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(54) **HEAD FOR LOAD CONTROL**

(57) Head (100) for load control adapted to be established between a strut of a strutting system and a profile of a formwork system, wherein the profile comprises a lug, the head (100) comprises a retractable camera (110) comprising a inlet hole (110a), a blind base (110b) and visual inspection means (150) established on the outer surface of the retractable chamber (110), wherein the retractable chamber (110) is adapted to receive the lug of the profile of the formwork system through the inlet hole (110a), an elastic element (130) adapted to support the load of the formwork system and a second chamber (140) concentric and external to the retractable chamber (110), wherein the second chamber (140) is configured to house the elastic element (130) and the retractable chamber (110) and connecting means for connecting the second chamber (140) with the strut.

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Description

Object of the invention

[0001] The object of the present invention relates to a transition head between a strut of a strutting system and a profile of a formwork system.

[0002] This invention has its application within the industry dedicated to the manufacture of accessories, devices and tools for the framing formwork.

Background of the invention

[0003] A multiplicity of formwork systems is known where the support structure of the formwork board is formed by tubes and profiles that are connected by a series of lugs forming a rigid temporary structure. These supporting structures lack inspection elements for the magnitude of the load exerted by the formwork system on said supporting structure.

[0004] The present invention satisfies this demand.

Description of the invention

[0005] The present invention relates to a head for load control in slab formwork systems. In particular, the present invention relates to a head adapted to be established between a strut of a strutting system and a profile of a formwork system comprising a lug.

[0006] The head for load control is a transition element between the strutting system and the slab formwork system and which allows the reduction of manufacturing costs and limits the movement of elements of the pieces used in the formwork.

[0007] The arrangement of the head according to the present invention between the strutting system and the slab formwork system allows the most optimal distribution of the shoring elements of the concrete structure, since it allows the removal of a series of constituent pieces of the arrangement once the stage of the first days of concreting is over, keeping only the shoring elements of the temporary structure in the previously determined positions.

[0008] Once the following days of the concreting stage have been passed, most of the struts, boards, beams and other material are removed. It is at this point when the shoring or re-strutting process of the structure must be carried out, with the shoring elements with struts remaining in the working position together with the head according to the present invention.

[0009] The head allows a simple and visual assessment of the load with which the shoring or strutting system is installed in the slab formwork system. This element indicates in a very simple way the load received by providing a retractable chamber that can comprise display means or set of marks such as grooves, notches, or colored lines, etc. and wherein said chamber is adapted to move in the direction and sense of the load force exerted by the formwork, causing a variation in the number of marks visible to the operator, and where this variation in the number of marks is proportional to the load of the formwork system on the strut attached to the head according to the present invention.

[0010] In the same way, this element can indicate the absence of load being in its rest position, wherein the total set of marks on the retractable chamber can be observed. Thanks to this, the head according to the present invention allows the formwork struts to be located in the desired position without any load and supporting the shoring or re-strutting elements.

[0011] When the shoring system needs to be re-strutted or reaffirmed, the strut, which is free of load so far, can be loaded. When preloading, the displacement of the retractable chamber and the disappearance of the display means will be observed. At this time the shoring system will be loaded with the preload established by the system of the invention.

[0012] Thus, the head according to the present invention comprises a retractable chamber with an inlet hole, a blind base and visual inspection means established on the outer surface of the retractable chamber. The retractable chamber is adapted to receive the lug of the formwork system profile through the inlet hole, an elastic element adapted to bear the load of the formwork system and a second chamber concentric and external to the retractable chamber, wherein the second chamber is configured to house the elastic element and the retractable chamber inside it.

[0013] The head also comprises connecting means for the connection of the second chamber with the strut, wherein the head comprises a rest position in which the elastic element is in its extended position and the retractable chamber protrudes from the interior of the second chamber allowing the display of the visual inspection means in its entirety.

[0014] The head comprises a loading position in which the formwork system exerts a load on the retractable chamber through the lug causing the retractable chamber to descend into the second chamber, the elastic element contraction and a total or partial blockage of the display of the visual inspection means. In the loading position, the blocking of the visual inspection means is proportional to the amount of load of the formwork system on the strut.

[0015] In a first preferred embodiment, the connecting means comprise screwing means.

[0016] In a second preferred embodiment, the invention is adapted for struts that comprise an inner cavity. For this type of struts, the connecting means of the head may comprise a male connector comprising a first end connected to the blind base of the retractable chamber and a second end, wherein the male connector is adapted to be inserted through its second end into the inner cavity of the strut.

[0017] In the second preferred embodiment, the elastic element is established around the male connector.

[0018] In preferred embodiments, the elastic piece is a spring. In other embodiments, the elastic piece can comprise rubber.

[0019] In preferred embodiments, the visual inspection means comprise a set of grooves. In other embodiments, the visual inspection means may comprise colored marks.

[0020] In preferred embodiments, the retractable chamber and the second chamber are cylindrical. In other embodiments, the retractable chamber and the second chamber are parallelepiped.

Description of the drawings

[0021] To complement the description that is being made and in order to help a better understanding of the features of the heads according to the present invention, a set of drawings is attached wherein, with an illustrative and non-limiting nature, the following has been represented:

Figure 1 shows a view of a first embodiment of the head according to the present invention in the rest position.

Figure 2 shows a section of the first embodiment of the head according to the present invention in the rest position.

Figure 3 shows a view of a first embodiment of the head according to the present invention in the loading position.

Figure 4 shows a section of the first embodiment of the head according to the present invention in the loading position.

Figure 5 shows a view of a second embodiment of the head according to the present invention in rest position.

Figure 6 shows a section of the second embodiment of the head according to the present invention in the rest position.

Figure 7 shows a view of a second embodiment of the head according to the present invention in the loading position.

Figure 8 shows a section of the second embodiment of the head according to the present invention in the loading position.

Preferred embodiment of the invention

[0022] Figures 1 and 2 show a view and section of a first embodiment of the head (100) according to the present invention.

[0023] The head (100) is adapted to be established between a strut of a strutting system and a profile of a formwork system and allows examining the load that the formwork system exerts on the strut. In particular, the head (100) comprises a retractable chamber (110) with an inlet hole (110a), as shown in figure 2, a blind base (110b) and visual inspection means (150) established on the exterior surface of the retractable chamber (110). The retractable chamber (110) is adapted to receive the lug of the formwork system profile through the inlet hole (110a).

[0024] Furthermore, the head (100) comprises an elastic element (130), preferably a spring, adapted to support the load of the formwork system. In other embodiments, the elastic element can be, for example, a rubber element.

[0025] Furthermore, the head (110) comprises a second chamber (140) concentric and external to the retractable chamber (110), wherein the second chamber (140) is configured to house the elastic element (130) inside it. The second chamber is also adapted to house the retractable chamber (110) (partially as shown in Figures 1 and 2, or fully as shown in Figures 3 and 4).

[0026] The head (110) comprises connecting means for the connection of the second chamber (140) with the strut. In this preferred embodiment, the connecting means are screwing means (125, 125a) that allow screwing of the head (100) to a strut, in particular, a plate (125) with holes (125a).

[0027] Figures 1 and 2 show the head (100) in the rest position, wherein the elastic element (130) is in its extended position and the retractable chamber (110) protrudes from inside the second chamber (140), as can be seen in figure 2, allowing the visual inspection means (150) to be viewed in its entirety.

[0028] Figures 3 and 4 show the head (100) in the loading position in which the formwork system exerts a load on the retractable chamber (110) through the lug causing the retractable chamber (110) to descend towards the interior of the second chamber (140). As can be seen in figure 4, the descent of the retractable chamber (110) causes the contraction of the elastic element (130) which supports the load of the formwork on the head (100). In the same way, the descent of the retractable chamber (110) causes a total blocking of the display of the visual inspection means (150). In other load positions, the blocking of the display means may be partial and not total, depending on the load to which the chamber (110) is subjected. Therefore, the blocking of the display of the visual inspection means (150) is proportional to the amount of load of the formwork system on the strut.

[0029] Figures 3 and 4 show a view and a section of a second preferred embodiment of a head (200) according to the present invention. Similar to the head (100) of Figures 1 to 4, the head (200) comprises connecting means for connecting the second chamber (140) with the strut. In this preferred embodiment of the head (200), the connecting means comprise a male connector (120) comprising a first end (120a) connected to the blind base (110b) of the retractable chamber (110) and a second end (120b). The male connector (120) is adapted to be inserted through the second end (120b) into the inner cavity of the strut.

[0030] Although reference has been made to specific embodiments of the invention, the heads described in

this document are susceptible to numerous variations and modifications, and all the mentioned features can be replaced by other technically equivalent ones without departing from the scope of protection defined by the claims.

Claims

1. Head (100) for load control adapted to be established between a strut of a strutting system and a profile of a formwork system, wherein the profile comprises a lug, the head (100) comprises:

- a retractable chamber (110) comprising an inlet hole (110a), a blind base (110b) and visual inspection means (150) established on the outer surface of the retractable chamber (110),
wherein the retractable chamber (110) is adapted to receive the lug of the profile of the formwork system through the inlet hole (110a);
- an elastic element (130) adapted to support the load of the formwork system; and
- a second chamber (140) concentric and exterior to the retractable chamber (110), wherein the second chamber (140) is configured to house the elastic element (130) and the retractable chamber (110) inside it; and
- connecting means for connecting the second chamber (140) with the strut,

wherein the head (100) comprises a rest position in which the elastic element (130) is in its extended position and the retractable chamber (110) protrudes from the interior of the second chamber (140) allowing the display of the visual inspection means (150) in its entirety,
wherein the head (100) comprises a loading position in which the formwork system exerts a load on the retractable chamber (110) through the lug causing the retractable chamber (110) to descend into the second chamber (140), the contraction of the elastic element (130) and a total or partial blocking of the display of the visual inspection means (150),
wherein said blocking of the display of the visual inspection means (150) is proportional to the magnitude of the load of the formwork system on the strut.

2. The head (100) according to claim 1, wherein the connecting means comprise screwing means (125, 125a).

3. The head (100) according to claim 1, wherein the strut comprises an inner cavity, and wherein the connecting means comprise:

- a male connector (120) comprising a first end (120a) connected to the blind base (110b) of the retractable chamber (110) and a second end (120b),
where the male connector (120) is adapted to be inserted through the second end (120b) into the inner cavity of the strut.

4. The head (100) according to claim 3, wherein the elastic element (130) is established around the male connector (120).

5. The head (100) according to claims 1 to 4, wherein the elastic element (130) is a spring.

6. The head (100) according to claim 1 to 4, wherein the elastic element (130) comprises rubber.

7. The head (100) according to claims 1 to 6, wherein the visual inspection means (150) comprise a set of grooves.

8. The head (100) according to claims 1 to 6, wherein the visual inspection means (150) comprises colored marks.

9. The head (100) according to claims 1 to 8, wherein the retractable chamber and the second chamber (110, 140) are cylindrical.

10. The head (100) according to claims 1 to 8, wherein the retractable chamber and the second chamber (110, 140) are parallelepiped.

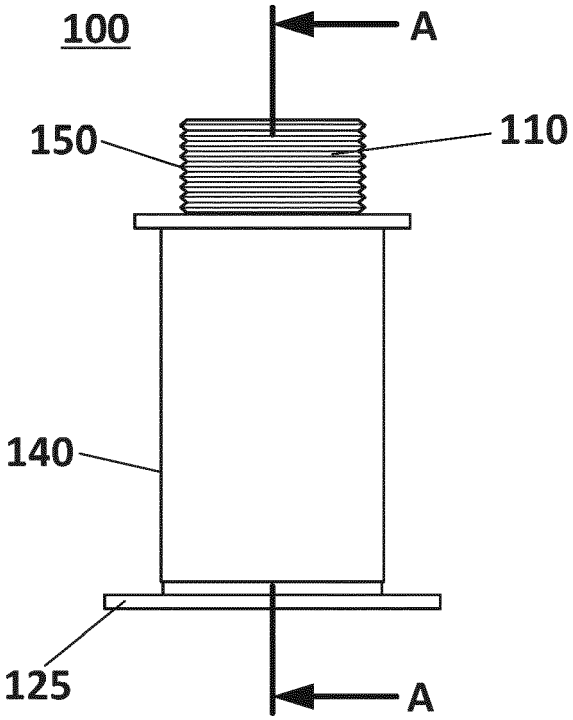

FIG. 1

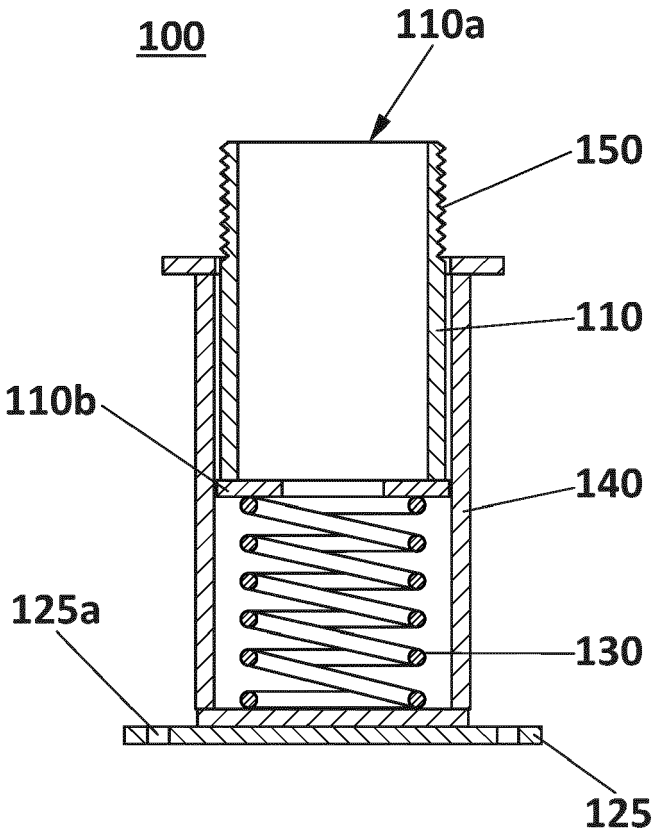

FIG. 2
A-A

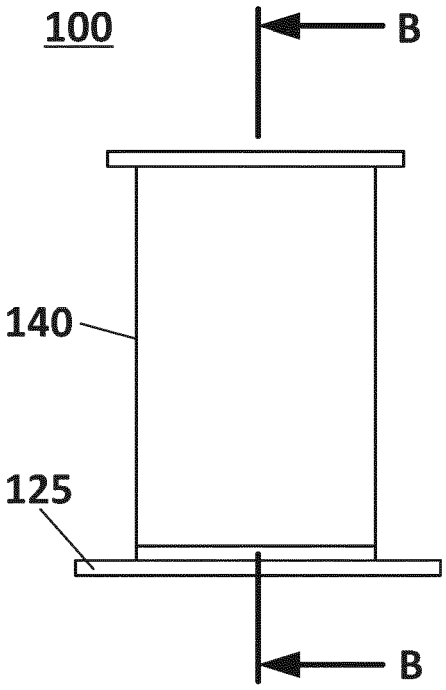

FIG. 3

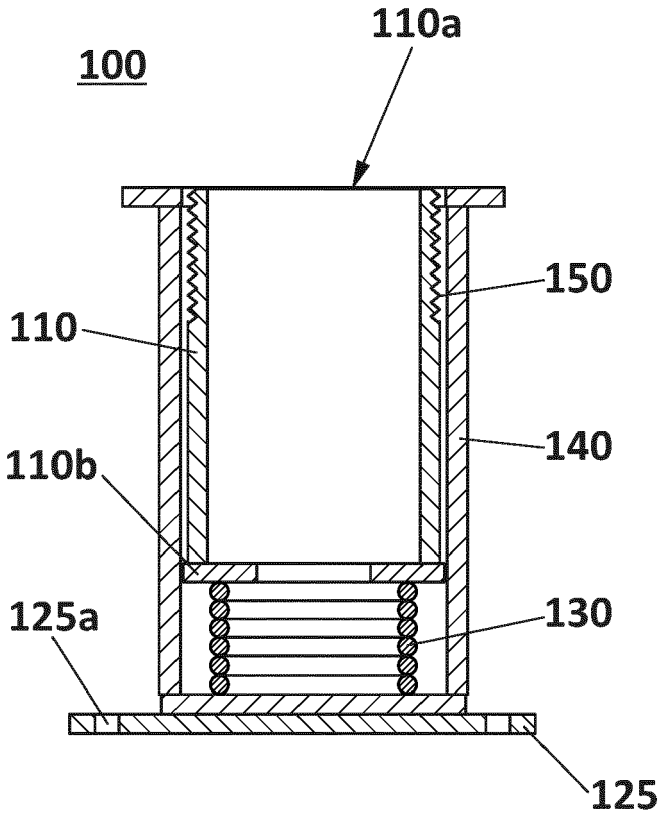

FIG. 4
B-B

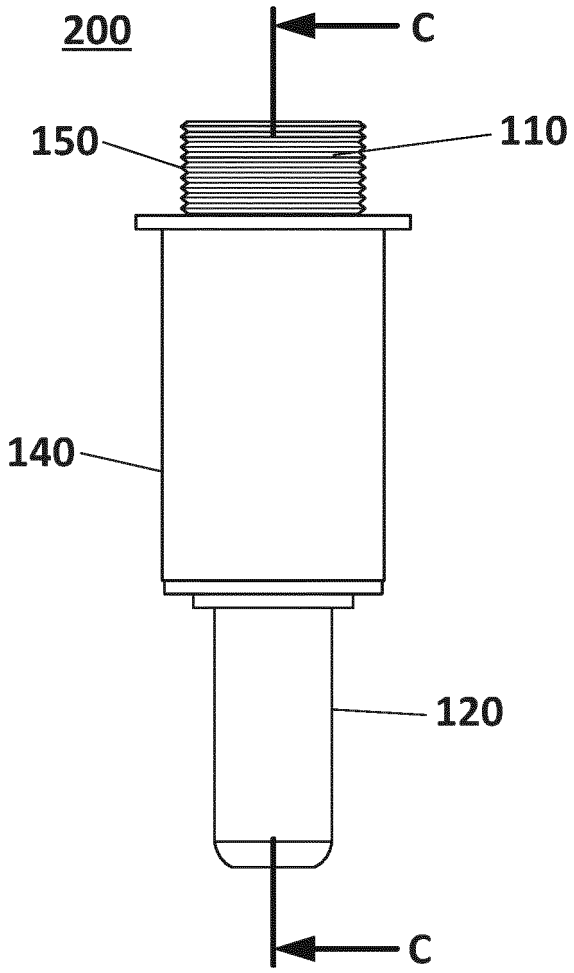
200
C
150
110
140
120
C

FIG. 5

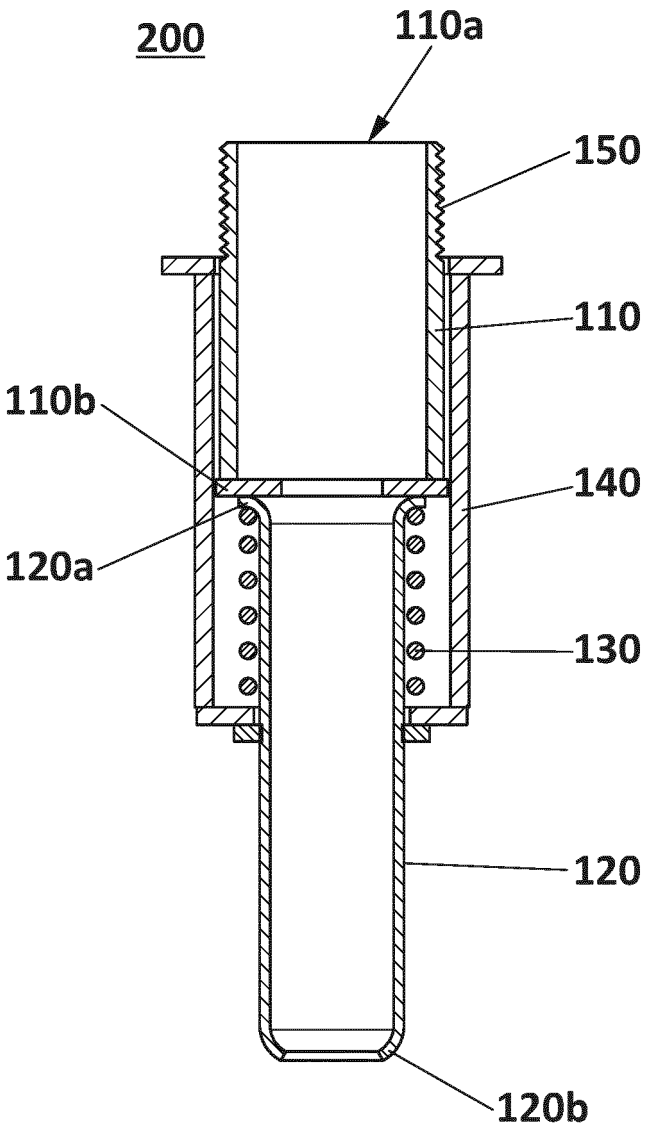
200
110a
150
110
110b
140
120a
130
120
120b

FIG. 6
C-C

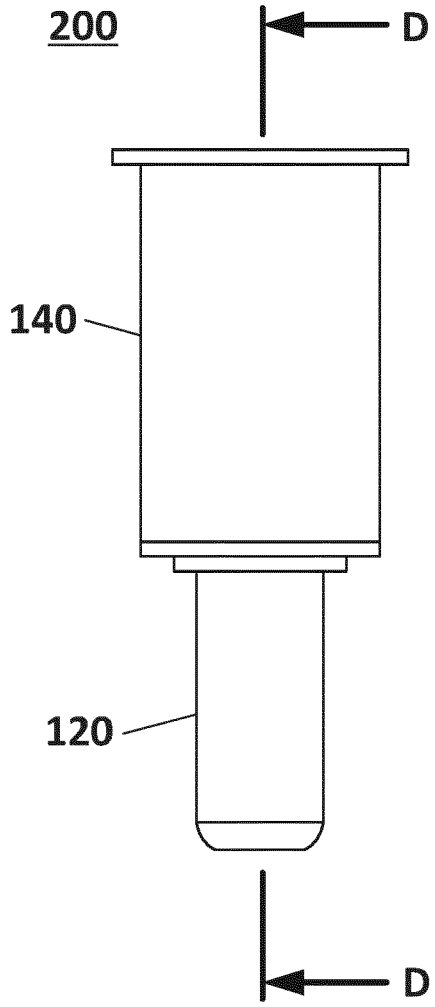

FIG. 7

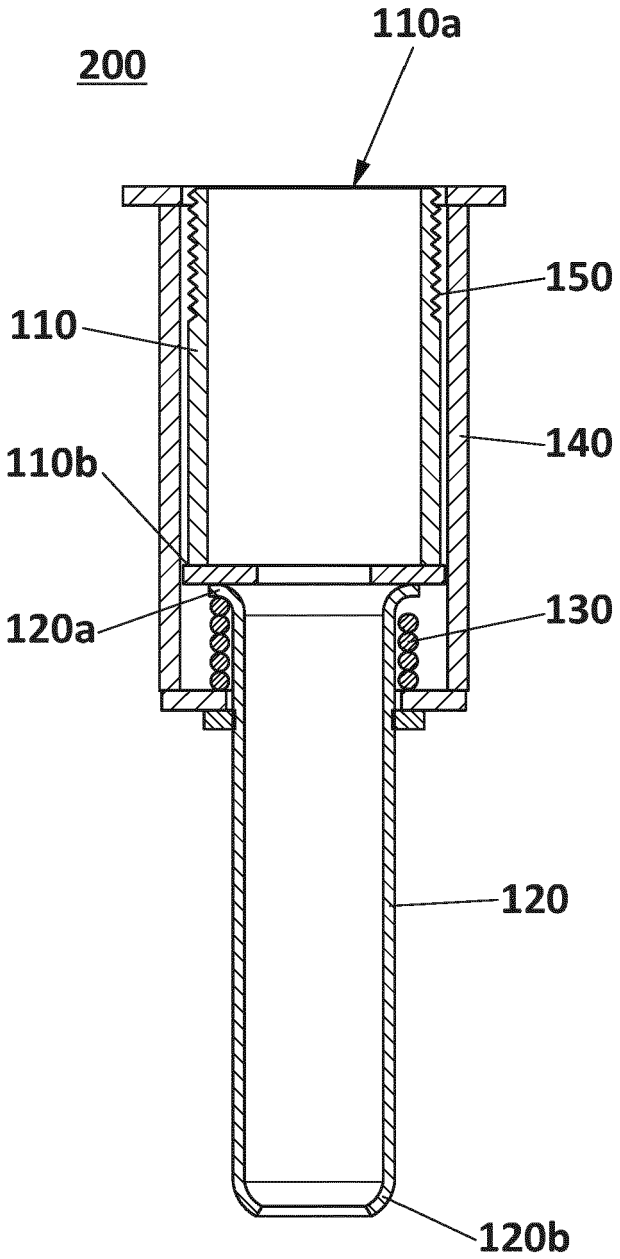

FIG. 8
D-D

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EUROPEAN SEARCH REPORT

Application Number
EP 21 38 2479

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X Y	US 2003/089050 A1 (TIPPING ELDON [US] ET AL) 15 May 2003 (2003-05-15) * paragraph [0053] - paragraph [0057]; figures 11-12 *	1-10 2-6,9,10	INV. E04G11/48 E04G25/00 E21D15/46 G01C15/00
X A	US 9 663 962 B1 (WHITTEMORE JEFFREY P [US]) 30 May 2017 (2017-05-30) * column 11, line 42 - column 13, line 54; figures 6-7 *	1,3-9 2,10	
Y	US 2018/106054 A1 (COOTE EAMUS PAUL [AU] ET AL) 19 April 2018 (2018-04-19) * paragraph [0122] - paragraph [0149]; figures 10-11 *	2-6,9	
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TECHNICAL FIELDS SEARCHED (IPC)

E04G
G01C
E21C
E21D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	21 October 2021	Manera, Marco

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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21-10-2021

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