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(54) **Safety rail holding device**

(57) Safety rail holding device (1) designed to be attached to a roof supporter (2), especially a roof truss, from below, and comprising a frame part (3) which comprises a surface (4) placed against the lower surface of the roof supporter and, at an angle to this, a bracket (5) for holding a safety rail post. Disposed in conjunction with the frame part is a clamping element (6) comprising at least two clamp surfaces (7, 8) designed to engage opposite side surfaces of the roof supporter and an element (10) for adjustment/locking of the clamping element.

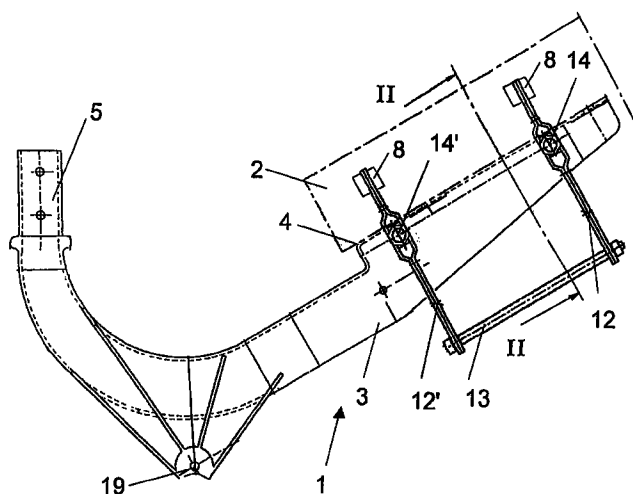


FIG. 1

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Description

[0001] The present invention relates to a safety rail holding device especially for ridge roofs, which holding device is designed to be attached to a roof supporter, especially a roof truss, from below the supporter and which comprises a frame part having a surface designed to be placed against the lower surface of the roof supporter and, at an angle to this, a bracket for attachment of a safety rail post.

[0002] This type of holders are used especially in conjunction with roof repair and construction work on buildings with pitched roofs. Typically, the safety rail holder part is attached to a supporting structure of the roof by using screws or bolts, which require holes drilled in the roof truss. Screw fastening requires several screws to fix the holder to the roof truss, which means that mounting the holder part is difficult and necessitates the use of several tools. The installation work is a slow and even dangerous operation. Bolt fastening involves corresponding drawbacks. Moreover, the holes made in the roof truss constitute a flaw of appearance. FI patent application 945348 presents a mounting bracket of this type.

[0003] The object of the present invention is to achieve a safety rail holding device that eliminates the drawbacks of prior art.

[0004] The invention is based on the idea of providing the holding device with a clamping element by means of which the holding device can be quickly and reliably mounted in the eaves area of the roof.

[0005] More precisely speaking, the invention is characterised by a clamping element disposed in conjunction with the frame part, said element comprising at least two clamp surfaces designed to engage opposite side surfaces of a roof supporter and an element for adjustment/locking of the clamping element.

[0006] The preferred embodiments of the invention are characterised by what is presented in the claims.

[0007] The clamping element constitutes a quick-action fastener of the frame part, by means of which the safety rail mounting brackets can be quickly and safely attached to the roof supporters. Thanks to the quick-action fastener, no holes need to be made in the roof supporter. Mounting the device takes considerably less time than mounting a traditional screw-fastened device. The clamp surfaces have a structure that bites into the wood material when fastened, ensuring a safe grip. Moreover, due to the structure and material of the clamp surfaces, the load is evenly distributed, preventing cleavage of the wood even under maximum load conditions. The structure of the holding device allows the device to be fitted to all roof supporter types of normal dimensions.

[0008] In the following, the invention will be described in detail by the aid of an example with reference to the attached figures, wherein

Fig. 1 presents a side view of a holding device according to the invention, attached to a roof supporter,

Fig. 2 presents the holding device of the invention, sectioned along line II - II in Fig. 1, and

Fig. 3 presents a general view of a safety rail system using the holding device of the invention.

[0009] A safety rail holding device 1 designed to be attached to a roof supporter 2, especially a roof truss, from below, said holding device comprising a frame part 3, which comprises a surface 4 placed against the lower surface of the roof supporter and, at an angle to this, a bracket 5 for holding a safety rail post 20. It is also possible to integrate the safety rail post with the frame part. Disposed in conjunction with the frame part of the holding device is a clamping element 6, which comprises at least two clamp surfaces 7, 8 designed to engage opposite side surfaces of the roof supporter 2 and an element 10 for adjustment/locking of the clamping element.

[0010] The holding device has been designed to be attached to a roof truss 2 in the eaves area of pitched roofs, especially ridge roofs. The end of the frame part 3 connected to the safety rail post forms an angle to the longitudinal axis of the roof supporter 2 and is preferably arranged to extend above the edge of the roof Fig. 3 shows a safety rail system mounted on a ridge roof. The system comprises a large number of posts 20 and rail parts 21 attached to them.

[0011] The clamping element comprises arm elements 11, 12 connected by their lower ends so that the arms can turn about an axle 13. In the example presented in the figure, the adjusting/locking element of the clamping element 6 comprises an elongated bar element 14 fitted through a hole going transversely through the frame part 3. At least one end of the bar element is provided with a screw thread, and the first arm element 11 is provided with a counterpart 17 fitted to said screw thread. The bar element 14 is preferably fitted through holes formed in the arm elements 11, 12. The bar element 14 is preferably a long bolt which, when rotated in one direction, causes the arm elements 11, 12 to move towards each other and which, when rotated in the opposite direction, causes the arm elements to move away from each other. These directions of motion are indicated by arrows in Fig. 2. The arm elements 11, 12 are provided with non-rotatable nut elements 17, 18.

[0012] The adjusting/locking element comprises spring elements 15, 16. The spring elements are preferably disposed between the arm elements 11, 12 and the frame part 3, so that the spring force causes the clamp surfaces of the arms to move away from each other when the adjusting element is being opened. In the case illustrated by the figure, the spring elements 15, 16 are spiral springs disposed around the bar element 14.

[0013] The clamping element comprises two arm ele-

ment pairs 11,12; 11',12' disposed at a distance from each other (in the longitudinal direction of the roof supporter). The arm element pairs are pivotally mounted on a common axle 13.

[0014] The clamp surfaces 7, 8 may comprise surface patterns, such as indentations, which provide a better grip and at least partially sink into the roof supporter, provided that the roof supporter is made of wood material.

[0015] The clamp surfaces 7, 8 may be made of a material allowing a better grip, such as rubber or plastic material or a mixed material.

[0016] The clamping element may comprise at least one prong element projecting from the clamp surface 7, 8. In this case, the clamp surface may be made of e.g. rubber material, from which the prong element protrudes. In the service position of the holding device, the prong element penetrates into the roof supporter.

[0017] The frame part 3 is provided with an attachment point 19 for an auxiliary supporting element. The auxiliary supporting element may be attached e.g. to the wall of the building. The holding device of the invention can be used with the applicant's safety rail systems marketed under the designation AluFix.

[0018] It is obvious to the person skilled in the art that the invention is not restricted to the embodiments described above, but that it may be varied within the scope of the following claims.

Claims

1. Safety rail holding device (1), said holding device being designed to be attached to a roof supporter (2), preferably a roof truss, from below, and comprising a frame part (3) which comprises a surface (4) placed against the lower surface of the roof supporter and, at an angle to this, a bracket (5) for holding a safety rail post, **characterised** in that it comprises a clamping element (6) disposed in conjunction with the frame part and comprising at least two clamp surfaces (7, 8) designed to engage opposite side surfaces of the roof supporter and an element (10) for adjustment/locking of the clamping element.
2. Holding device as defined in claim 1, **characterised** in that the clamping element (6) comprises arm elements (11, 12) connected by their lower parts so that they can turn about an axle (13).
3. Holding device as defined in claim 1 or 2, **characterised** in that the adjusting/locking element (10) of the clamping element comprises an elongated bar element (14) fitted in the frame part (3) so as to permit transverse movement of the bar element.
4. Holding device as defined in any one of claims 1 - 3, **characterised** in that the adjusting/locking ele-

ment comprises spring elements (15, 16).

5. Holding device as defined in any one of claims 1 - 4, **characterised** in that the clamping element comprises two arm element pairs (11, 12; 11', 12') disposed at a distance from each other in the longitudinal direction of the roof supporter.
6. Holding device as defined in claim 5, **characterised** in that the arm element pairs (11, 12; 11', 12') have been arranged to be turnable about a common axle (13).
7. Holding device as defined in any one of claims 1 - 6, **characterised** in that the clamp surfaces (7, 8) comprise surface patterns, such as indentations, which provide a better grip and at least partially sink into the roof supporter.
8. Holding device as defined in any one of claims 1 - 6, **characterised** in that the clamp surfaces (7, 8) are made of a material allowing a better grip, such as rubber or plastic material or a mixed material.
9. Holding device as defined in any one of claims 1 - 8, **characterised** in that the clamping element comprises at least one prong element protruding from the clamp surface (7, 8).
10. Holding device as defined in any one of claims 1 - 9, **characterised** in that the frame part (3) is provided with an attachment point 19 for an auxiliary supporting element.

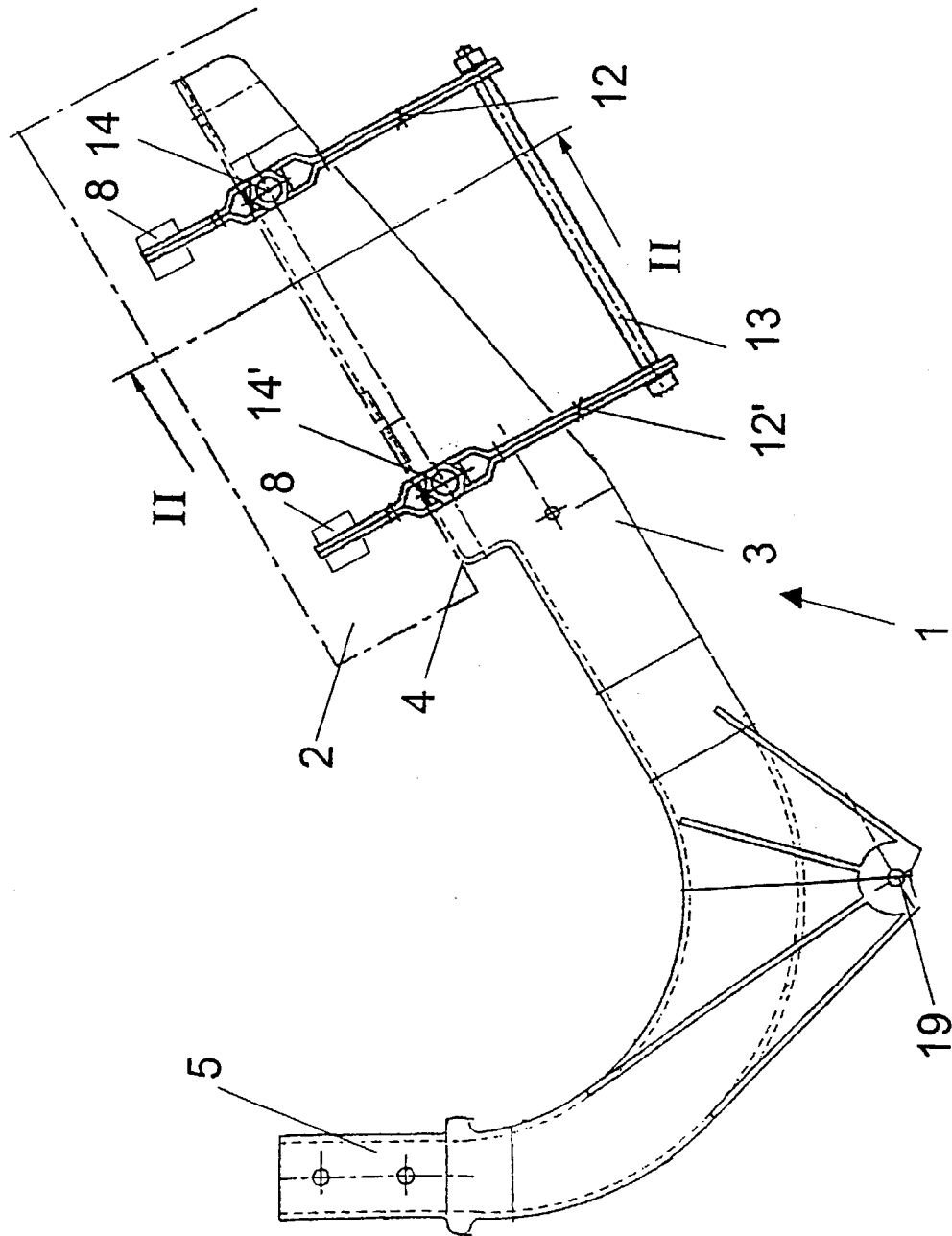


FIG. 1

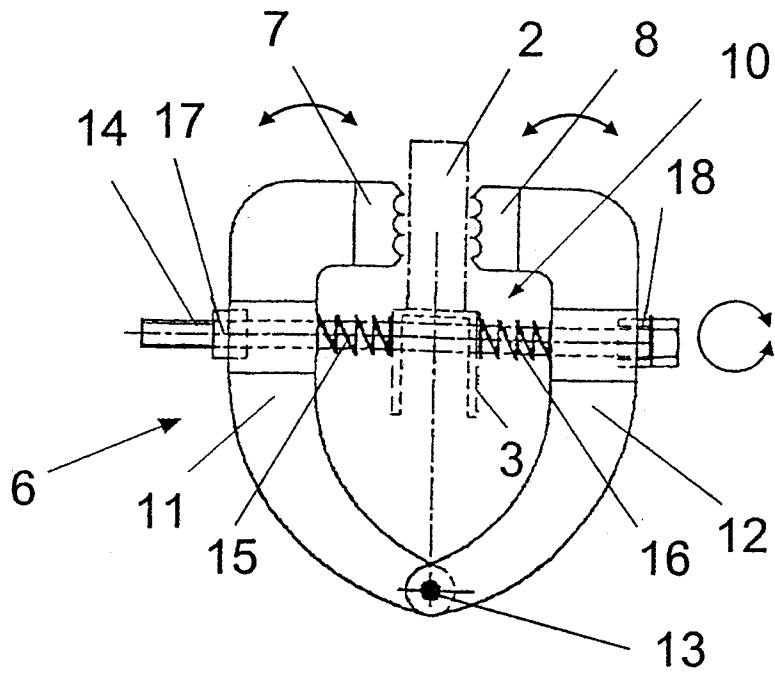


FIG. 2

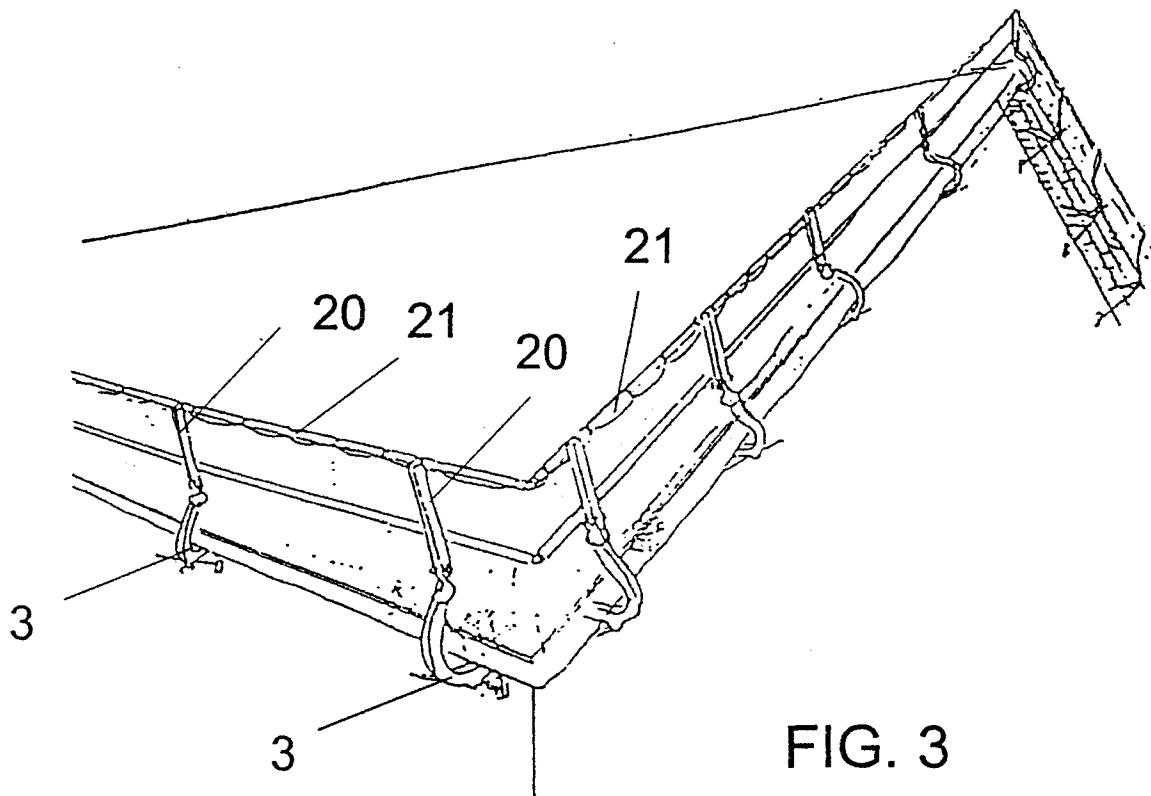


FIG. 3