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SLAT ROOF AND METHOD FOR ADAPTING A SLAT ROOF

LAMELLENDACH UND VERFAHREN ZUR ANPASSUNG EINES LAMELLENDACHES

TOIT À LATTES ET PROCÉDÉ D'ADAPTATION D'UN TOIT À LATTES

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Proprietor: Renson Sunprotection-Screens NV 8790 Waregem (BE)

Inventors:
• ABEEL, Bart Pieter Jules 8880 Sint-Eloois-Winkel (BE)
• LEMIEGRE, Kristof 9050 Gentbrugge (BE)

Representative: Hostens, Veerle et al KOB NV Patents
President Kennedypark 31 C 8500 Kortrijk (BE)

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Description

[0001] The present invention relates to a slat roof comprising beams, several slats arranged parallel to one another therebetween and slat shafts by means of which the slats are rotatably fixed to the respective beams.

[0002] The present invention furthermore relates to a method for adapting a slat roof to form a slat roof according to the present invention.

[0003] Slat roofs having rotatable slats are usually used to cover an outdoor area, such as a terrace covering or veranda roof, etc. In addition to said slats, a slat roof of this type may also comprise one or more additional slats, such as for example a few fixedly arranged slats. Using such a rotatably arranged slat shaft, the slats are rotatable between an open position, in which an intermediate space extends between the slats, and a closed position, in which the slats together form a closed shelter. By rotating the slats between these positions, it is possible to regulate the incidence of light, radiant heat and ventilation into the space underneath the slats. By directing the slats, it is possible to protect against the sun and/or wind or, on the contrary, to let them in. In addition, the slats may optionally be provided slidably in the slat roof, with, in that case, the slats being typically slideable between a position in which they are spread out over the slat roof and a position in which they are substantially arranged at one side of the slat roof.

[0004] A problem with such slat roofs is that the beams begin to bulge (and bend upwards) under the weight and the bending of the slats suspended between them in the plane of these slats. Wind loads can also cause this phenomenon. On the one hand, this problem is becoming more widespread due to the growing trend of designing larger uninterrupted covers to have such slat roofs and of using heavier slats in such covers, such as glass slats, for example. On the other hand, this problem is also becoming more widespread due to another trend, namely to make these slat roofs simpler, so that they can also be installed by DIY enthusiasts.

[0005] In order to remedy this problem, the beams are often designed to be sturdier. However, this requires more material and means that the beams become a great deal more expensive, which also results in a considerable increase in the cost price of the entire slat roof. Wider and heavier beams are often also undesirable for aesthetic reasons.

[0006] It is also known to place the beams at an incline (concave), counter to the bulging, so that they return to being straight as a result of the bulging. However, it is difficult to connect such beams neatly to other girders which in this case together form a frame for the slat roof. Such beams are difficult to mitre in an aesthetic manner.

[0007] It is further known to provide a transverse girder in the centre of such a slat roof. However, most customers do not wish for such a division of their slat roof using such a transverse girder.

[0008] Recently, the present applicant devised a further solution using a tension cable which is fitted inside a hollow slat shaft. This solution was proposed in patent application BE 2015/5333. However, this solution using a tension cable in a hollow slat shaft cannot be applied to all slat roofs equally well. This solution is less suitable, for example, for relatively simple slat roofs where the beams are made in a single piece and, as a consequence, the ends of these tension cables cannot so easily be concealed in said beams.

[0009] Another possibility is to fit a circlip to the end of the slat shaft which is fitted through the beam and extends on the other side of the beam from that of the slat. However, this end is usually no longer accessible after the slat has been installed.

[0010] The object of the present invention is also to provide an alternative solution to overcome the stated problem.

[0011] This object of the invention is achieved by providing a slat roof comprising beams, several slats arranged parallel to one another between these beams and slat shafts by means of which these slats are rotatably fastened to the respective beams, wherein the slat shaft of at least one slat is provided, on at least one end by means of which it is attached to a respective beam, with at least one radial projection and the respective beam comprises at least one fitting opening which comprises a shaft opening through which the corresponding slat shaft extends in the mounted position and comprises an insertion opening which ends in the shaft opening in such a manner that the corresponding slat shaft, in a first position with said radial projection at the location of the insertion opening, can be fitted through the fitting opening by its corresponding end and, after this slat shaft has been inserted in the insertion opening, in a different position, different from the first position, said radial projection engages behind a part of the beam which delimits the shaft opening adjacent to the insertion opening, in order to rotatably attach this slat shaft to this beam.

[0012] By allowing one or more such radial projections to engage behind a part of the beam which delimits the shaft opening, one or more slats can be secured with respect to the beams by means of their slat shafts, so that these one or more slats help to keep the beams in position and prevent bending.

[0013] Such a radial projection may form an integral part of the slat shaft or may be attached thereto.

[0014] A slat of such a slat roof may be rotatably attached to the beams by one single slat shaft, in which case this slat shaft extend along the length of this slat and is rotatably mounted in the beams at its ends. If the last-mentioned slat of a slat roof according to the invention comprises such a single slat shaft, then each of the ends of this slat shaft is preferably provided with such a radial projection. Each of the beams is then preferably provided with a said corresponding fitting opening.

[0015] However, such a slat may also be provided with a slat shaft at each of its ends, in which case these slat shafts are rotatably mounted in the beams at their oppo-
site end. This is typically the case when the slat shafts are arranged horizontally for the purpose of rotation for the sake of simplicity, while the slat is placed at an angle for the sake of drainage. If the last-mentioned slat of a slat roof according to the invention comprises two such slat shafts, then each of these slat shafts is preferably provided with such a radial projection. Each of the beams is then preferably provided with a said corresponding fitting opening.

In a preferred embodiment, said corresponding slat shaft of a slat roof according to the present invention is rotatable about its shaft, in order to take it from the first position to the other position.

More specifically, the fitting opening may to this end be substantially configured as a keyhole opening.

A said keyhole opening can be provided in the beam, for example, by means of milling. However, this requires the beam to undergo a milling operation.

Alternatively and more preferably, the fitting opening may for example also be formed by a borehole in the corresponding beam and a substantially C-shaped flexible insertion element which is arranged in this borehole, with the substantially C-shaped flexible insertion element forming said part of the beam that delimits the shaft opening. In this case, a simple borehole in the beam is then sufficient, in which case only a flexible insertion element which has already been produced has to be provided in the beam.

In the case of keyhole openings which are produced in the beam by means of milling, such a flexible insertion element would still have to be produced in the beam, thus necessitating an additional operation. However, the advantage of such a milled keyhole opening is that the insertion opening can have larger dimensions. The corresponding radial projection may then have larger dimensions, so that this radial projection could in principle also engage behind the edge of the shaft opening across a larger zone in order to secure the slat with respect to the beam.

In order to provide said substantially C-shaped flexible insertion element in the borehole, the former may be pressed to form a shape which is smaller than the said borehole and can be inserted freely herein. Subsequently, this substantially C-shaped flexible insertion element may be released again in order to flexibly expand again until it is pressed against the edges of the borehole and forms a C-shaped edge that delimits the shaft opening. The cavity inside the C shape itself in this case forms the shaft opening. The opening between the legs of the C shape then forms the insertion opening of the fitting opening.

Preferably, each position of the said corresponding slat shaft of a slat roof according to the present invention, in which this slat shaft is rotatable in the mounted position of the slat roof, is a said different position. In this way, the slat shaft always remains secured in the fitting opening during normal operation of the slat roof, so that the bending of the beams does not vary too greatly upon rotation of the slats in the mounted position of the slat roof. Therefore, this slat shaft can then not accidentally become detached from the beam.

A slat roof according to the present invention furthermore preferably also comprises at least one spacer which is arranged between the said at least one slat and a corresponding beam. Such a spacer may help to ensure in a simple manner that the radial projection engages behind the said edge.

More specifically such a spacer may be configured as a sleeve with a substantially C-shaped cross section which is arranged around the corresponding slat shaft.

In a preferred slat roof according to the present invention, the slat shafts of several slats comprise said radial projections and the corresponding ends are fitted in said fitting openings of the beams. By thus securing several slats with respect to the beams by means of their slat shafts, it is possible to ensure with even greater certainty that the beams are held in position and bending is prevented.

Still more preferably, the slat shafts of all slats therefore comprise said radial projections and the corresponding ends are fitted in said fitting openings of the beams.

The beams of the slat roof according to the present invention are preferably hollow, so that the ends of the slat shafts can end in said cavity.

Preferably, the slat shaft of at least one slat of a slat roof according to the present invention may furthermore be provided, at a certain at least one end by means of which it is attached to a said beam, with at least one radial projection which, in the mounted position, extends between the slat and the respective beam, against this beam. In this case, this radial projection then forms a securement against the beams becoming concave.

Still more preferably, the slat shafts of several slats comprise such radial projections and most preferably the slat shafts of all slats comprise such radial projections.

In addition, the object of the present invention is also achieved by providing a method for adapting a slat roof comprising beams, several slats arranged parallel to one another between these beams and slat shafts by means of which the slats are rotatably fixed to the respective beams, in which case the slat shaft of at least one slat is provided, on at least one end, with at least one radial projection, in which the respective beam is provided with a corresponding fitting opening which comprises a shaft opening through which the corresponding slat shaft extends in the mounted position and comprises an insertion opening which ends in the shaft opening, in which the corresponding slat shaft, in a first position with said radial projection at the location of the insertion opening, is fitted through the fitting opening by its corresponding end and in which, after it has been inserted in the insertion opening, it is moved to a different position, different from the first position, in which it engages, by
means of the said radial projection, behind a part of the beam which delimits the shaft opening adjacent to the insertion opening, in order to rotateably attach this slat shaft to the beam.

[0031] In a preferred method according to the present invention, a spacer is fitted between the slat and the beam after the corresponding slat shaft has been installed in the fitting opening and moved to the other position. More specifically, to this end, a sleeve with a substantially C-shaped cross section can be fitted over the slat shaft in order to fit it as a spacer between the slat and the beam.

[0032] The present invention will now be explained in more detail by means of the following detailed description of single preferred embodiments of a slat roof according to the present invention. The sole aim of this description is to give illustrative examples and to indicate further advantages and particulars of the present invention and can therefore not be interpreted as a limitation of the area of application of the invention or of the patent rights defined in the claims.

[0033] Reference numerals are used in this detailed description to refer to the attached drawings, in which:

- Fig. 1 shows a part of a slat roof according to the present invention in perspective at the location of a beam and several slats attached thereto;
- Figs. 2-4 show a perspective view of the various steps involved in fitting a slat to the beam from the slat roof in Fig. 1;
- Fig. 5 shows a perspective view of a substantially C-shaped insertion element from the slat roof from Fig. 1 separately;
- Figs. 6-8 show a perspective view of a slat with a substantially C-shaped insertion element from the slat roof from Fig. 1, with the slat in different rotational positions;
- Fig. 9 shows a perspective view of an end piece of a slat from the slat roof from Fig. 1 separately.

[0034] The slat roof (1) illustrated in Fig. 1 comprises several slats (3) which are arranged parallel to each other between two beams (2), only one beam (2) of which has been illustrated in the figures. The other beam (2) is of similar construction to the illustrated beam (2). These slats (3) are attached to the beams (2) so as to be rotatable by means of slat shafts (4), which are shown in the further figures.

[0035] The slats (3) can be moved between an open position and a closed position by rotating them. In the open position, there is an intermediate space between the slats (3), through which, for example, air can enter the space situated underneath or can leave this space situated underneath. In the closed position, the slats (3) form a closed shelter which can protect the space situated underneath against, for example, wind and/or precipitation.

[0036] With respect to drainage of precipitation, the slats (3) are arranged such that they slope towards one of the two beams (2).

[0037] The beams (2) may be made of, for example, aluminium, plastic, wood, etc. In the illustrated embodiment, these beams (2) are hollow.

[0038] The slats (3) may, for example, also be made from profiled sections of aluminium or plastic and may, if desired, be provided with filler elements made of, for example, polycarbonate, glass, wood, etc.

[0039] A shaft is fitted through each slat (3) of the illustrated slat roof (1), which shaft is not visible in the figures. To each end of each slat (3), an end piece (14) is fitted which is illustrated separately in Fig. 9. The said shaft of the slat (3) is in this case fitted in the cavity (15) of this end piece (14). To this end piece (14), a slat shaft (4) is fitted which is provided at its end with a radial projection (5). Such an end piece (14) may be made, for example, from plastic.

[0040] In order to be able to fit the slats (3) to the beams (2) so as to be rotatable, boresholes (10) are provided in a side wall of each beam (2) which form openings to the interior of this beam (2). In these boresholes (10), substantially C-shaped flexible insertion elements (9) are in each case provided. Such a substantially C-shaped flexible insertion element (9) has been shown separately in a perspective view in Fig. 5. This may be made, for example, from rubber or plastic. On its outer circumference, this insertion element (9) is provided with a groove (12) which is delimited by two ribs (13). By pushing in this insertion element (9), it can be inserted into a said borehole (10). By then releasing this insertion element (9) again thereafter, it will return to its original shape in a flexible way and can be mounted in this borehole (10), with the edge of the borehole (10) engaging in the groove (12) and the ribs (13) extending next to the side wall of the beam (2). In this way, this substantially C-shaped flexible insertion element (9) forms a C-shaped edge which delimits a shaft opening (6), through which, in the mounted position of the slat roof (1), a slat shaft (4) may engage. The opening (7) between the legs of the C shape forms an insertion opening (7) through which the radial projection (5) of a slat shaft (4) may be fitted. The shaft opening (6) and the insertion opening (7) together form a keyhole-shaped fitting opening (8) for mounting a slat shaft (4).

[0041] Figs. 2 to 4 show how a slat (3) can be mounted in such a fitting opening (8) by means of its slat shaft (4). In a first position of the slat shaft (4), as illustrated in Fig. 2, in which the radial projection (5) is situated at the location of the insertion opening (7), the slat shaft (4) can be fitted through the fitting opening (8), as is illustrated in Fig. 3. The radial projection (5) at the end of the slat shaft (4) then extends into the cavity of the beam (2). In this case, the slat shaft (4) is first brought so far into the cavity that it is possible to fit the corresponding slat shaft (4) at the other end of the slat (3) in a corresponding fitting opening (8) of the other beam (2) in a similar manner. Subsequently, the slat (3) will extend between both beams (2), with the radial projections (5) at the ends of
the corresponding slat shafts (4) being situated in the cavities of the beams (2). Thereafter, the slat shaft (4) can be rotated in such a manner that each radial projection (5) engages behind the corresponding C-shaped flexible insertion element (9). In order to prevent the slat shafts (4) from being released again from the corresponding fitting openings (8), sleeves (11) with a C-shaped cross section are fitted over the slat shafts (4) as spacers (11), between the slat (3) and the beams (2), as can be seen in Fig. 1. In addition, the position of the C-shaped flexible insertion element (9) is chosen such that the first position is a position into which the slat (3) can only be moved during fitting or removal of the slat roof (1). In the mounted position of the slat roof (1), the slat (3) can no longer be moved into this position, due to the presence of the other slats (3), as can be seen in Fig. 1. In the rotation positions, into which the slat (3) can be moved in the mounted position of the slat roof (1), the radial projection (5) will always engage behind the C-shaped flexible insertion element (9), as can be seen in Figs. 6 to 8.

Claims

1. Slat roof (1), comprising
- beams (2);
- several slats (3) arranged parallel to one another between these beams (2);
- slat shafts (4) by means of which these slats (3) are rotatably fastened to the respective beams (2);

characterized in that the slat (4) of at least one slat (3) is provided, on at least one end by means of which it is attached to said beam (2), with at least one radial projection (5) and the respective beam (2) comprises at least one fitting opening (8) which comprises a shaft opening (6) through which the corresponding slat shaft (4) extends in the mounted position and comprises an insertion opening (7) which ends in the shaft opening (6) in such a manner that the corresponding slat shaft (4), in a first position with said radial projection (5) at the location of the insertion opening (7), can be fitted through the fitting opening (8) by its corresponding end and, after this slat shaft (4) has been inserted into the insertion opening (7), in a different position, different from the first position, said radial projection (5) engages behind a part (9) of the beam (2) which delimits the shaft opening (6) adjacent to the insertion opening (7), in order to rotatably attach this slat shaft (4) to this beam (2).

2. Slat roof (1) according to Claim 1, characterized in that the said corresponding slat shaft (4) is rotatable from the first position to the other position.

3. Slat roof (1) according to Claim 2, characterized in that the fitting opening (8) is substantially configured as a keyhole opening.

4. Slat roof (1) according to Claim 3, characterized in that the fitting opening (8) is formed by a borehole (10) in the corresponding beam (2) and a substantially C-shaped flexible insertion element (9) which is arranged in this borehole (10), with the substantially C-shaped flexible insertion element (9) forming said part (9) that delimits the shaft opening (6).

5. Slat roof (1) according to one of the preceding claims, characterized in that each position of the said corresponding slat shaft (4) in which it is rotatable in the mounted position of the slat roof (1) is a said different position.

6. Slat roof (1) according to one of the preceding claims, characterized in that the slat roof (1) comprises at least one spacer (11) which is arranged between the said at least one slat (3) and a corresponding beam (2).

7. Slat roof (1) according to Claim 6, characterized in that the spacer (11) is configured as a sleeve (11) with a substantially C-shaped cross section which is arranged around the corresponding slat shaft (4).

8. Slat roof (1) according to one of the preceding claims, characterized in that each end of the slat shaft (4) or slat shafts (4) of the said at least one slat (3), by means of which it is attached to a respective beam (2), is provided with at least one said radial projection (5) and is arranged in said corresponding fitting opening (8) of the respective beam (2).

9. Slat roof (1) according to one of the preceding claims, characterized in that the slat shafts (4) of several slats (3) comprise said radial projections (5) and the corresponding ends are fitted in said fitting openings (8) of the beams (2).

10. Slat roof (1) according to Claim 9, characterized in that the slat shafts (4) of all slats (3) comprise said radial projections (5) and the corresponding ends are fitted in said fitting openings (8) of the beams (2).

11. Slat roof (1) according to one of the preceding claims, characterized in that the beams (2) are hollow.

12. Slat roof (1) according to one of the preceding claims, characterized in that the slat shaft (4) of at least one slat (3) is provided, at a certain at least one end by means of which it is attached to said beam (2), with at least one radial projection which, in the mounted position, extends between the slat (3) and the respective beam (2) against this beam (2).
13. Method for adapting a slat roof (1) comprising beams (2), several slats (3) arranged parallel to one another between these beams and slat shafts (4) by means of which the slats (3) are rotatably fixed to the respective beams (2), characterized in that the slat shaft (4) of at least one slat (3) is provided, on at least one end, with at least one radial projection (5), in that the respective beam (2) is provided with a corresponding fitting opening (8) which comprises a shaft opening (6) through which the corresponding slat shaft (4) extends in the mounted position and comprises an insertion opening (7) which ends in the shaft opening (6) in such a manner that the corresponding slat shaft (4), in a first position with said radial projection (5) at the location of the insertion opening (7), is fitted through the fitting opening (8) by its corresponding end, and in that, after it has been inserted in the insertion opening (7), it is moved to a different position, different from the first position, in which it engages by means of said radial projection (5) behind a part (9) of the beam (2) which delimits the shaft opening (6) adjacent to the insertion opening (7), in order to rotatably attach this slat shaft (4) to the beam (2).

14. Method according to Claim 13, characterized in that a spacer (11) is fitted between the slat (3) and the beam (2) after the corresponding slat shaft (4) has been installed in the fitting opening (8) and moved to the other position.

15. Method according to Claim 14, characterized in that a sleeve (11) with a substantially C-shaped cross section is fitted over the slat shaft (4) in order to fit it as a spacer (11) between the slat (3) and the beam (2).

Patentansprüche

1. Lamellendach (1), aufweisend

   - Träger (2);
   - etliche Lamellen (3), die parallel zueinander zwischen diesen Trägern (2) angeordnet sind;
   - Lamellenwellen (4), mittels welcher die Lamellen (3) drehbar an den jeweiligen Trägern (2) befestigt sind;

   dadurch gekennzeichnet, dass die Lamellenwelle (4) von mindestens einer Lamelle (3) an mindestens einem Ende, mittels welcher sie an dem Träger (2) befestigt ist, mit mindestens einem radialen Vorsprung (5) bereitgestellt ist und der jeweilige Träger (2) mindestens eine Montageöffnung (8) aufweist, welche eine Wellenöffnung (6) aufweist, durch welche sich die entsprechende Lamellenwelle (4) in der montierten Stellung erstreckt, und eine Einführöffnung (7) aufweist, welche derart in der Wellenöffnung (6) endet, dass die entsprechende Lamellenwelle (4) in einer ersten Stellung mit dem radialen Vorsprung (5) an der Stelle der Einführöffnung (7) mittels ihres entsprechenden Endes durch die Montageöffnung (8) eingesetzt werden kann und nachdem die Lamellenwelle (4) in die Montageöffnung (7) eingeführt ist, der radiale Vorsprung (5) in einer weiteren Stellung, die sich von der ersten Stellung unterscheidet, hinter einem Teil (9) des Trägers (2), welcher die Wellenöffnung (6) begrenzt, die zur Einführöffnung (7) benachbart ist, einrastet, um diese Lamellenwelle (4) an diesem Träger (2) drehbar zu befestigen.

2. Lamellendach (1) nach Anspruch 1, dadurch gekennzeichnet, dass die entsprechende Lamellenwelle (4) von der ersten Stellung in die weitere Stellung drehbar ist.

3. Lamellendach (1) nach Anspruch 2, dadurch gekennzeichnet, dass die Montageöffnung (8) im Wesentlichen als eine Schlüsselloch-Öffnung konfiguriert ist.

4. Lamellendach (1) nach Anspruch 3, dadurch gekennzeichnet, dass die Montageöffnung (8) durch ein Bohrloch (10) in dem entsprechenden Träger (2) und ein im Wesentlichen C-förmiges flexibles Einführelement (9), welches in diesem Bohrloch (10) angeordnet ist, gebildet ist, wobei das im Wesentlichen C-förmige flexible Einführelement (9) den Teil (9) bildet, der die Wellenöffnung (6) begrenzt.

5. Lamellendach (1) nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, dass jede Stellung der entsprechenden Lamellenwelle (4), in welcher sie in der montierten Stellung des Lamellendaches (1) drehbar ist, eine weitere Stellung ist.

6. Lamellendach (1) nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, dass das Lamellendach (1) mindestens einen Abstandhalter (11) aufweist, welcher zwischen der mindestens einen Lamelle (3) und einem entsprechenden Träger (2) angeordnet ist.

7. Lamellendach (1) nach Anspruch 6, dadurch gekennzeichnet, dass der Abstandhalter (11) als eine Hülse (11) mit im Wesentlichen C-förmigem Querschnitt konfiguriert ist, welche um die entsprechende Lamellenwelle (4) angeordnet ist.

8. Lamellendach (1) nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, dass jedes Ende der Lamellenwelle (4) oder Lamellenwellen (4) der mindestens einen Lamelle (3), mittels welchem sie an einem jeweiligen Träger (2) befestigt ist, mit...
mindestens einem radialen Vorsprung (5) bereitgestellt ist und in der entsprechenden Montageöffnung (8) des jeweiligen Trägers (2) angeordnet ist.

9. Lamellendach (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Lamellenwellen (4) etlicher Lamellen (3) die radialen Vorsprüinge (5) aufweisen und die entsprechenden Enden in die Montageöffnungen (8) der Träger (2) eingesetzt sind.

10. Lamellendach (1) nach Anspruch 9, **dadurch gekennzeichnet, dass** die Lamellenwellen (4) aller Lamellen (3) die radialen Vorsprüinge (5) aufweisen und die entsprechenden Enden in die Montageöffnungen (8) der Träger (2) eingesetzt sind.

11. Lamellendach (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Träger (2) hohl sind.

12. Lamellendach (1) nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Lamellenwelle (4) von mindestens einer Lamelle (3) an einem bestimmten, mindestens einem Ende, mittels welchem sie am Träger (2) befestigt ist, mit mindestens einem radialen Vorsprung bereitgestellt ist, welcher sich in der montierten Stellung zwischen der Lamelle (3) und dem jeweiligen Träger (2) gegen diesen Träger (2) erstreckt.

13. Verfahren zum Anpassen eines Lamellendaches (1), das Träger (2), etliche Lamellen (3), die zueinander parallel zwischen diesen Trägern angeordnet sind, und Lamellenwellen (4), mittels welcher die Lamellen (3) drehbar an den jeweiligen Trägern (2) befestigt sind, aufweist, **dadurch gekennzeichnet, dass** die Lamellenwelle (4) von mindestens einer Lamelle (3) an mindestens einem Ende mit mindestens einem radialen Vorsprung (5) bereitgestellt ist, dass der jeweilige Träger (2) mit einer entsprechenden Montageöffnung (8) bereitgestellt ist, welche eine Wellenöffnung (6) aufweist, durch welche sich die entsprechende Lamellenwelle (4) in der montierten Stellung erstreckt, und eine Einführöffnung (7) aufweist, welche derart in der Wellenöffnung (6) endet, dass die entsprechende Lamellenwelle (4) in einer ersten Stellung mit dem radialen Vorsprung (5) an der Stelle der Einführöffnung (7) mittels ihres entsprechenden Endes durch die Montageöffnung (8) eingesetzt wird, und dadurch, dass, nachdem sie in die Einführöffnung (7) eingeführt ist, sie in eine andere Stellung bewegt wird, die sich von der ersten Stellung unterscheidet, in welcher sie mittels des radialen Vorsprungs (5) hinter einem Teil (9) des Trägers (2), welcher die Wellenöffnung (6), die benachbarte zur Einführöffnung (7) angeordnet ist, begrenzt, einrastet, um diese Lamellenwelle (4) drehbar am Träger (2) zu befestigen.

14. Verfahren nach Anspruch 13, **dadurch gekennzeichnet, dass** ein Abstandhalter (11) zwischen der Lamelle (3) und den Träger (2) eingesetzt wird, nachdem die entsprechende Lamellenwelle (4) in der Montageöffnung (8) installiert und in die andere Stellung bewegt wurde.

15. Verfahren nach Anspruch 14, **dadurch gekennzeichnet, dass** eine Hülse (11) mit einem im Wesentlichen C-förmigen Querschnitt auf die Lamellenwelle (4) aufgesetzt ist, um sie als einen Abstandhalter (11) zwischen der Lamelle (3) und dem Träger (2) einzusetzen.

**Revendications**

1. Toit (1) à lamelles, comprenant
   - des poutres (2);
   - plusieurs lamelles (3) disposées parallèlement les unes aux autres entre ces poutres (2);
   - des embouts (4) de lamelles par le biais desquels ces lamelles (3) sont attachées de manière rotative aux poutres respectives (2);

   caractérisé en ce que l’embout (4) de lamelle d’au moins une lamelle (3) est pourvu, sur au moins une extrémité par laquelle il est attaché à ladite poutre (2), d’au moins une saillie radiale (5) et la poutre respective (2) comprend au moins une ouverture de raccord (8) qui comprend une ouverture (6) d’embout à travers laquelle l’embout (4) de lamelle correspondant s’étend dans la position montée et comprend une ouverture d’insertion (7) qui se termine par l’ouverture (6) d’embout de telle sorte que l’embout (4) de lamelle correspondant, dans une première position avec ladite saillie radiale (5) à l’emplacement de l’ouverture d’insertion (7), puisse être ajusté à travers l’ouverture de raccord (8) par son extrémité correspondante et, une fois que cet embout (4) de lamelle a été inséré dans l’ouverture d’insertion (7), dans une position différente, qui est différente de la première position, de telle sorte que ladite saillie radiale (5) vienne en prise derrière une partie (9) de la poutre (2) qui délimite l’ouverture (6) d’embout adjacente à l’ouverture d’insertion (7), afin d’attacher de manière rotative cet embout (4) de lamelle à cette poutre (2).

2. Toit (1) à lamelles selon la revendication 1, caractérisé en ce que ledit embout (4) de lamelle correspondant peut tourner de la première position dans l’autre position.

3. Toit (1) à lamelles selon la revendication 2, caractérisé en ce que...
térisé en ce que l'ouverture de raccord (8) est configurée sensiblement sous forme d'ouverture en trou de serrure.

4. Toit (1) à lamelles selon la revendication 3, caractérisé en ce que l'ouverture de raccord (8) est formée par un trou de perçage (10) dans la poutre correspondante (2) et un élément d'insertion flexible (9) sensiblement en forme de C qui est disposé dans ce trou de perçage (10), l'élément d'insertion flexible (9) sensiblement en forme de C formant ladite partie (9) qui délimite l'ouverture (6) d'embout.

5. Toit (1) à lamelles selon l'une quelconque des revendications précédentes, caractérisé en ce que chaque position dudit embout (4) de lamelle correspondant dans laquelle il peut tourner dans la position montée du Toit (1) à lamelles est une dite position différente.

6. Toit (1) à lamelles selon l'une quelconque des revendications précédentes, caractérisé en ce que le Toit (1) à lamelles comprend au moins un élément d'espacement (11) qui est disposé entre ladite au moins une lamelle (3) et une poutre correspondante (2).

7. Toit (1) à lamelles selon la revendication 6, caractérisé en ce que l'élément d'espacement (11) est configuré sous forme de manchon (11) de section transversale substantiellement en forme de C qui est disposé autour de l'embout de lamelle correspondant (4).

8. Toit (1) à lamelles selon l'une quelconque des revendications précédentes, caractérisé en ce que chaque extrémité de l'embout (4) de lamelle ou des embouts (4) de lamelle de ladite au moins une lamelle (3), au moyen de laquelle il est attaché à une poutre respective (2), est pourvue d'au moins une dite saillie radiale (5) et est disposée dans ladite ouverture de raccord correspondante (8) de la poutre respective (2).

9. Toit (1) à lamelles selon l'une quelconque des revendications précédentes, caractérisé en ce que les embouts (4) de lamelles de plusieurs lamelles (3) comprennent lesdites saillies radiales (5) et les extrémités correspondantes sont ajustées dans lesdites ouvertures de raccord (8) des poutres respectives (2).

10. Toit (1) à lamelles selon la revendication 9, caractérisé en ce que les embouts (4) de lamelles de toutes les lamelles (3) comprennent lesdites saillies radiales (5) et les extrémités correspondantes sont ajustées dans lesdites ouvertures de raccord (8) des poutres (2).

11. Toit (1) à lamelles selon l'une quelconque des revendications précédentes, caractérisé en ce que les poutres (2) sont creuses.

12. Toit (1) à lamelles selon l'une quelconque des revendications précédentes, caractérisé en ce que l'embout (4) de lamelle d'au moins une lamelle (3) est pourvu, au niveau d'au moins une certaine extrémité par ladite poutre (2), d'au moins une saillie radiale qui, dans la position montée, s'étend entre la lamelle (3) et la poutre respective (2) contre cette poutre (2).

13. Procédé pour adapter un Toit (1) à lamelles comprenant des poutres (2), plusieurs lamelles (3) disposées en parallèles les unes aux autres entre ces poutres et des embouts (4) de lamelles au moyens desquels les lamelles (3) sont fixées de manière rotative aux poutres respectives (2), caractérisé en ce que l'embout (4) de lamelle d'au moins une lamelle (3) est pourvu, sur au moins une extrémité, d'au moins une saillie radiale (5), en ce que la poutre respective (2) est pourvue d'une ouverture de raccord correspondante (8) qui comprend une ouverture (6) d'embout à travers ladite poutre à travers l'ouverture d'insertion (7), soit ajusté à travers l'ouverture de raccord (8) par son extrémité correspondante, et en ce qu'après son insertion dans l'ouverture d'insertion (7), il est déplacé dans une position différente, qui est différente de la première position, dans laquelle il vient en prise au moyen de ladite saillie radiale (5) à l'emplacement de l'ouverture d'insertion (7), soit ajusté à travers l'ouverture de raccord (8) par son extrémité correspondante, et en ce qu'après son insertion dans l'ouverture d'insertion (7), il est déplacé dans une position différente, qui est différente de la première position, dans laquelle il vient en prise au moyen de ladite saillie radiale (5) derrière une partie (9) de la poutre (2) qui délimite l'ouverture (6) d'embout adjacente à l'ouverture d'insertion (7) afin d'attacher de manière rotative cet embout (4) de lamelle à la poutre (2).

14. Procédé selon la revendication 13, caractérisé en ce qu'un élément d'espacement (11) est ajusté entre la lamelle (3) et la poutre (2) après que l'embout de lamelle correspondant (4) a été installé dans l'ouverture de raccord (8) et déplacé dans l'autre position.

15. Procédé selon la revendication 14, caractérisé en ce qu'un manchon (11) ayant une section transversale sensiblement en forme de C est ajusté par-dessus l'embout (4) de lamelle afin de l'ajuster en tant qu'élément d'espacement (11) entre la lamelle (3) et la poutre (2).
REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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