(11) **EP 1 479 851 A1**

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:

24.11.2004 Bulletin 2004/48

(51) Int CI.⁷: **E04G 5/04**, E04G 21/32

(21) Application number: 04447127.4

(22) Date of filing: 19.05.2004

(84) Designated Contracting States:

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PL PT RO SE SI SK TR Designated Extension States:

AL HR LT LV MK

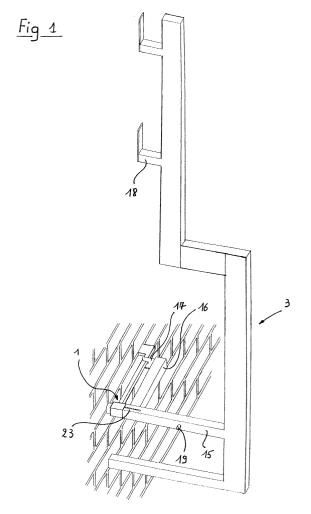
(30) Priority: 20.05.2003 BE 200300302

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(54) Railing anchor and accompanying railing support

(57) Railing anchor for fastening railing supports (3) into a wall, comprising a rod like carrier (1), which at a first extremity is provided with first attaching means (7) for connection into the wall, and at the second extremity is provided with second attaching means (9) for a railing support, in between which the carrier moreover is provided with a rod like anchoring brace (2), extending substantially transverse to the carrier (1), which anchoring brace (2) at its one extremity is provided with a, at least in rotation direction rigid connection (11) with the carrier (1), and further is provided with third attaching means with the wall. Accompanying railing support and a process for placement of the railing anchor.



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Description

[0001] The invention relates to a railing anchor for anchoring railing supports into a wall, as described in the preamble of conclusion 1. The invention also relates to a railing support suitable for cooperating with the railing anchor, and to a process to fasten said railing anchors and the railing support onto the wall.

[0002] Railing anchors are for instance used to provide a temporary railing around the upper side of a building under construction. When constructing a building it frequently happens that employees of the construction company are present onto or off the upper side of already raised or partly raised walls. Such situation may entail great dangers, among other things because the employees regularly have to carry construction elements upwards or have to receive these from others. Thereby, they may easily loose their equilibrium and fall downward. Construction materials may also fall from the upper side of the building, by which persons may be injured. In order to prevent such accidents, a temporary railing is usually installed around the upper side of the building under construction, which railing has to provide the necessary safety for the employees at work, and for the persons in the vicinity of the building.

[0003] The known temporary railing is usually attached to a partly raised sidewall. Hereby, holes are drilled into the sidewall, into which the railing is subsequently screwed. After the sidewall has been raised further from the height at which the railing had been attached, the railing is unscrewed from the wall and subsequently screwed onto the sidewall again at a higher part of the sidewall, until the desired height of the sidewall has been attained.

[0004] Attaching the known railing to the wall is cumbersome and has to be carried out by at least two persons. Moreover the wall is necessarily provided with drilling holes at several places, resulting in a permanent disfigurement of the wall.

[0005] The present invention aims to provide an easily attachable Brace and accompanying railing support having a light construction and ensuring a reliable attachment of railing supports in brickwork and concrete works where danger with respect to falling exists for persons.

[0006] The railing anchor according to the invention thereto is characterized in that it comprises a rod like carrier, which at a first extremity is provided with first attaching means for connection into a wall, and at the second extremity is provided with second attaching means for a railing support, in between which the carrier moreover is provided with a rod like anchoring brace, extending substantially transverse to the carrier, which anchoring brace at its one extremity is provided with a, at least in rotation direction rigid connection with the carrier, and further is provided with third attaching means with the wall

[0007] By providing, according to the invention a sep-

arate railing anchor onto which, after its attachment to the wall, a railing support can be mounted, is achieved that all necessary handlings to attach the railing anchor and the railing to the wall can be carried out by one person only, for instance by the person already executing the brickwork or concrete works.

[0008] According to the invention, the rod like carrier is anchored into the wall with its axis substantially perpendicular to the plane of the wall by means of the first attaching means. At the other extremity of the carrier, which extremity sticks out of the wall, a railing support is attached by means of the second attaching means. According to the invention the carrier is, somewhere between both extremities provided with a rod like anchoring brace, which is fastened into the wall with its free extremity and which is, at its other extremity, at least in rotation direction, rigidly attached to the carrier, by which rotation of the part of the carrier protruding from the wall is hindered.

[0009] The railing anchor is build in over at least a part of the carrier of the railing anchor into the wall onto which the safeguard against falling has to be attached during bricklaying of blocks of stone and/or cement, or it is screwed into the wall. A further advantage of the railing anchor according to the invention is that the amount of time it takes to attach the safeguard against falling is much reduced when compared to the known railing anchor. Moreover it now becomes possible that the bricklayer and/or the sheet piler installs the railing anchor himself during his normal work, without having to take any additional risk, for instance by changing position.

[0010] The railing anchor may in principle be manufactured from all suitable construction materials. It is for instance possible to use unfilled polymers, or polymers filled with fillers and/or reinforcing fibres. Advantageously the railing anchor is manufactured from stainless steel. Through this is achieved that the railing anchor is substantially insensitive to the aggressive action of cement and water, and therefore is easily kept clean. [0011] The railing anchor according to the invention advantageously comprises a sliding connection between anchoring brace and carrier which substantially only permits a shifting along the carrier in the axial direction of the carrier. Through this is achieved that the anchoring brace can be installed into the wall, or can be

anchoring brace can be installed into the wall, or can be removed from the wall, independently from the carrier. Advantageously the sliding connection consists of a tubular sliding member attached to the anchoring brace, which can fittingly slide along at least a part of the longitudinal axis of the likewise tubular cross section of the carrier. Through this is achieved that the resistance against rotation of the carrier around its axis is further enhanced.

[0012] According to the invention, the anchoring brace is anchored with its free extremity into the wall by means of third attaching means. This may for instance be achieved by screwing and/or nailing said free extremity into the wall. Advantageously however, the third at-

taching means comprise at the free extremity of the anchoring brace a plate like lip, which extends radially outward with respect to the axis of the anchoring brace and which is receivable into the wall. If desired, the lip may be received by a previously made groove in the wall with a shape adapted to receive the lip. It is also possible to put the lip onto a partly constructed wall and build this lip in during bricklaying. Another possibility is to brick in a separate plate having the shape of the groove, wherein the lip may be taken up. Once the lip has been fastened into the wall, the anchoring brace, which is attached onto the carrier of the railing anchor according to the invention, ensures that rotation of the carrier around its longitudinal axis is further hindered. Obviously such rotation is already hindered somewhat by securing the carrier into the wall itself.

[0013] Securing the carrier according to the invention into the wall is advantageously achieved by providing first attaching means of the rod like carrier comprising a cylindrical part, provided with screw thread. The screw-thread may to fasten cooperate with suitable attaching means, provided into or behind the wall, such as for instance a concrete screw cap, a nut, and other attaching means known and available to the person skilled in the art. The cylindrical part may have different lengths, dependent on the thickness and other characteristics of the wall into which the railing anchor has to be fastened.

[0014] The transversely mounted anchoring brace is, according to the invention attached to the carrier. Advantageously the connection is provided by means of a tubular sliding member that may fittingly slide over at least a part of the longitudinal axis of the likewise tubular and/or quadrangular cross section of the carrier. The part of the carrier having a tubular and/or quadrangular cross-section also forms advantageously a connection piece for a railing support, provided to be attached to the railing anchor according to the invention. The railing anchor according to the invention is therefore advantageously characterized in that the second attaching means of the rod like carrier comprise a tubular part, over which a likewise tubular supporting part of a railing support may be slid.

[0015] It further has advantages to characterize the railing anchor in that the rod like carrier additionally is provided with a stop, for instance having the shape of a bush provided around the axis of the carrier, which stop controls the intrusion depth into the wall when fastening the carrier into the wall. The connection piece and the tubular sliding member, which is slideable over the connection piece, can advantageously slide with respect to each other over a limited distance only. The sliding distance of the sliding member with respect to the connection piece is in this preferred embodiment limited in the direction of the first attaching means (towards the wall when in use) by the stop bush and in the direction of the second attaching means (towards the railing support when in use) by a stop pin, which is attached to the car-

rier and extends transversely to the axis of the carrier. The stop bush may, in this embodiment in addition function as connection between the part of the carrier that is to be fastened into the wall, which advantageously has a cylindrical cross section (the threaded rod) and the part serving as connection piece for the railing support. This is for instance preferred when the carrier is manufactured by assembling a cylindrical rod and a box girder. Advantageously the stop is made in the shape of a bush. The round shape of the stop bush has in addition the advantage that when turning the railing anchor into and/or out of the wall, damage to the brickwork is prohibited or prevented. By providing the stop pen onto the carrier between the tubular sliding member and the extremity of the carrier provided for attaching the railing support, sliding off of the anchoring brace from the connection piece of the carrier is prevented. Although not necessary according to the invention, this facilitates transport and attachment of the railing anchor according to the invention.

[0016] The invention likewise relates to a railing support for a circumferential railing, which is attachable onto the railing anchor according to the present invention. The railing support according to the invention comprises a supporting beam, extending substantially vertical in use and provided with at least one plank support and/or other support, which supporting beam is at its under side height provided with a rod like supporting part, extending substantially transverse to the axis of the supporting beam, which may detachably be fastened to the second attaching means of the carrier.

[0017] The railing support or rail beam is fastened to the second attaching means (denoted as the connection member in a preferred embodiment) of the carrier by means of a suitable connection. The railing support is advantageously characterized in that the supporting part is tubular and is slideable over the tubular part of the railing anchor according to the preferred embodiment described above and attachable hereto by means of a mortise and tenon joint. When the rail beam is slid completely onto the connection piece of the railing anchor a securing pin is stuck into the hole of the mortise and tenon joint.

[0018] Obviously it is in addition possible to provide other retaining means onto the railing such as a latticework, wire netting, and others. The retaining part of the railing support may have any shape. The manner by which the railing support is attached to the railing anchor of course has to be adapted to the chosen embodiment of the railing anchor.

[0019] In order to further improve the resistance against rotation about the axis of the railing anchor the railing support according to the invention advantageously has a supporting part with a portion which substantially extends transversely to the axis of the supporting part and, when in use substantially extends parallel to the axial direction of the anchoring brace, which portion can be detachably fastened to the anchoring brace

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of the invented railing anchor. Such a supporting part, which in the context of this application is also designated as snapper, secures a strong connection of the railing support to the railing anchor, and is very easily removed. The supporting part is in addition advantageously provided with a groove.

[0020] The invention also relates to a process for fastening a possibly temporary railing support onto a building. The process substantially comprises attaching the carrier of the railing anchor according to the invention into or onto a wall, which is possibly still in-progress, sliding the anchoring brace onto the carrier, fastening the lip of the anchoring brace in or onto the wall, securing the carrier and anchoring brace in the wall, and slidingly attach a railing support according to the invention onto the secured railing anchor in the wall.

[0021] By applying different railing anchors and railing supports according to the invention a suitable amount of times according to the process a railing system is formed suitable to form a safety fence around for instance the upper level floor of a building under construction in brickwork or concrete. Obviously, the railing anchor and railing support according to the present invention can in addition be used in other applications, such as for instance in factories, when moving, and so on.

[0022] In order to fasten, in a preferred embodiment, the railing anchor to the brickwork, a concrete screw cap is for instance screwed onto the threaded rod of the railing anchor. This threaded rod with the concrete screw cap is laid between the brickwork bricks and secured into the brickwork with mortar. When bricklaying, care is taken to slide the anchoring brace against the stop bush whereby the plate like lip of the anchoring brace is secured into the longitudinal joint of the brickwork. After hardening of the mortar a firm attachment of the railing anchor to the brickwork wall has been achieved.

[0023] After removal of the railing anchor the concrete screw cap remains into the hardened mortar of the wall. It is an advantage that removal of the railing anchor may be carried out by one person only. This is achieved by sliding the anchoring brace completely against the stop pin and, by a rotating movement, turning the railing anchor loose from the brickwork wall. A further advantage of this embodiment is that afterwards a threaded rod may again be screwed into the concrete screw cap left behind in the wall whereto for instance a scaffolding may be attached.

[0024] In this way it is also possible to replace the railing anchor when future work has to be done for which a safety-guard against falling needs to be placed (for instance maintenance work to the building). In this case special care has to be taken during bricklaying to keep the openings that were formed in the wall by the threaded rod with screw thread of the carrier and by the plate like lip of the anchoring brace free from mortar.

[0025] In another preferred embodiment the railing anchor is secured into the brickwork by sticking the threaded rod provided with screw-thread through a hole

drilled into the load-bearing wall and fastening it at the inner side with a nut.

[0026] It is likewise possible, for instance when applied to concrete walls, to embed the concrete screw cap into the concrete wall directly, and provide an open space in the concrete material into which the lip of the anchoring brace can take grip. The railing anchor may in this case, after removal of the formwork, be screwed into the concrete wall.

[0027] The invention will now be further explained in more detail with the aid of the following examples and drawings, without being limited thereto.

Figure 1 is a perspective view of a railing anchor and a railing support in secured position against a brickwork wall;

Figure 2 shows a perspective view of an anchoring brace according to the invention;

Figure 3 is a perspective view of an unmounted railing anchor according to the invention;

Figure 4 shows a perspective view of a railing anchor according to the invention being secured to a cavity wall:

Figure 5 a perspective view of the railing anchor being secured to a single wall;

Figure 6 a perspective view of the railing anchor being secured with a connection with a nut at the inner side of the wall;

Figure 7 a perspective view of the railing anchor being screwed into a concrete wall;

Figure 8 finally is a perspective view of an unmounted railing support.

[0028] In Figure 4 a railing anchor is shown which is bricked in into a cavity wall (4). To brick in the railing anchor, a concrete screw cap (20) is completely screwed onto the threaded rod (7). The railing anchor is subsequently placed onto the front stone such that the stop bush (8) touches against the front brickwork and the threaded rod (7) runs on into the inner cavity wall. By placing the stop bush (8) completely against the front stone and sliding the sliding member (11) completely against the bush (8), lip (14) of the anchoring brace (2) enters the longitudinal joint of the parament. The threaded rod (7) with the concrete screw cap (20) is hereby bricked in into the backside of the front joint of the inner cavity wall. The anchoring brace (2) ensures that the connection piece (9) cannot rotate. After bricklaying up to the desired height and hardening of the mortar the railing support (3) may be attached to the railing anchor. The railing support (3) slides with the supporting part (15) over the connection piece (9) of the railing anchor until it lies against sliding member (11). Connection piece (19) ensures that railing support (3) as well as anchoring brace (2) of the railing anchor cannot possibly slide backwards and moreover ensures that rotation is no longer possible. By sliding supporting part (15) of railing support (3) according to the invention onto the second attaching means (9) of the railing anchor and to pin it down through mortise and tenon joint (10, 19), a possible shifting of sliding member (11) of anchoring brace (2) in the axial direction is prevented. The sliding member (11) in this situation is "captured" between the stop bush (8) and the supporting part (15). Thereby lip (14) cannot possibly come out of the wall and/or cannot possibly be removed from the wall. In this way a particularly safe (temporary) securing in the wall is obtained, since anchoring brace (2) may only be removed from the wall after railing support (3) has been removed. The snapper (17) of the railing support (3) takes grip into the anchor arm (13) such that the play between connection piece (9) and supporting part (15) is minimal. The disassembly of the railing support (3) is achieved by removing the securing pin (19) and slide the railing support (3) off the railing anchor. When removing the railing support (3) sliding member (11) of the railing anchor can freely slide backwards (away from the wall) to against the stop (12). Plate (14) of anchoring brace (2) hereby comes out of the joint of the parament thereby allowing a rotating movement, through which the railing anchor can simply be removed from the wall. During turning out of the railing anchor the concrete screw cap (20) remains in the brickwork.

[0029] According to the invention it is additionally possible to achieve the mortise and tenon joint between the railing anchor and the railing support in an alternative way. Accordingly, it is for instance possible with the railing anchor according to the invention to provide the stop pin mounted onto the carrier with a spring system that makes it possible to push-in the stop pin to a position substantially at equal level to the outer circumference of the tubular cross section of the carrier. By keeping the stop pin in a pushed-down position the railing anchor with the railing support can be slid over the tubular part of the carrier. The railing support is provided with a cylindrically shaped opening such that when the railing support is completely slid onto the connection piece, the down pushable stop pin fits into this cylindrically shaped opening.

The rigid connection between railing support and railing anchor is now formed by the stop pin, which in this embodiment in addition functions as mortise and tenon, joint.

[0030] The advantage of this preferred embodiment is that the securing pin, the plughole in the railing support and in the railing anchor, and the groove in the supporting part of the railing support are superfluous and therefore may be omitted.

[0031] In Figure 5 a railing anchor is shown which is bricked in into a single wall (4). To brick in the railing anchor, a concrete screw cap (20) is completely screwed onto the threaded rod (7). The railing anchor is subsequently placed onto the brickwork stones such that the stop bush (8) touches against the brickwork. By placing the stop bush (8) completely against the brickwork stones and sliding the sliding member (11) com-

pletely against the bush (8), lip (14) of the anchoring brace (2) enters the longitudinal joint of the wall. The anchoring brace (2) ensures that the connection piece (9) cannot rotate. After bricklaying up to the desired height and hardening of the mortar the railing support (3) may be attached to the railing anchor. The railing support (3) slides with the supporting part (15) over the connection piece (9) of the railing anchor until it lies against sliding member (11). Connection piece (19) ensures that railing support (3) as well as anchoring brace (2) of the railing anchor cannot possibly slide backwards and moreover ensures that rotation is no longer possible. By sliding supporting part (15) of railing support (3) according to the invention onto the second attaching means (9) of the railing anchor and to pin it down through mortise and tenon joint (10, 19), a possible shifting of sliding member (11) of anchoring brace (2) in the axial direction is prevented. Also in this embodiment the anchoring brace (2) may only be removed from the wall after railing support (3) has been removed. The snapper (17) of the railing support (3) takes grip into the anchor arm (13) such that the play between connection piece (9) and supporting part (15) is minimal. The disassembly of the railing support (3) is achieved by removing the securing pin (19) and slide the railing support (3) off the railing anchor. When removing the railing support (3) sliding member (11) of the railing anchor can freely slide backwards (away from the wall) to against the stop (12). Plate (14) of anchoring brace (2) hereby comes out of the joint of the wall thereby allowing a rotating movement, through which the railing anchor can simply be removed from the wall. During turning out of the railing anchor the concrete screw cap (20) remains in the brick-

[0032] In Figure 6 a Railing anchor is shown which is bricked in into a wall with a connection with a nut (21) along the inner side of the wall. To brick in the railing anchor, the threaded rod (7) is taken through the wall, either by bricking it in, or by means of a drilled hole. The railing anchor is subsequently placed onto the brickwork stones such that the stop bush (8) touches against the brickwork. By placing the stop bush (8) completely against the brickwork stones and sliding the sliding member (11) completely against the bush (8), lip (14) of the anchoring brace (2) enters the longitudinal joint of the wall. The threaded rod (7) sticks through the wall and is fastened by screwing onto a nut (21). The anchoring brace (2) ensures that the connection piece (9) cannot rotate. After bricklaying up to the desired height and hardening of the mortar the railing support (3) may be attached to the railing anchor. The railing support (3) slides with the supporting part (15) over the connection piece (9) of the railing anchor until it lies against sliding member (11). Connection piece (19) ensures that railing support (3) as well as anchoring brace (2) of the railing anchor cannot possibly slide backwards and moreover ensures that rotation is no longer possible. By sliding supporting part (15) of railing support (3) according to

the invention onto the second attaching means (9) of the railing anchor and to pin it down through mortise and tenon joint (10, 19), a possible shifting of sliding member (11) of anchoring brace (2) in the axial direction is prevented. Also in this embodiment the anchoring brace (2) may only be removed from the wall after railing support (3) has been removed. The snapper (17) of the railing support (3) takes grip into the anchor arm (13) such that the play between connection piece (9) and supporting part (15) is minimal. The disassembly of the railing support (3) is achieved by removing the securing pin (19) and slide the railing support (3) off the railing anchor. When removing the railing support (3) sliding member (11) of the railing anchor can freely slide backwards (away from the wall) to against the stop (12). Plate (14) of anchoring brace (2) hereby comes out of the joint of the wall thereby allowing a rotating movement, through which the railing anchor can simply be removed from the wall.

During turning out of the railing anchor, the nut is unscrewed from the brickwork. It is now possible to remove the railing anchor from the brickwork.

[0033] In Figure 7 a Railing anchor is shown which is screwed into the concrete wall (6). Prior to this a concrete screw cap (20) is embedded into the concrete wall (6). In addition a recess (22) is left into the concrete wall (6) at plate (14) height. The railing anchor is then screwed onto the concrete wall (6) after hardening and removal of the shuttering by turning the threaded rod (7) into the embedded concrete screw cap (20). By placing the stop bush (8) completely against the concrete wall, holding lip (14) at recess (22) height and sliding the sliding member (11) completely against the bush (8), lip (14) of the anchoring brace (2) enters the recess (22) of the concrete wall. The anchoring brace (2) ensures that the connection piece (9) cannot rotate. Hereafter the railing support (3) may be attached to the railing anchor. The railing support (3) slides with the supporting part (15) over the connection piece (9) of the railing anchor until it lies against sliding member (11). Connection piece (19) ensures that railing support (3) as well as anchoring brace (2) of the railing anchor cannot possibly slide backwards and moreover ensures that rotation is no longer possible. The snapper (17) of the railing support (3) takes grip into the anchor arm (13) such that the play between connection piece (9) and supporting part (15) is minimal. The disassembly of the railing support (3) is achieved by removing the securing pin (19) and slide the railing support (3) off the railing anchor. When removing the railing support (3) sliding member (11) of the railing anchor can freely slide backwards (away from the wall) to against the stop (12). Plate (14) of anchoring brace (2) hereby comes out of the recess (22) in the concrete wall thereby allowing a rotating movement. During turning out of the railing anchor, the concrete screw cap (20) remains in the concrete wall (6).

Claims

- 1. Railing anchor for fastening railing supports 3 into a wall, comprising a rod like carrier 1, which at a first extremity is provided with first attaching means 7 for connection into the wall, and at the second extremity is provided with second attaching means 9 for a railing support, in between which the carrier moreover is provided with a rod like anchoring brace 2, extending substantially transverse to the carrier 1, which anchoring brace 2 at its one extremity is provided with a, at least in rotation direction rigid connection 11 with the carrier 1, and further is provided with third attaching means with the wall.
- 2. Railing anchor according to conclusion 1, characterized in that, the connection 11 between anchoring brace 2 and carrier 1 is a sliding connection 11 which substantially only permits a shifting along the carrier 1 in the axial direction of carrier 1.
- 3. Railing anchor according to conclusion 2, characterized in that, the sliding connection 11 consists of a tubular sliding member 11 attached to the anchoring brace 2 which can fittingly slide along at least a part of the longitudinal axis of the likewise tubular cross section 9 of the carrier 1.
- 4. Railing anchor according to any one of conclusions 1 - 3, characterized in that, the third attaching means 14 at one extremity of the anchoring brace 2 consist of a plate like lip 14 which extends radially with respect to the axis of the anchoring brace 2 and which is receivable into the wall.
- Railing anchor according to any one of conclusions 1 - 4, characterized in that, the first attaching means of the rod like carrier 1 comprise a cylindrical part 7, provided with screw-thread 7A.
- 6. Railing anchor according to any one of conclusions 1 - 5, characterized in that, the second attaching means 9 of the rod like carrier 1 comprise a tubular part 9, over which a likewise tubular supporting part 15 of a railing support 3 can be slid.
- 7. Railing anchor according to any one of conclusions 1 - 6, characterized in that, the rod like carrier 1 in addition is provided with a stop 8, which defines the intrusion depth of carrier 1 in the wall when attached to the wall.
- 8. Rail support 3 suitable for a circumferential railing which is attachable to the railing anchor according to any one of conclusions 1 6, comprising a supporting beam 24 which in use extends substantially vertical and which is provided with at least one plank support 18, which supporting beam at its under side

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is provided with a rod like supporting part 15, which extends substantially transverse to the axis of the supporting beam 24 and which may be connected detachably to the second attaching means 9 of the carrier 1.

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9. Rail support 3 according to conclusion 8, characterized in that, supporting part 15 is tubular and can be slid over the tubular part 9 of the railing anchor according to conclusion 6 and can thereto be fastened by means of a mortise and tenon joint (10,19).

10. Rail support according to conclusion 8 of 9, characterized in that, supporting part 15 is provided with a part 16, which extends transversely to the axis of the supporting part and in use extends substantially parallel to the axial direction of the anchoring brace 2, which can be attached detachably to the anchoring brace 2 of the railing anchor accord- 20 ing to any one of conclusions 1-6.

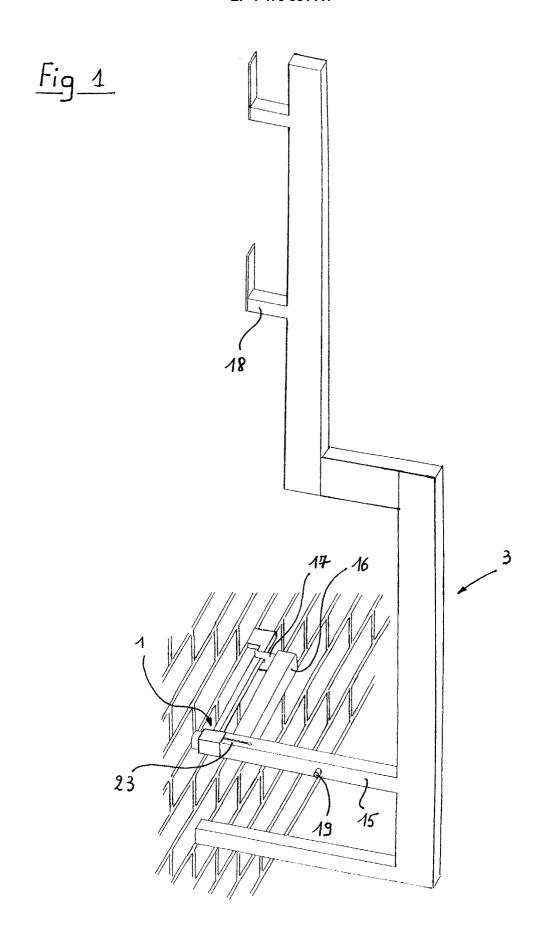
11. Process for attaching a railing support 3 onto a building, comprising attaching the carrier 1 of the railing anchor according to any one of the conclusions 1-6 in or onto a wall, which is possibly still inprogress, sliding the anchoring brace 2 onto the carrier 1, fastening the lip 14 of the anchoring brace 2 in or onto the wall, securing the carrier 1 and anchoring brace 2 in the wall, and slidingly attach a railing support 3 according to any one of conclu-

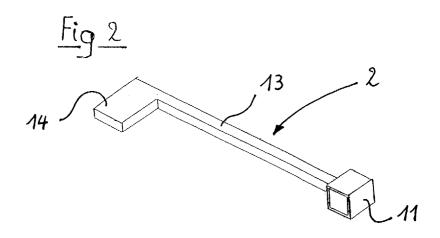
sions 8-10 onto the secured railing anchor in the wall.

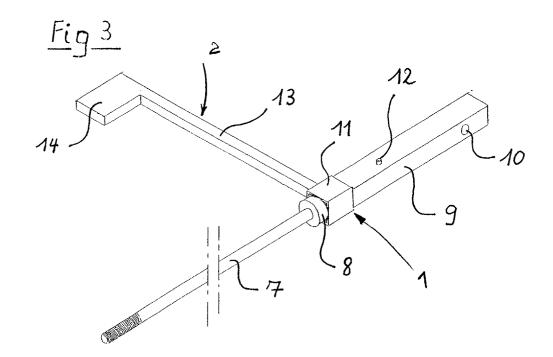
12. Process for fastening a circumferential railing onto a building, comprising the steps of repeating a suitable amount of times the process according to conclusion 11 in a substantially horizontal plane, and subsequently placing planks and/or other suitable retaining structures into the plank supports 18 of the thus positioned railing supports 3.

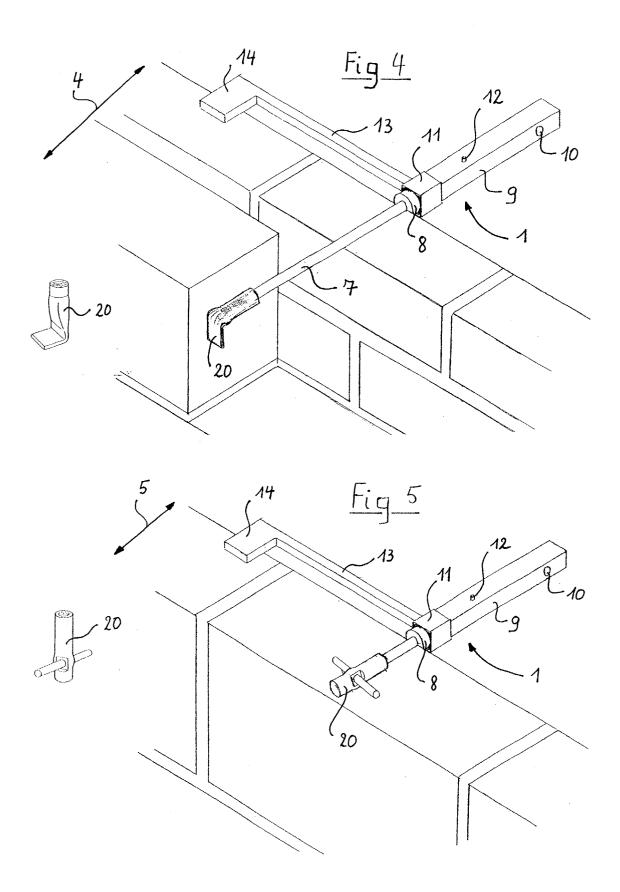
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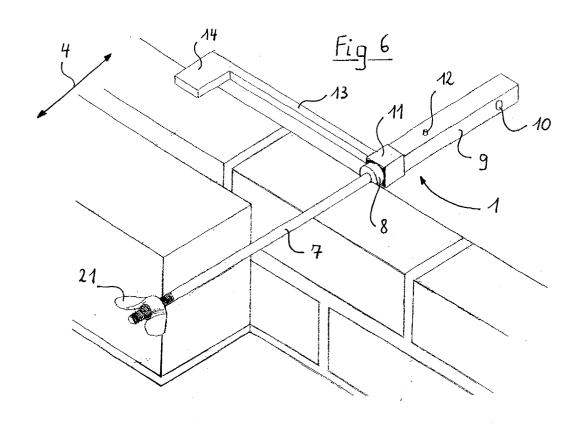
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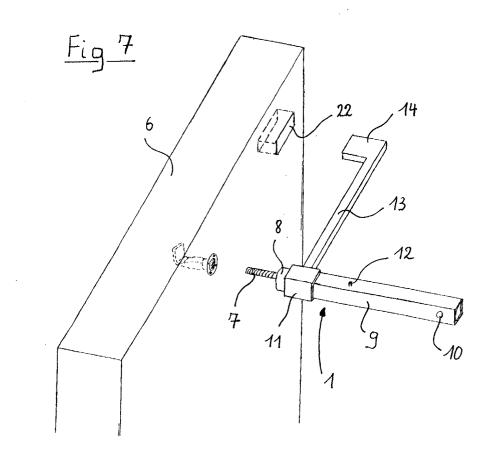




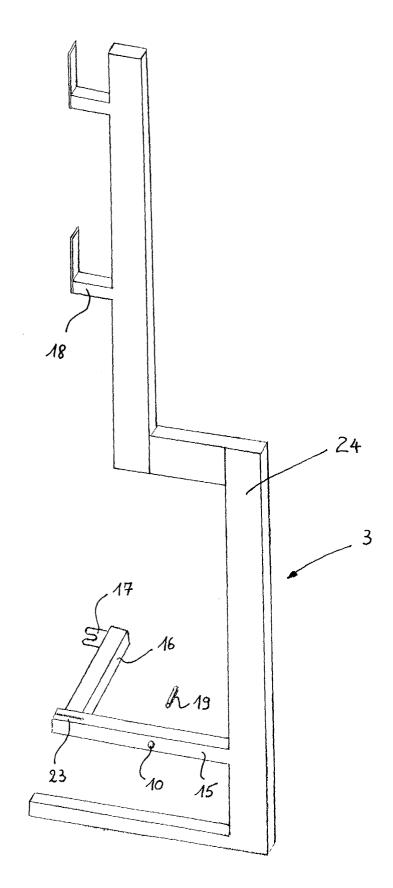














EUROPEAN SEARCH REPORT

Application Number EP 04 44 7127

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