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(54) Benævnelse: **Afbalanceringsindretning til en overliggende struktur**

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WO-A1-2009/005376
DE-U1- 8 325 655
DE-U1- 20 216 353
JP-A- 2006 348 708

Description

The invention relates to a balancing device for an overhead structure.

Prior Art

Overhead structures designed as a canopy are known which are fastened in a self-supporting manner to a building structure, in particular a wall, by means of a support profile. The angular setting of the canopy is determined by the arrangement of the support legs of the support profile at an angle with respect to the building structure. When a canopy plate is clamped in the support profile and/or the canopy is mounted, the angular setting can no longer be changed or adjusted.

A "Device for holding a projecting plate-shaped element" is known, for example, from DE 202 16 353 U1. The device has a support element which is connectable to the wall and which includes a clamping holder, pivotable on the support element about a rotational axis, for the plate-shaped element, the angular setting of the clamping holder being adjustable by means of an adjustment mechanism and lockable in the desired position. The clamping holder for the plate-shaped element is pivoted in relation to the support element about a rotational axis and subsequently locked. As soon as the desired inclination of the plate has been correctly set, the clamping holder is locked in this position and can then no longer move by itself.

WO 2009/005376 A1 discloses a mounting, designed as a floor profile, for a plate, in particular a glass pane, which has clamping jaws with a slot. The mounting has a foot part so that the mounting can be placed on a structure, in particular a floor. The slot between the clamping jaws may have an elongated design in order to accommodate an edge of the plate. One of the clamping jaws may have a fastening means that is provided with a thread, and that is activatable also when the foot part is mounted on the building. The fastening means of the one clamping jaw in cooperation with fastening means in the other clamping jaw may clamp the plate, so that the plate is held in the slot even when the plate is not situated parallel to the side faces of the clamping jaws pointing in the direction of the slot.

JP 2006 348708 A discloses a canopy for which a plate is described that is clamped into a profile having an upper wall and a lower wall. The upper wall has a plurality of hole openings for accommodating screws that are intended to engage with a notch. Elastic elements are used, so that a pressure element may be situated on the elastic elements, the elastic elements being pressed into the notch.

DE 83 25 655 U1 discloses a support structure for providing roofing for a basement shaft or a basement opening. The support structure has a roof support bracket or a roof support frame that is slidable into itself or foldable. The roof support bracket or roof support frame is designed as a profiled stamped sheet metal part or bent part, and may be mounted on the basement shaft or a wall, flanking the opening in pairs. The support structure is subdivided into a stationarily anchored bracket section and a foldable bracket section; the bracket sections are connected to one another by a folding hinge, and may be brought into two different folding positions by means of a fixing device.

One disadvantage of the known devices is that the support element is designed to be adjustable up to the final locking, but the angular setting of the plate-shaped element within the support element is not.

The object of the invention, therefore, is to provide a device that allows the angular setting of a canopy plate that is clamped in a support element to be balanced or aligned.

Summary of the Invention

A balancing device for an overhead structure that is situatable on a building structure according to Claim 1 is proposed, in which the angular setting of a canopy plate may be balanced after it is clamped in a support profile.

The canopy plate is made in particular of a laminated glass and has two or more glass panes. An intermediate layer made of a film or the like is provided in each case between the glass panes. The canopy plate is supported in the connection area of the support profile.

The canopy plate is clamped between two support legs of the support profile or rests on a lower support leg.

Pressure elements are situated between the bottom side of the upper support leg and the top side of the canopy plate, and/or between the top side of the lower support leg and the bottom side of the canopy plate. These pressure elements prevent contact between the canopy plate, made in particular of glass, and the support legs made in particular of metal.

In a first exemplary embodiment, boreholes are introduced into the lower and/or the upper support leg(s) of the support profile. These boreholes are provided in the position in which a pressure element is situated on the side of the corresponding support leg facing the canopy plate. Set screws are subsequently introduced into these boreholes from below and/or from above, and forces are thus exerted on the canopy plate via the respective pressure element, so that the angular setting of the canopy plate within the support profile is adjustable within certain limits. The limits for the angular range are determined by the spacing and the angle of the support legs.

In a second exemplary embodiment, a borehole is preferably introduced into the lower support leg and the set screw is screwed in from the front. The set screw is pressed against the lower pressure element, and thus acts on the pressure element in such a way that the pressure element is pushed upwardly, thus pressing against the canopy plate and lifting it, so that the angular setting of the canopy plate is adjustable to a limited extent.

The canopy plate may also be made of other suitable materials, such as an acrylic glass or a composite plate made in particular of transparent plastics.

The device according to the invention has the advantage that the angular setting of the canopy plate, which is already clamped in its support profile, is still adjustable afterwards.

Further advantages and advantageous embodiments of the invention are apparent from the following description of the figures, the drawings, and the claims.

One exemplary embodiment of the approach according to the invention is explained in greater detail below with reference to the appended schematic drawings, which show the following:

Figure 1 shows a support profile together with a canopy plate and two balancing devices, in cross section,

Figure 2 shows another embodiment of the balancing device, in cross section, and

Figure 3 illustrates the overhead structure with the support profile according to Figure 1 together with the canopy plate and a number of balancing devices, in an oblique view from above.

Figure 1 schematically illustrates an overhead structure 10, with a support profile 12 having an upper support leg 14 and a lower support leg 16, and a back plate 18. A canopy plate 20 is clamped in the support profile 12. The canopy plate 20 is designed as a

laminated glass pane, and has an upper glass pane 22 and a lower glass pane 24. An intermediate layer is situated between the two glass panes 22 and 24.

The canopy plate 20 may also be made of a laminated glass having multiple glass panes, for example three glass panes, situated one on top of the other, and the corresponding number of intermediate layers. Other materials, such as clear acrylic glass or the like, are also conceivable.

In the present context, "top," for the overhead structure 10 situated on a building structure, refers to the direction toward the roof of the building structure, and "bottom" refers to the direction toward the floor.

A first pressure element 26 is situated in the connection area of the canopy plate 20, at the end of the upper support leg 16 proximally facing the back plate 18, between the upper support leg 16 and the upper glass pane 22. A first borehole 28 is vertically introduced into the upper support leg 16. A first set screw 30 which exerts a force on the first pressure element 26 may be screwed through this first borehole 28. The first pressure element acts on the upper glass pane 22 of the canopy plate 20 in such a way that the entire canopy plate 20 may be adjusted about a limited angular range, depending on the force that results from the set screw 30.

In addition, a second pressure element 32 is situated in the connection area of the canopy plate 20, between the lower support leg 16 and the lower glass pane 24. This has the function of a supporting element for the canopy plate 20. A second borehole 34 is introduced into the lower support leg 16 vertically, i.e., perpendicularly with respect to the orientation of the support leg 16, and a second set screw 36 may be screwed into the second borehole. The second pressure element 32, the second borehole 34, and the second set screw 36 are situated on the front end of the lower support leg 16 facing distally away from the back plate 18. As a result of the application of a force by screwing in the set screw 36, the canopy plate 20 may be adjusted about a limited angular range via the force effect of the second pressure element 32 on the lower glass pane 24.

In this exemplary embodiment, the overhead structure 10 may have either set screws 30 only from the top or set screws 36 only from the bottom, or from both below and above; the set screws 30, 36 may in each case be continuously situated in a punctiform manner or at freely selectable intervals along the longitudinal extent of the support profile 12. The angle of the canopy plate 20 that is clamped in the support profile 12 may thus be adjusted within a limited angular range and set as desired.

Figure 2 shows another embodiment of the balancing device. The lower support leg 16 is illustrated. The lower support leg has a third pressure element 38 which in particular has a wedge shape. A third borehole 40 that is horizontal, i.e., in horizontal alignment with the orientation of the support leg 16, is introduced from the front on the front, distal end of the support leg 16. A third set screw 42 may be screwed into this horizontal borehole 40 from the front. The third set screw acts on the third pressure element 38 so that the latter is moved upwardly, thus lifting the canopy plate.

In the present context, "front" means the end of the support leg 16 that points in the opposite direction from the back plate 18, i.e., distally away from the building structure on which the overhead structure 10 is to be situated.

Figure 3 illustrates the overhead structure 10 with a support profile 12 according to Figure 1, in an oblique view from above. A number of set screws 30a, 30b, 30c, 30d, ... 30n are illustrated in the upper support leg 14, and are arranged in a row on the distal side of the upper support leg 14 in the direction of the back plate 18, toward a building structure on which the overhead structure 10 is mountable.

Corresponding to this exemplary embodiment, in other designs the lower set screws 36 and likewise the set screws 42 introduced from the front may be inserted in a row in a number a to ... n.

The first pressure element 26 together with the first set screw 30 forms a first balancing device, the second pressure element 32 together with the second set screw 36 forms a second balancing device, and the third pressure element 38 together with the third set screw 42 forms a third balancing device. Each of these balancing devices may be situated alone or in any conceivable combination or position with one another. Each of these balancing devices may be situated in a punctiform manner in the support profile 12.

If one or more of the pressure elements 26 and/or 32 or 38 is/are designed not as a single element, but, rather, with a continuous band shape, for example, the respective set screws 30 a–n and/or 36 a–n or 42 a–n engage with the corresponding pressure element band.

The pressure elements 26, 32, 38 are made, for example, of plastic or have a composite design made of plastic and a metal or light metal alloy, for example; the metal layer does not come into contact with the canopy plate 20 made of glass.

The interaction between the set screw 30, 36, 42 in the respective borehole 28, 34, 40 and the respective pressure element 26, 32, 38 as a balancing device allows the canopy plate 20 to be adjusted or tilted in the desired angular setting in a limited angular range.

This angular range is adjustable within a limited range that is determined by the arrangement and the position of the support legs 14, 16. The deviation for the overhead structure 10 is understood to be different from the position of the canopy plate 20 within the support legs 14, 16 of the support profile 12, in which the canopy plate 20 is clamped in the connection area. This position, which is determined by clamping between the two support legs 14, 16, differs, for example, from the right angle of the building structure or its vertical wall if the support legs 14, 16 are situated on the back plate 18 at this right angle. The support legs 14, 16 may also be angled with respect to the back plate 18 at an angle that is larger or smaller than 90°. The deviation of the canopy plate 10 then also refers to the adjustable angular setting of its position within the two support legs 14, 16.

List of reference numerals

10	overhead structure
12	support profile
14	upper support leg
16	lower support leg
18	back plate
20	canopy plate
22	upper glass pane
24	lower glass pane
26	first pressure element
28	first borehole
30	first set screw
30a, 30b,..., to 30n	further set screws
32	second pressure element
34	second borehole
36 [a,..., - n]	second set screw
38	third pressure element
40	third borehole
42 [a,..., - n]	third set screw
n	number

Patentkrav

1. Afbalanceringsindretning til en overliggende struktur (10), som kan anbringes på en bygning, hvilken afbalanceringsindretning omfatter en afskærmningsplade (20), der er fastspændt i en bæreprofil (12) med to støtteben (14, 16) i en forbindelsesregion, hvor der er dannet mindst én boring (28, 34, 40) i mindst ét støtteben (14, 16), i hvilken boring der i hvert tilfælde er anbragt én justeringsskrue (30, 36, 46), og hvor justeringsskruerne (30, 36, 46) er anbragt punktvis eller på række (a, b, c, d, ..., n) i bæreprofilen (12), og hvor afskærmningspladen (20) bæres således, at den kan justeres ved kraftpåvirkning af justeringsskruen (30, 36, 46) ved hjælp af trykelementer (26, 32, 38), som er begrænset til et vinkelområde, **kendetegnet ved, at** hver justeringsskrue (30, 36, 46) i hvert tilfælde er tildelt ét trykelement (26, 32, 38), og **ved, at** trykelementet (26, 32, 38) er kileformet.

2. Afbalanceringsindretning ifølge krav 1, **kendetegnet ved, at** boringen (28) til justeringsskruen (30, 30a, 30b, 30c, 30d, 30n) er dannet i det øvre støtteben (14) lodret proksimalt i forhold til bagpladen (18).

3. Afbalanceringsindretning ifølge et af de foregående krav, **kendetegnet ved, at** boringen (34) til justeringsskruen (36) er dannet i det nedre støtteben (16) lodret distalt i forhold til bagpladen (18).

4. Afbalanceringsindretning ifølge et af de foregående krav, **kendetegnet ved, at** boringen (49) til justeringsskruen (42) er dannet i det nedre støtteben (16) vandret i forhold til forsiden.

5. Afbalanceringsindretning ifølge et af de foregående krav 1 til 4, **kendetegnet ved, at** trykelementerne (26, 32, 38) foreligger i form af et bånd, således at en flerhed af justeringsskruer (30 a-n, 36 a-n, 42 a-n) indvirker på trykelementet eller -elementerne (26, 32, 38), der foreligger i form af et bånd.

6. Afbalanceringsindretning ifølge et af de foregående krav 1 til 4, **kendetegnet ved, at** trykelementet (26, 32) er skiveformet.

7. Afbalanceringsindretning ifølge krav 1, **kendetegnet ved, at** afskærmningspladen (20) foreligger i form af en lamineret glasrude og indbefatter mindst to glasruder (22, 24) med mindst ét mellemliggende lag.

8. Afbalanceringsindretning ifølge krav 1, **kendetegnet ved, at** afskærmningspladen (20) er dannet af acrylglas.

9. Bygning med en overliggende struktur (10), som indbefatter en afbalanceringsindretning ifølge et af kravene 1 til 8.

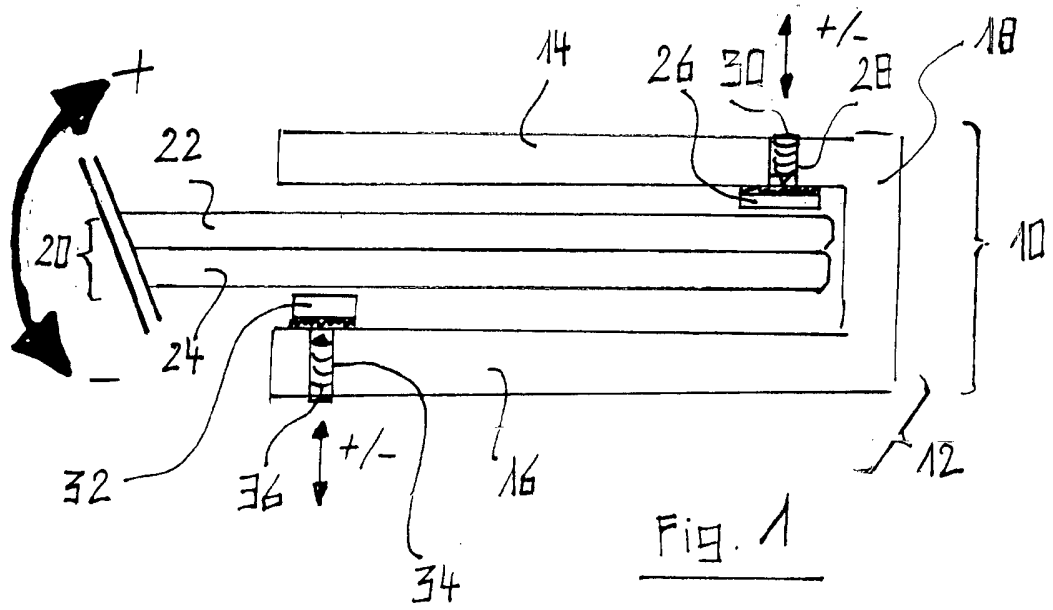

Fig. 1

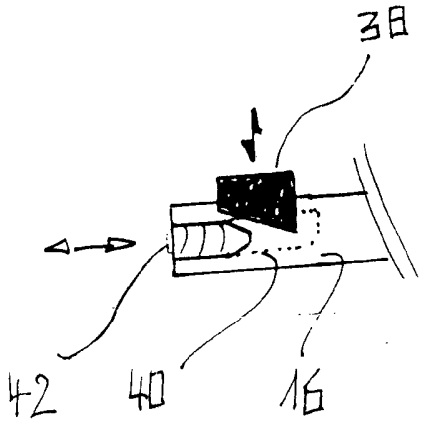

Fig. 2

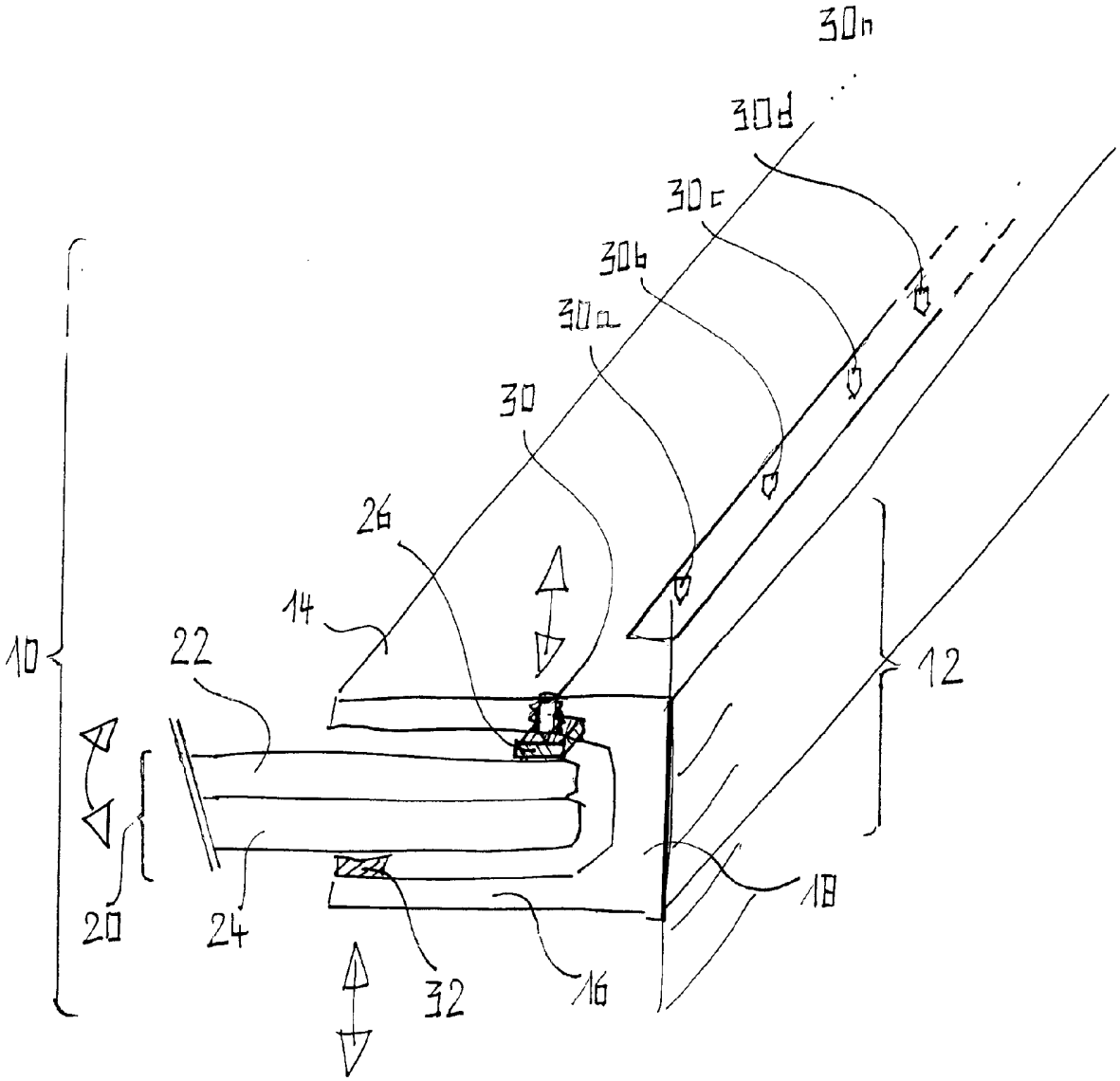

Fig. 3