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(54) **CONSTRUCTION POST WITH REINFORCEMENT DEVICE**

(57) The invention relates to a construction post comprising an outer tube, an inner tube and a piece for securing the tubes together. The outer tube comprises a tightening nut at the upper end, the inner tube being able to move inside the outer tube and comprising a plurality of pairs of holes distributed along the length thereof. The holes are arranged in diametrically opposite positions of the inner tube, the securing piece passing through one of the pairs of holes of the inner tube so as to prevent relative movement between the inner and outer tubes. The post is characterised in that it has a reinforcement device comprising a tubular sleeve able to slide along the outside of the inner tube of the construction post, the tubular sleeve comprising means for securing to the construction post.

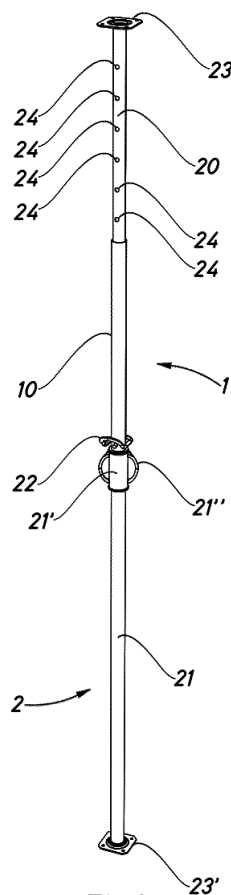


Fig.3

Description

[0001] The present invention relates to an acrow prop comprising a reinforcement device which provides reinforcement for resisting buckling of the prop.

[0002] An acrow prop is a telescopic element that is used as a temporary support for structures during construction or repair work thereof, or in situations where there is the risk of a structure collapsing, among other applications. For example, acrow props can be used to support walls of a formwork mould until the concrete has hardened and the walls can be removed from the mould.

[0003] An acrow prop usually comprises two telescopic tubes, i.e. an inner tube that can move inside an outer tube and a system for attaching the inner and outer tubes together. Said attachment system usually consists of a plurality of pairs of holes distributed along the length of the inner tube and arranged in diametrically opposed positions, and of an attachment part that passes through one of said pairs of holes so as to prevent movement of the outer and inner tubes relative to one another. By means of the attachment part, the extension of the prop can be discretely controlled. In order to finely adjust the extension of the prop, the outer tube comprises, on its upper end, a nut on which the attachment part rests.

[0004] The versatility brought by the adjustable length allows acrow props to cover a wide range of lengths, the maximum length of said props being the one where the inner tube has been extended to its greatest extent out of the outer tube. However, the greater the length of the prop during use, the lesser the resistance to buckling, there being the risk of the prop collapsing and ceasing to perform its structural function when used at lengths close to its maximum length. Furthermore, high loads can also cause the prop to buckle even if the length of the prop is not close to the maximum length. In order to ensure the structural integrity of the acrow prop in these cases, the only existing solution is to increase the number of props so as to distribute the load supported by each prop. As a result, the cost of using acrow props increases on account of the need for a greater number of acrow props and, also, on account of this entailing a greater amount of time for installing and removing same.

[0005] The present invention aims to solve the aforementioned problems relating to acrow props. In particular, the present invention discloses an acrow prop which comprises two telescopic tubes, i.e. one outer tube and one inner tube, and a part for attaching the outer and inner tubes together, the outer tube comprising an adjusting nut on its upper end, the inner tube being capable of moving inside the outer tube and said inner tube comprising a plurality of pairs of holes distributed along its length, the holes of said pairs of holes being arranged in diametrically opposed positions on the inner tube, said attachment part passing through one of said pairs of holes in the inner tube so as to prevent movement of the outer and inner tubes relative to one another, said prop being characterised in that it comprises a reinforcement

device, said reinforcement device comprising a tubular sleeve that can slide over the outside of the inner tube of the acrow prop and said tubular sleeve comprising means for attachment to the acrow prop.

[0006] It is also an object of the present invention to provide a reinforcement device for said acrow prop, characterised in that it comprises a tubular sleeve that is capable of sliding over the outside of the inner tube of the acrow prop and said tubular sleeve comprising means for attachment to the acrow prop. Furthermore, another object of the present invention is to use said reinforcement device on an acrow prop in order to improve the resistance of the prop to buckling.

[0007] The acrow prop according to the present invention has improved resistance to buckling by virtue of the reinforcement device, increasing the load required for the prop to collapse from buckling. In this way, the acrow prop according to the present invention ensures that a structure is stable and secure against high axial loads with fewer props in comparison with acrow props that do not comprise said reinforcement device. Consequently, because fewer acrow props are required, the installation and removal time for the props is less and their cost more economical.

[0008] Furthermore, the reinforcement device according to the present invention requires little time to be placed, given that the tubular sleeve simply needs to slide over the outside of the inner tube of the prop and be attached to the acrow prop. In addition, the length of the reinforcement device also makes it possible to transport the prop without having to remove said reinforcement device, which means that the prop and its device can be transported and stored without being separated, thus precluding the need to place the reinforcement device on the prop before each use. In any case, if necessary, the reinforcement device can also be removed simply and quickly by releasing it from the prop and sliding it over the outside of the inner tube and off.

[0009] In one embodiment of the acrow prop according to the present invention, the means for attaching the tubular sleeve to the prop comprise a pair of holes arranged in diametrically opposed positions on the tubular sleeve, such that the attachment part passes through the pair of holes in the tubular sleeve so as to attach it to the acrow prop. In this way, the part for attaching the inner and outer tubes together also passes through the holes of the tubular sleeve, the tubular sleeve being attached to the acrow prop.

[0010] Optionally, the tubular sleeve contacts the adjusting nut on the upper end of the outer tube of the prop. In this position, possible angular movement between the inner and outer tubes of the prop due to loads is minimised.

[0011] Preferably, the tubular sleeve comprises a circumferential fin on one of its ends. In this way, when the tubular sleeve contacts the adjusting nut on the outer tube of the prop, the contact surface is larger, and therefore the stresses and forces generated are less. In addition,

tion, the fin makes it easier to manually handle the device and helps to align both tubes of the prop.

[0012] To aid understanding, and by way of explanatory yet non-limiting example, the present invention is described below on the basis of an embodiment depicted in drawings, in which:

Fig. 1 is a perspective view of an embodiment of a reinforcement device for acrow props according to the present invention.

Fig. 2 is a front elevation view of the device from Fig. 1.

Fig. 3 is a perspective view of an acrow prop that incorporates a reinforcement device according to the present invention.

Fig. 4 is a magnified perspective view of a detail from Fig. 3, in which the region of the acrow prop in which the reinforcement device is located has been enlarged.

Fig. 5 is a front elevation view of 5 acrow props in different length configurations, in which only the acrow props b and c comprise a reinforcement device according to the present invention.

[0013] As can be seen in Fig. 1 and 2, the reinforcement device -1- for the acrow prop according to the present invention is a tubular sleeve -10- that comprises a circumferential fin -11- on one of its ends. In addition, the tubular sleeve -10- comprises two holes -12-, -12'- arranged in diametrically opposed positions.

[0014] Fig. 3 and 4 show an acrow prop -2- according to the present invention that comprises the reinforcement device -1- from Fig. 1 and 2. The prop -2- comprises an inner tube -20- and an outer tube -21- that are attached together by means of an attachment part -22-, the outer tube -21- having, on the upper portion thereof, an adjusting nut -21'- for more precisely controlling the extension of the prop -2-, which nut comprises handles -21"- for manual handling thereof. In addition, the prop -2- has planar parts -23-, -23'- on its ends that facilitate contact of the prop -2- with the surfaces of the structures it supports.

[0015] Furthermore, the inner tube -20- of the prop -2- comprises a plurality of pairs of holes arranged in diametrically opposed positions, only one hole -24- of each pair of holes being shown in Fig. 3 and 4.

[0016] The inner tube -20- of the prop -2- is introduced into the tubular sleeve -10-, said tubular sleeve -10- resting on the adjusting nut -21'- on the upper end of the outer tube -21- by means of the circumferential fin -11-. The holes -12-, -12'- of the tubular sleeve -10-, being arranged in a diametrically opposed manner, in the same way as the pairs of holes -24- in the inner tube -20- of the prop -2-, allow the attachment part -22- to pass

through both the holes -24- of the inner tube and the holes -12-, -12'- of the tubular sleeve -10-, attachment of the tubular sleeve -10- to the prop -2- thus being achieved (Fig. 3 and 4).

[0017] Controlling the positions of the inner -20- and outer -21- tubes of the prop -2- relative to one another makes it possible to achieve a wide range of lengths, as shown by the different configurations in Fig. 5. In the configurations in which the length of the prop -2- is close to the maximum length thereof (see Fig. 5a and 5b), the resistance of the prop -2- to buckling is reduced and there is the risk of collapse. The use of the reinforcement device -1- increases the resistance of the prop -2- to buckling, and therefore the prop -2- in Fig. 5b is at less risk of collapsing from buckling than the prop -2- in Fig. 5a.

[0018] The configuration in Fig. 5c corresponds to the position in which the prop -2- is at its smallest length when having the reinforcement device -1- according to the present invention, Fig. 5d showing the prop -2- at the same length but without the reinforcement device -1-. In order to be able to use the prop -2- at smaller lengths (see Fig 5e and 5f), the reinforcement device -1- must be removed, in which cases it is not possible to use the reinforcement device -1- to increase the resistance of the prop -2- to buckling, because there is no space. Nevertheless, in these cases, because the length of the prop -2- is small, resistance to buckling is not jeopardised, and the use of the device -1- according to the present invention is not usually necessary.

[0019] Although the invention has been set out and described with reference to embodiments thereof, it should be understood that these do not limit the invention, and that it is possible to alter many structural or other details that may prove obvious to persons skilled in the art after interpreting the subject matter disclosed in the present description, claims and drawings. Therefore, the scope of the present invention includes any variant or equivalent that could be considered covered by the broadest scope of the following claims.

Claims

1. Acrow prop comprising two telescopic tubes, i.e. one outer tube and one inner tube, and a part for attaching the outer and inner tubes together, the outer tube comprising an adjusting nut on its upper end, the inner tube being capable of moving inside the outer tube and said inner tube comprising a plurality of pairs of holes distributed along its length, the holes of said pairs of holes being arranged in diametrically opposed positions on the inner tube, said attachment part passing through one of said pairs of holes in the inner tube so as to prevent movement of the outer and inner tubes relative to one another, said prop being **characterised in that** it comprises a reinforcement device, said reinforcement device comprising a tubular sleeve that can slide over the outside of

the inner tube of the acrow prop and said tubular sleeve comprising means for attachment to the acrow prop.

2. Prop according to claim 1, **characterised in that** said means for attaching the tubular sleeve to the prop comprise a pair of holes arranged in diametrically opposed positions on the tubular sleeve such that the attachment part passes through the pair of holes in the tubular sleeve so as to attach it to the acrow prop. 5
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3. Prop according to either claim 1 or claim 2, **characterised in that** the tubular sleeve contacts the adjusting screw on the upper end of the outer tube of the prop. 15
4. Prop according to any one of the preceding claims, **characterised in that** the tubular sleeve comprises a circumferential fin on one of its ends. 20
5. Reinforcement device for the acrow prop according to claims 1 to 4, **characterised in that** it comprises a tubular sleeve that comprises means for attachment to the acrow prop. 25
6. Reinforcement device according to claim 5, **characterised in that** said means for attachment to the prop comprise a pair of holes arranged in diametrically opposed positions on the tubular sleeve. 30
7. Device according to either claim 5 or claim 6, **characterised in that** the tubular sleeve comprises a circumferential fin on one of its ends. 35
8. Use of the reinforcement device according to claims 5 to 7 on an acrow prop in order to improve the resistance of said acrow prop to buckling. 40

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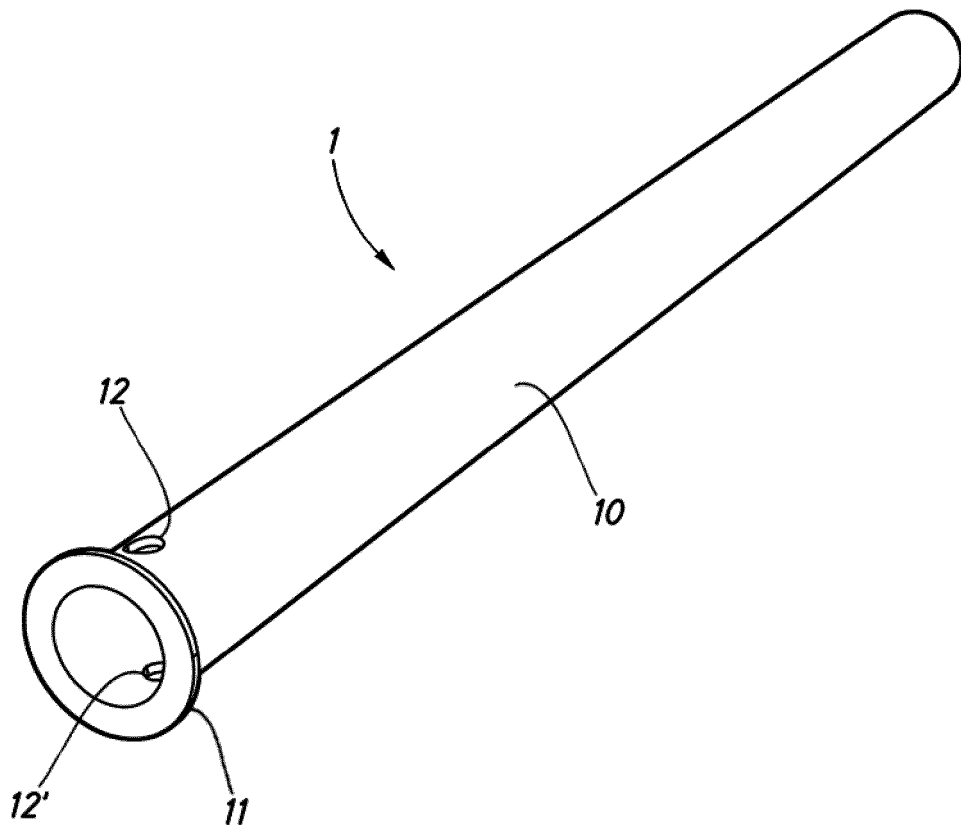


Fig.1

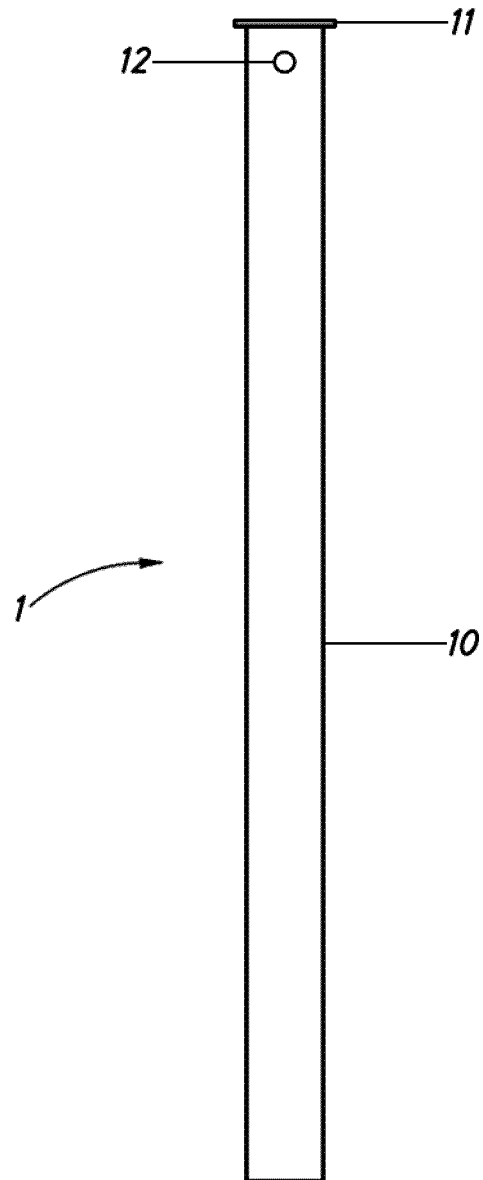


Fig.2

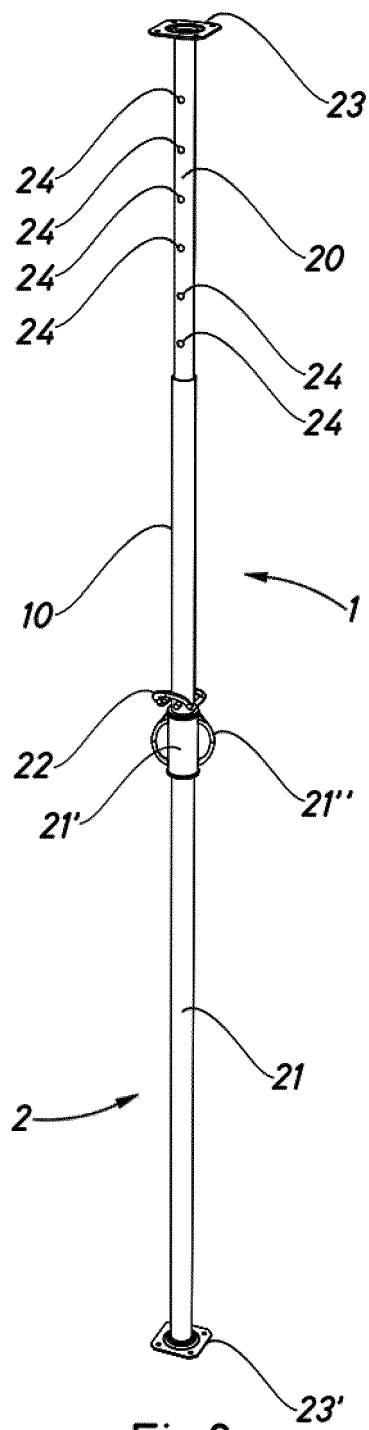


Fig.3

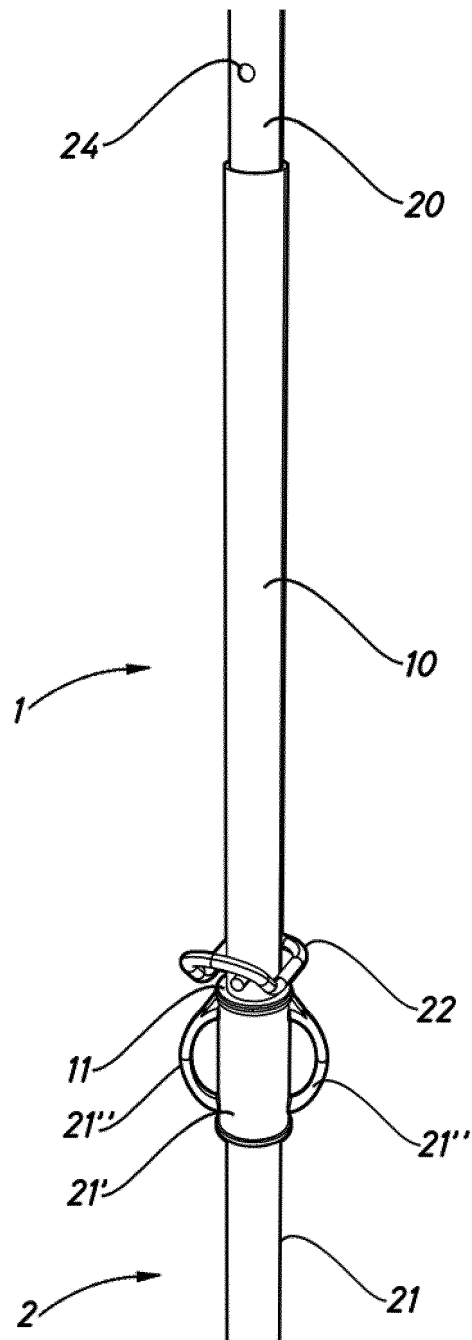


Fig.4

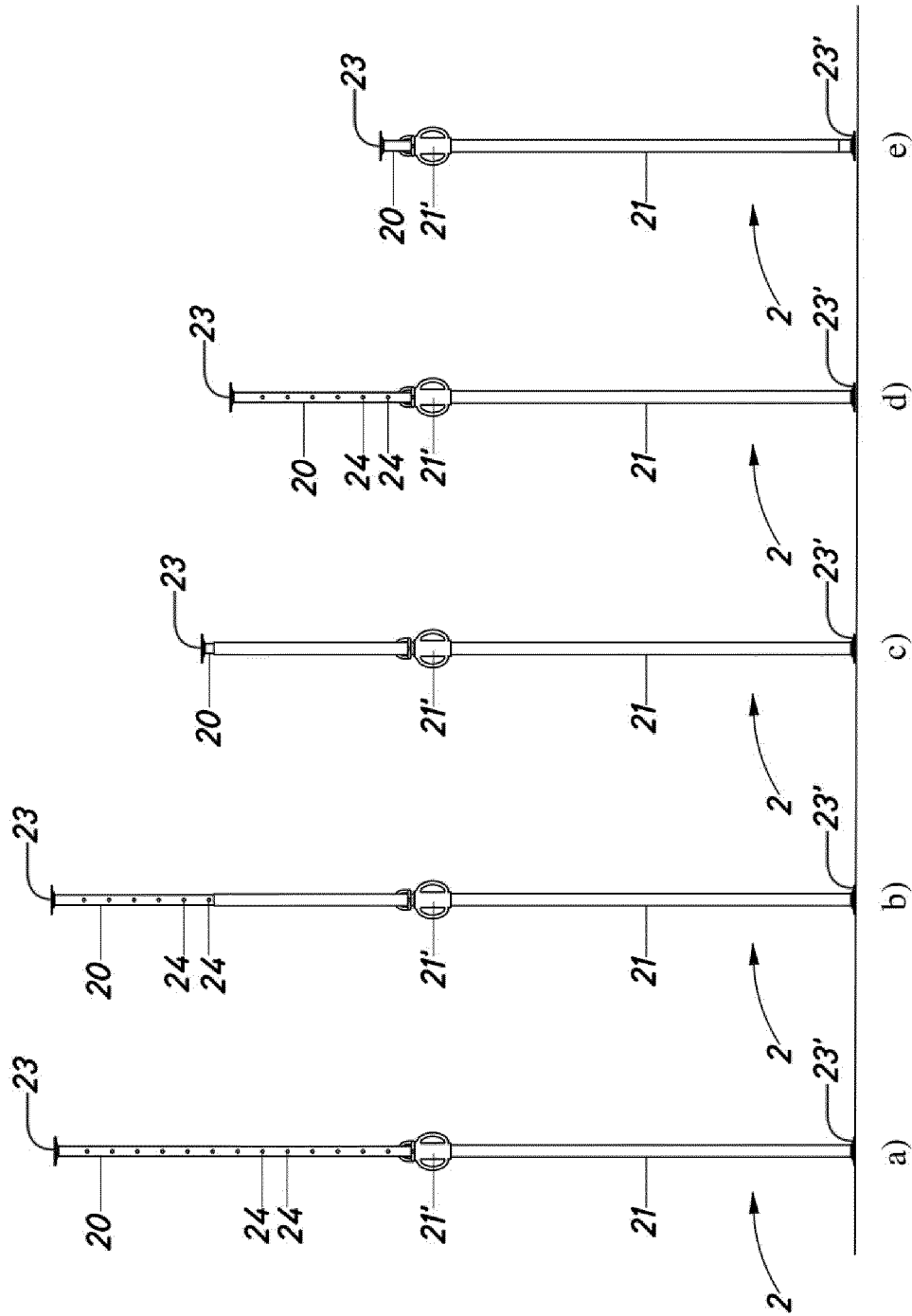


Fig.5

INTERNATIONAL SEARCH REPORT

International application No

PCT/ES2017/070523

A. CLASSIFICATION OF SUBJECT MATTER

INV. E04G25/06 E04G25/04
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

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X	FR 904 545 A (M.ROLAND) 8 November 1945 (1945-11-08) page 1, line 59 - page 2, line 86; figures 1-4	1-3,5,6, 8
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X	JP 2006 063653 A (KOBAYASHI KENJI) 9 March 2006 (2006-03-09) abstract; figures 1-3,9	1-8
	-/-	



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Date of the actual completion of the international search

9 October 2017

Date of mailing of the international search report

06/11/2017

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INTERNATIONAL SEARCH REPORT

International application No

PCT/ES2017/070523

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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Form PCT/ISA/210 (continuation of second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

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