



EUROPEAN PATENT APPLICATION

(43) Date of publication:
14.06.2023 Bulletin 2023/24

(51) International Patent Classification (IPC):
E04G 5/04 (2006.01)

(21) Application number: **21472014.6**

(52) Cooperative Patent Classification (CPC):
E04G 5/04; E04G 5/046

(22) Date of filing: **08.12.2021**

(84) Designated Contracting States:
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO
PL PT RO RS SE SI SK SM TR**
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

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(54) **SCISSOR HOLDER FOR BUILDING SCAFFOLDING, KIT, SYSTEM AND METHOD FOR FIXING BUILDING SCAFFOLDING TO A BUILDING STRUCTURE**

(57) The kit and system for fixing of building scaffolding to a building structure are applicable in the field of construction, for example during the erection of ventilated façades. The kit includes an anchor (9) with a loop (7) at one end and an elongated part (8) in its opposite end, and a scissor holder (1), comprising two hinged plates (6), where the hinge (4) separates each of the plates (6) into two arms, and in a closed position of the holder (1) both plates (6) are located parallel to each other. At the

end of one of their arms, the plates are hook-shaped and the hooks (2) are open to each other or opposite to each other, and in a closed position of the holder (1) they form a closed ring-shaped hole together. The plates (6) have an open-end hole (3) for fixing of the position of the holder (1), and an open-end hole (5) for connection with a building scaffolding, wherein each of the hole pairs (3, 5) are coaxial in a closed position of the holder (1).

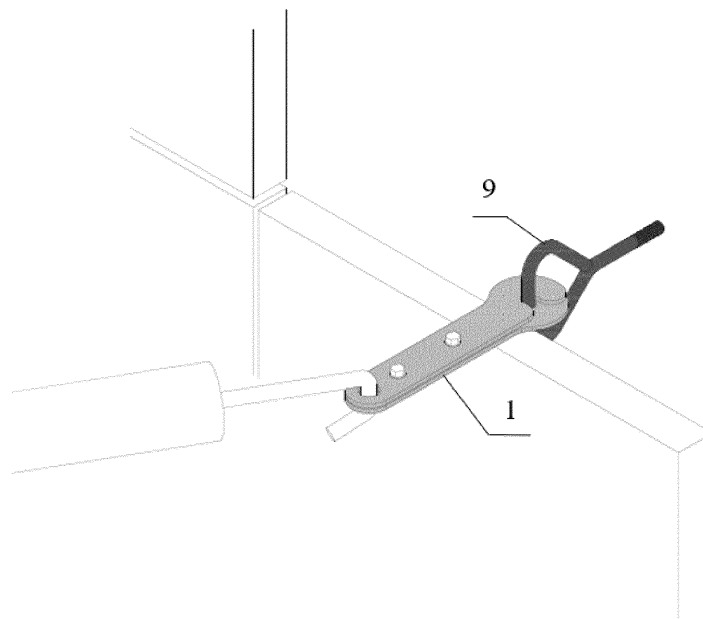


Fig. 3

Description

TECHNICAL FIELD

[0001] The scissor holder, the kit, the system and the method for fixing of building scaffolding to a building structure, according to the invention, are applicable in the field of construction, for example during the erection of ventilated façades.

STATE OF THE ART

[0002] In the state of the art, a few systems for fixing of building scaffolding to a building structure are known:

1. A system, wherein an anchor bolt with a loop is fixed to a building wall by special anchoring chemical compounds. In the loop of the bolt, a scaffold fixing hook is placed, which is connected at its other end with the scaffold. Such bolts can also be screwed into a wall in or concreted over bracket, welded to a steel load-bearing construction or screwed into a hole on a steel construction with a thread. For this system, during the erection of a curtain wall from façade panels, free space is left around the bolt, without a façade panel, which is completed during the disassembly of the scaffold. Accordingly, a disadvantage of the system is that it requires too many steps and increases the work time for the disassembly of the scaffold. Normally, the anchor bolt remains behind the façade panels. Said can be used when repairs are necessary.

2. A system that includes a holder, which is walled in or fixed with anchor bolts to a wall. In its disengaged end, the holder has a hole, into which a plate is placed and the two elements are fixed to each other by a formed groove in the plate and a formed protrusion or pin in the hole of the holder. The protrusion/pin and groove come into contact with each other, after a second plate is inserted into the hole of the holder that presses the first plate, therefore engaging the protrusion/pin with the groove. In its disengaged end, the plates have a hole for connecting to a building scaffolding by a rod with a hook. The two plates are located between the façade panels, wherein only their holes are showing outside of the panels. After erection of the façade, the plates are extracted by first pulling out the second, then the first plate. Respectively, the second plate is freely positioned and does not bear the load of the scaffold. That means that the system has a low load-bearing capacity.

TECHNICAL SUMMARY OF THE INVENTION

[0003] A task of the invention is to create a device with a high load-bearing capacity, for fixing of a building scaf-

folding to a building structure, and a system for fixing of a building scaffolding to a building structure, which allows for easy and optimized, time and amount-wise, steps for assembly and disassembly of a building scaffolding to/from a building structure.

[0004] This task is completed by the creation of a kit for fixing of a building scaffolding to a building structure, including a supporting element and a holder, according to the invention.

[0005] The holder is a scissor holder for a building scaffolding, comprising two hinged plates, where the hinge separates each of the plates into two arms and in the closed position of the holder, the two plates are located parallel to each other. At the end of one of their arms, the plates are hook-shaped and the hooks of the plates are open to each other or opposite to each other and in a closed position of the holder, they together form a closed ring-shaped hole. The plates have at least one open-end hole for fixing of the position of the holder and at least one open-end hole for connection with a building scaffolding, wherein each pair of holes on both arms for fixing of the position of the holder and each pair of open-end holes of the two arms for connection with a building scaffolding are coaxial in a closed position of the holder.

[0006] The supporting element is an anchor with a loop at one end and an elongated part in the opposite end.

[0007] The closed ring-shaped hole, formed by the hook-shaped parts of the two plates of the scissor holder is for insertion of the loop of the supporting element.

[0008] In a preferred embodiment of the invention, the anchor is an anchor bolt, the elongated part of which has at least a partial thread.

[0009] In a preferred embodiment of the invention, the loop of the anchor has a triangular shape, wherein one of the corners of the loop is connected to the elongated part of the anchor, where in a closed position, the holder is fastened to a straight part of the triangular loop with a possibility to change its vertical position along said straight part.

[0010] A system is also created for fixing of a building scaffolding to a building structure that ensures easy and efficient assembly and disassembly of a building scaffolding and does not require finishing tasks on the building structure after the disassembly of the building scaffolding. The system includes a building scaffolding and said kit for connection to a building structure, wherein the anchor is meant for fastening to the building structure and the loop of the anchor is fastened to the closed ring-shaped hole, formed between the hook-shaped parts of the plates of the holder. The building scaffolding is connected by at least one connection device to the at least one pair of coaxial open-end holes, formed in the plates of the holder, for connection with a building scaffolding, wherein in at least one of the pairs of coaxial open-end holes for fixing of the position of the holder, there are fasteners.

[0011] In the cases, where between the scaffolding and the building structure, a curtain wall is erected, it is an

advantage, if in a closed position the holder has a thickness equal to or lower than the distance (the gap) between two neighboring façade panels, mounted to a load-bearing subconstruction.

[0012] An additional task of the invention is the creation of a method for fixing of a building scaffolding to a building structure, which allows for easy and optimized, time and amount-of-actions wise, method for assembly and disassembly of a building scaffolding to/from a building structure.

[0013] This task is completed by creating a method for fixing of a building scaffolding to a building structure, including the stages:

- Fixing of an anchor with a loop to a building structure;
- Fastening of the loop of the anchor in a closed ring-shaped hole, formed between hook-shaped parts of plates of a scissor holder;
- Placing of fasteners in a pair of coaxial open-end holes for fixing of the closed position of the holder;
- Connection of a building scaffolding directly or indirectly to a pair of coaxial open-end holes for connection with a building scaffolding, formed in the plates of the holder.

[0014] In an embodiment of the invention, the anchor is fixed in a hole of the building structure by a fixing agent, placed in said hole. Alternatively, the elongated part of the anchor can have at least a partial thread, wherein the anchor is fixed into a hole in the building structure by a thread, formed in a metal part of the building structure or by a wall plug, placed into the building structure. Alternatively, it can be fixed in a hole in the building structure through welding.

[0015] Advantages of the kit and the system for fixing of a building scaffolding to a building structure, according to the invention, are:

- They are not labour-consuming and save work time, because it is not necessary to leave "windows" in the façade cladding in the places for fixing of a scaffold to the wall and respectively, there is no need to close them (as a repair task) during disassembly of the scaffolding, like in the case of ventilated façade cladding, where this task requires special elements for fixing of the façade panel in a "window" of the facade;
- No special construction of the holder for anchor fastening to a wall is required;
- They secure greater load-bearing capacity compared to the known fixing kits, because in the case of the scissor holder, both elements are load-bearing.

BRIEF DESCRIPTION OF THE FIGURES

[0016] Further into the description, the scissor holder and the system for fixing of a building scaffolding to a building structure, subjects of the invention, are clarified by preferred embodiments, listed as examples that are non-limiting to the scope of the invention, with reference to the attached figures, where:

10 Figure 1 is a profile view from above of a scissor holder in an open position, according to a preferred embodiment of the invention.

15 Figure 2 is a profile view of an anchor with a triangular loop, according to a preferred embodiment of the invention.

20 Figure 3 is a partial profile view of a system for fixing of a building scaffolding to a building structure, according to a preferred embodiment of the invention.

EXEMPLARY EMBODIMENT OF THE INVENTION

25 **[0017]** The kit for fixing of a building scaffolding to a building structure, according to the invention, includes a supporting element and a holder.

[0018] The holder 1 is a scissor holder for a building scaffolding (fig. 1), comprising two hinged plates 6, where the hinge 4 separates each of the plates 6 into two arms, and in a closed position of the holder 1 both plates 6 are located parallel to each other. At the end of one of their arms, the plates 6 are hook-shaped and the hooks 2 of the plates 6 are open to each other or opposite to each other and in a closed position of the holder 1 together form a closed ring-shaped hole. It is possible for the hooks 2 to have a different shape, for example an S or C-shape. It is preferable for the hooks 2 to have the same shape, turned against each other, but it is possible for their shapes to differ, as long as they're turned against each other and in a closed position of the holder 1 to form a closed ring-shaped hole.

35 **[0019]** The plates 6 can have the same length, or alternatively different lengths, as long as the length of the part of the hinge 4 up to the hooks 2 of both plates 6 matches.

40 **[0020]** The plates 6 have holes 3 for fixing of the position of the holder 1. It is possible to have one, two or more such holes 3 formed, in different places along the plates 6. For example, it is possible to have holes 3 for fixing of the position of the holder 1, located between the hinge 4 and the hooks 2 (fig. 1). Alternatively, it is possible to have holes 3 for fixing of the position of the holder 1, located between the hinge 4 and the end of the holder 1, which is located opposite to the hooks 2.

45 **[0021]** The positions of the hole 3 for fixing and the hole for the hinge 4 can be interchangeable.

[0022] The plates 6 have open-end holes 5 for connection to a building scaffolding. It is possible to have one,

two or more such holes 5 formed in different places along the plates 6, as long as it is suitable for direct or indirect connection with a building scaffolding. For example, it is possible to have an open-end hole 5, located between the hinge 4 and the end of the holder 1, which is located opposite to the hooks 2 (fig. 1).

[0023] Each pair of holes 3 on both arms for fixing of the position of the holder 1 and each pair of open-end holes 5 on both arms for connection with a building scaffolding are coaxial in a closed position of the holder 1. The size of the pairs of coaxial holes has to be in conformity with their function.

[0024] The holder 1 can be made of galvanized or stainless steel.

[0025] For the hinge 4 of the holder 1 different elements can be used, like for example, a rivet, a bolt with a nut, a cap or another suitable element that is also known from the state of the art.

[0026] The supporting element is an anchor 9 with a loop 7 at one end and an elongated part 8 at the opposite end.

[0027] The closed ring-shaped hole, formed by the hook-shaped parts 2 of the two plates 6 of the scissor holder 1 in a closed position is for insertion of the loop 7 of the supporting element (fig. 3).

[0028] The anchor 9 can be an anchor bolt, the elongated part of which 8 has at least a partial thread (fig. 2). Alternatively, the anchor 9 can be unthreaded and in this case its elongated part 8 is fixed through welding.

[0029] The anchor 9 is made of steel, for example stainless steel.

[0030] The loop 7 of the anchor 9 can have different shapes, for example a triangular shape, where one of the corners of the loop 7 is connected to the elongated part 8 of the anchor 9 (fig. 2), wherein the holder 1 is fastened to a straight part of the triangular loop 7 with a possibility to change the position along said straight part (fig. 3). In other words, the triangular shape gives an opportunity for adjustment of the position of the scissor holder 1 in a vertical direction, when the anchor 9 is installed to a building wall so that the holder 1 can stay right in the gap between the respective façade cladding panels of the building structure, to which it connects. Alternatively, it is possible for the loop 7 to have a rectangular or another suitable shape.

[0031] It is possible for the loop 7 of the anchor 9 to be positioned horizontally, while the holder 1 is positioned vertically, therefore it is inserted into a vertical slit between two neighboring panels.

[0032] When the anchor 9 is fixed to the building structure and the loop 7 of the anchor 9 is fastened into the closed ring-shaped hole, formed between the hook-shaped parts 2 of the plates 6 of the holder 1, wherein fasteners are placed in the pair of coaxial open-end holes 3 for fixing of the position of the holder 1, wherein the building scaffolding can be directly or indirectly connected by fastening means to the pair of coaxial open-end holes 5 for connection to a building scaffolding, formed

in the plates 6 of the holder 1.

[0033] It is possible for the anchor 9 to be fixed into a hole of the building structure by an anchoring chemical compound, placed into said hole, wherein the anchor 9 can have or not have a thread along its elongated part 8. Alternatively, the elongated part 8 of the anchor 9 can have at least a partial thread, wherein the anchor 9 is fixed with its threaded part in a threaded hole of the building structure, formed in a metal part of the building structure or by a wall plug, placed into the building structure. Alternatively, the anchor 9 can be fixed into a hole of the building structure through welding. Alternatively, the anchor 9 can be directly welded to the building structure without forming a hole, when there are metal bearing details in the building structure, for example, metal beams.

[0034] When used during the construction of buildings with curtain walls, it is preferable for the holder 1 to have a thickness equal to or lower than the distance between two neighboring façade panels, fixed to a load-bearing subconstruction (fig. 3). That way it is not necessary to leave an empty space around the scaffolding fixing kit during the fixing of façade panels, wherein the holder 1 protrudes only by one of its parts in front of the surface of the two façade panels, between which it is placed.

Exemplary installation of the kit for fixing of a building scaffolding to a building structure

[0035]

- In the wall of the building, in the places, where a building scaffolding will be fixed is where a hole is drilled and with the help of an anchoring chemical compound in the hole, an anchor bolt 9 is fixed with, for example, a triangular loop 7, so that the triangular loop 7 is positioned vertically (fig. 3). In case the building has a metal bearing construction, a hole is drilled in a metal beam, a thread is made and the bolt is inserted into the hole, wherein it is possible for the anchor 9 to be welded to a metal beam;
- The loop 7 of the bolt is where the scissor holder 1 is placed in an open position, which closes in such a way that the formed hooks 2 of both plates 6 of the holder 1 envelop the loop 7 of the bolt, wherein the open-end holes 5 for connection to a building scaffolding of the two plates 6 of the holder 1 are coaxial. Afterwards, the closed position of the holder 1 is fixed, for example, with a bolt, placed in the pair of coaxial holes 3 for fixing of the position of the holder 1, formed on both plates 6 of the holder 1, and a nut is screwed onto the bolt;
- Fastening means, like for example a rod with a hook, for fixing of a building scaffolding to the holder 1 is placed into the pair of coaxial open-end holes 5 for connection with a building scaffolding on the holder 1. That way, the scaffolding is fixed to the wall of the building;

- During the erection of the curtain wall, if necessary, the holder 1 can be moved vertically along the length of the straight part of the triangular loop 7 of the bolt, thus being positioned precisely in the horizontal gap between two façade panels (fig. 3). That way, contingent small offsets in the vertical position of the anchor 9 are eliminated during its installation;
- During the dismantling of the scaffolding, it is disconnected from the holder 1, the bolt in the hole 3 for fixing of the position of the holder 1 is unscrewed, the holder 1 is opened like a scissor and releases the loop 7 of the bolt, after which it is removed from the gap between the façade panels. The triangular anchor bolts remain fixed to the wall behind the façade panels.

[0036] The reference numbers of the technical features are included in the claims only to increase the intelligibility of the claims and, therefore, these reference numbers have no limiting effect regarding the interpretation of the elements, signified with these reference numbers.

Claims

1. Scissor holder for building scaffolding, comprising two hinged plates (6), wherein the hinge (4) separates each of the plates (6) into two arms, and in a closed position of the holder (1) the two plates (6) are positioned parallel to each other, wherein at the end of one of their arms, the plates (6) are hook-shaped, and the hooks (2) of the plates (6) are open to each other or opposite to each other, and in a closed position of the holder (1) they form a closed ring-shaped hole, wherein each of the plates (6) has at least one open-end hole (3) for fixing of the position of the holder (1), and at least one open-end hole (5) for connection with a building scaffolding, wherein each pair of holes (3) on both arms for fixing of the position of the holder (1) and each pair of open-end holes (5) on both arms for connection with a building scaffolding are coaxial in a closed position of the holder (1).
2. Kit for fixing of building scaffolding to a building structure, including a supporting element and a holder, **characterized in that** the supporting element is an anchor (9) with a loop (7) at one end and an elongated part (8) in the opposite end, wherein the holder is a scissor holder (1) according to claim 1, wherein the closed ring-shaped hole, formed by the hook-shaped parts (2) of both plates (6) is for insertion of the loop (7) of the supporting element.
3. Kit for fixing of building scaffolding to a building structure, according to claim 2, **characterized in that** the anchor (9) is an anchor bolt, the elongated part of

which (8) has at least a partial thread.

4. Kit for fixing of building scaffolding to a building structure, according to claims 2 and 3, **characterized in that** the loop (7) of the anchor (9) has a triangular shape, and one of the corners of the loop (7) is connected to the elongated part (8) of the anchor (9), wherein the holder (1) is fastened to a straight part of the triangular loop (7) with a possibility to change its vertical position along said straight part.
5. System for fixing of building scaffolding to a building structure, including a building scaffolding and a fastener for connection to a building structure, **characterized in that** the fastener is a kit, according to claims 2 - 4, wherein the anchor (9) is for fixing to the building structure, and the loop (7) of the anchor (9) is fastened in the closed ring-shaped hole, formed between the hook-shaped parts (2) of the plates (6) of the holder (1) in a closed position, wherein the building scaffolding is connected by at least one fastening means to the at least one pair of coaxial open-end holes (5), formed in the plates of the holder for connection with a building scaffolding, and wherein fasteners are placed in the at least one pair of coaxial open-end holes (3) for fixing of the position of the holder (1).
6. System for fixing of building scaffolding to a building structure according to claim 5, **characterized in that** the loop (7) of the anchor (9) has a triangular shape and one of the corners of the loop (7) is connected with the elongated part (8) of the anchor (9), wherein in a closed position, the holder (1) is fastened to a straight part of the triangular loop (7) with a possibility to change its vertical position along said straight part.
7. System for fixing of building scaffolding to a building structure according to each of the previous claims, **characterized in that** in a closed position, the holder (1) has a thickness equal to or lower than the distance between two neighboring façade panels, fixed to a load-bearing subconstruction, which is fastened to the building structure.
8. Method for fixing of building scaffolding to a building structure by means of a kit for fixing, according to claims 2 to 4, including the steps:
 - fixing of an anchor (9) with a loop (7) to a building structure;
 - fastening of the loop (7) of the anchor (9) in a closed ring-shaped hole, formed between hook-shaped parts (2) of plates (6) of a scissor holder (1), according to claim 1;
 - placing of fastening means in a pair of coaxial open-end holes (3) for fixing of a closed position of the holder (1);

- connection of a building scaffolding directly or indirectly to a pair of coaxial open-end holes (5), formed in the plates (6) of the holder (1), for connection to a building scaffolding.

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9. Method for fixing of building scaffolding to a building structure according to claim 8, **characterized in that** the anchor (9) is fixed in a hole in the building structure by a fixing agent, placed in said hole.

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10. Method for fixing of building scaffolding to a building structure according to claim 8, **characterized in that** the anchor (9) has an elongated part (8), which has at least a partial thread, wherein the anchor (9) is fixed into a hole in the building structure by a thread, formed in a metal part of the building structure.

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11. Method for fixing of building scaffolding to a building structure according to claim 8, **characterized in that** the anchor (9) has an elongated part (8), which has at least a partial thread, wherein the anchor (9) is fixed into a hole in the building structure by a wall plug, placed into the building structure.

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12. Method for fixing of building scaffolding to a building structure according to claim 8, **characterized in that** the anchor (9) is fixed into a hole in the building structure through welding.

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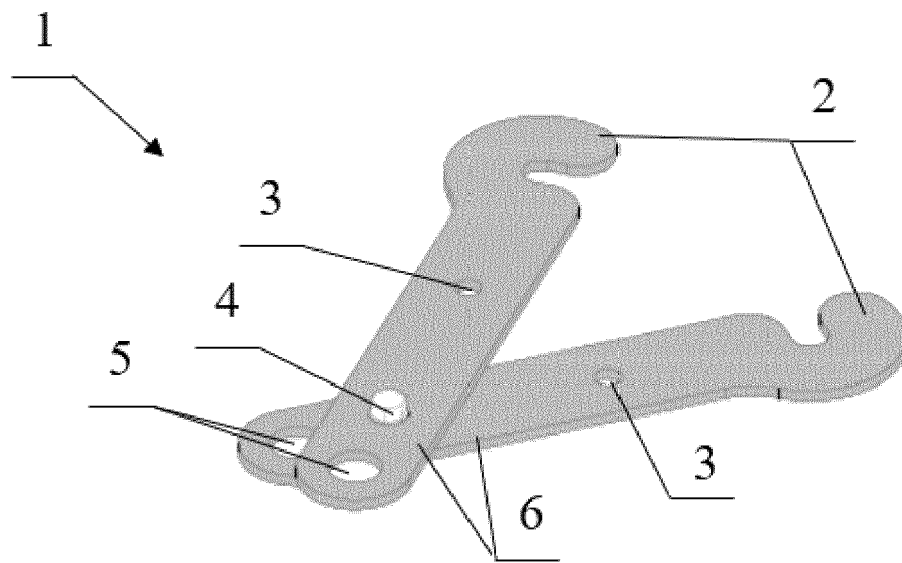


Fig. 1

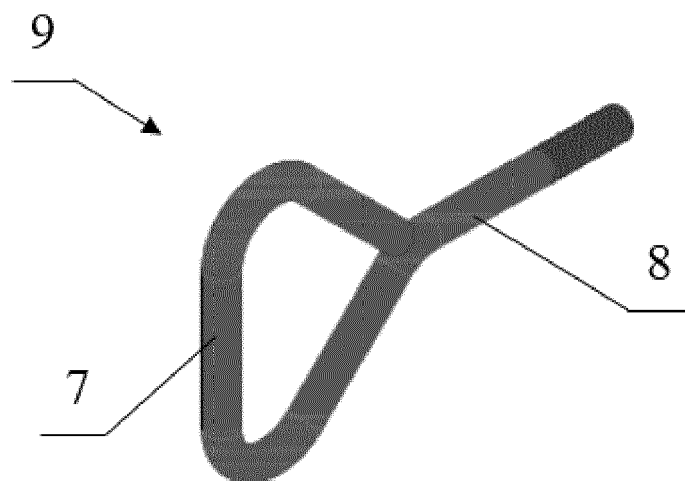


Fig. 2

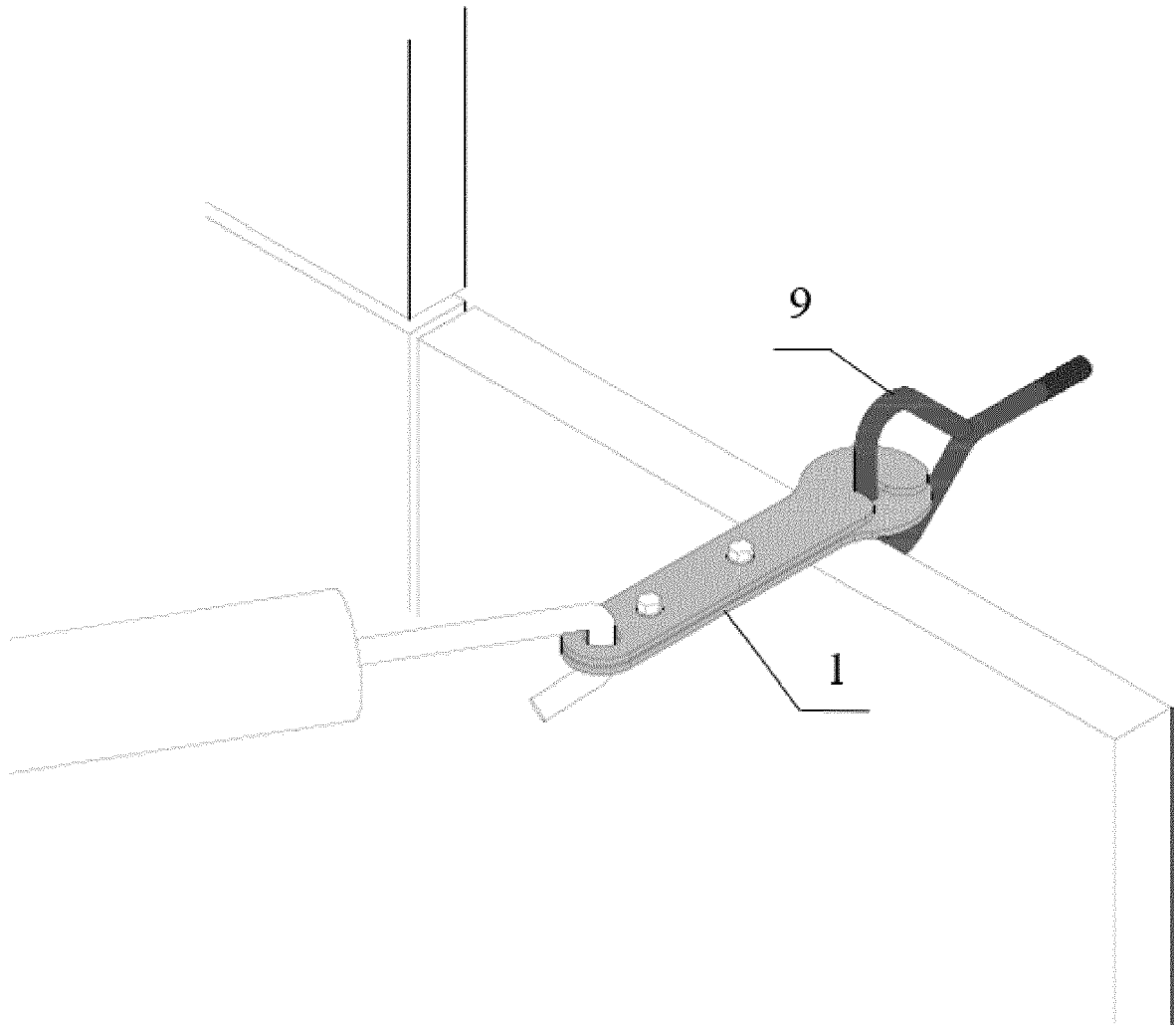


Fig. 3



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