

(19)



(11)

EP 1 983 256 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:

22.10.2008 Bulletin 2008/43

(51) Int Cl.:

F21V 21/26^(2006.01)

(21) Application number: **07425226.3**

(22) Date of filing: **18.04.2007**

(84) Designated Contracting States:

**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE
SI SK TR**

Designated Extension States:

AL BA HR MK RS

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(54) **A piece of furniture with an electrical track**

(57) A furnishing component comprises at least one

track (18,19,28,29) of conductive material for the flow of electric current provided on its surface.

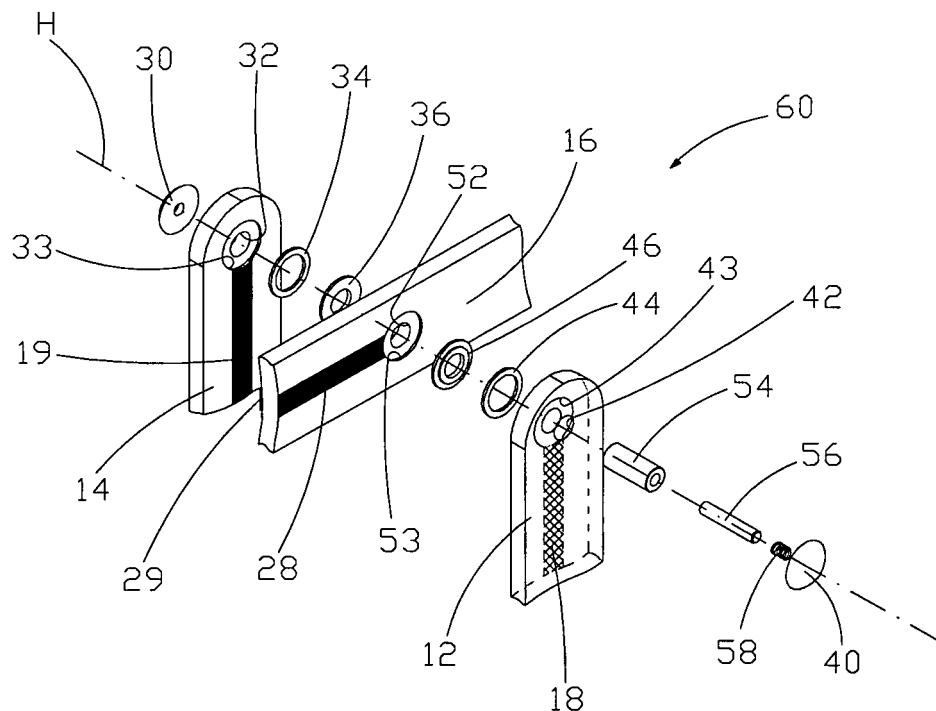


Fig. 2

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Description

[0001] The present invention relates to a furnishing component, such as a piece of furniture, or an electric lamp considered here by way of example.

[0002] In order to power one or more light sources, electric lamps comprise electric cables with an insulating lining which may peel off or even be cut accidentally. In order to prevent easy access to the electric cables, the latter are usually positioned inside protective/containing structures such as hollow bars or small tubes, this, however, making manufacture of the lamps more complex and costly.

[0003] Since these protective structures often have rough cutting edges, in particular in low-cost lamps, the electric cables may be damaged or even cut during movement of the lamp. This problem may be avoided, however, only by means of costly chamfering operations.

[0004] The main object of the invention is to provide a furnishing component which solves the problems described in a simple manner.

[0005] These and other objects are achieved by a furnishing component comprising at least one track of electrically conductive material for conveying electric current provided on its surface. For example, one or more tracks of conductive material may consist of a layer of conductive paint or a strip of copper or other electrically conductive material.

[0006] The object of the invention is also achieved by a method for connecting to a power supply source an electric apparatus which is associated with a furnishing component, characterized in that at least one track of electrically conductive material is provided on the surface of the component.

[0007] Advantageously it is possible to have a single track of conductive material in the case where the furnishing component is entirely or partly made of conductive material, using this conductive part as the power conductor combined with the track (suitable insulation being ensured for the user).

[0008] The furnishing component may be a lamp with a bar provided on its surfaces with a track which, together with the structure of the lamp made of conductive material, allows the flow of electric current.

[0009] The furnishing component may also comprise one or more mechanical articulated joint members which are joined to one or more tracks so as to form an electrical bridge between them. The mechanical articulated joint therefore allows both the flow of electric current and articulation of the furnishing component.

[0010] The mechanical articulated joint member may comprise, for each pair of tracks which it connects in series, two conductive parts which are movably joined together and make frictional contact with each other, each conductive part being connected to a respective track.

[0011] It is possible, for example, to use as an articulated joint a hinge-type fastening system (for example hinges) which are widely available commercially, arrang-

ing the parts movable relative to each other in electrical contact with the tracks provided on the furnishing component. These parts will act as an electrical bridge (jump-er) between the tracks.

[0012] The aspects and advantages of the present invention will emerge more clearly from the following description, provided purely by way of example, with reference to the accompanying drawing in which:

- 10 - Figure 1 is an axonometric view of a lamp according to the invention;
- Figure 2 is an exploded view of a detail of the lamp according to Figure 1, enclosed inside the circle C shown in broken lines;
- 15 - Figure 3 is an exploded axonometric view of a detail of the lamp according to a variant of the invention;
- Figure 4 is a side view of the detail shown in Figure 3.

[0013] A lamp 10 according to the invention comprises two separate and parallel vertical bars 12, 14 which are hinged on a pivoting bar 16 by means of a mechanical articulated joint member 60, referred to below more simply as swivel joint. The bottom ends of the vertical bars 12, 14 are fixed to a base 24, while the top ends have

two coaxial holes 32, 42.

[0014] The pivoting bar 16 has, in a middle longitudinal position, a hole 52 and at the two ends, respectively, a counter-weight 22 and a light source 20 (in Figure 1 shown generically as a cylinder), such as a light bulb or

a neon lamp.

[0015] Powering of the light source 20 is performed by means of two conductors, each formed by a first and a second track of conductive material which are placed in series electrical connection with each other by the swivel joint 60. In particular, a conductor comprises a first track 18 and a second track 28, while the other conductor comprises a first track 19 and a second track 29. The conductive material is a conductive paint.

[0016] The first tracks 18, 19 are respectively arranged, facing each other, on the surfaces of the opposite sides of the vertical bars 12, 14, as can be seen in Figure 2. The tracks 18, 19 extend from the bottom ends of the bars 12, 14, where they are electrically connected to a power supply source, to the coaxial holes 32, 42 where they are electrically connected to the swivel joint 60.

[0017] The second tracks 28, 29 are respectively arranged on opposite side faces of the pivoting bar 16 and extend from the hole 52 to the end of the pivoting bar 16, where they make contact with the terminals of the light source 20.

[0018] The swivel joint 60 comprises two first bushes 36, 46 which are made of conductive material and each of which is inserted inside a respective annular seat 53 of the bar 28 (in Figure 2 only one seat 53 of a side face is visible). The seat 53 is coaxial with the hole 52. The bush 36 is rigidly coupled with the pivoting bar 16 and welded or in simple electrical contact with the track 29. Similarly, the bush 46 is welded or in electrical contact

with the track 28.

[0019] The swivel joint 60 comprises moreover two second bushes 34, 44 which are inserted respectively inside an annular seat 33 of the vertical bar 14 and inside an annular seat 43 of the vertical bar 12. The bush 34 is rigidly coupled with the vertical bar 12 and welded or in simple electrical contact with the track 19. Similarly the bush 44 is coupled with the vertical bar 14 provided with the track 19.

[0020] The first bushes 36, 46 make frictional contact with the respective second bushes 34, 44 so as to make frictional contact, rotating on top of each other, and also allow the flow of electric current. At the same time, the pivoting bar 16 may rotate about an axis H coinciding with the axis of the holes 32, 42, 52.

[0021] The swivel joint 60 also comprises a pin 54 made of insulating material (for example plastic) with a hole inside which a bar 56 threaded at the ends is arranged. Caps 30, 40 are screwed into the ends of the threaded bar 56 and keep the two lateral bars 12, 14 pressed against the first and second bushes 34, 36, 44, 46 and therefore the pivoting bar 16. By way of a variant, the pin 54 and the bar 56 may be formed as a single body. By screwing the caps 30 and 40 onto the threaded ends of fasteners on the bar 56, the closing force of the swivel joint 60 is modified so as to allow rotation of the bar 16 with a greater or lesser degree of resistance. A spring 58 bearing against the cap 40 and the pin 54 ensures correct relative positioning, without play, of the pin 54 and the bar 56.

[0022] Consequently the electric power supply current is able to flow from one of the tracks 18, 19 to the corresponding track 28, 29 and at the same time the bars 12, 14, and 28 are hinged and are able to rotate relative to each other. In other words the electric current passes through (in the following order or in the opposite order) the first track 19, the second bush 34, the first bush 36, the second bush 34 and the second track 29. The same is also applicable to the second conductor.

[0023] Coupling of the bushes or any other parts for connecting the bars or for electrical connection may also be performed by male and female means.

[0024] According to a variant of the invention, a lamp, which is otherwise similar to the lamp 10, may comprise a different swivel joint - indicated by 160 in Figures 3 and 4 - which again establishes series electrical connection between tracks of conductive material in order to form a continuous conductor. The reference numbers for this variant have a prefix "1" for parts which are functionally and/or structurally identical to those of the previous variant.

[0025] In particular, there is a conductor comprising a first track 118 and a second track 128 (visible solely in Figure 4), while the other conductor comprises a first track 119 and a second track 129.

[0026] As can be seen in Figure 3, the first tracks 118, 119 are arranged, respectively, on the surfaces of the coplanar sides 113, 115 of vertical bars 112, 114 which

are separate from each other and are in the form of a parallelepiped with a rounded end, said bars, together with a pivoting bar 116, in the form of a parallelepiped, forming the structure of the lamp.

[0027] The second tracks 128, 129 are arranged on the two opposite smaller-width sides 131, 141 (in Figure 3 only one side 131 is visible and indicated) of the pivoting bar 116 and extend from the end of the bar 116 corresponding to the light source as far as the point closest to a through-hole 116a in the said bar 116.

[0028] The swivel joint 160, which has a substantially symmetrical structure, comprises two innermost disks 136, 146 and two outer disks 134, 144. The disks 134, 136, 144, 146, which are all made of conductive material and have a radius S which is equal to the radius of curvature R of the ends of the bars 112, 114, are centrally holed and coaxial with holes 142 in the end of the vertical bars 112, 114 and the through-hole 116a in the pivoting bar 116.

[0029] A pin 156 made of insulating material (for example plastic) passes through the three bars 112, 114, 116 and the four disks 134, 136, 144, 146.

[0030] The outer disks 134, 144 each have a side bearing against one of the opposite sides of the vertical bars 112, 114. Each disk 134, 144 comprises, respectively, two perpendicularly projecting and diametrically opposite tongues 135, 145 (only one of which is visible) which embrace the respective bar 112, 114, the disk of which makes contact.

[0031] The tongues 135 establish electrical contact between the first track 119 and the disk 134, and the tongues 145 establish electrical contact between the first track 118 and the disk 144. The tongues 135, 145 also prevent rotation of the disk 134, 144.

[0032] The inner disks 136, 146 make contact, respectively, with the disks 134 and 144 and bear against the bar 116 both with their surface and with a tongue 137, 147 which is formed in the manner of the tongues 135, 145.

[0033] The tongues 137, 147 make electrical contact with the tracks 129, 128, respectively, and rotationally entrain the disks 136, 146 when the bar 116 is displaced.

[0034] In this lamp the path followed by the electric power supply current is as follows: the first track 119, the tongue 135, the outer disk 134, the inner disk 136, the tongue 137, the track 129, the light source, the track 128, the tongue 147, the inner disk 146, the outer disk 144, the tongue 145 and the track 118.

[0035] Locking in position of the pivoting bar 116 with respect to the two vertical bars 112, 114 is achieved by rotating two knobs 130, 140 which are screwed onto the two ends of a threaded bar 156 passing inside the hole in the pin 154. Suitable means, such as springs 158, 168, rubber spacers and washers, allow the bar locking operations to be performed by means of the knobs 130, 140.

[0036] According to a further variant, the disks 134, 136 and the disks 144, 146 may be rigidly fastened together or formed as a single body. By removing one of

the tongues 145, the assembly may then be rotated together with the bar 166 and the tongue 145 may rotate along the end edge of the bars 112, 114. By sliding a tongue 145 it is possible to make or break contact with the adjacent track 118, 119, thus acting as a sliding switch. In this way it is possible to open or close the electric circuit and thus switch on or off the light source of the lamp, simply by displacing the pivoting bar 116.

[0037] According to a further variant of the invention, the lamp may comprise, in addition to a pivoting bar, a single vertical bar instead of two bars. The tracks may be located on the facing or opposite side surfaces of the two bars. In this second case, the swivel joint may incorporate two bridge-pieces which connect each track of the vertical bar to the respective track of the oscillating bar.

[0038] One or more tracks and/or one or more swivel joints may also be mounted on furnishing components other than a lamp, in order to transmit electric current between parts movable relative to each other. A variant may be a piece of furniture, for example a cupboard, in which the hinges of the leaves are configured for example in the manner of the swivel joint 60 or are simple metal bodies (of the known type, commercially available) which allow the flow of electric current from one leaf to the main structure, both provided with tracks made of conductive material and terminating on, and bridged by, the swivel joint.

Claims

1. Furnishing component (10), **characterized in that**, for transmission of electric current, it comprises at least one track (18, 19, 28, 29) of electrically conductive material provided on its surface.
2. Furnishing component (10) according to Claim 1, comprising a mechanical articulated joint member (60) connected to at least one track (18, 19, 28, 29) and mounted as an electrical jumper.
3. Furnishing component (10) according to Claim 2, in which the mechanical articulated joint member (60) comprises two conductive parts (34, 36, 44, 46) which are coupled together movably and in electrical contact with each other, each conductive part being electrically connected to a track.
4. Furnishing component (10) according to Claim 3, in which the two conductive parts (34, 36, 44, 46) are mounted in frictional contact with each other.
5. Furnishing component (10) according to Claim 4, in which the conductive parts comprise adjacent bushes (34, 44) making electrical contact with a respective track (18, 19).
6. Furnishing component (10) according to Claim 4, in which the conductive parts comprise one or more disks (136, 134, 144, 146) having one or more tongues (135, 145) situated diametrically opposite each other and perpendicularly projecting.
7. Furnishing component (10) according to Claim 6, in which one or more tongues (135, 145) are arranged in electrical contact with a respective track.
8. Furnishing component (10) according to Claim 6 or 7, in which the one or more tongues (135, 145) are mounted so as to make or break electric contact with a respective track according to the angular position of said one or more disks.
9. Furnishing component (10) according to one of Claims 2 to 8, **characterized in that** it is a lamp provided with at least one track (18, 19, 28, 29) for powering the light source thereof.
10. Furnishing component (10) according to Claim 9, in which the lamp comprises at least two arms (12, 14, 16) which are hinged by means of the mechanical articulated joint member.
11. Furnishing component (10) according to Claim 10, in which an arm (12, 14) comprises at least one track (18, 19) which is placed electrically in series by the mechanical articulated joint member (60) with a respective track (28, 29) of another arm (16).
12. Furnishing component (10) according to Claim 12, in which an arm comprises two base bars (12, 14), each with a track (18, 19), the other arm being a pivoting bar (16) with two tracks (28, 29) connected to the two base bars (12, 14) by means of the mechanical articulated joint member (60); and each track (28, 29) of the pivoting bar (16) being placed by the mechanical articulated joint member (60) in series electrical connection with a track (18, 19) of a base bar (12, 14).
13. Furnishing component (10) according to any one of the preceding claims, in which the conductive material is a conductive paint.
14. Method for connecting an electrical apparatus associated with a furnishing component to a power supply source, **characterized by** providing at least one track of conductive material on the surface of the furnishing component.
15. Method according to Claim 14, **characterized by** using a mechanical articulated joint member as an electrical bridge between tracks.

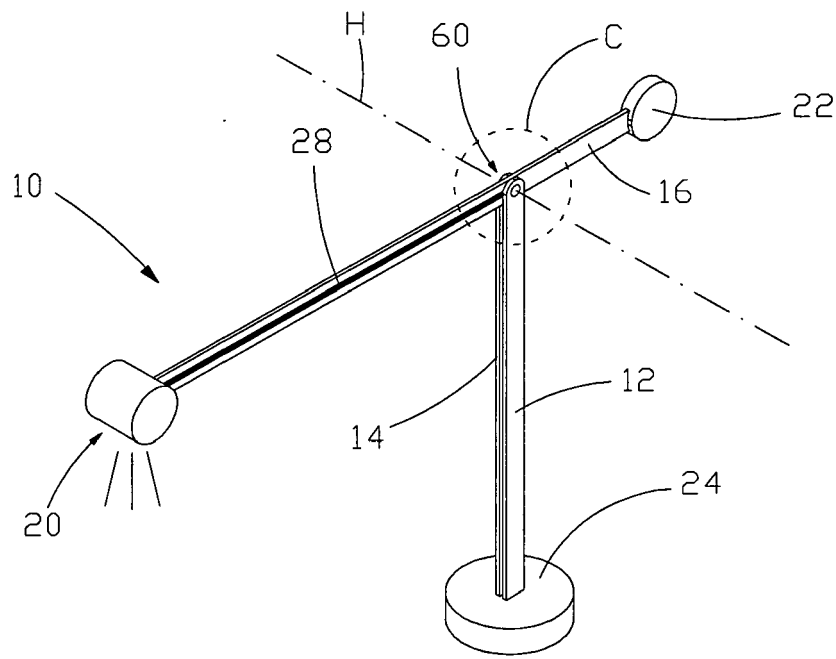


Fig. 1

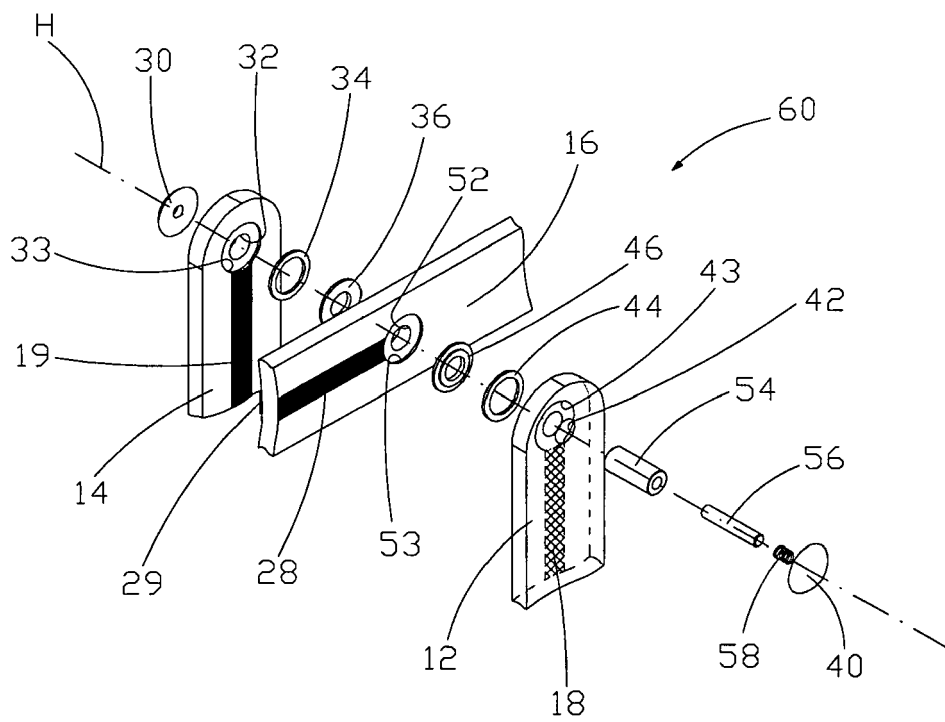
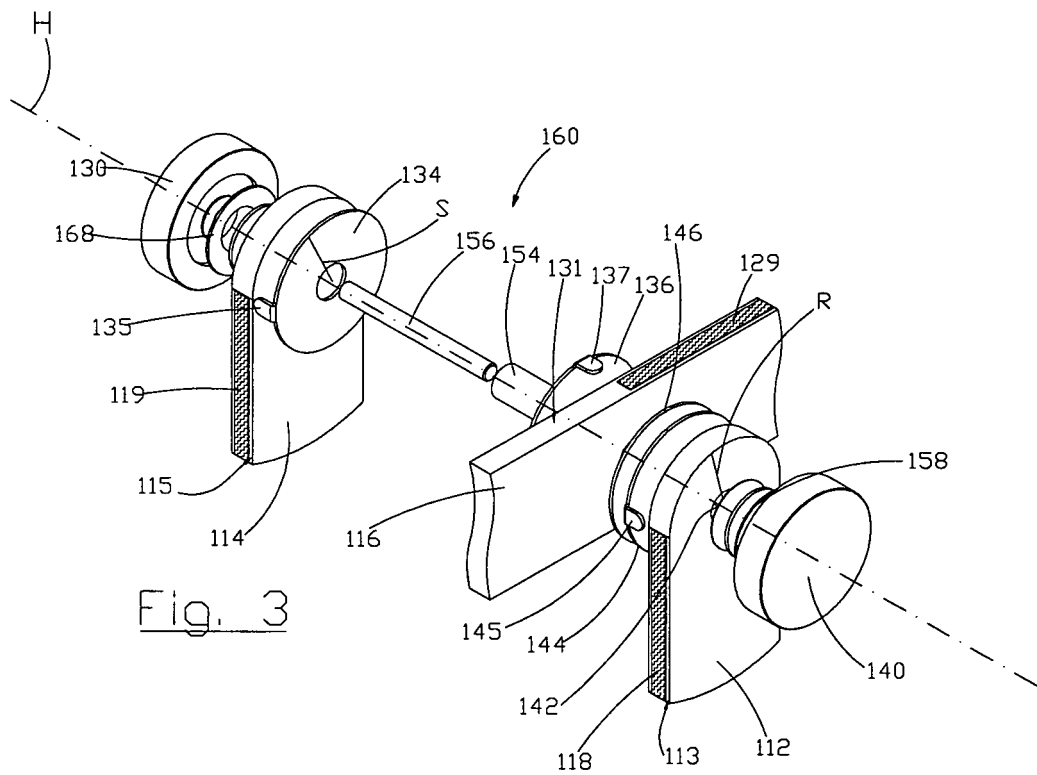
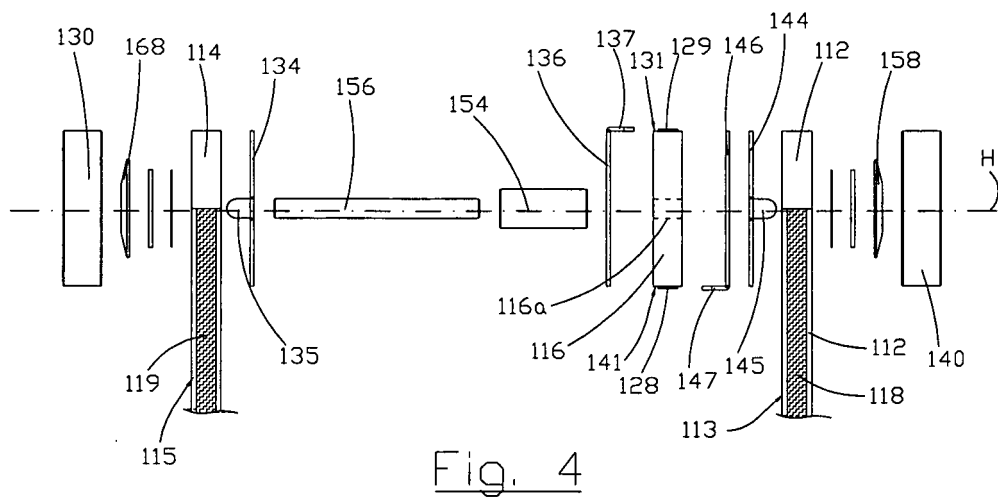


Fig. 2





European Patent
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Application Number
EP 07 42 5226

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Place of search Munich		Date of completion of the search 16 July 2007	Examiner Arboreanu, Antoniu
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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