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(54) A STRUCTURAL MOUNT CONFIGURED TO BE INSTALLED IN AN OPENING IN A PITCHED ROOF OF A BUILDING AND ADAPTED TO PROVIDE A SPACE FOR HOUSING A HVAC UNIT

(57) The invention relates to a structural mount configured to be installed in an opening in a pitched roof of a building, wherein the structural mount is adapted to provide a space for housing a HVAC unit at least partly outside the building and the structural mount comprises at least an access opening providing access to the space from the inside of the building.

The invention also relates to a system comprising the structural mount and further to a building provided with the system.

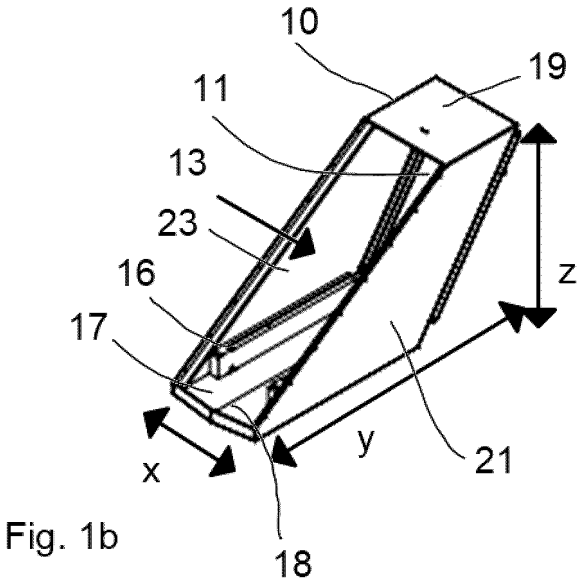

Fig. 1b

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Description

[0001] The invention relates to a structural mount configured to be installed in an opening in a pitched roof of a building, wherein the structural mount is adapted to provide a space for housing a HVAC unit at least partly outside the building and the structural mount comprises at least an access opening providing access to the space from the inside of the building.

[0002] The invention also relates to a system comprising the structural mount and further to a building provided with the system.

[0003] Such a structural mount is known from NL2018541. The known mount provides an accommodation for a HVAC unit above the roof and above a roof opening. A drawback of the known structural mount is that its vertical configuration makes it difficult for an operator perhaps even impossible to install or maintain a HVAC unit without additional measures like for example a lift.

[0004] An HVAC (Heating, Ventilation, and Air Conditioning) unit is designed to provide a controlled and comfortable indoor environment of a building by regulating temperature, humidity, and/or air quality. HVAC units are commonly used in residential, commercial, and industrial buildings.

[0005] It is an object to provide an improved structural mount for a pitched roof of a building for a HVAC unit and/or a standard structural mount.

[0006] At least one of these objects is achieved with claim 1.

[0007] The structural mount of this disclosure is configured to be installed in an opening in a pitched roof of a building. The structural mount is adapted to provide a space for housing a HVAC unit at least partly outside the building. The structural mount comprises at least an access opening providing access to the space from the inside of the building. The structural mount is a standard structural mount which is designed for movement with respect to the opening during installation for positioning at least a portion of the space and the access opening on the inside of the building.

[0008] By means of the structural mount of this disclosure it is possible to provide a standard structural mount which can be used for any pitched roof independent of the sloping angle, i.e. the standard structural mount can be used without modifications in a pitched roof with a sloping angle of 30 degrees or in a pitched roof with a sloping angle of 65 degrees with respect to the horizontal. This is achieved in that the standard structural mount is designed for movement with respect to the (roof) opening during installation, such that during installation the ratio of the space located inside and outside the building is variable. The space refers to the space defined by the standard structural mount. After installation of the standard structural mount in the roof opening, a space portion of the space for accommodating a HVAC unit in the standard structural mount is at least partly located outside the building for fresh air intake and/or air exhaust of the HVAC unit outside the building.

[0009] Further or alternatively, the improved structural mount of this disclosure makes installation in a variable position with respect to the opening of the pitched roof possible, such that the most optimal position and/or orientation of the standard structural mount with respect to the opening can be selected for operator access from inside the building by means of the access opening to the space. At least a portion of the access opening, or the complete access opening is located on the inside of the building. Operator access through the access opening can be further optimized by moving the space relatively far into the building, or even more inwardly than outwardly, such that an installed HVAC unit will be positioned relatively far into the building, or even more inside the building than outside the building. Operator access can be provided in this manner without requiring additional measures in the mount such as a lift. Operator access is required for example for installation or maintenance of the HVAC unit. A cost effective structural mount is provided with a relatively long lifespan.

[0010] The improved structural mount of this disclosure also provides flexibility for an architect or for a user of the building, in that in the design for roof installation of the structural mount the extent to which the structural mount protrudes inwards / outwards can be varied for aesthetic reasons or inner building space saving reasons or any other wishes. In one aspect, the standard structural mount is a prefab one-piece construction with non-variable dimensions or a prefab one-piece thermal barrier with non-variable dimensions. Such a prefab standard structural mount can be used for pitched roofs independent of the sloping angle and with many options for an architect and/or a user of the building. The prefab standard structural mount also ensures that installation of a (complete) roof construction, see below for details of a roof construction, on a pitched roof can be done relatively easily and relatively quick.

[0011] The standard structural mount may have two standard horizontal dimensions and one standard vertical dimension, wherein one of the two horizontal dimensions of the standard structural mount is equal or larger than the vertical dimension of the standard structural mount and the other of the two horizontal dimensions of the standard structural mount is equal or smaller than the vertical dimension of the standard structural mount. Hence, the standard structural mount extends equally in one horizontal direction and the vertical direction, or more in one horizontal direction than in the vertical direction. With these dimensions operator access can be relatively easily provided without requiring relatively complex mechanisms, such as a lift and the like, to get access to the space and a HVAC unit in the space by an operator. A more horizontal extension than vertical extension of the standard structural mount strengthens this access advantage. In one aspect, the standard structural mount is designed for moving in a horizontal direction with respect

to the opening during installation to obtain the most optimal position. It is for example possible to design the (roof) opening such that the vertical height of the standard structural mount corresponds to the vertical height of the opening (independent of its orientation), such that during installation in the opening it is impossible to linearly move the standard structural mount in a vertical direction, but it is possible to linearly move the standard structural mount in a horizontal direction. The same effect can also be obtained with corresponding shapes of the opening and the standard structural mount. In another aspect, the structural mount is configured for pivoting, for example during installation, in the opening to a desired orientation with respect to the pitched roof. In this manner, it is for example possible to provide the standard structural mount with a slight (10 degrees or less) tilted orientation with respect to the horizontal. Such a tilted orientation may for example be desired for aesthetic reasons and/or for movement of the HVAC unit in the space using gravity.

[0012] In a further aspect, the space is located in a horizontal direction adjacent to the access opening. Such a relationship between the space and the access opening makes it possible that the HVAC unit can be positioned in the space at the same level, or more or less the same level, as the access opening which facilitates operator access through the access opening. For example, a horizontal (virtual) center line of the space crosses the access opening. The horizontal (virtual) center line of the space may cross substantially in the center of the access opening. In addition or alternatively, a vertical center line of the space may be spaced from the access opening. In this manner, it is possible to provide the standard structural mount with the advantages described in this disclosure with relatively compact dimensions, in particular vertical dimension.

[0013] The access opening may define an angle between 0 and 55 degrees with the vertical, preferably larger than 0 and smaller than 55 degrees. In other words, the access opening defines a virtual plane which extends more in a vertical direction than in a horizontal direction to facilitate access to the space for an operator with minimal or no additional means.

Brief description of the drawings:

[0014]

Figures 1a,b show perspective views of a roof construction and a structural mount of the roof construction with an example of a HVAC support unit in a working position;

Figure 2a-c show various views of the roof construction and the structural mount shown in figures 1a,b installed in an opening in a pitched roof with a sloping angle with respect to the horizontal of 55 degrees;

Figure 3a-c show various views of another roof construction with the structural mount shown in figures 1a-2c installed in an opening in a pitched roof with a sloping angle with respect to the horizontal of 35 degrees.

Figure 4a-c show various views of the roof construction shown in figures 1a-2c with the HVAC support unit in an operator position.

[0015] In the following description identical or corresponding parts have identical or corresponding reference numerals. Each feature disclosed with reference to a specific figure can also be combined with another feature disclosed in this disclosure, unless it is evident for a person skilled in the art that these features are incompatible.

[0016] In this disclosure "substantially horizontally displacing" means that the movement of HVAC unit forms an angle comprised between 0° and 45° with the horizontal, preferably between 0° and 30° with the horizontal.

Detailed description of the drawings:

[0017] Figure 1a shows a perspective view of a roof construction 1 housing and carrying a structural mount 10 of the roof construction 1. Figure 1b shows a perspective view of the structural mount 10. Figure 2a shows a cross section, see figure 1a 2a-2a indicating the position of the cross section shown in figure 2a, through the roof 101 having support beams 104 of the roof 101 and indoor and outdoor parts of the roof construction 1 shown in figure 1a. Figure 2b shows a cross section, see figure 1a 2b-2b indicating the position of the cross section shown in figure 2b, through the roof 101 and the roof construction 1 shown in figure 1a. Figure 2c shows the same cross section as shown in figure 2b, wherein parts of the roof construction 1 and a HVAC unit 150 are omitted. Figure 2c shows for example an early stage in the (complete) installation process of the roof construction 1, wherein the structural mount 10 has already been installed in the desired position and with the desired orientation with respect to the roof 101.

[0018] The structural mount 10 is a prefab one-piece construction with non-variable dimensions in the x,y,z directions. Such a prefab standard structural mount can be used for pitched roofs independent of the sloping angle and with many options for an architect and/or a user of the building. The prefab standard structural mount also ensures that installation of a (complete) roof construction as for example shown in figure 1a on a pitched roof can be done relatively easily and relatively quick. The prefab one-piece construction can be further constructed as thermal barrier. A thermal barrier is a material or structure designed to impede or reduce the transfer of heat between two different temperature environments. The primary purpose of a thermal barrier is to provide insulation and prevent the excessive flow of heat. Materials suitable for manufacturing a thermal barrier are for example selected from the group consisting of: fiberglass, foam insulation, cellulose insulation, wool insulation or combi-

nations. A thermal barrier may in addition or alternatively be provided in a constructional manner, for example by cavity wall insulation, wherein the room between inner and outer sides, for example spaces between plastic walls, can be filled with air or insulating materials to reduce heat transfer. Injection moulding including rotation moulding as a manufacturing process can be used for producing the prefab standard structural mount 10 or at least parts thereof such as its external design, for example its outer walls. The standard structural mount may be made of plastic or a composite, optionally filled with insulation material. In this manner, a cost effective standard structural mount with the functions of a thermal barrier as discussed above can be provided.

[0019] The structural mount 10 is configured to be installed in an opening 103 in a pitched roof 101 of a building, wherein the structural mount 10 is adapted to provide a space 13 for housing a HVAC unit 150 at least partly outside O the building. The outside O and inside I (see fig. 2a) of the building are divided by a virtual plane defined by the outer surface 100 of the pitched roof 101. The structural mount 10 comprises at least an access opening 11 providing access to the space 13 from the inside I of the building, wherein the structural mount is the above identified standard structural mount 10 which is designed for movement with respect to the opening 103 during installation for positioning at least a portion of the access opening 11 and at least a portion of the space 13 on the inside I of the building. In the examples shown in the figures the access opening 11 is positioned on the inside I of the building. The access opening 11 is position at a distance extending in the y-direction from the roof opening 103 inside I the building. The space 13 is defined by the (maximal) inner dimensions in the x,y,z direction of the standard structural mount 10. The volume of the space 13 is larger than a volume defined by dimensions of a standard HVAC unit 150, in particular the space volume is at least twice as large as the volume of the HVAC unit 150. A standard HVAC unit 150 may have a width and height between 60 and 100 cm and depth 25-50 cm.

[0020] The standard structural mount 10 may have or has two standard horizontal dimensions extending in the x- and y-direction (figs. 1b and 2c) and one standard vertical dimension in the z-direction. In the shown embodiment of the standard structural mount 10 one (y-direction) of the two horizontal dimensions of the standard structural mount is larger than the vertical dimension (z-direction) of the standard structural mount and the other (x-direction) of the two horizontal dimensions of the standard structural mount is smaller than the vertical dimension of the standard structural mount (z-direction). The horizontal dimension in the x-direction is preferably maximally 1 meter such that this horizontal dimension is smaller than the corresponding dimension of roof insulation panels (not shown). In this manner, installation of the roof construction 1 advantageously only requires to remove (or not to install) one roof insulation panel, or at least a part thereof, to provide the roof opening 103 in the roof 101. The standard structural mount 10 features a trapezoid in a longitudinal (y-direction) cross-section. In a trapezoid, at least one pair of opposite sides are parallel, but the other pair of opposite sides are not. The parallel sides are called bases, and the non-parallel sides are called legs. The standard structural mount (not shown) may also feature a longitudinal (y-direction) cross-section shaped like a parallelogram. The standard structural mount 10 comprises at least a bottom side 17 forming a base of a trapezoid and a top side 19 forming a base a trapezoid. The top side 19 is connected to the bottom side by side walls 21, 23 (Fig. 1c).

[0021] The standard structural mount 10 extends in one horizontal direction more than in the vertical direction. A relatively limited vertical dimension has the advantage that operator access can be relatively easily provided without requiring relatively complex mechanisms extending in the vertical direction, such as a lift and the like to get access to the HVAC unit for maintenance work by an operator.

[0022] The standard structural mount 10 is designed for moving in a horizontal direction, i.e. the y-direction, with respect to the roof opening 103 during installation to obtain the most optimal position. It is for example possible to design the (roof) opening 103 such that the vertical height (z-direction) of the standard structural mount corresponds to the vertical height of the opening 103 (independent of its orientation), such that during installation in the opening 103, it is impossible to linearly move the standard structural mount 10 in a vertical direction, but it is possible to linearly move the standard structural mount 10 in a horizontal direction (y-direction). The same effect can also be obtained with corresponding shapes of the opening and the standard structural mount (not shown). In the standard structural mount 10, the bottom side 17 is designed to be moved during installation between any position between inside I the building to a position largely outside O the building. The top side 19 and the bottom side 17 each have an outwardly facing end 17a, 19a and an inwardly facing end 17b, 19b (fig. 2c), wherein the distance in the y-direction between these ends 17a, 17b; 19a, 19b is larger in the bottom side 17 than the top side 19, in particular at least two times larger. The outwardly end 19a of the top side 19 is located below the outer surface 100 of the pitched roof 101, i.e. on the inside I of the building, whereas the outwardly end 17a of the bottom side 17 is located above the outer surface 100 of the pitched roof 101, i.e. on the outside O of the building.

[0023] The structural mount 10 is configured for pivoting during installation in the opening to a desired orientation with respect to the pitched roof, normally the virtual horizontal center line C of the structural mount 10 extends horizontally as shown in the figures. It is for example also possible to provide the standard structural mount 10 with a slight (10 degrees or less) tilted orientation (not shown) with respect to the horizontal. Such a tilted orientation may for example be desired for aesthetic reasons and/or

for movement of the HVAC unit in the space using gravity.

[0024] The space 13 is located in a horizontal direction adjacent to the access opening 11. Such a relationship between the space 13 and the access opening 11 makes it possible that the HVAC unit can be positioned in the space at the same level, or more or less the same level, as the access opening 11 which facilitates operator access through the access opening. The horizontal (virtual) center line of the space crosses the access opening. The horizontal (virtual) center line of the space crosses the access opening close to the center of the access opening as shown in figure 2c. A vertical center line of the space 13 is spaced from the access opening 11. In this manner, it is possible to provide the standard structural mount 10 with the advantages described in this disclosure and with relatively compact dimensions, in particular a relatively limited vertical dimension.

[0025] The access opening may define an angle between 0 and 55 degrees with the vertical (z-direction), preferably larger than 0 and smaller than 55 degrees. The access opening 11 defines an angle of approximately 35 degrees with the vertical (z-direction). In other words, the access opening defines a virtual plane which extends more in a vertical direction than in a horizontal direction to facilitate access to the space for an operator with minimal or no additional means.

[0026] The structural mount 10 comprises an interior design to collect condensation and to drain the condensation outside the structural mount 10. The bottom side 17 may be configured for collection and drainage of condensation water. For example, the bottom side 17 may have drain 18 (Fig. 1b).

[0027] Figure 3a-c show various views of another roof construction 1' with the same structural mount 10 as shown in figures 1a-2c installed in an opening in a pitched roof. The roof construction 1' has a different configuration to cope with the roof 101' with a (different) sloping angle with respect to the horizontal of 35 degrees (instead of 55 degrees as shown in figures 1a-2c). The roof 101' also comprises a roof opening 103' and support beams 104'. The difference will be explained by using figures 2a, 2b and 3a, 3b. The difference between the roof constructions 1; 1' is that the roof construction 1 comprises an outside housing panel construction 125 having a different configuration that the outside housing panel construction 125' of the roof construction 1'. The outside housing panel constructions 125; 125' are configured for connection to the structural mount 10, wherein each outside housing panel construction is provided with at least one airflow opening, i.e. air vents 127; 127' (see also fig. 4c) and a protective and/or aesthetic outside covering for the HVAC unit and the structural mount. The outside covering comprises side panels 129; 129' and top panels 131; 131', wherein dependent on the roof pitch, and the desired position / orientation of the structural mount 10 more or less top and/or side panels 129; 129', 131; 131' may be used to provide a roof construction. In addition, both roof constructions 1; 1' may comprise a carrying mechanism 152 (fig. 4c) connected to the roof 101; 101'. The carrying mechanism 152 is adapted to carry the structural mount 10, such that after installation the structural mount 10 is permanently connected to the roof 101; 101'.

[0028] Figures 4a-c show various views of the roof construction 1 with the HVAC unit 150 in an operator position. The same roof construction 1 is also shown in figures 1a, 2a, 2b, but with the HVAC unit 150 in a working position. The HVAC unit 150 is supported/carried by a HVAC unit support 25 which is a part of the structural mount 10 in the embodiments shown in the figures. Details of the support 25 will be explained below. The working principle of the HVAC unit support 25 as shown in figures 4a-c is also applicable on the roof construction 1' shown in figures 3a-c.

[0029] The HVAC unit support 25 is configured for substantially horizontally (in the y-direction) displacing the HVAC unit 150 between a working position as shown in figures 1a, 2a, 2b, 3a, 3b at least partly outside O the building and an operator position as shown in figures 4a-c at least partly inside I the building. The distance between the operator position and the working position is defined by the horizontal displacement distance. In the embodiment as shown in the figures, the HVAC unit 150 is in a working position located outside O the building for fresh air intake and/or air exhaust outside the building and in an operator position located inside I the building. In the operator position the HVAC unit support is positioned more inside the building than in the working position. In the operator position the HVAC unit 150 can be installed or removed from the roof construction 1; 1' or maintenance work can be performed on an installed HVAC unit 150. After operator activities, the HVAC unit 150 can be moved from the operator position to the working position. In the working position, the HVAC unit is capable of providing a controlled and comfortable indoor environment of a building by regulating temperature, humidity, and/or air quality. The distance between the access opening 11 and the working position of the HVAC unit 150 is larger than the distance between the access opening 11 and the operator position of the HVAC unit 150. The horizontal displacement of the HVAC unit between the working position and the operator position requires no lift mechanism. A lift mechanism results in many countries in stricter building requirements for the roof construction and/or inspection intervals, such as for safety, maintenance, or regulatory compliance. In addition, the roof construction of this disclosure is attractive from a cost perspective. For example, a relatively non-complex HVAC unit support (not shown) may be provided by a flat HVAC unit support surface designed for moving, for example by sliding, a HVAC unit 150 between the working position and operator position (and back).

[0030] The roof construction 1; 1' may be configured for manually moving the HVAC unit 150 between the working position and the operator position and vice versa by means of the HVAC unit support 25. Such a relatively

simple configuration of the roof construction 1; 1' enables a relatively quick installation of the roof construction on a pitched roof of a building, and normally the installation of manually operated displacement mechanisms can be done without permits or (strict) compliance requirements. It is also possible that the HVAC unit support comprises a motor (not shown) for displacing the HVAC unit support 25 between the working position and the operator position.

[0031] The access opening 11 may be provided with a movable partition 30 that allows or restricts access into and out of the enclosed space 13 of the roof construction 1;1'. The movable partition 30 is swingable about a pivot axis 31 extending between two opposing side walls 21, 23 of the structural mount 10 between an open position and a closed position. It is also for example possible that the movable partition is slideable between an open position and a closed position. The movable partition 30 may close the access opening 11 in a closed position like a door, such that the space 13 of the roof construction 1; 1' is closed with respect to the indoor environment inside of the building as shown in figures 1a-3c. The space 13 of the roof construction 1; 1' is normally in direct communication with outside air. Thus closing the access opening 11 by means of the partition 30 may for example be desired from a thermal perspective for the building. The movable partition 30 provides in the open position (see figures 4a-c) an at least partly open access opening 11, such that access to the space 13 and/or to the HVAC unit 150 in the operator position for an operator can be provided, for example for maintaining the HVAC unit 150 in the roof construction 1, 1'. For example, the operator position (not shown) may be located at least partially inside the space 13 close to the access opening 11, such that the partition in the open position provides access for the operator to the HVAC unit 150. In the open position of the moveable partition 30, the operator position of the HVAC unit may also be provided by means of the moveable partition 30. For example, in the open position of the moveable partition 30, the HVAC unit can be brought to the operator position relatively far inside the building and for example out of the space by means of the HVAC unit support 25. Hence, the HVAC unit 150 can be moved at least partially or at least substantially out of the space 13 of the roof construction 1; 1' to arrive at the operator position, which may facilitate operator activities on the HVAC unit. The partition and the HVAC unit support may be connected to each other or are provided in one-piece, wherein, like a drawer of a cupboard (not shown), moving the partition to the open position simultaneously moves the HVAC unit support from the working position to or towards the operator position. In the example shown in the figures, a side 30a (fig. 4c) of the partition 30 facing the space 13 in the closed position is adapted to receive in the open position the HVAC unit 150 in the operator position, such that the HVAC unit 150 can be moved at least partially or at least substantially out of the space 13 of the roof construction 1, 1', which may facilitate operator activities on the HVAC unit 150. The side 30a of the partition is adapted to receive the HVAC unit support 25.

[0032] The HVAC unit support 25 may comprise at least one displacement attribute 25a. The at least one displacement attribute such as rails, grooves and/or wheels may facilitate displacement of the HVAC unit 150 between the working position and operator position. Such displacement attribute(s) may optionally require additional measures in the roof construction 1; 1' which further facilitate the horizontal movement of the HVAC unit 150 for an operator.

[0033] The HVAC unit support (not shown) may also comprises at least a part of displacement equipment for moveable carrying the HVAC unit 150, for example the displacement equipment comprises slides, such as telescopic slides. The HVAC unit may for example be connected to the roof construction 1; 1' by slides, such as telescopic slides, for linear (such as horizontal) movement of the HVAC unit 150.

[0034] The HVAC unit support 25 has a sled-like design 25, with or without displacement attribute or cooperating with or without displacement attribute, wherein the sled-like design 25 can be slid over an inner support surface 26 (fig. 1b) of the roof construction 1; 1'. The inner support surfaces 26 are in the embodiment shown provided by the structural mount 10 of the roof construction 1; 1'. In the open position of the partition 30, the side 30a of the partition is aligned with the inner support surfaces 26 such that the sled-like HVAC unit support 25 can be moved over the inner support surfaces 26 and the side 30a from the working position to the operator position provided on the side 30a, and vice versa. The inner support surfaces 26 are located at a distance from the bottom side 17 such that above the bottom side 17 room is provided for hoses and other connections 151, like a electrical connection, which can be connected to the HVAC unit 150 for its operation. The connections may further comprise a medium supply/discharge of the HVAC unit 150, control wiring to the HVAC unit 150 and/or a fluid connection (for rain and condensation) from the HVAC unit 150. In this manner, the sled-like HVAC unit support 25 can be freely moved between the working and operator position. In addition, an inner side 41 of the structural mount 10 comprising the partition 30 has a bottom section of the inner side 41 below the partition 30 providing a cable hole 43 for hoses and other connections 151. This position of the cable hole 43 in bottom section of the inner side 41 below the partition 30 ensures that the partition 30 may be relatively simple and that the partition 30 can be opened and closed relatively easily. Such a cable hole 43 may also comprise a fluid drain for discharging rain and condensation from the space 13, wherein the fluid drain may also be connected to the fluid connection 151 mentioned above. Such a fluid drain to the inside I of the building is optional. It may be desired for safety reasons that when the partition 30 is closed there is no fluid communication (such as for example by means of the cable hole) possible between the space 13 and the

inside I of the building. For example, these safety reasons may be applicable if the HVAC unit 150 is a propane (R290) heat pump. The fluid drain for discharging rain and condensation from the structural mount 10 / roof construction 1; 1' may for safety reasons then only be directed towards the outside O of the building to avoid fluid leakage (such as propane) between the space 13 and the inside I of the building.

[0035] The roof construction 1; 1' may further comprises end indicators or end stops (not shown) for indicating or stopping the HVAC unit 150 in the working position and/or in the operator position, in particular for a HVAC unit support 25 adapted for manually displacing the HVAC unit 150 between the working position and the operator position. The end indicators/stops facilitate an operator.

[0036] This disclosure also relates to a system for mounting a HVAC unit 150 on a pitched roof of a building comprising a structural mount 10 and a roof construction 1; 1' configured to be attached to the pitched roof and the structural mount, optionally the roof construction includes the outside housing panel construction as disclosed herein.

Claims

1. A structural mount configured to be installed in an opening in a pitched roof of a building, wherein the structural mount is adapted to provide a space for housing a HVAC unit at least partly outside the building and the structural mount comprises at least an access opening providing access to the space from the inside of the building, wherein the structural mount is a standard structural mount which is designed for movement with respect to the opening during installation for positioning at least a portion of the space and the access opening on the inside of the building.

2. The structural mount according to claim 1, wherein the standard structural mount has two standard horizontal dimensions and one standard vertical dimension, wherein one of the two horizontal dimensions of the standard structural mount is equal or larger than the vertical dimension of the standard structural mount and the other of the two horizontal dimensions of the standard structural mount is equal or smaller than the vertical dimension of the standard structural mount, and/or the standard structural mount is designed for moving in a horizontal direction with respect to the opening during installation and/or the structural mount is configured for pivoting in the opening to a desired orientation with respect to the pitched roof.

3. The structural mount according to any of the preceding claims, wherein the standard structural mount is a prefab one-piece thermal barrier with non-variable dimensions.

4. The structural mount according to any of the preceding claims, wherein the space is located in a horizontal direction adjacent to the access opening.

5. The structural mount according to any of the preceding claims, wherein the structural mount comprises at least a bottom side and a top side connected to the bottom side, wherein the bottom side is designed to be moved during installation between any position between inside the building to a position largely outside the building, preferably the top side and the bottom side each have an outwardly facing end and an inwardly facing end, wherein the distance between these ends is larger in the bottom side than the top side, more preferred at least two times larger, and/or the structural mount is configured to be connected with an outside housing panel construction provided with at least one airflow opening, wherein the outside housing panel construction provides a protective and/or aesthetic outside covering for the HVAC unit and the structural mount, and/or the space defines a space volume which is larger than a volume defined by dimensions of a standard HVAC unit, preferably the space volume is at least twice as large as the volume of the HVAC unit.

6. The structural mount according to any of the preceding claims, wherein the structural mount comprises a HVAC unit support configured for substantially horizontally displacing the HVAC unit between a working position at least partly outside the building and an operator position at least partly inside the building.

7. The structural mount according to any of the preceding claims, wherein the access opening is provided with a movable partition that allows or restricts access into and out of the enclosed space, for example the movable partition is swingable and/or slideable, and/or the moveable partition is moveable between an open position and a closed position, wherein in the open position of the moveable partition access to the operator position is provided, and/or the operator position of the HVAC unit is provided by means the moveable partition in the open position.

8. The structural mount according to claim 6 or 7, wherein the HVAC unit support comprises at least one displacement attribute, such as rails, grooves and/or wheels.

9. The structural mount according to any of the preceding claims 6-8, wherein the HVAC unit support comprises at least a part of displacement equipment for moveable carrying the HVAC unit, for example the displacement equipment comprises slides, such as

telescopic slides.

10. The structural mount according to any of the preceding claims 6-9, wherein the HVAC unit support is adapted for manually displacing the HVAC unit between the working position and the operator position and vice versa.

11. The structural mount according to any of the preceding claims 6-10, wherein the structural mount further comprises end indicators or end stops for indicating or stopping the HVAC unit in the working position and/or in the operator position.

12. The structural mount according to any of the preceding claims, wherein the structural mount is made of plastic or a composite, optionally filled with insulation material, and/or a horizontal center line of the space crosses the access opening, preferably substantially in the center of the access opening, and/or a vertical center line of the space is spaced from the access opening.

13. The structural mount according to any of the preceding claims, wherein the access opening defines an angle between 0 and 55 degrees with the vertical, preferably larger than 0 and smaller than 55 degrees

14. A system for mounting a HVAC unit on a pitched roof of a building comprising a structural mount according to any of the preceding claims and a roof construction configured to be attached to the pitched roof and the structural mount, optionally the roof construction includes the outside housing panel construction as defined in claim 5.

15. A building having a pitched roof, wherein the building comprises a system of claim 14.

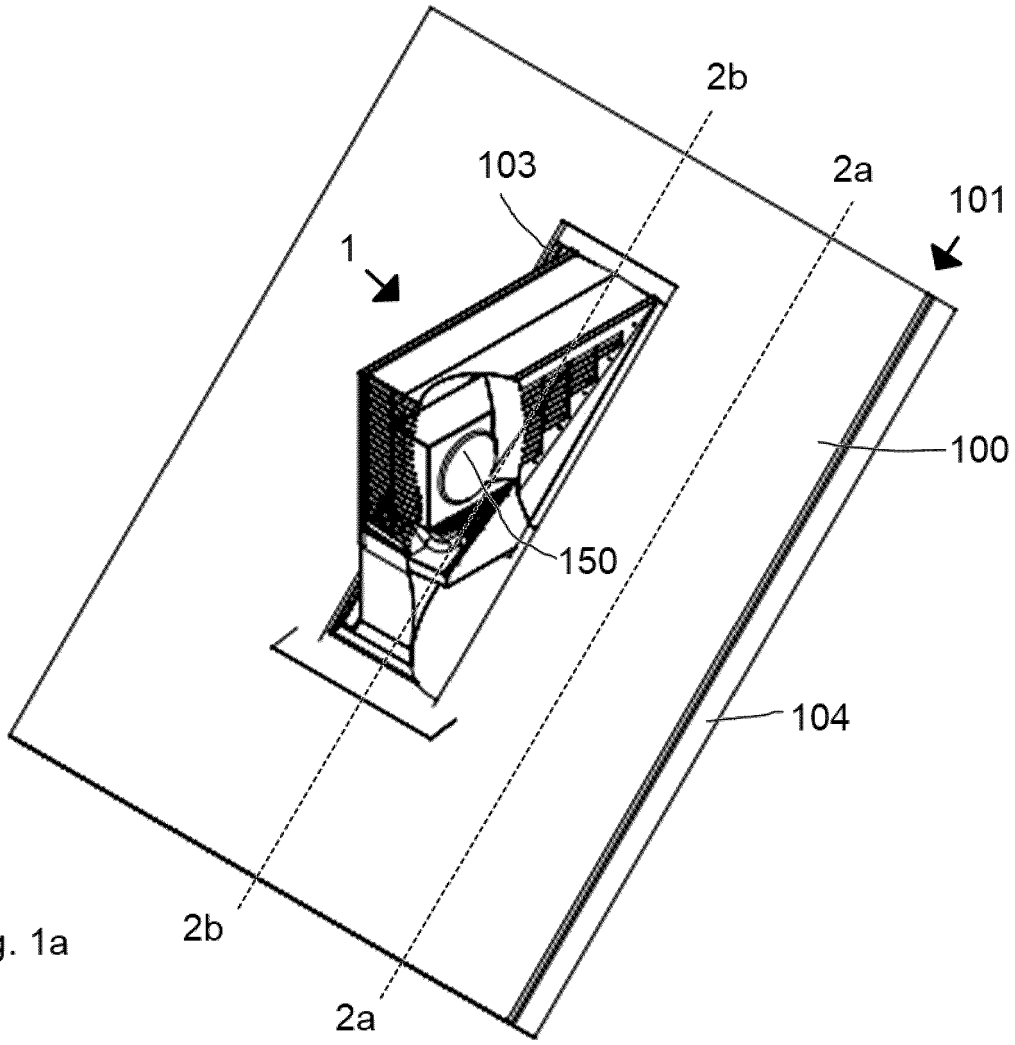

Fig. 1a

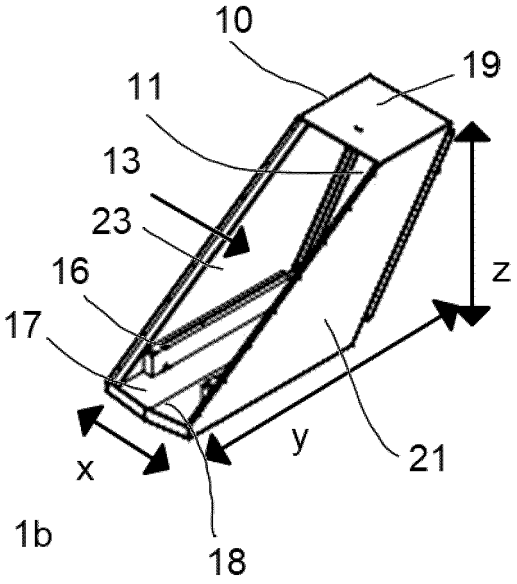

Fig. 1b

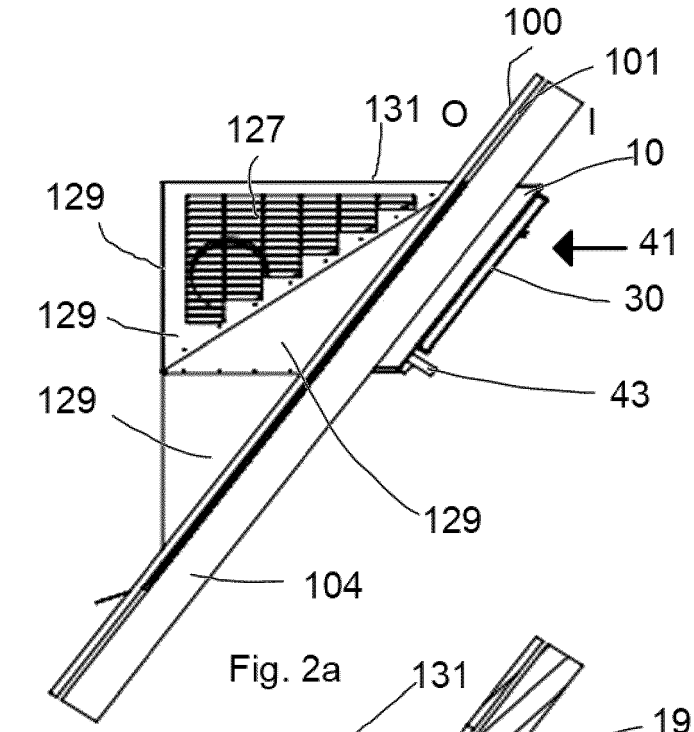

Fig. 2a

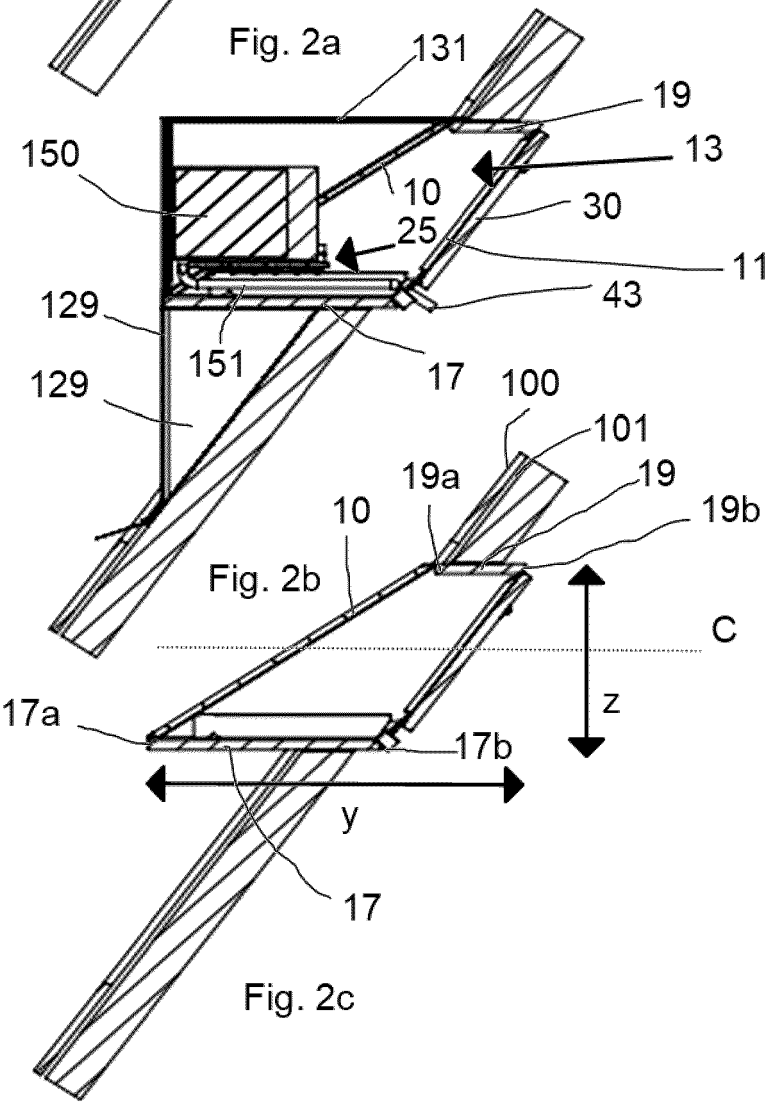

Fig. 2b

Fig. 2c

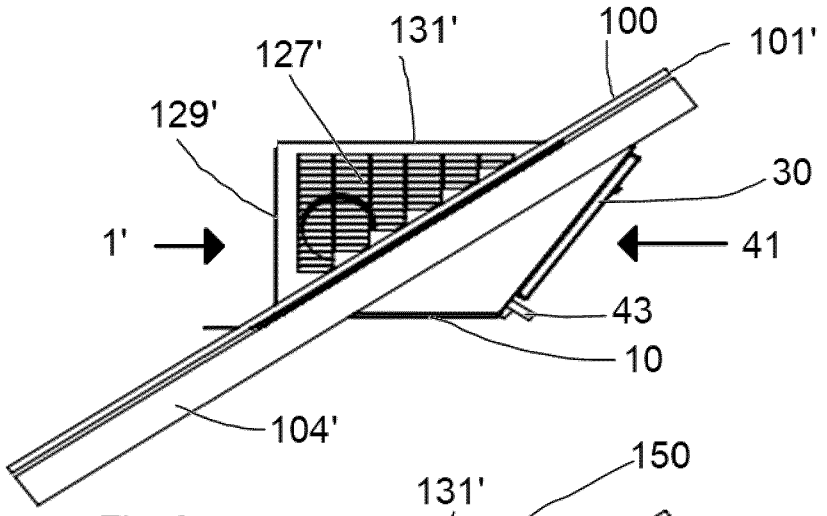

Fig. 3a

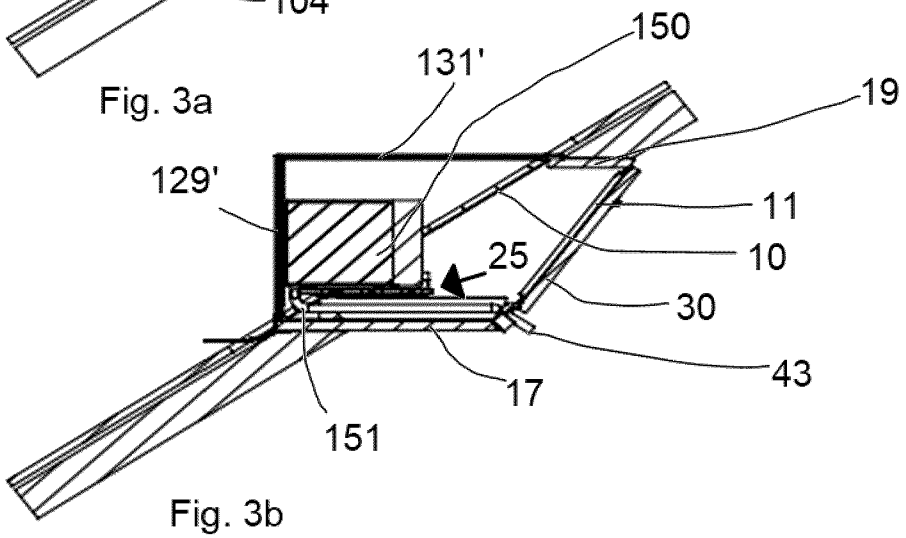

Fig. 3b

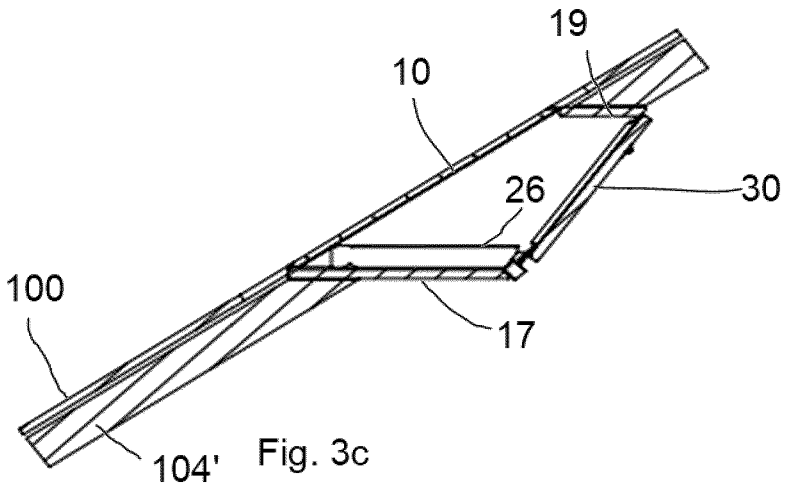

Fig. 3c

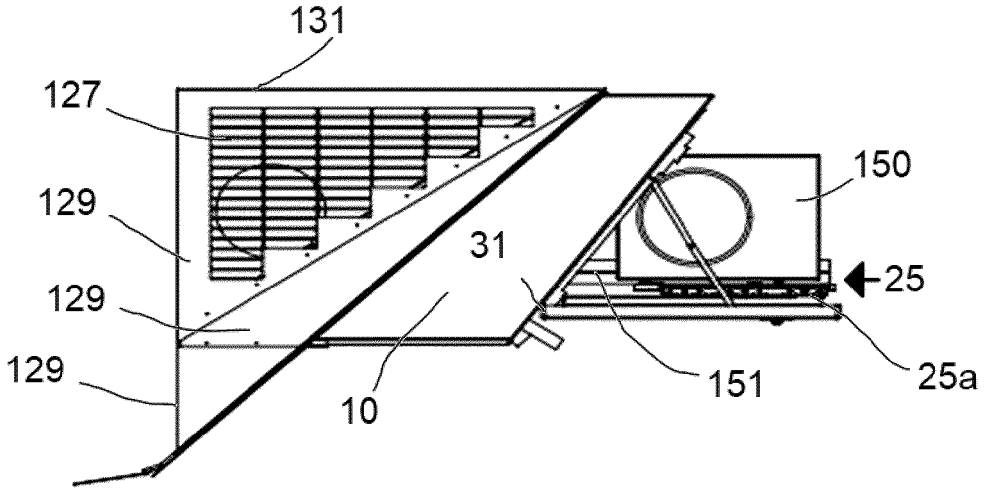

Fig. 4a

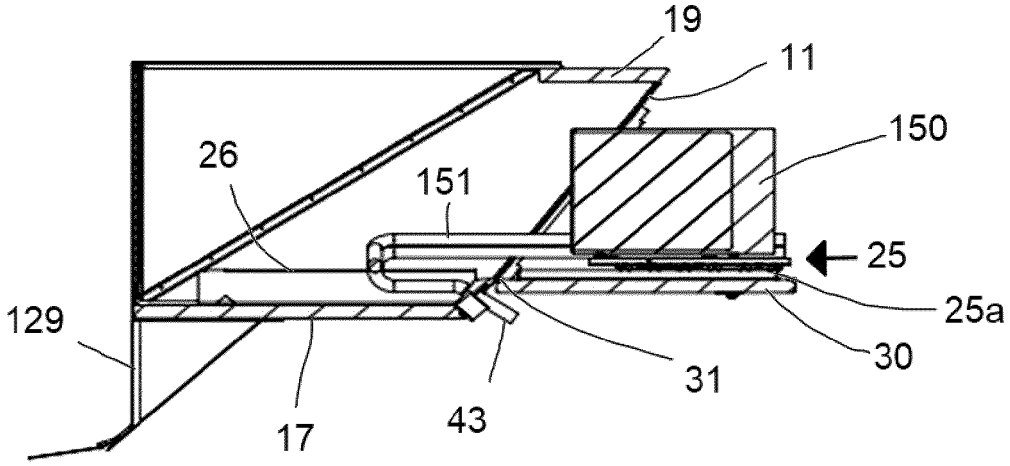

Fig. 4b

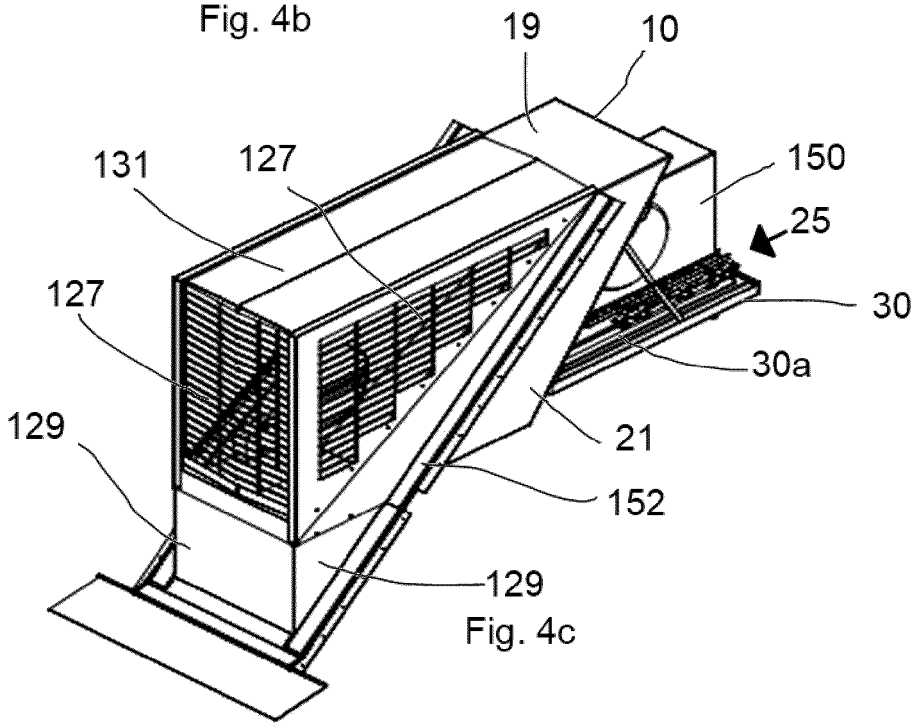

Fig. 4c

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EUROPEAN SEARCH REPORT

Application Number
EP 24 21 8367

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Place of search	Date of completion of the search	Examiner
Munich	3 February 2025	Mattias Grenbäck

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