrated locking devices the side-wall panels can be folded out and Figure 3 illustrates an intermediate stage during this folding out procedure of the panels 2 and 3, whereby the panels 4 and 5 are taken along. Said panels ultimately reach the position illustrated with dashed lines in Figure 3, from which position the second panels 4 respectively 5 are pivoted vertically upwards whereby the third panels 6 respectively 7 are forming part of the roof. This upwards pivoting of the panels 4 respectively 5 and 6 respectively 7 is only possible in case the roof panel 8 can be displaced in vertical and/or horizontal direction and the hinged connections allow sufficient freedom of movement.

In the embodiment of Figure 4 further locking means are necessary to provide sufficient solidity in transversal direction, which can be realized in a known way using struts or making use of narrow side-walls which can have in a known way a number of panels which can be folded out, although these narrow side-walls can provide sufficient strength themselves for instance the box has an inner frame extending along the edges of the box.

If the roof panel 8 after folding out the panels 4 until 7 is again connected to the shorter side-walls respectively to this framework, then a sufficient solidity is already obtained.

If the shorter side-walls are constructed out of a number of adjoining panels rotatable around vertical axes, for instance at the position of the edges 17 and 18, then these panels can be con-

nected to the second panels 4 and 5.

Figure 4 illustrate the third panels 6 and 7 in a somewhat sloping position, which can be easily realized by a correct position adjustment and correct dimensioning of these panels respectively the positioning of the hinges.

The second panels 4 respectively 5, forming the side-walls, do not have to be exactly vertical.

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Figure 6 illustrates the partly folded out situation with the roof panel in the elevated position, whereby the corresponding sectional view is illustrated in Figure 6a.

Figure 6b illustrates the position which can be obtained when the first panels 2', 3' have reached the completely horizontal position. The same situation is also illustrated in Figure 7.

From the position illustrated in Figure 7 respectively 6b the second and third panels 4', 5' respectively 6', 7' can be rotated upwards to the position illustrated with normal lines in Figure 7a, whereby the roof panel 19 is in the highest position, which situation is illustrated in Figure 7 with the dashed lines 23, 24.

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As is illustrated in Figures 8 and 8a it is, however, also possible to position the second panels 4' and 5' vertically or nearly vertically whereby the third panels 6' and 7' with the telescoping parts 21, 22 are positioned in a light sloping configuration forming a roof.

Also in these embodiments the front and rear walls can be realized using panels which are separately contained into the box or using panels which can be folded out and are attached to the shorter side panels.

Instead of foldable panels, which are in principle known from the above-mentioned Dutch Application 7600978, it is also conceivable to use telescopically extendable panels.

In this way it is possible to construct a large building which, as is indicated in Figure 8 by dashed lines, can be enlarged by adding a second box.

Claims

1. Transportable module shaped as a rectangular box having a floor panel (1), a roof panel (8), long side-wall panels (2, 3) and short side-wall panels (4, 5), of which panels at least the floor panel (1) and the long side-wall panels (2, 3) are hinged to each other, which box contains furthermore the other parts and panels (6, 7) for con-



structing a building having a floor space surface consisting of said floor panel (1), and the surfaces of the long side-wall panels (2, 3) folded out into the horizontal position, characterized in that said long side-wall panels (2, 3) are at or near their upper- respectively outer edges (11, 12) hinged to at least a second long panel (4, 5), which in the folded out position can constitute a side-wall (4, 5) of the building, which second panel (4, 5) and/or the next panel is at or near the other edge (13, 14) hinged to a third panel (6, 7), which is with its upper edge (15, 16) hinged to said roof panel (8).

2. Module according to claim 1, characterized in that the roof panel (8) of the box is adjustable in vertical direction.

3. Module according to claim 2, characterized in that the adjustable roof panel (19) has vertical profile metals (20) at its corners, guide into or onto vertical profile parts at the corners of the box.

4. Module according to claim 2 or 3, characterized in that said third panel (6', 7') is composed out of two sections, which are slidable (21, 22) in relation to each other in the plane of this panel.

Revendications

1. Module transportable en forme de caisse rectangulaire comprenant un panneau de plancher (1), un panneau de toit (8), des panneaux latéraux longs (2, 3) et des panneaux latéraux courts (4, 5) parmi lesquels au moins le panneau de plancher (1) et les panneaux latéraux longs (2, 3) sont articulés entre eux, la caisse contenant en outre les autres éléments et panneaux (6, 7) pour la construction d'un bâtiment comprenant une surface de plancher constituée du panneau de plancher (1) et des surfaces des panneaux latéraux longs (2, 3) déployées vers l'extérieur en position horizontale, caractérisé en ce que les panneaux latéraux longs (2, 3) sont articulés en ou près de leur bord respectif supérieur ou extérieur (11, 12) sur au moins un deuxième panneau long (4, 5) qui dans la position déployée peut constituer une paroi latérale (4, 5) du bâtiment, lequel deuxième panneau (4, 5) et/ou le panneau suivant est articulé ou sont articulés en ou près de son ou leur autre bord (13, 14) sur un troisième panneau (6, 7) qui en son extrémité supérieure (15, 16) est articulé au panneau de toit (8).

2. Module selon la revendication 1, caractérisé

en ce que le panneau de toit (8) de la caisse est ajustable en direction verticale.

3. Module selon la revendication 2, caractérisé en ce que le panneau de toit ajustable (19) présente à ses angles des profilés verticaux en métal (20) qui sont guidés aux angles de la caisse dans ou sur des éléments profilés verticaux.

4. Module selon la revendication 2 ou 3, caractérisé en ce que le troisième panneau (6', 7') est composé de deux sections qui peuvent coulisser (21, 22) l'une par rapport à l'autre dans le plan de ce panneau.

Patentansprüche

1. Transportierbarer Modul in der Form eines rechteckigen Kastens mit einem Bodenpaneel (1), einem Dachpaneel (8), langen Seitenwandpaneelen (2, 3) und kurzen Seitenwandpaneelen (4, 5), von welchen Paneelen mindestens das Bodenpaneel (1) und die langen Seitenwandpaneelen (2, 3) aneinander angelenkt sind, welcher Kasten ausserdem die anderen Teile und Paneele (6, 7) zum Errichten eines Gebäudes mit einer aus dem Bodenpaneel (1) und den nach aussen in die Horizontallage entfalteten Flächen der langen Seitenwandpaneelen (2, 3) bestehenden Bodenfläche enthält, dadurch gekennzeichnet, dass die langen Seitenwandpaneelen (2, 3) an oder in Nähe ihrer jeweils oberen und äusseren kante (11, 12) an mindestens einem zweiten langen Paneel (4, 5) angelenkt sind, das in der entfalteten Lage eine Seitenwand (4, 5) des Gebäudes bilden kann, wobei das zweite Paneel (4, 5) und/oder das nächste Paneel an oder in Nähe dessen bzw. deren anderer Kante (13, 14) an ein drittes Paneel (6, 7) angelenkt ist bzw. sind, das an seiner oberen Kante (15, 16) an das Dachpaneel (8) angelenkt ist.

2. Modul nach Anspruch 1, dadurch gekennzeichnet, dass das Dachpaneel (8) des Kastens in vertikaler Richtung einstellbar ist.

3. Modul nach Anspruch 2, dadurch gekennzeichnet, dass das einstellbare Dachpaneel (19) an seinen Ecken vertikale Profile (20) aus Metall aufweist, die an den Ecken des Kastens in oder an vertikalen Profilelementen geführt werden.

4. Modul nach Anspruch 2 oder 3, dadurch gekennzeichnet, dass das dritte Paneel (6', 7') aus zwei Abschnitten besteht, die zueinander in der Ebene dieses Paneels verschoben (21, 22) werden können.

