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(54) Title: CLIMBING SHOE FOR FIXING A CLIMBING SCAFFOLD TO A CONCRETE SECTION OF A BUILDING UNDER CONSTRUCTION

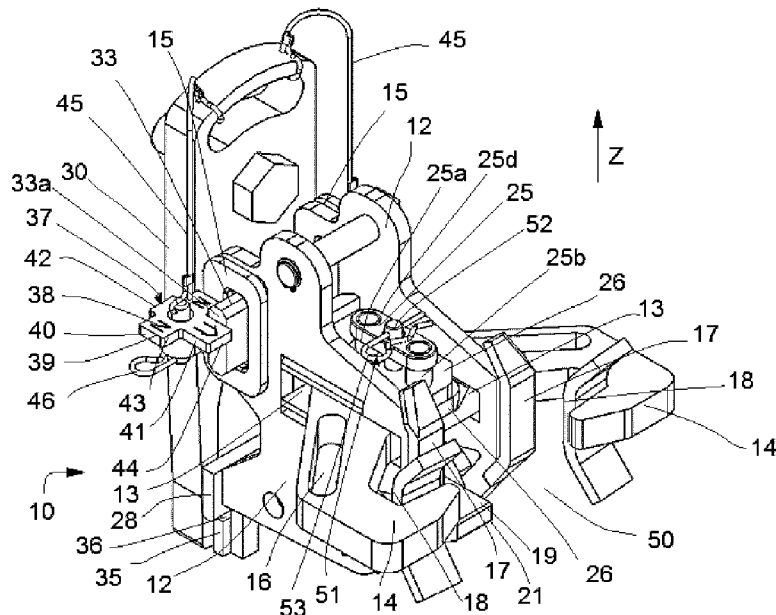


FIG. 7

(57) Abstract: Climbing shoe for fixing a climbing scaffold to a concrete section (2), comprising a first part (11) including clamps (14) configured for securing a track of the climbing scaffold and allowing the guided movement of the track while the climbing scaffold climbs in a substantially vertical direction, and a second part (30) fixed to the concrete section (2), the first part (11) being coupled to the second part (30). The first part (11) and the second part (30) are coupled to one another by means of a transverse guide (33) arranged in one of said parts (11, 30) and at least one hook (15) surrounding the transverse guide (33) arranged in the other one of said parts (11, 30), the hook (15) and the transverse guide (33) being able to slide with respect to one another for laterally disassembling the first part (11) with respect to the second part (30).

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- 1 -

DESCRIPTION

5 “Climbing shoe for fixing a climbing scaffold to a concrete section of a building under construction”

FIELD OF THE ART

10 The present invention relates to a climbing shoe for fixing a climbing scaffold to a concrete section of a building under construction.

PRIOR ART

15

Climbing scaffolds suitable for being fixed to a building under construction, particularly to concrete sections of said building, are known in the state of the art, the scaffold comprising substantially vertical tracks arranged parallel to one another, climbing shoes anchored to the corresponding concrete section through respective
20 anchoring means, which are suitable for guiding the respective track in a substantially vertical climbing direction, and a work platform supported by the tracks.

Patent document EP1899548A1 discloses a climbing shoe comprising a first part including clamps suitable for securing and guiding the track, the clamps being
25 coupled to one another in a pivotable manner, such that they can go from a position in which the clamps are closed surrounding the track to a position in which clamps are open allowing the movement of the corresponding track. The climbing shoe further comprises a second part which is fixed to the wall, and a pivoting element configured for retaining the track in a working position and allowing the vertical
30 upward movement of the track guided in the climbing shoe, the first part and the second part being coupled by means of a horizontal bolt parallel to the vertical wall.

EP2365159A1 describes a climbing shoe also comprising a first part including clamps surrounding and guiding the track, and a second part anchored to the
35 corresponding concrete section, the first part being coupled to the second part

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through a respective bolt. The first part further includes side walls attached to one another by means of horizontal plates, the clamps being articulated to one another and attached to the horizontal plates through a double safety bolt going through said horizontal plates and the clamps. Said double safety bolt keeps the clamps closed
5 for the passage of the track. The first part further comprises a rocker arm configured for retaining the track in the working position blocking its vertical movement and for allowing the track to climb.

10 DISCLOSURE OF THE INVENTION

The object of the invention is to provide a climbing shoe for fixing a climbing scaffold to a concrete section of a building, as defined in the claims.

15 The climbing shoe of the invention comprises a first part including clamps configured for securing a track of the climbing scaffold in a working position and allowing the guided movement of the track while the climbing scaffold climbs in a substantially vertical direction, and a second part fixed to the concrete section, the first part being coupled to the second part in the working position.

20

The first part and the second part are coupled to one another by means of a transverse guide arranged in one of said parts and at least one hook surrounding the transverse guide arranged in the other one of said parts, the hook and the transverse guide being able to slide with respect to one another for laterally disassembling the
25 first part with respect to the second part.

An optimized climbing shoe that can be easily disassembled laterally, particularly the first part including the clamps with respect to the second part fixed to the concrete section, is thereby obtained.

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These and other advantages and features of the invention will become evident in view of the drawings and the detailed description of the invention.

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DESCRIPTION OF THE DRAWINGS

Figure 1 shows a side view of a climbing scaffold fixed to a building under construction comprising climbing shoes according to the invention.

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Figure 2 shows a detailed view of the climbing scaffold fixed to the building under construction shown in Figure 1 in which one of the climbing shoes is shown fixed to the building and coupled to a track of the climbing scaffold.

10 Figure 3 shows a top view of the climbing shoe shown in Figure 2 fixed to the building under construction and coupled to the track of the climbing scaffold.

Figure 4 shows a top view of the climbing shoe shown in Figure 2 fixed to the building under construction, released from the track of the climbing scaffold.

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Figure 5 shows a top view of the climbing shoe shown in Figure 2 fixed to the building under construction and coupled to the track of the climbing scaffold 1, in an extreme blocking position.

20 Figure 6 shows a top view of the climbing shoe shown in Figure 2 fixed to the building under construction and coupled to the track of the climbing scaffold, in another extreme blocking position.

Figure 7 shows a perspective view of the climbing shoe shown in Figure 2.

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Figure 8 shows another perspective view of the climbing shoe shown in Figure 2.

Figure 9 shows a sectioned view of the climbing shoe shown in Figure 2.

30 Figure 10 shows a partial exploded view of the climbing shoe shown in Figure 2.

DETAILED DISCLOSURE OF THE INVENTION

35 Figure 1 shows a climbing scaffold 1 fixed to a building under construction,

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particularly to concrete sections 2 of said building, comprising tracks 3, climbing shoes 10 which are anchored to the corresponding concrete section 2 through respective anchoring means 32 and suitable for guiding the respective track 3 in a substantially vertical climbing direction Z, and a work platform 4 supported by the tracks 3. In the embodiment shown in the drawings, the climbing scaffold 1 comprises two tracks 3 arranged substantially parallel to one another, each of which is simultaneously supported and guided by at least two climbing shoes 10 arranged substantially aligned to one another.

10 Each track 3 is formed by at least one profile having a substantially H-shaped cross-section and further comprises fastening elements 6 housed partially inside the corresponding H-shaped profile, extending towards the anchoring means 32 of the respective climbing shoes 10. The fastening elements 6 cooperate with the corresponding climbing shoes 10 in the fastening of the corresponding track 3 and in
15 the climbing of the climbing scaffold 1.

Each climbing shoe 10 comprises a first part 11 including clamps 14 configured for securing the corresponding track 3, which in a working position shown in Figures 1, 2, 3, 5 and 6, allow the guided movement of the track 3 while the climbing scaffold 1
20 climbs in the climbing direction Z, and a second part 30 fixed to the concrete section 2, the first part 11 being coupled to the second part 30 in the working position. The first part 11 and the second part 30 are coupled to one another by means of a transverse guide 33 arranged in one of said parts 11 and 30 and at least one hook
25 15 surrounding the transverse guide 33 arranged in the other one of said parts 11 and 30, the hook 15 and the transverse guide 33 being able to slide with respect to one another for laterally disassembling the first part 11 with respect to the second part 30.

In the embodiment shown in the drawings, the second part 30 comprises the transverse guide 33 whereas the first part 11 comprises two hooks 15 surrounding
30 said transverse guide 33. Furthermore, the transverse guide 33 comprises a profile having a substantially T-shaped cross-section which is surrounded by the hooks 15, each hook 15 including a geometry complementary to the profile of the transverse guide 33.

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On the other hand, the second part 30 comprises a plate 31 which is anchored to the concrete section 2 through an anchoring bolt 32. Furthermore, the second part 30 comprises a support 35 on which a lower end 27 of the first part 11 is supported, said second part 30 supporting the first part 11 through said support 35. Therefore,
5 most of the stresses to which the climbing shoe 10 is subjected are supported by the anchoring bolt 32 and by the support 35, the stresses supported by the transverse guide 33 being minimized. Particularly, as a result of the support 35 the transverse guide 33 only supports horizontal loads, bending in said transverse guide 33 being prevented. The support 35 extends in the transverse direction into one end of the
10 plate 31 and includes a housing 36 in the transverse direction, in which a projection 28 of the first part 11 is partially housed, as shown in Figures 2, 7, 8 and 9. The projection 28 is coupled to the support 35 in a movable manner along the housing 36.

15 In the embodiment shown in the drawings, the second part 30 comprises two supports 35 arranged aligned with one another, each of which has a substantially U-shaped cross-section. The projection 28 of the first part 11 in turn has a substantially rectangular cross-section which is partially housed inside the supports 35 of the second part 30.

20

Furthermore, the second part 30 is anchored to a vertical surface of the concrete section 2. In other embodiments not shown in the drawings, the second part 30 can be configured for being anchored to a slab of the concrete section 2 or to other parts of said concrete section 2.

25

On the other hand, the first part 11 of the climbing shoe 10, shown in detail in Figures 7 to 9, comprises in addition to the two clamps 14, side walls 12 arranged substantially parallel to one another, and attachment plates 26 of said side walls 12, arranged substantially orthogonal to the side walls 12, the two clamps 14 being
30 coupled to one another and to the attachment plates 26 in a pivotable manner through a double safety bolt 25. Each clamp 14 goes through the corresponding side wall 12 through a groove 13 in the corresponding side wall 12. When the climbing shoe 10 is in the working position, the clamps 14 are closed, as shown in Figures 3, 5 and 6, demarcating a housing 50 through which the respective track 3 moves in
35 the climbing direction Z. In said position, the clamps 14 surround the track 3,

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particularly a flange of the track 3, guiding the movement of the track 3. To that end, both the clamps 14 and the side walls 12 comprise guides 17 and 18 in the climbing direction Z collaborating in the guiding of the track 3. Said guides 17 and 18 together with the clamps 14 demarcate the housing 50.

5

In the working position, the double safety bolt 25 goes through the clamps 14 and the attachment plates 26, keeping the clamps 14 closed. The double safety bolt 25 comprises two arms 25a and 25b of different length such that, when operators want to open the clamps 14, they have to pull the double safety bolt 25 vertically upwards until one of the arms 25b is released from the clamps 14 and from the respective attachment plates 26, and then pull on the grips 16 arranged in each clamp 14, causing them to pivot with respect to the other arm 25a of the double safety bolt 25 for opening same. The longer arm 25a includes at its free end a Seeger ring 25c to prevent it from being disassembled. Furthermore, to prevent pulling the double safety bolt 25 by accident, the climbing shoe 10 includes safety means 51 including a rod 52 projecting from one of the attachment plates 26 going through the double safety bolt 25, particularly a plate 25d attaching the arms 25a and 25b of said safety bolt 25 and a catch 53 which transversely goes through the rod 52 and abuts against the plate 25d of the double safety bolt 25, such that for operators to be able to open the clamps 15, they must remove the catch 53 from the rod 52 before pulling on the double safety bolt 25.

Each climbing shoe 10 further comprises a rocker arm 19, shown in detail in Figure 9, pivotable with respect to a rotating shaft 20 substantially orthogonal to the pivoting axis of the clamps 14, coupled to the side walls 12 of the first part 11. The rocker arm 19 is suitable for pivoting between the working position, shown in Figure 2, in which said rocker arm 19 supports the fastening element 6 of the corresponding track 3, and a climbing position in which the rocker arm 19 allows the movement of the track 3 in the climbing direction Z. To that end, the rocker arm 19 comprises a front part 21 which in the working position is partially housed in the housing 50 demarcated by the clamps 14 such that it abuts against the respective fastening element 6 preventing the respective track 3 from moving down, and a rear part 22 which in the working position abuts against a stop 29 coupled to the side walls 12. In the climbing position, as the respective track 3 moves up, the respective fastening elements 6 hit the front part 21 of the respective rocker arms 19, forcing them to

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rotate to the position in which they allow the upward movement of the track 3. The front part 21 rotates integrally with the rear part 22 of the rocker arm 19 such that when the rocker arm 19 rotates by action of the respective fastening element 6, the rear part 22 is separated from the stop 29 coupled to the side walls 12. Once the
5 fastening element 6 has exceeded the corresponding rocker arm 19, it returns to the working position as a result of a spring 24 coupled to the rotating shaft 20.

On the other hand, each climbing shoe 10 comprises blocking means 37 fixed to the second part 30 blocking the sliding of the first part 11 with respect to the second part
10 30. The blocking means 37 comprise blocking elements 38, shown in detail in Figure 10, each of which has a base 39 which is supported in the transverse guide 33, particularly in a support 33b of said transverse guide 33 and a pin or rod 39b extending substantially orthogonal to the base 39 and inserted in said transverse guide 33, particularly in the support 33b of said transverse guide 33. The blocking
15 element 38 is fixed to the second part 30 through the pin 39b, said blocking element 38 being able to rotate with respect to said pin 39b when it is inserted in the second part 30. The base 39 abuts against the transverse guide 33 and against the hooks
15, respectively, blocking the movement of the first part 11 with respect to the second part 30 in a neutral blocking position shown in Figure 3 and in extreme
20 blocking positions shown respectively in Figures 5 and 6. Therefore, operators can regulate the position of the first part 11 with respect to the second part 30 for correcting assembly errors, such as for example, the climbing shoes not being arranged in a vertically aligned manner because the concrete sections have
recesses, or because the corresponding track had bent due to the loads it supports
25 and it is therefore difficult to introduce the track into the next climbing shoe.

In the embodiment shown in the drawings, each climbing shoe 10 comprises two blocking elements 38 each of them arranged on each side of the first part 11 blocking, in a blocking position, the sliding of the first part 11 with respect to the
30 second part 30. Each blocking element 38 is coupled to the second part 30 in a removable manner, there being a need to release the blocking element 38 with respect to the second part 30, either by separating the base 39 from the transverse guide 33 until the blocking element 38 can rotate with respect to the pin 39b and be positioned in the new blocking position, or disassembling the blocking element 38
35 from the second part 30, completely releasing the blocking element 38 from the

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transverse guide 33, as shown in Figure 10, to go from one blocking position to another.

5 The base 39 of the blocking element 38 has a substantially T shape and is demarcated by blocking surfaces 40 and 41 substantially parallel to an axis of symmetry Y of said base 39 and blocking surfaces 42, 43 and 44 substantially orthogonal to the axis of symmetry Y. In the neutral blocking position N shown in Figure 3, the blocking elements 38 are arranged such that the axis of symmetry Y of the respective base 39 is substantially orthogonal to the transverse guide 33, the
10 stop surfaces 40 and 41 of each blocking element 38 arranged facing the respective hook 15 and the transverse guide 33 abutting against said respective hook 15 and against said the transverse guide 33, particularly against one end 33a of said transverse guide 33. In the context of the invention, T shape must be understood as both a true T shape and as a cross such as that shown in the drawings, i.e., a T with
15 an upper prolongation.

In the extreme blocking positions, shown respectively in Figures 5 and 6, the first part 11 is moved with respect to the second part 30. In the described embodiment, the first part 11 can move about 10 mm from the neutral blocking position N along
20 the transverse guide 33 in both directions to the respective extreme blocking position in which at least one of the stop surfaces 40, 41, 42, 43 and 44 of the respective blocking element 38 abuts against the respective hook 15 and against the transverse guide 33, particularly against the end 33a of said transverse guide 33. In the embodiment shown in the drawings, both blocking elements 38 are oriented in the
25 same position. Particularly, in the neutral blocking position, the blocking elements 38 are arranged such that their axis of symmetry is substantially orthogonal to the transverse guide 33, whereas in the extreme positions, both blocking elements 38 are rotated 90° in the same direction from the neutral blocking position N, i.e., the axis of symmetry of the blocking elements 38 is arranged substantially parallel to the
30 transverse guide 33 such that the stop surfaces 42, 43 and 44 facing the respective hook 15 and the transverse guide 33 abut against the hook 15 and against the end 33a of the transverse guide 33.

The blocking means 37 further comprise safety means 45 keeping each blocking

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element 38 permanently coupled to the second part 30 regardless of whether or not said blocking element 38 is inserted in the transverse guide 33. This therefore ensures that the operators do not lose the blocking element 38 and minimizes the risk of the operators forgetting to place the blocking element when changing it from one position to another. The safety means 45 include a flexible cable, each end of the flexible cable being fixed respectively to the blocking element 38 and to the second part 30, keeping the blocking element 38 permanently coupled to the second part 30. Furthermore, to prevent pulling the blocking element 38 by accident, releasing it, the blocking means 37 comprise a catch 46 transversely going through the rod 39b of the corresponding blocking element 38 and abutting against the support 33b of the transverse guide 33, such that for operators to be able to release the blocking element 38, they must remove the catch 46 from the rod 39b before pulling the blocking element 38.

For the self-climbing scaffold 1 to perform climbing for the purpose of constructing new concrete sections 2, the tracks 3 slide with respect to the climbing shoes 10 having closed clamps 15 in the climbing direction Z and are introduced into the next climbing shoe 10, i.e., introduced into the free climbing shoe 10 arranged immediately above. The self-climbing scaffold 1 comprises means causing the movement of said tracks 3, such as a climbing cylinder and a shoe the details of which have not been described given that they are not the object of the invention and it is not considered necessary to understand same.

For disassembling the corresponding climbing shoe 10, the operators must first take out the safety catch 53 from the double safety bolt 25, then pull the double safety bolt 25 upwards until one of the arms 25b of said double safety bolt 25 is released from the clamps 15 and from the attachment plates 16, and open the clamps 15 causing them to pivot with respect to the other arm 25a of the double safety bolt 25 by pulling on the grips 16 of the clamps 15. Next, the operators must release one of the blocking elements 38 from the transverse guide 33 such that the first part 11 can slide with respect to the second part 30 anchored in the concrete section 2 and the first part 11 can be separated with respect to the second part 30.

On the other hand, the climbing shoes 10 are generally fixed to the concrete section 2 corresponding with the blocking means 37 arranged in the neutral position shown

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in Figures 3 and 4. If it is necessary to move the first part 11 with respect to the second part 30 anchored in the corresponding concrete section 2 to enable introducing the corresponding track 3 or making the introduction easier, the operators must release the blocking elements 38 from the transverse guide 33. The operators must therefore separate the base 39 of the respective blocking element 38 from the transverse guide 33 until each blocking element 38 can rotate with respect to its pin 39b or disassemble each blocking element 38 from the second part 30 completely releasing the blocking element 38 from the transverse guide 33. The operators shall first remove the catch 46 of the blocking element 38. Next, the operators move the first part 11 with respect to the second part 30 sliding the first part 11 through the hooks 15 along the transverse guide 33 until positioning it in one of the two extreme positions. Once the first part 11 is positioned in one of the extreme blocking positions, the operators block said position by positioning the blocking elements 38 in said extreme blocking positions. In the embodiment shown in the drawings, the operators must rotate the blocking elements 38 90° with respect to the neutral blocking position, placing both blocking elements 38 in the same orientation such that they abut respectively against the hooks 15 and against the transverse guide 33 preventing the relative movement between the first part 11 and the second part 30.

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In other embodiments not depicted in the drawings, the hooks can be comprised in the second part of the climbing shoe whereas the transverse guide can be included in the first part.

CLAIMS

1. Climbing shoe for fixing a climbing scaffold (1) to a concrete section (2) of a building, comprising a first part (11) including clamps (14) configured for securing
5 a track (3) of the climbing scaffold (1) in a working position and allowing the guided movement of the track (3) while the climbing scaffold (1) climbs in a substantially vertical direction, and a second part (30) fixed to the concrete section (2), the first part (11) being coupled to the second part (30) in the working position, **characterized in that** the first part (11) and the second part (30) are
10 coupled to one another by means of a transverse guide (33) arranged in one of said parts (11, 30) and at least one hook (15) surrounding the transverse guide (33) arranged in the other one of said parts (11, 30), the hook (15) and the transverse guide (33) being able to slide with respect to one another for laterally disassembling the first part (11) with respect to the second part (30).
15
2. Climbing shoe according to the preceding claim, wherein the second part (30) comprises a support (35) on which a lower end (27) of the first part (11) is supported, said second part (30) supporting the first part (11) through said support (35).
20
3. Climbing shoe according to the preceding claim, wherein the support (35) extends in the transverse direction and includes a housing (36) in the transverse direction in which a projection (28) arranged in the lower end (27) of the first part (11) is partially housed, the projection (28) being movable along the housing (36)
25 for laterally disassembling the first part (11) with respect to the second part (30).
4. Climbing shoe according to any of the preceding claims, wherein the second part (30) comprises the transverse guide (33) and the first part (11) comprises the at least one hook (15) surrounding the transverse guide (33).
30
5. Climbing shoe according to the preceding claim, wherein the first part (11) comprises two hooks (15).
6. Climbing shoe according to any of the preceding claims, wherein the transverse guide (33) comprises a profile having a substantially T-shaped cross-section going through the at least one hook (15), each hook (15) including a geometry
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complementary to the profile of the transverse guide (33).

7. Climbing shoe according to any of the preceding claims, comprising blocking means (37) which are fixed to the second part (30) on each side of the first part (11), blocking in a blocking position the sliding of the first part (11) with respect to the second part (30).
8. Climbing shoe according to the preceding claim, wherein the blocking means (37) comprise at least one blocking element (38) demarcated by blocking surfaces (40, 41, 42, 43, 44), such that in the blocking position at least one of the blocking surfaces (40, 41, 42, 43, 44) abuts against the transverse guide (33) and against the at least one hook (15), respectively, blocking the relative movement between the first part (11) and the second part (30).
9. Climbing shoe according to claim 7 or 8, wherein the blocking element (38) has a base (39) which is supported in the transverse guide (33) and a pin (39b) inserted in said transverse guide (33), wherein the base (39) has a T-shaped geometry demarcated by the blocking surfaces (40, 41, 42, 43, 44), the blocking surfaces (40, 41) which are substantially parallel to an axis of symmetry (Y) of the base (39) being arranged facing the hook (15) and the transverse guide (33) in a neutral blocking position, and the blocking surfaces (42, 43, 44) which are substantially orthogonal to the axis of symmetry (Y) of the base (39) being arranged facing the hook (15) and the transverse guide (33) in extreme blocking positions, blocking the movement between the first part (11) and the second part (30).
10. Climbing shoe according to the preceding claim, wherein the blocking element (38) is fixed to the second part (30) in a removable manner, the blocking element (38) being released from the second part (30) to go from one blocking position to another.
11. Climbing shoe according to claim 9, wherein the blocking element (38) is configured to go from one blocking position to another by rotating with respect to the rod (39b).
12. Climbing shoe according to any of claims 8 to 11, wherein the blocking means (37) comprise safety means (45) keeping the respective blocking element (38)

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permanently coupled to the second part (30).

13. Climbing scaffold **characterized in that** it comprises climbing shoes (10) according to any of the preceding claims.

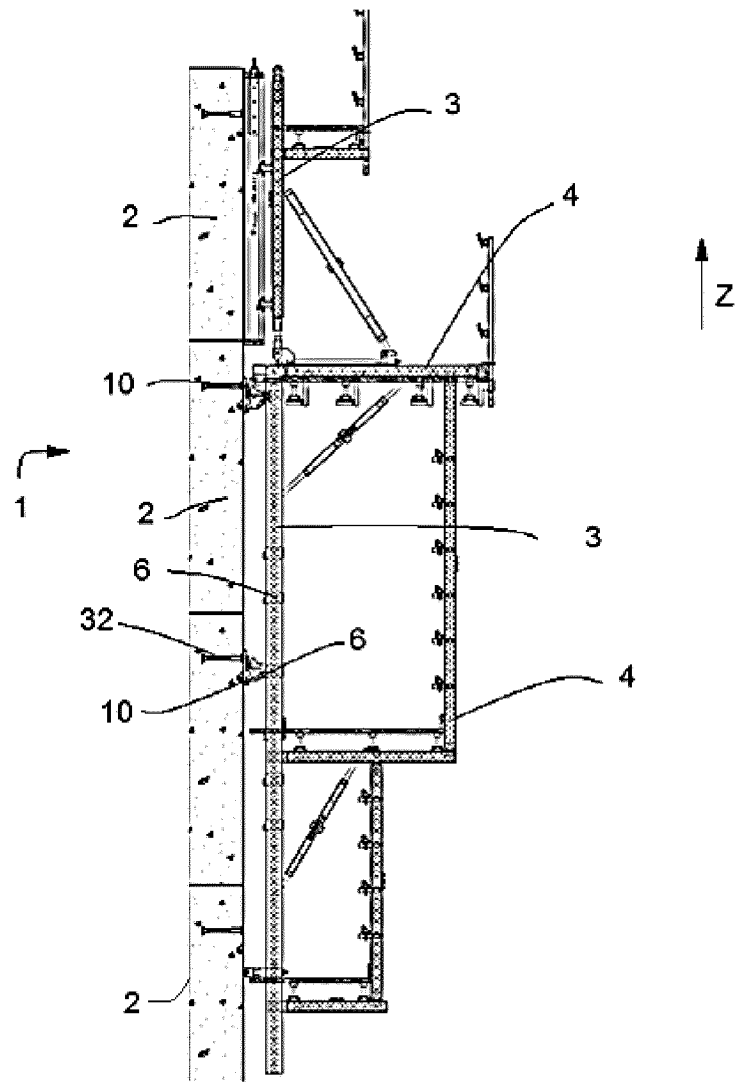


FIG. 1

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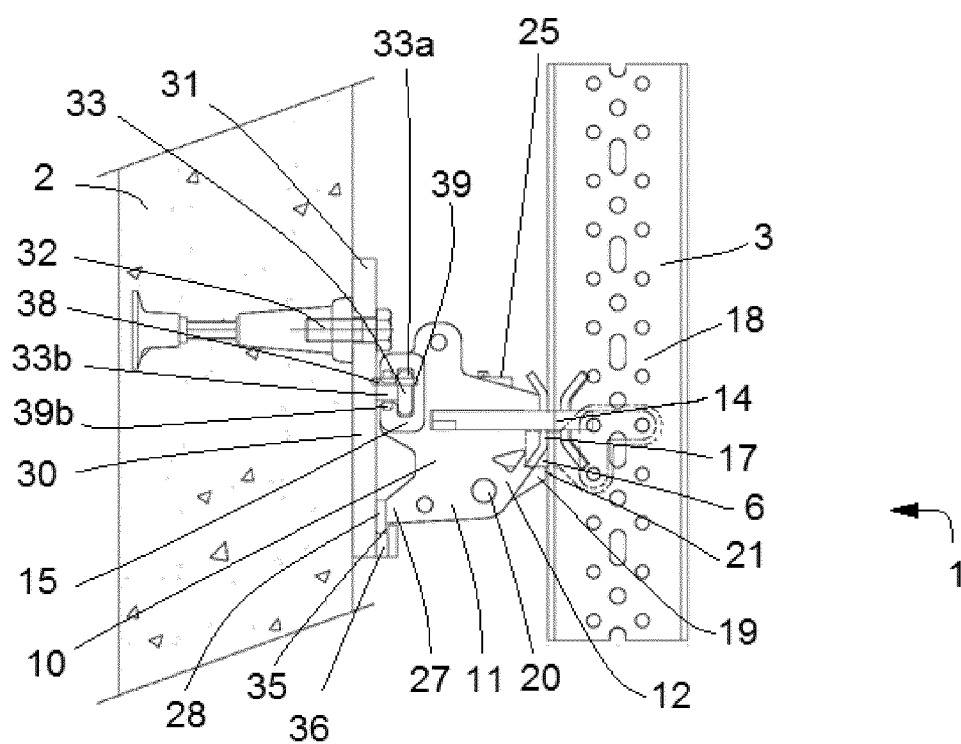


FIG. 2

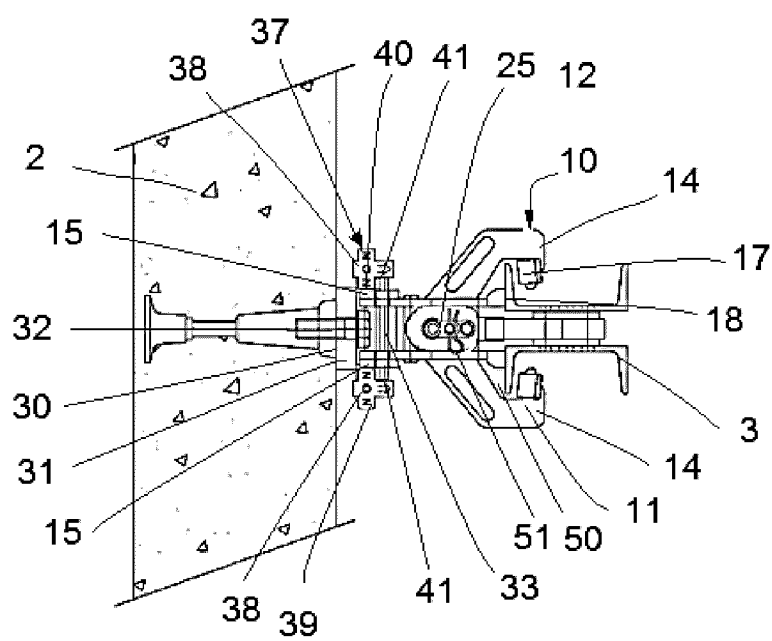


FIG. 3

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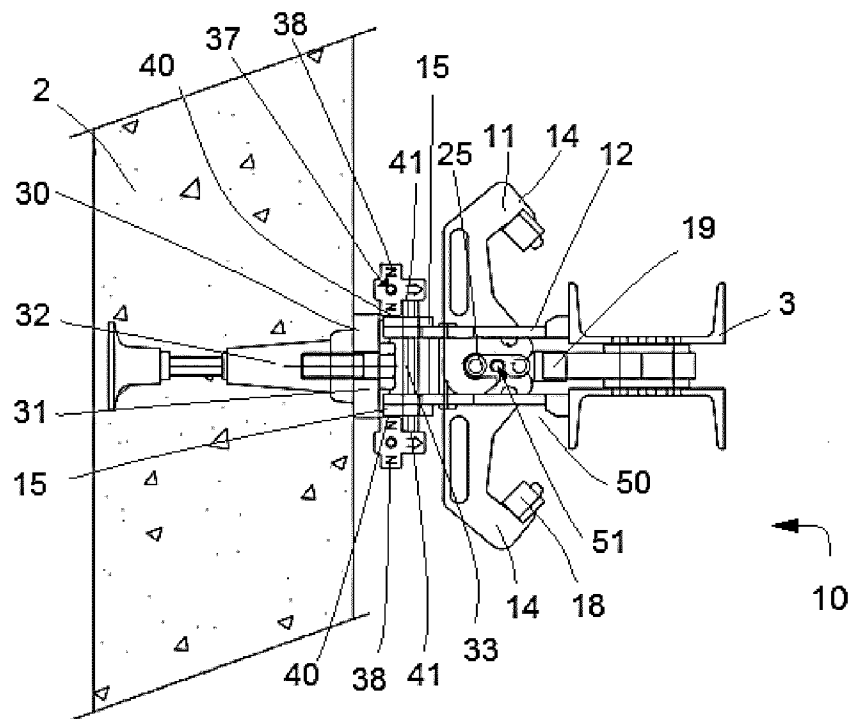


FIG. 4

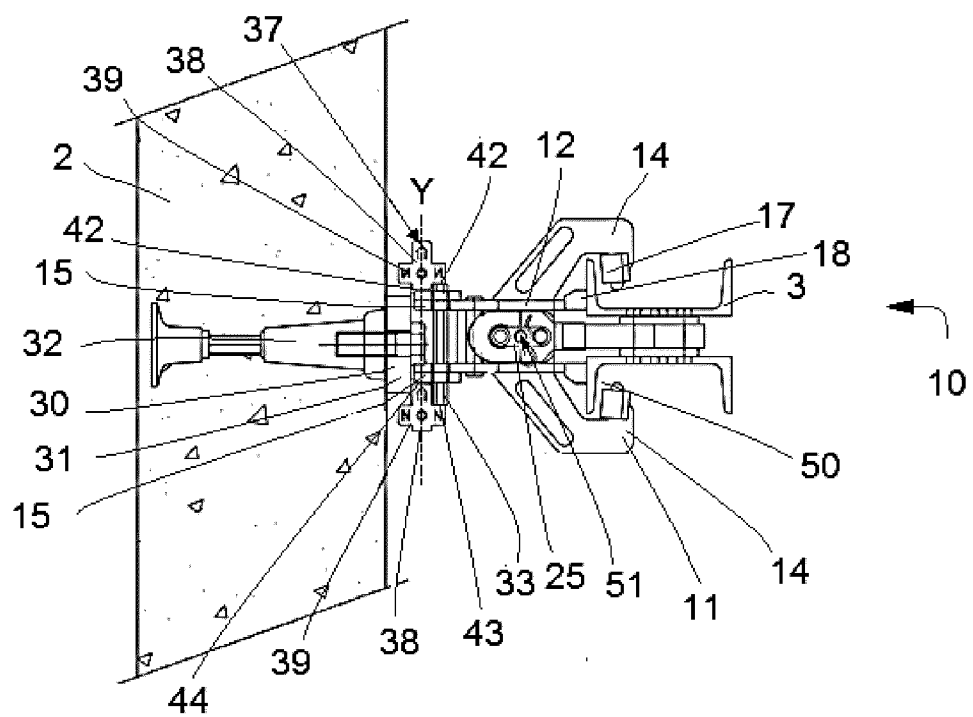


FIG. 5

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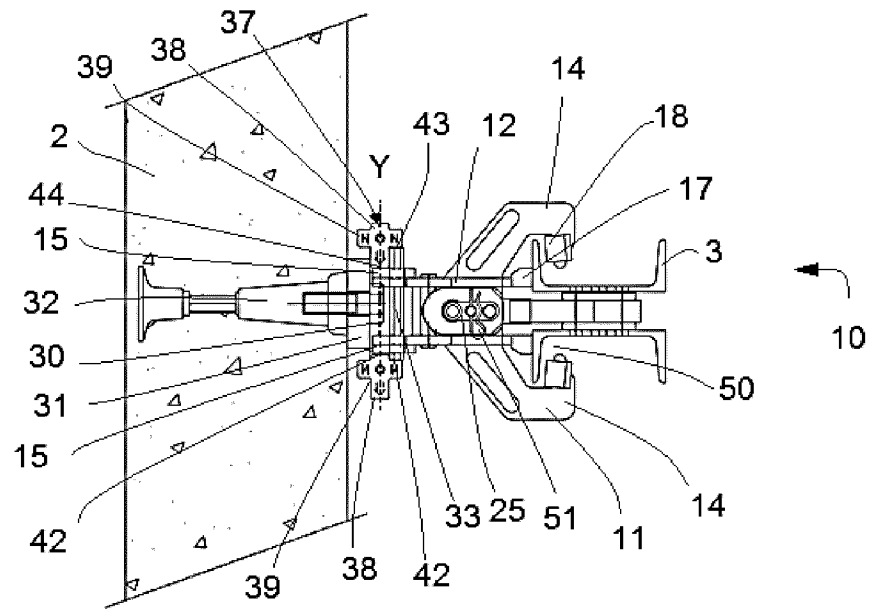


FIG. 6

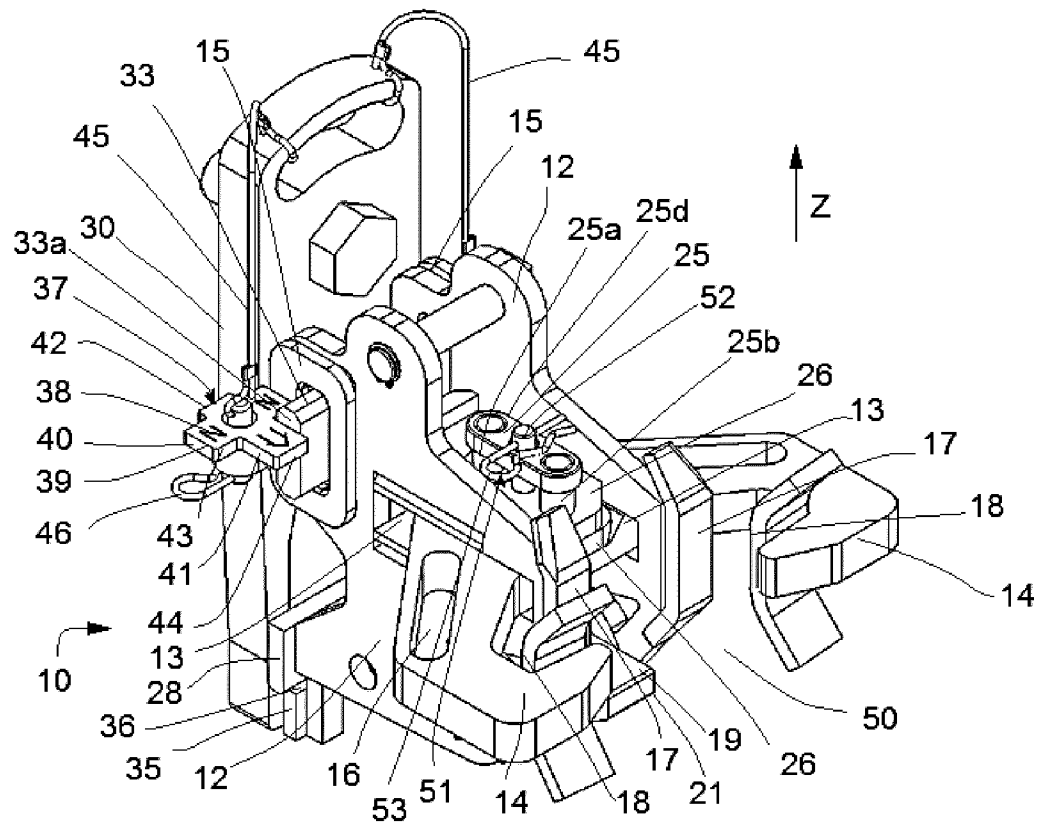


FIG. 7

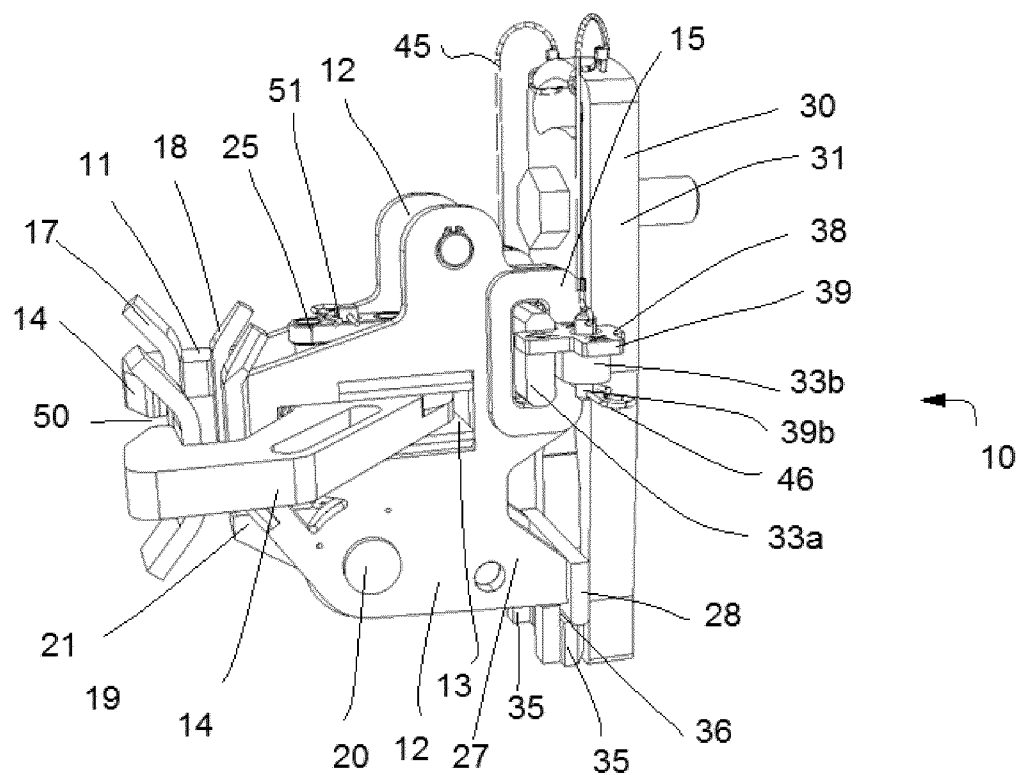


FIG. 8

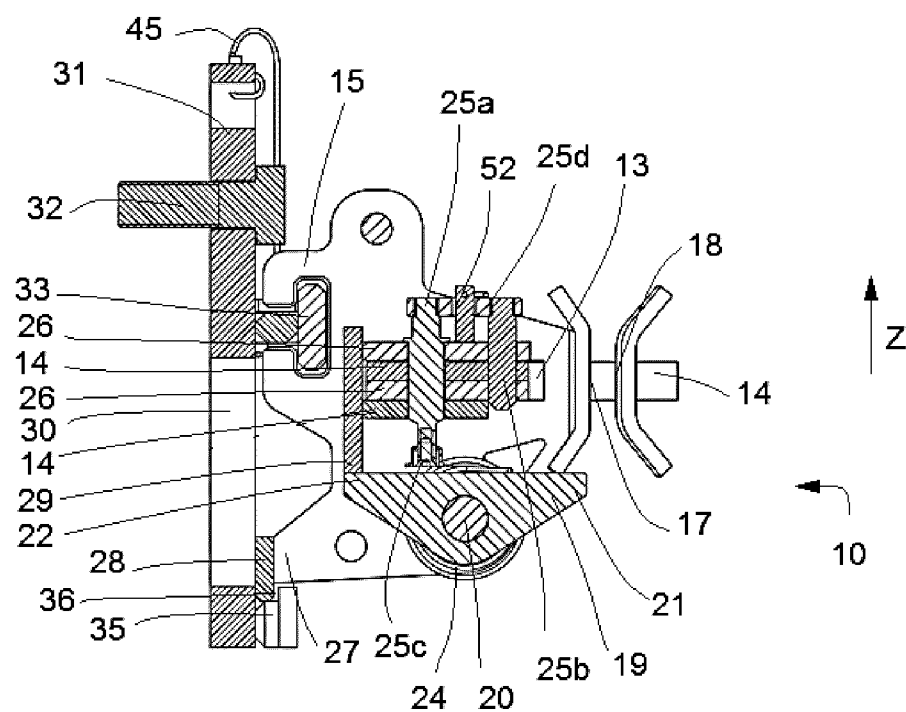


FIG. 9

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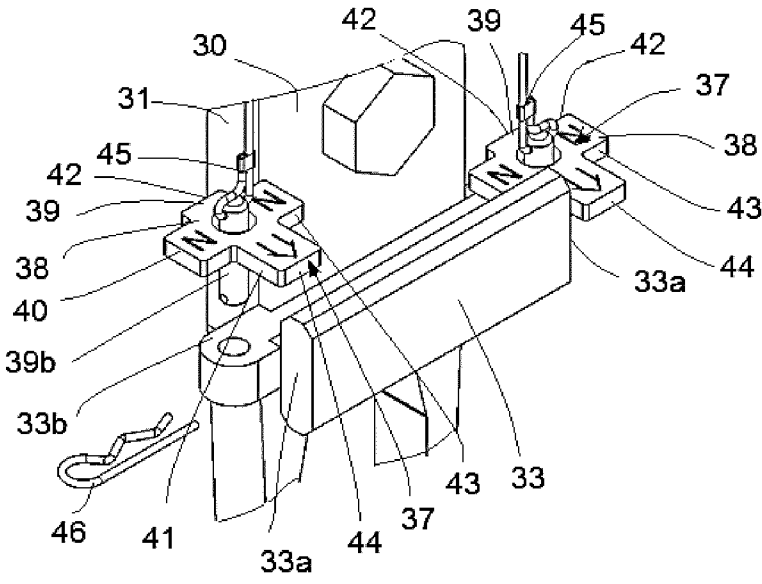


FIG. 10

INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2017/060609

A. CLASSIFICATION OF SUBJECT MATTER
 INV. E04G3/20 E04G3/28
 ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
 E04G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	KR 2016 0025467 A (DOKA GMBH) 8 March 2016 (2016-03-08) paragraph [0027] - paragraph [0040]; figures 3-7	1-8,12, 13 9-11
X	----- US 2014/305070 A1 (JIN RUI [CN] ET AL) 16 October 2014 (2014-10-16) paragraph [0050]; figures 1,3	1,4,6,13
X	----- US 4 129 197 A (PRESTON JOHN C) 12 December 1978 (1978-12-12) figures 1-3	1,6,13
A	-----	2-5



Further documents are listed in the continuation of Box C.



See patent family annex.

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Information on patent family members

International application No

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
KR 20160025467 A	08-03-2016	CN 205259594 U	25-05-2016
		EP 2990564 A1	02-03-2016
		HK 1219522 A1	07-04-2017
		KR 20160025467 A	08-03-2016

US 2014305070 A1	16-10-2014	CN 103635643 A	12-03-2014
		US 2014305070 A1	16-10-2014
		WO 2013185277 A1	19-12-2013

US 4129197 A	12-12-1978	NONE	
