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(54) DEVICE FOR TILTING AND LOCKING THE RESTING SURFACE OF A TABLE

(57) A device (10) for tilting and locking the resting surface (11) of a table (12), of the type comprising at least one support (13) for the resting surface (11), the device (10) comprising:
- a body (14) that is integral with the at least one support (13) and extends along a tilting axis (15) below the resting surface (11) and at least along much of the length of the latter, to which it is also hinged at its ends,
- locking means (16), which comprise at least one tooth (17) which protrudes from at least one end of the body (14) and is adapted to enter by snap action and reversibly a corresponding opening (18) at the edge (19) of the resting surface (11) when the latter is in the configuration for use.

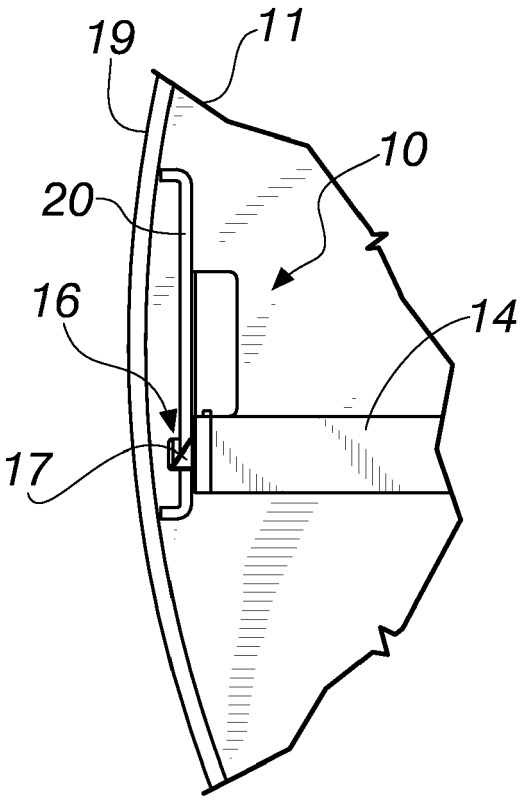

Fig. 2

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Description

[0001] The present invention relates to a device for tilting and locking the resting surface of a table.

[0002] In the catering sector, in bars or in reception rooms in general, tables are often used which have tilting resting surfaces, which tilt from a horizontal configuration for use to a vertical configuration for non-use, in order to facilitate the stacking thereof when they are not needed.

[0003] Typically, such tables are provided with a central joint below the resting surface, which connects a support of the surface, to which the latter is fixed, to the supporting leg. In order to ensure that the horizontal configuration of the resting surface is maintained, there is a snap-acting locking device with a moveable element that, pushed by a spring, engages by snap action with the support of the resting surface, locking it, and so also locking the resting surface which is integral therewith.

[0004] To unlock the resting surface, in so doing changing the configuration from horizontal to vertical, the user must act on an adapted disengagement lever, which is positioned at the locking device, in a position central to the resting surface and below it.

[0005] This solution, although widespread in the sector, is not devoid of drawbacks.

[0006] Access to the disengagement lever is not easy owing to its position, central to and below the resting surface, forcing the user to bend down in order to reach the lever and to exert thereupon the force required to release it.

[0007] Furthermore, the presence of the lever, which itself has a not inconsiderable size, influences the weight and the cost of the tilting mechanism.

[0008] Also, these solutions are more easily adoptable for tables with a round resting surface, than for tables with a rectangular resting surface, owing to the need to double the mechanisms for locking and release (which must be installed on opposite sides), the need to connect, on opposite sides, the actuation of the locking elements and of the release levers, and owing to the need to connect the legs of the table to opposite sides with a crosspiece, which, being typically thick and extending at the height of the legs of the user, can interfere with them, without complying with the size regulations now in force.

[0009] The aim of the present invention is to provide a device for tilting and locking the resting surface of a table, for which the operations to release the resting surface are easier than those needed with the solutions known nowadays.

[0010] Within this aim, an object of the invention is to provide a tilting device that is easily adaptable to any type of table, either with central support or with a plurality of supports and also with a rectangular resting surface, to comply with size regulations.

[0011] Another object of the invention is to provide a tilting device that is structurally simple and easy to use, which can be implemented at low cost and the overall weight of which is less than the solutions known nowadays.

[0012] This aim and these and other objects which will become better apparent hereinafter are achieved by a device for tilting and locking the resting surface of a table, of the type comprising at least one support for said resting surface, said device being characterized in that it comprises:

- a body that is integral with said at least one support and extends along a tilting axis below said resting surface and at least along much of the length of the latter, to which it is also hinged at its ends,
- locking means, which comprise at least one tooth which protrudes from at least one end of said body and is adapted to enter by snap action and reversibly a corresponding opening at the edge of said resting surface when the latter is in the configuration for use.

[0013] Further characteristics and advantages of the invention will become better apparent from the description of a preferred, but not exclusive, embodiment of the device according to the invention, which is illustrated by way of non-limiting example in the accompanying drawings wherein:

- Figure 1 is a front elevation view of a table with a tilted round resting surface and provided with a device according to the invention;
- Figure 2 shows an enlarged detail of Figure 1;
- Figure 3 shows an enlarged detail of the device according to the invention;
- Figure 4 is a perspective view from below of a portion of the device, the body integral with the support of the table;
- Figure 5 is a perspective view from below of another type of table, with a rectangular resting surface and two supports, for which the device according to the invention can be used;
- Figure 6 is an exploded perspective view of a part of the device according to the invention, seen from below, with respect to the installation position;
- Figure 7 is an exploded perspective view of a part of the device according to the invention, seen from above, with respect to the installation position;
- Figure 8 shows a part of the device according to the invention, seen from below when the resting surface is in the configuration for use;
- Figure 9 shows the same part of the device according to the invention as that shown in Figure 8, in a view from below and during the tilting of the resting surface;
- Figure 10 is a cross-sectional view of the part of the device according to the invention which is shown in Figures 8 and 9.

[0014] With reference to the figures, the device according to the invention is generally designated with the reference numeral 10.

[0015] The device designed for tilting and locking a resting surface 11 of a table 12, of the type comprising at least one support 13, i.e. a single lower support centered to the resting surface, as shown in the example of the table with a round resting surface 11, or two lower supports, as in the example shown in Figure 5 for the table 12 with a rectangular resting surface 11.

[0016] The device 10 comprises a body 14 that is integral with the support, as can clearly be seen in Figure 4, and which extends longitudinally along a tilting axis 15 below the resting surface 11 and at least along much of the length of the latter, preferably all of it as in the example to which it is also hinged at its ends (see Figure 5).

[0017] It also comprises locking means 16, which comprise at least one tooth 17 which protrudes from at least one end of the body 14 and is adapted to enter by snap action and reversibly a corresponding opening 18 at the edge 19 of the resting surface 11 when the latter is in the configuration for use, typically horizontal.

[0018] In particular, a plate-like element 20, clearly visible in the enlargement in Figure 3, is joined, preferably by welding, to the edge 19 of the resting surface 11, on the inside, and has the opening 18 within which the tooth 17 is adapted to engage. There are conveniently two of such plate-like elements 20, in longitudinally opposing positions, with which the body 14 is adapted to engage with its ends.

[0019] The resting surface 11 and the plate-like elements 20 are preferably made of metallic material and the latter are obtained by blanking and bending sheet metal.

[0020] The locking means 16 comprise at least one element 21 for engagement with the edge 19 of the resting surface 11, in particular with the plate-like element 20. The engagement element 21, indicated in Figures 6 to 9, has a square cross-section and has a free end at which there is the tooth 17 and it is adapted to translate with respect to the body 14, pushed by way of a spring 22, hereinafter referred to as the first spring 22, toward the outside of the body 14, so as to protrude therefrom with the tooth 17, as shown in Figure 8, and vice versa in opposition to the spring 22, as shown in Figure 9.

[0021] The engagement element 21 is coupled with its end that lies opposite to the tooth 17 integrally with a translatable element 23, hereinafter referred to as the first translatable element 23, within the body 14, which is tubular, along the direction of extension of the latter.

[0022] The first translatable element 23 has a cavity 24 so as to correspond to a window 25 provided on the body 14, which, at least in the direction of translation of the first translatable element 23, is longer than the cavity 24.

[0023] The device 10 can be provided with the engagement element 21, with the respective first translatable element 23, at only one of the ends of the body 14, or, as in the example shown, it can comprise a pair of opposite engagement elements 21, at the opposite ends of the body 14, which are coupled so as to translate in opposite directions and simultaneously, being connected by way of adapted transmission means 26.

[0024] Each one of them is integral with a respective first translatable element 23 and is pushed by a respective spring 22 so as to protrude with the tooth 17 from the respective end of the body 14.

[0025] The transmission means 26 comprise a linkage 27, at a first translatable element 23, which is pivoted in a central portion thereof on a rotation axis 28 which is perpendicular to the direction of the tilting axis 15 and is coupled by the ends at, respectively, the first translatable element 23 and a first end of a rod 29 which is integral with the opposing first translatable element 23, which carries the other engagement element 21, to which it is coupled with an opposite second end.

[0026] The device 10 also comprises means 30 for the snap coupling of the body 14 to the resting surface 11, which comprise a pair of cylindrical elements 31, which are aligned along the tilting axis 15, each one at an end of the body 14, from which they protrude, being pushed by way of a spring 32, hereinafter referred to as the second spring 32, in order to be inserted by snap action in a corresponding circular hole 33 at the edge 19 of the resting surface 11. The cylindrical elements 31 therefore constitute the hinges with which the body 14 is coupled to the resting surface 11.

[0027] Each plate-like element 20 is conveniently provided with such a circular hole 33, for receiving each one of the cylindrical elements 31.

[0028] Each cylindrical element 31 is integral with an element 34 which can translate within the body 14, along the direction of extension of the latter, and which is provided with a recess 35 at a slot 36 provided on the body 14 and along which the recess 35 is adapted to be translated with the translatable element 34. Hereinafter the latter will be referred to as the second translatable element 34.

[0029] In particular, as can be seen from the exploded views, there are two caps 37 which close each of the ends of the body 14.

[0030] From the view in Figure 7 and from the cross-section in Figure 10 it can be seen that each one of the caps 37 has two openings from which the engagement element 21 can protrude and it has two receptacles 38 at each one of which a respective appendage 39, i.e. respectively of the first translatable element 23 and of the second translatable element 34, is accommodated. The appendages 39 are hollow in order to accommodate the respective springs, the first 22 and the second 32, which being helical are mounted on a respective peg 40 of the appendage 39 and are contained between the inner wall of the latter and a containment wall 41 of the receptacle 38, as can be seen from Figure 10 (in which the device 10 is shown in cross-section taken along the tilting axis 15).

[0031] In order to integrally associate the engagement elements 21 and the cylindrical elements 31 with the respective appendages 39, each one of the latter has, at

the end, a channel for inserting the end of the respective engagement element 21 or of the respective cylindrical element 31, the latter conveniently having a groove.

[0032] Each cap 37 has a limb 42 extending toward the interior of the body 14, which is interposed between a wall of the body 14 and the first translatable element 23 and is conveniently provided with a through opening 43 with dimensions corresponding to those of the window 25, which it overlaps.

[0033] For one cap 37, the one at the end portion of the body 14 in which the linkage 27 is present, there is a pin 44 on which the linkage 27 is hinged.

[0034] At the same portion, the first translatable element 23 is contoured to receive one end of the linkage 27.

[0035] The body 14 is provided with holes 45 for the fixing of each of the caps 37, which are conveniently perforated, by way of screws 46.

[0036] Each of the caps 37 has, on one of its sides, a recess 47 in which a filler 48 made of elastically deformable plastic material, similar to rubber, is placed, which protrudes from the end of the body 14 in order to abut against a respective portion 49 of the plate-like element 20 (indicated in Figure 3) when the resting surface 11 is brought to the configuration for use, the portion 49 being positioned below the resting surface 11.

[0037] Use of the device according to the invention is the following.

[0038] The resting surface 11 can be mounted on the support 13. It is positioned on the body 14 with the plate-like elements 20 at the ends of the body 14. The tip of a screwdriver, or other similar means, is inserted into one of the recesses 35 in order to shift the second translatable element 34 toward the center of the body 14, thus making the cylindrical element 31 retract into the body 14. The end of the body 14 is faced toward the plate-like element 20 with the cylindrical element 31 at the circular hole 33.

[0039] The recess 35 is then released and the cylindrical element 31, pushed by the second spring 32 toward the outside of the body 14, engages by snap action within the circular hole 33.

[0040] The same operation is repeated for the opposite end of the body 14.

[0041] At the end of the mounting, the resting surface 11 will be tiltable about the tilting axis 15, which passes through both of the cylindrical elements 31.

[0042] The locking of the resting surface 11 in the configuration for use occurs by inserting the teeth 17 of the engagement elements 21 into the respective openings 18 of the plate-like elements 20. This occurs by snap action, by way of the thrust of the springs 22, when the resting surface 11 is made to rotate into the configuration for use.

[0043] To return to the tilted configuration, the user acts directly with his/her hands on one of the cavities 24 to make the first translatable element 23 slide within the body 14, as shown in Figure 9.

[0044] In this step the opposing first translatable element 23 is entrained so as to translate in the opposite direction from the previous one by way of the transmission means 26. The linkage 27 rotates about the pin 44, causing the translation of the rod 29, which entrains the opposing first translatable element 23. The two engagement elements 21 are then made to retreat into the body 14, in opposition to the thrust of the respective first springs 22, thus releasing them from the engagement with the respective plate-like elements 20.

[0045] In practice it has been found that the invention fully achieves the intended aim and objects, by providing a device thanks to which the user can release the resting surface of the table in order to bring it from a configuration for use to the tilted position more easily and rapidly than the solutions nowadays known, independently of the characteristics of the support of the resting surface and in compliance with the size regulations in force.

[0046] In fact, the means to use in order to release the resting surface are positioned at its perimeter and therefore are easily accessible, independently of the dimensions and shape of the table.

[0047] Furthermore the device according to the invention is structurally simple and easy to use, and is also lighter and more economic than the solutions known nowadays which require the installation of a release lever.

[0048] Another advantage of the device according to the invention is that it enables the user to easily mount and dismount the resting surface with respect to the supporting structure, of which the tilting mechanism is substantially an integral part, and therefore to not only stack more tables in smaller spaces but also to store the resting surfaces and the supports separately. This possibility can also be convenient for transport.

[0049] The invention, thus conceived, is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims. Moreover, all the details may be substituted by other, technically equivalent elements.

[0050] In practice the materials employed, provided they are compatible with the specific use, and the contingent dimensions and shapes, may be any according to requirements and to the state of the art.

[0051] The disclosures in Italian Patent Application No. PD2015A000080 (102015902344152) from which this application claims priority are incorporated herein by reference.

[0052] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A device (10) for tilting and locking the resting surface (11) of a table (12), of the type comprising at least

one support (13) for said resting surface (11), said device (10) being **characterized in that** it comprises:

- a body (14) that is integral with said at least one support (13) and extends along a tilting axis (15) below said resting surface (11) and at least along much of the length of the latter, to which it is also hinged at its ends,
- locking means (16), which comprise at least one tooth (17) which protrudes from at least one end of said body (14) and is adapted to enter by snap action and reversibly a corresponding opening (18) at the edge (19) of said resting surface (11) when the latter is in the configuration for use.

2. The device according to claim 1, **characterized in that** said locking means (16) comprise at least one element (21) for engagement with said edge (19), which has a free end at which there is said tooth (17) and which is adapted to translate with respect to said body (14), pushed by way of a spring (22) toward the outside of said body (14), so as to protrude therefrom with said tooth (17) and vice versa in opposition to said spring (22).

3. The device according to claim 2, **characterized in that** said engagement element (21) is coupled, with its end that lies opposite said tooth (17), integrally with an element (23) that can translate within said body (14), along the direction of extension of the latter, said translatable element (23) having a cavity (24) so as to correspond to a window (25) provided on said body (14), said window (25), at least in the direction of translation of the translatable element (23), being longer than said cavity (24).

4. The device according to claim 2, **characterized in that** it comprises at least one pair of opposite engagement elements (21) at the opposite ends of said body (14) which are coupled so as to translate in opposite directions and simultaneously, being connected by way of transmission means (26).

5. The device according to claims 3 and 4, **characterized in that** said transmission means (26) comprise a linkage (27), at said translatable element (23), which is pivoted in a central portion thereof on a rotation axis (28) which is perpendicular to the direction of said tilting axis (15) and is coupled by the ends at, respectively, said translatable element (23) and a first end of a rod (29) which is integral with an opposing translatable element (23), which carries a said engagement element (21), to which it is coupled with an opposite second end.

6. The device according to claim 1, **characterized in that** it comprises means (30) for the snap coupling of said body (14) to said resting surface (11), which comprise a pair of cylindrical elements (31), which are aligned along said tilting axis (15), each one at an end of said body (14), from which they protrude, being pushed by way of a spring (32) in order to be inserted by snap action in a corresponding circular hole (33) at said edge (19) of said resting surface (11).

7. The device according to claim 6, **characterized in that** each said cylindrical element (31) is integral with an element (34) which can translate within said body (14), along the direction of extension of the latter, and which is provided with a recess (35) at a slot (36) provided on said body (14) and along which said recess (35) is adapted to be translated with said translatable element (34).

8. The device according to claim 1, **characterized in that** it comprises at least one plate-like element (20) which is joined to said edge (19) of said resting surface (11), on the inside, and has said at least one opening (18).

9. The device according to claims 6 and 8, **characterized in that** said plate-like element (20) is provided with said circular hole (33).

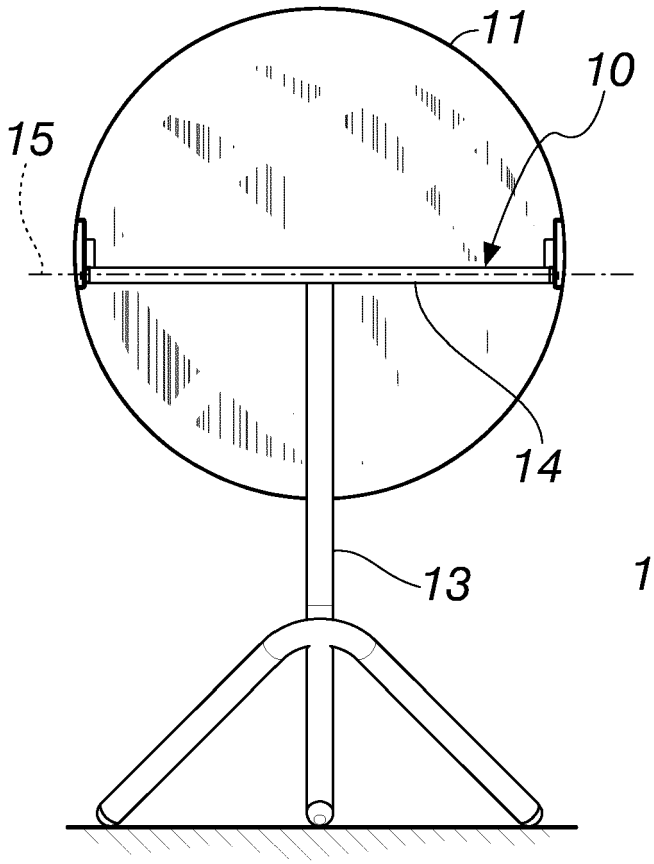

Fig. 1

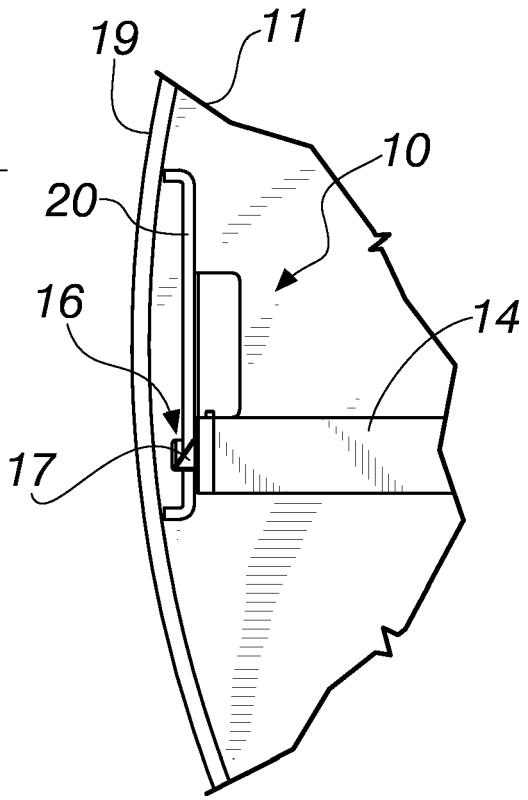

Fig. 2

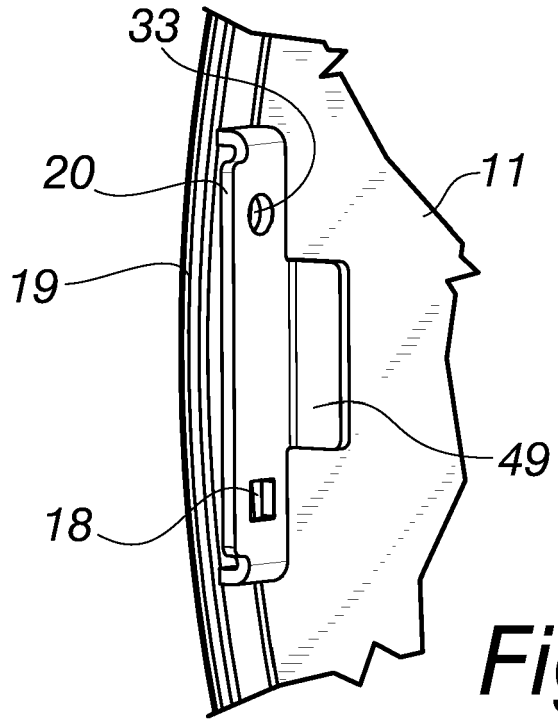

Fig. 3

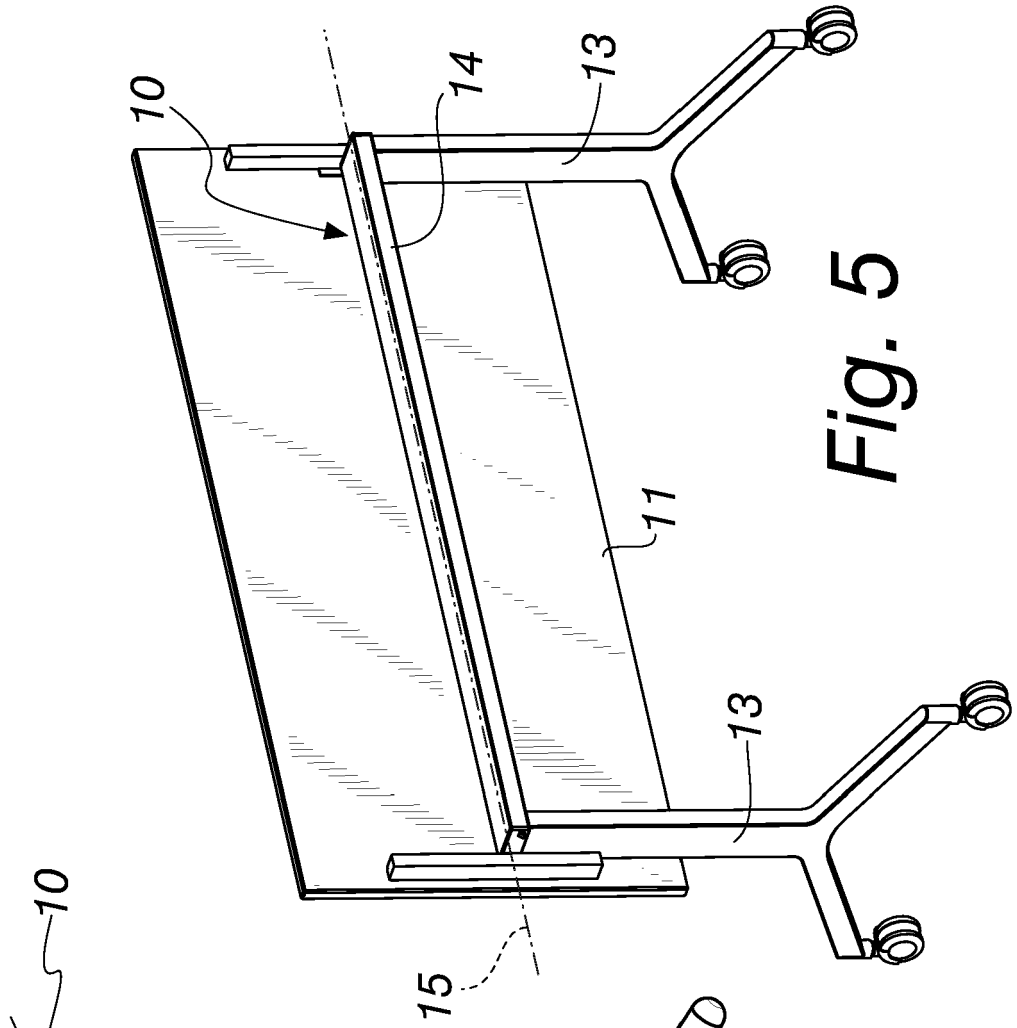

Fig. 5

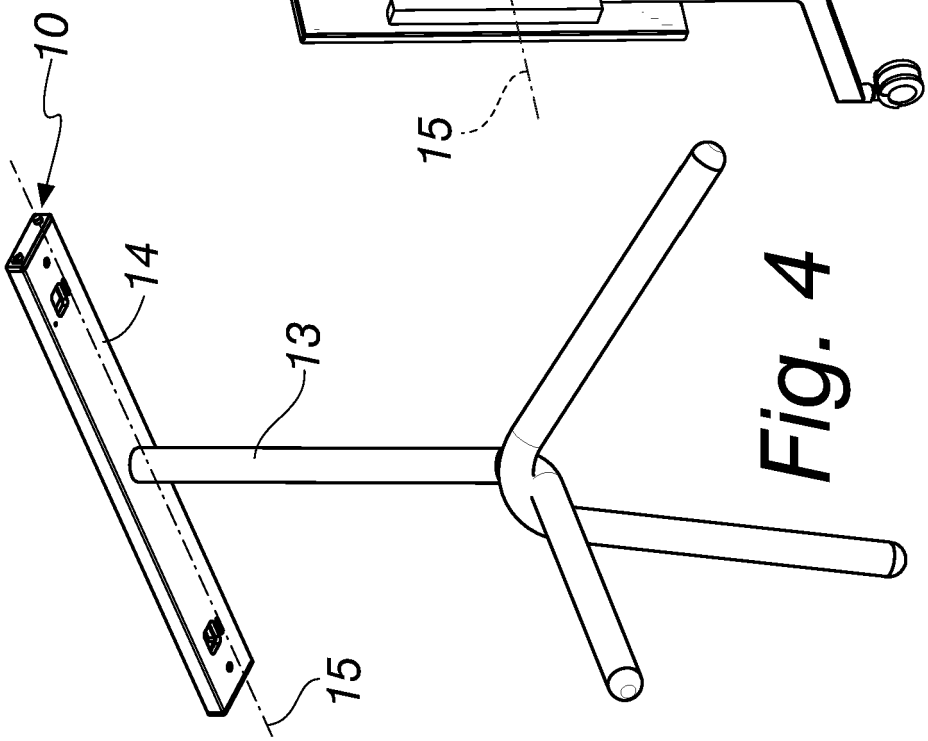

Fig. 4

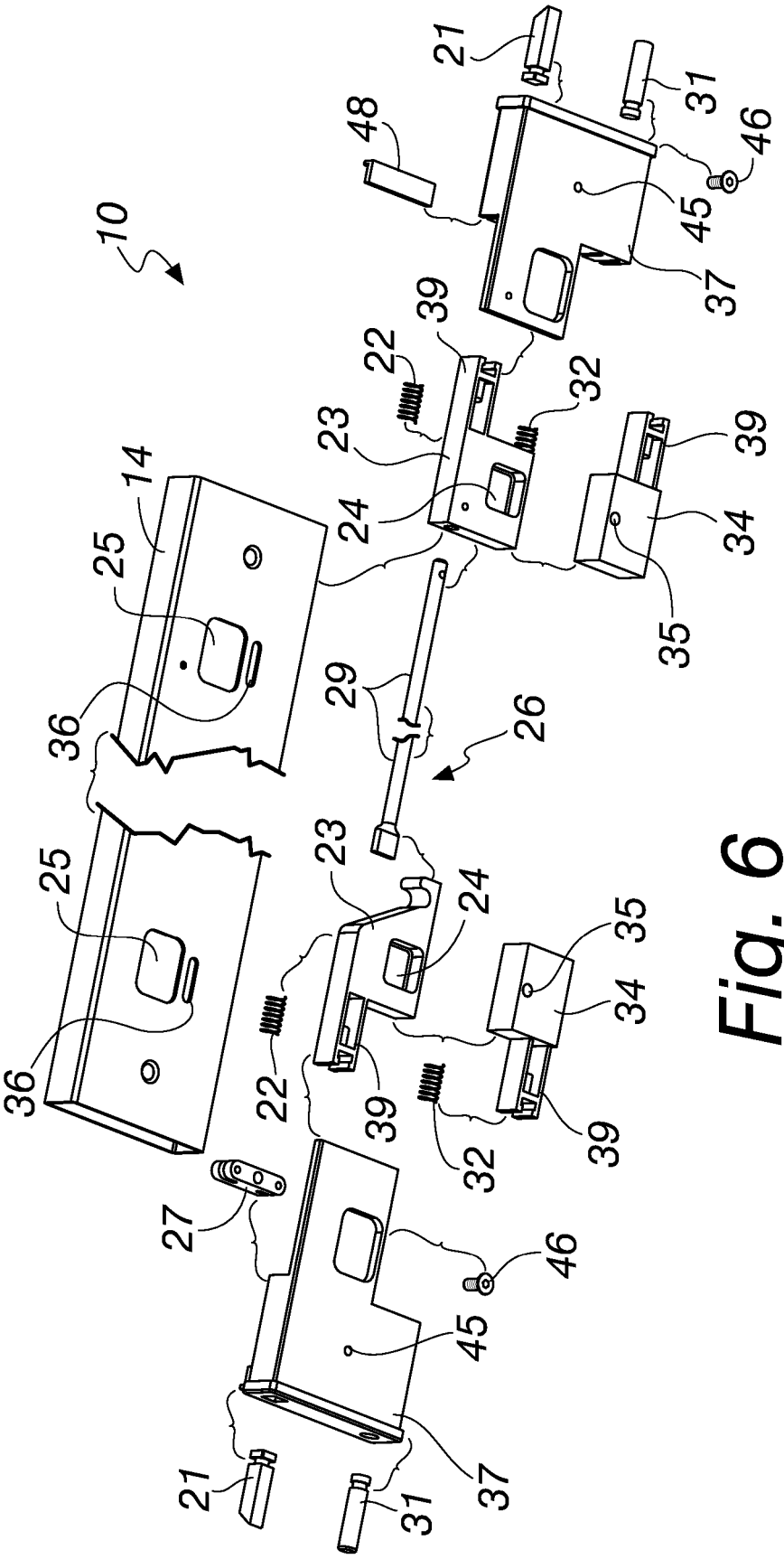

Fig. 6

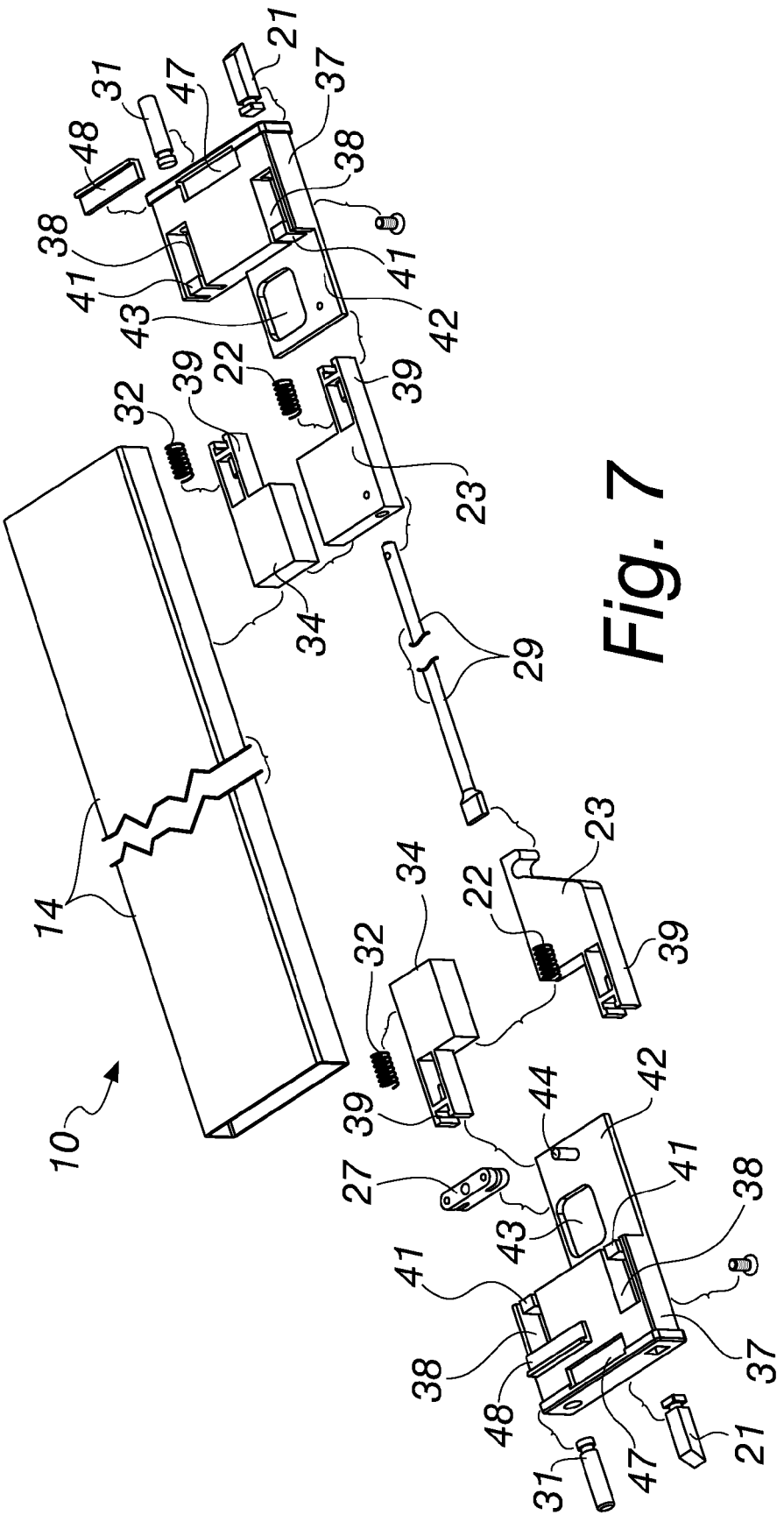

Fig. 7

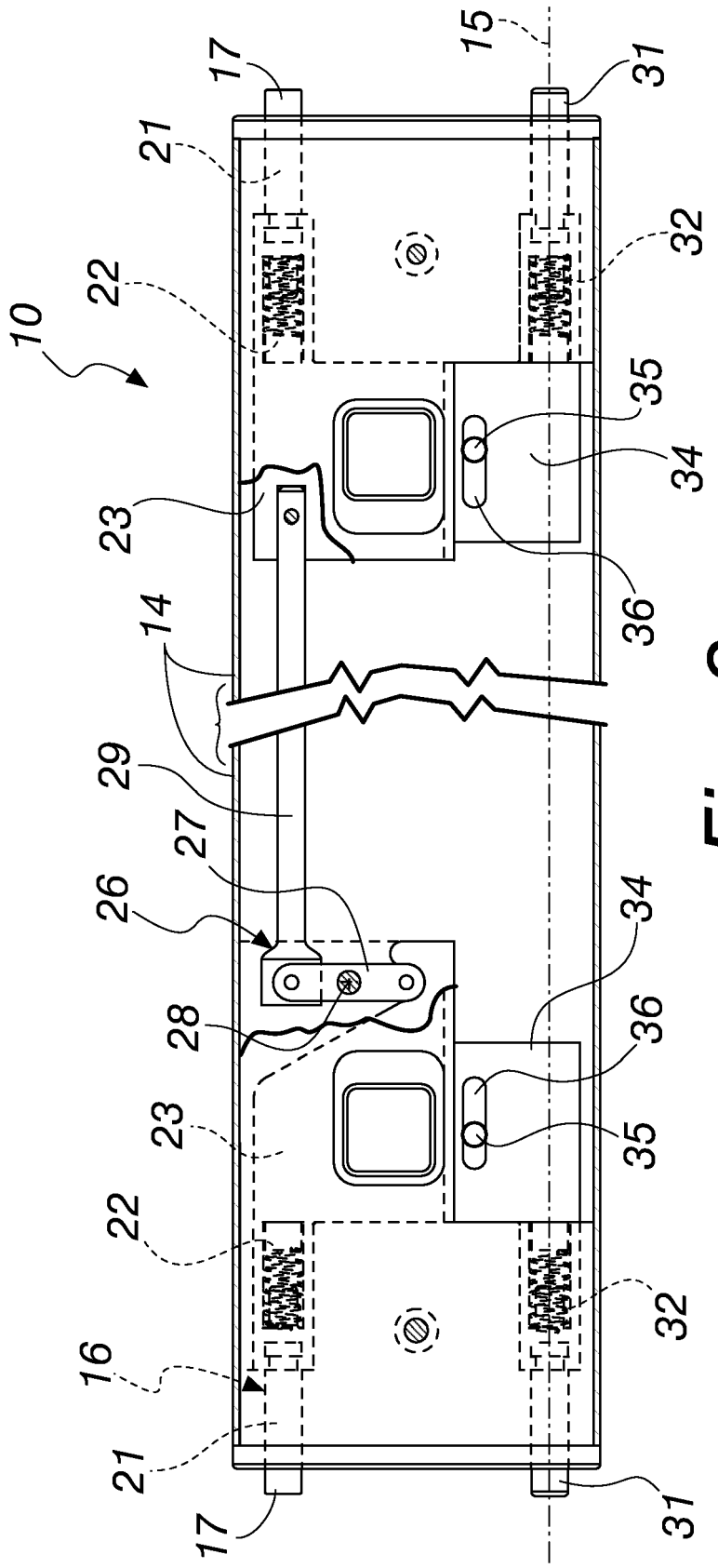

Fig. 8

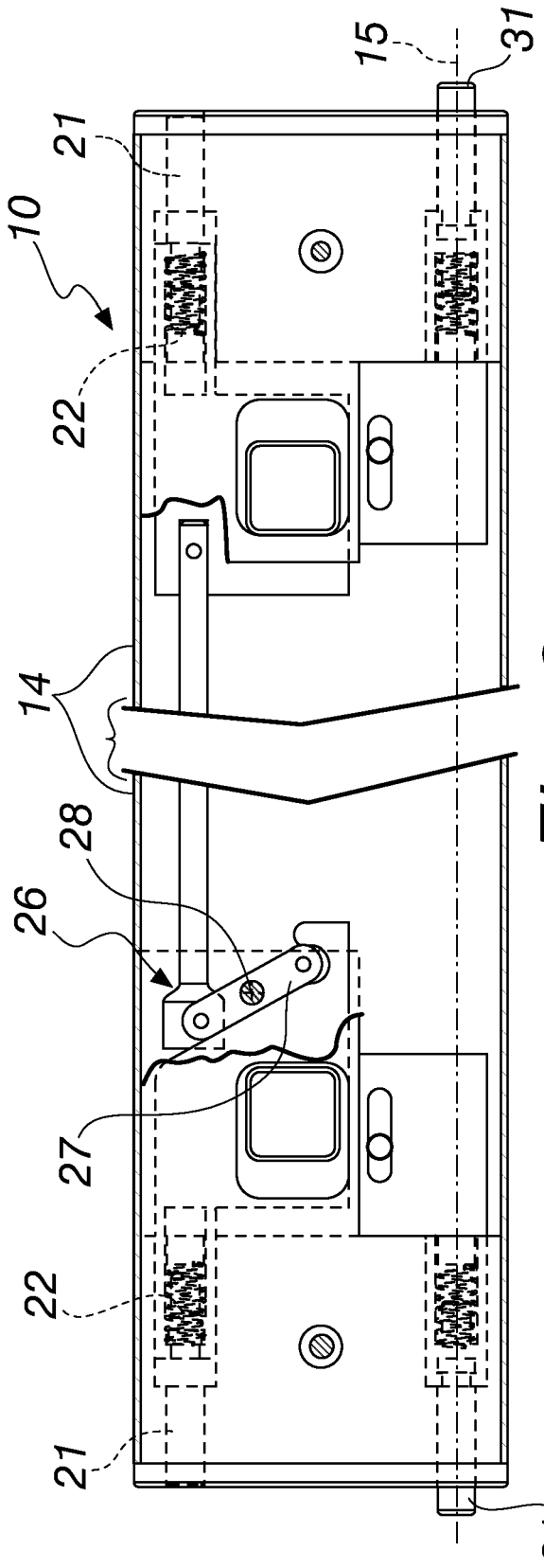

Fig. 9

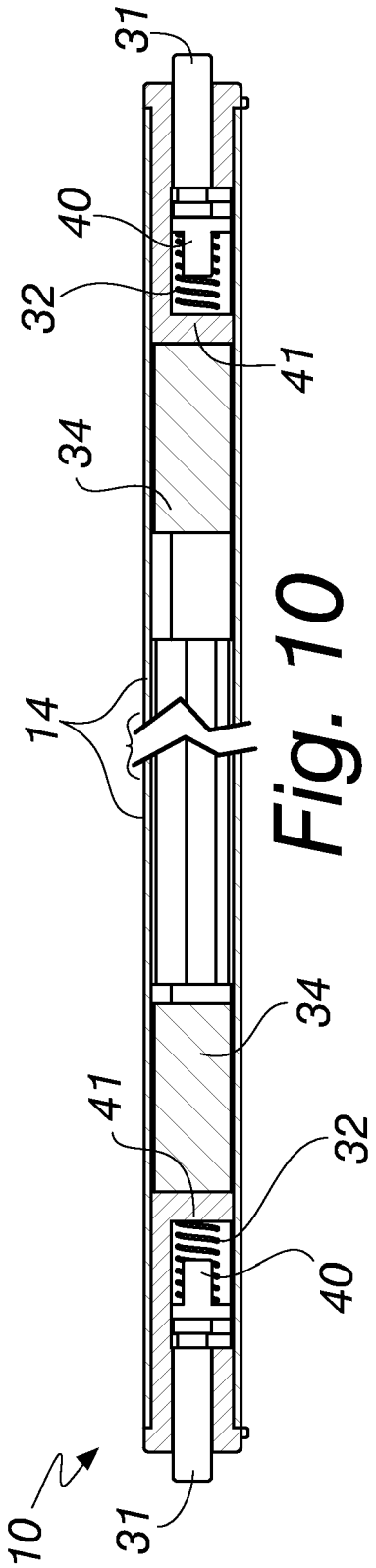

Fig. 10

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EUROPEAN SEARCH REPORT

Application Number
EP 16 16 4708

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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TECHNICAL FIELDS SEARCHED (IPC)

A47B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	1 August 2016	Martinez Valero, J

CATEGORY OF CITED DOCUMENTS

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REFERENCES CITED IN THE DESCRIPTION

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