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(54) Coil former comprising right-angled terminal pins.

(57) The coil former (1) comprises two flanges (3) which are interconnected via a tubular central portion (5). At least one of the flanges (3) is provided with a number of recesses (7) in the form of right-angled slots comprising a first section (14) and a second section (16). The recesses (7) accommodate terminal pins (9) which are made of an electrically conductive wire and which comprise a first portion (13) and a second portion (15), which portions extend perpendicularly to one another. The second portion (15) comprises a locally widened portion (21). The width of at least a part of the second section (16) of the slot (7) corresponds to the transverse dimension of the terminal pins (9). The widened portion (21) is formed in a direction substantially perpendicularly to a plane through the first portion (13) and the second portion (15) of the terminal pin (9). In a wall of the second section (16) of the recess (7) there is recessed a chamber (19) whose dimensions are such that the widened portion (21) fits therein. The terminal pin (9) is locked in the coil former (1) by cooperation between the widened portion (21) and the chamber (19).

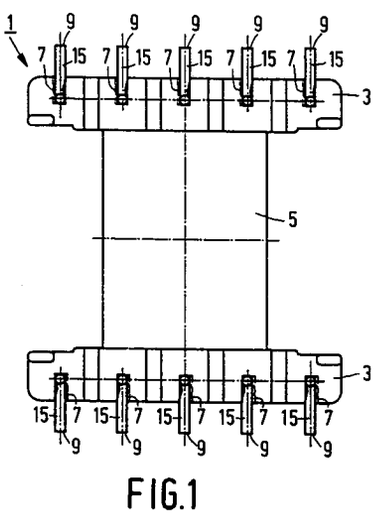

FIG.1

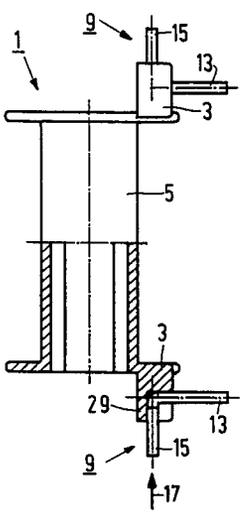

FIG.3

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The invention relates to a coil former, comprising two flanges which are interconnected by way of a tubular central portion, at least one of said flanges being provided with a number of recesses, a terminal pin made of an electrically conductive wire being inserted into at last one of said recesses, which terminal pin comprises a first portion and a second portion comprising a locally widened portion, which first and second portions extend perpendicularly to one another, each of said recesses being shaped as a right-angled slot comprising a first section accommodating the first portion of the terminal pin and a second section accommodating the second portion of the terminal pin, at least a part of the second section of each slot having a width corresponding to the transverse dimension of the terminal pin.

A coil former of this kind is known from UK Patent Application GB 2 129 772A. Therein, a coil former is described which comprises terminal pins that can be automatically mounted and which, because of their construction, are firmly secured in the coil former so that they are locked against withdrawal. To this end, the terminal pins are distorted. A drawback thereof consists in that the distortion of the terminal pins and the mounting of these pins in the coil former is rather complex so that the procedure is rather time-consuming.

It is an object of the invention to provide a coil former of the kind set forth in which said drawback is mitigated.

To achieve this, the coil former in accordance with the invention is characterized in that the locally widened portion extends substantially perpendicularly to a plane through the first and the second portion of the terminal pin, in a wall of the second section of each slot there being recessed a chamber whose dimensions are such that the widened portion fits therein, the terminal pin being locked in the chamber by cooperation between the widened portion and the chamber. The chamber can be recessed in the coil former during the moulding of the coil former and large numbers of terminal pins can be manufactured separately from the coil former. Thus, the terminal pins can subsequently be quickly and simply mounted in the coil former.

An embodiment of the coil former in accordance with the invention is characterized in that the locally widened portion is a kink formed in the pin.

An alternative embodiment of the coil former in accordance with the invention is characterized in that the locally widened portion is a distortion obtained by squeezing the pin. The latter two embodiments both offer a feasible alternative as regards the locally widened portion of the terminal pin.

The invention will be described in detail hereinafter with reference to the drawing.

Figure 1 is a bottom view of a first embodiment of a coil former in accordance with the invention.

Figure 1a is a detailed sectional view of a part of a flange of the coil former in accordance with the invention provided with a right-angled slot.

Figure 2 is a side elevation of the coil former shown in figure 1.

Figure 3 is a front view of the coil former shown in figure 1.

Figure 4a is a detailed sectional view of a part of a flange of the coil former in accordance with the invention in which a distorted terminal pin is secured.

Figure 4b is a partial, detailed bottom view of a flange of the coil former in accordance with the invention.

Figure 4c is a partial detailed side elevation of a flange of the coil former in accordance with the invention.

Figures 5a, 5b and 5c are views corresponding to the figures 4a, 4b and 4c for a different shape of the cross section of the terminal pin.

Figures 6a, 6b and 6c are the same views as the figures 4a, 4b and 4c for another distortion of the terminal pin.

Figure 7 is a front view of a second embodiment of the coil former shown in figure 1.

The coil former 1 shown in figure 1 comprises two flanges 3 which are interconnected via a tubular central portion 5. The coil former 1 may consist of, for example an injection moulded electrically insulating material. At least one of the flanges 3 is provided with a number of recesses 7 which are shaped as a right-angled slot as shown in figure 1a. A right-angled slot is to be understood to mean herein a slot comprising two side walls 6 and a bottom 8 consisting of a first portion 10 and a second portion 12, which portions extend perpendicularly to one another. The first portion 10 extends horizontally and bounds the first section 14, the second portion 12 extending vertically and bounding the second section 16. The sections 14, 16 are open at the exterior of the flange 3. Electrically conductive terminal pins 9 made of, for example metal wire are arranged in at least a number of the recesses 7.

Figure 2 is a side elevation of the coil former 1. The coil former 1 comprises a cavity 11 in which a core of a soft-magnetic material (not shown), for example ferrite, can be inserted.

The terminal pins 9 comprise a first portion 13 and a second portion 15 which extend perpendicularly to one another. The first portion 13 can be used, for example for soldering the coil former 1 onto a printed circuit board (PCB), the second portion 15 being used to attach the transformer

windings (not shown). In figure 1 the second portion 15 of the terminal pin 9 is visible and in figure 2 the first portion 13 is visible.

Figure 3 is a front view of a coil former 1 as shown in figure 1. A part of the coil former 1 is shown in a sectional view. The direction in which the terminal pins 9 are inserted into the flange 3 is denoted by the arrow 17. The first portion 13 of the terminal pins 9 is arranged in the first section 14 of the recesses 7, the second portion 15 being arranged in the second section 16. The width of the slot 7 corresponds to the transverse dimension of the wire of the terminal pins 9.

Figure 4a is a detailed representation of the portion of the flange 3 in which the terminal pin 9 is secured.

Figure 4b is a sectional view taken along the line IVb-IVb in figure 4a. A chamber 19 is recessed in a side wall 6 of the second section 16 of the recess 7. The second portion 15 of the terminal pin 9 comprises a locally widened portion 21 in the form of a kink. The kink 21 extends in a direction approximately perpendicularly to the plane formed by the first portion 13 and the second portion 15 of the terminal pin 9.

Figure 4c is a sectional view taken along the line IVc-IVc in figure 4a. The kink 21 in the terminal pin 9 fits in the recessed chamber 19. Removal of the terminal pin 9 from the flange 3 in the direction denoted by the arrow 23 is prevented by cooperation between the kink 21 and the chamber 19. This is because, when the transformer windings (not shown) are attached, a force arises in the direction 23, which force is liable to pull the terminal pin 9 out of the flange 3. Moreover, rotation of the terminal pin 9 in the slot 7 in the direction denoted by the arrow 25 is also prevented. The soldering section 13, however, is not exposed to forces which could pull out the terminal pin.

The terminal pin 9 may have, for example a circular cross section as assumed for the foregoing Figures; however, the terminal pin 9 may also have a square cross section as shown in the figures 5a, 5b and 5c.

Figures 6a, 6b and 6c are views similar to the figures 4a, 4b and 4c, be it that the locally widened portion 21 in these embodiments is achieved by local squeezing of the terminal pin 9. The widened portion 21 is again situated in a direction approximately perpendicularly to the plane formed by the first portion 13 and the second portion 15 of the terminal pin 9. Figure 6b is a sectional view taken along the line VIb-VIb in figure 6a. The slot 7 is provided with a recessed chamber 20 whose shape deviates from that of the chamber 19 in figure 4b. This is because the chamber 20 is symmetrical with respect to the axis 8 of the slot 7. The substantially symmetrical widened portion 21 of the terminal pin 9, obtained by squeezing, fits in the recessed chamber 20. Cooperation between the widened portion 21 and the chamber 20 again prevents the terminal pin 9 from being pulled out of the flange 3 in the direction denoted by the arrow 23 as shown in figure 6c. The figures 6a, 6b and 6c show an embodiment comprising terminal pins 9 having a circular cross section. However, the terminal pin 9 may also have, for example a square cross section (not shown) as in the figures 5a, 5b and 5c.

Figure 7 shows a second embodiment of the coil former 1. The terminal pin 9 is inserted into the flange 3 from the side of the central portion 5 as denoted by the arrow 27. The shape of the flange 3 automatically locks the terminal pin 9 against pulling out of the flange 3 in the direction 23. When forces are also exerted on the terminal pin 9 in a direction parallel but opposite to the insertion direction 27, pulling out of the terminal pin 9 in this direction is prevented by the widened portion 21 which is in this case represented by a kink.

An additional advantage of the embodiments shown in the figures 3 and 7 consists in the presence of a partition 29 which automatically results from the shape of the flange 3. The partition 29 constitutes a shield between the connection portion 15 of the terminal pin 9 and the ferrite core.

Claims

1. A coil former, comprising two flanges which are interconnected by way of a tubular central portion, at least one of said flanges being provided with a number of recesses, a terminal pin made of an electrically conductive wire being inserted into at least one of said recesses, which terminal pin comprises a first portion and a second portion comprising a locally widened portion, which first and second portions extend perpendicularly to one another, each of said recesses being shaped as a right-angled slot comprising a first section accommodating the first portion of the terminal pin and a second section accommodating the second portion of the terminal pin, at least a part of the second section of each slot having a width corresponding to the transverse dimension of the terminal pin, characterized in that the locally widened portion extends substantially perpendicularly to a plane through the first and the second portion of the terminal pin, in a wall of the second section of each slot there being recessed a chamber whose dimensions are such that the widened portion fits therein, the terminal pin being locked in the chamber by cooperation between the widened portion and the chamber.

2. A coil former as claimed in Claim 1, characterized in that the locally widened portion is a kink formed in the pin.

3. A coil former as claimed in Claim 1, characterized in that the locally widened portion is a distortion obtained by squeezing the pin.

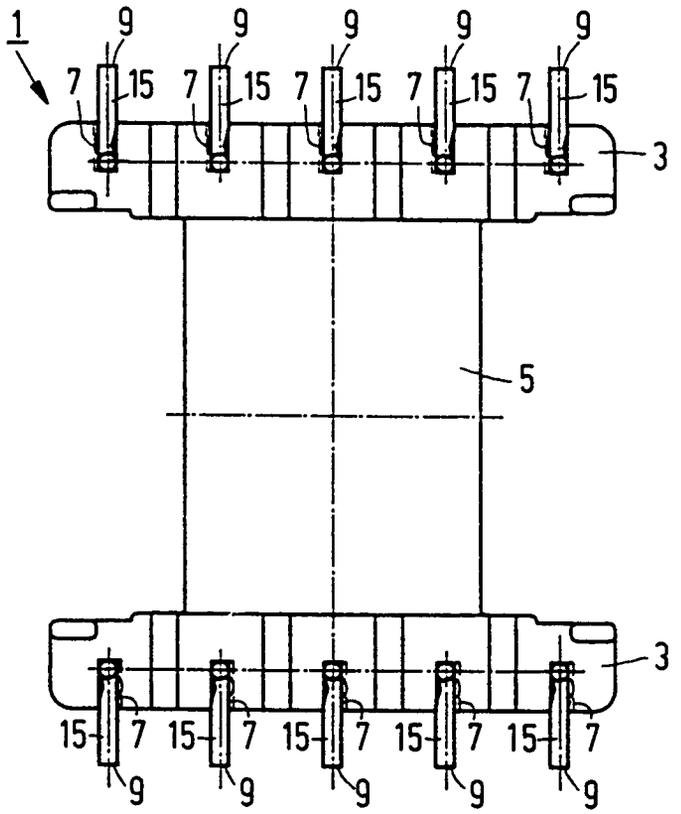

FIG.1

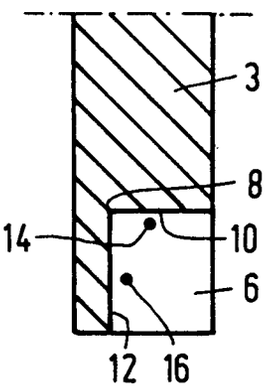

FIG.1a

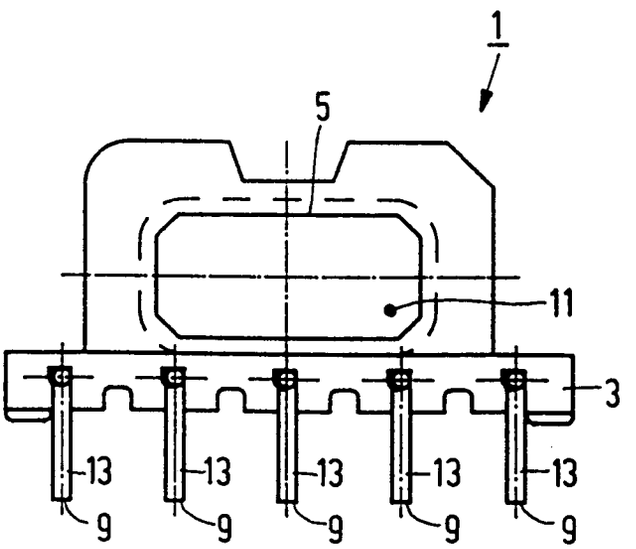

FIG.2

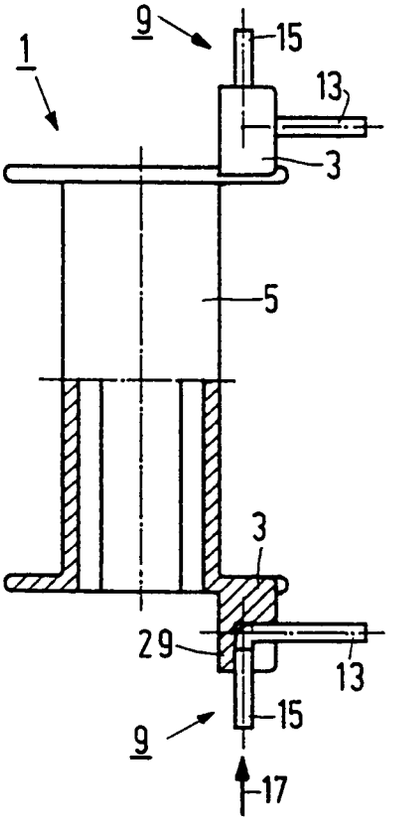

FIG.3

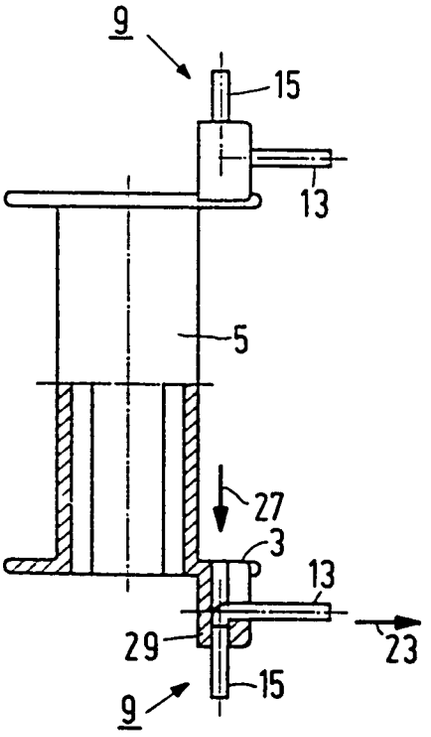

FIG.7

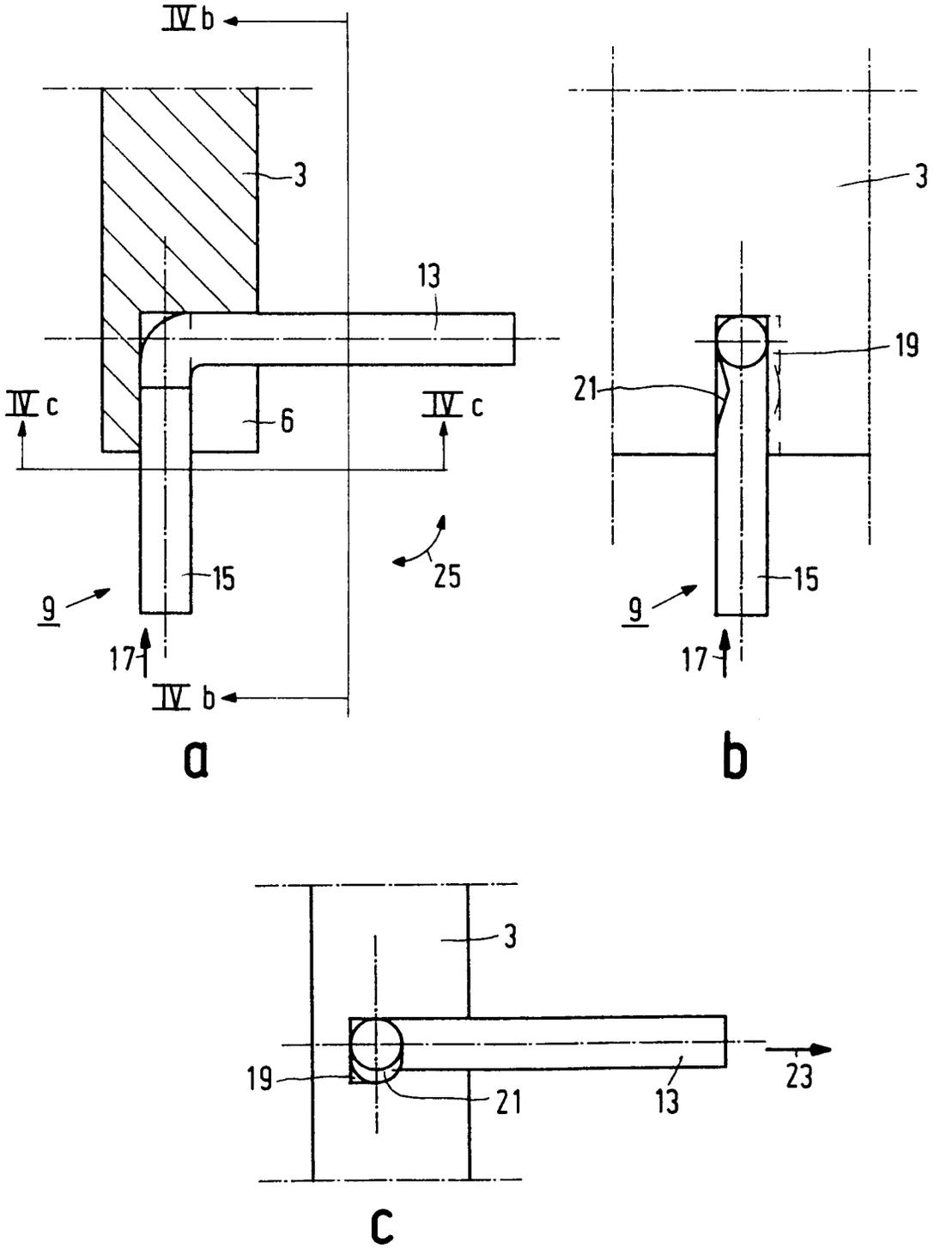

FIG.4

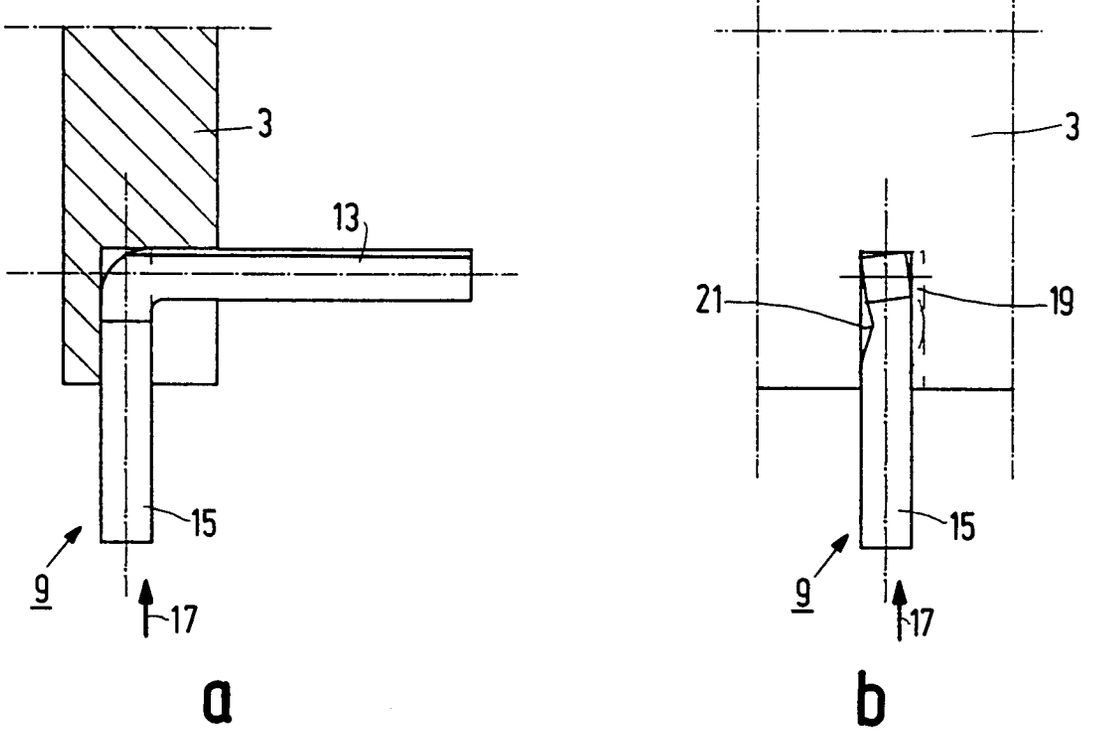

FIG.5

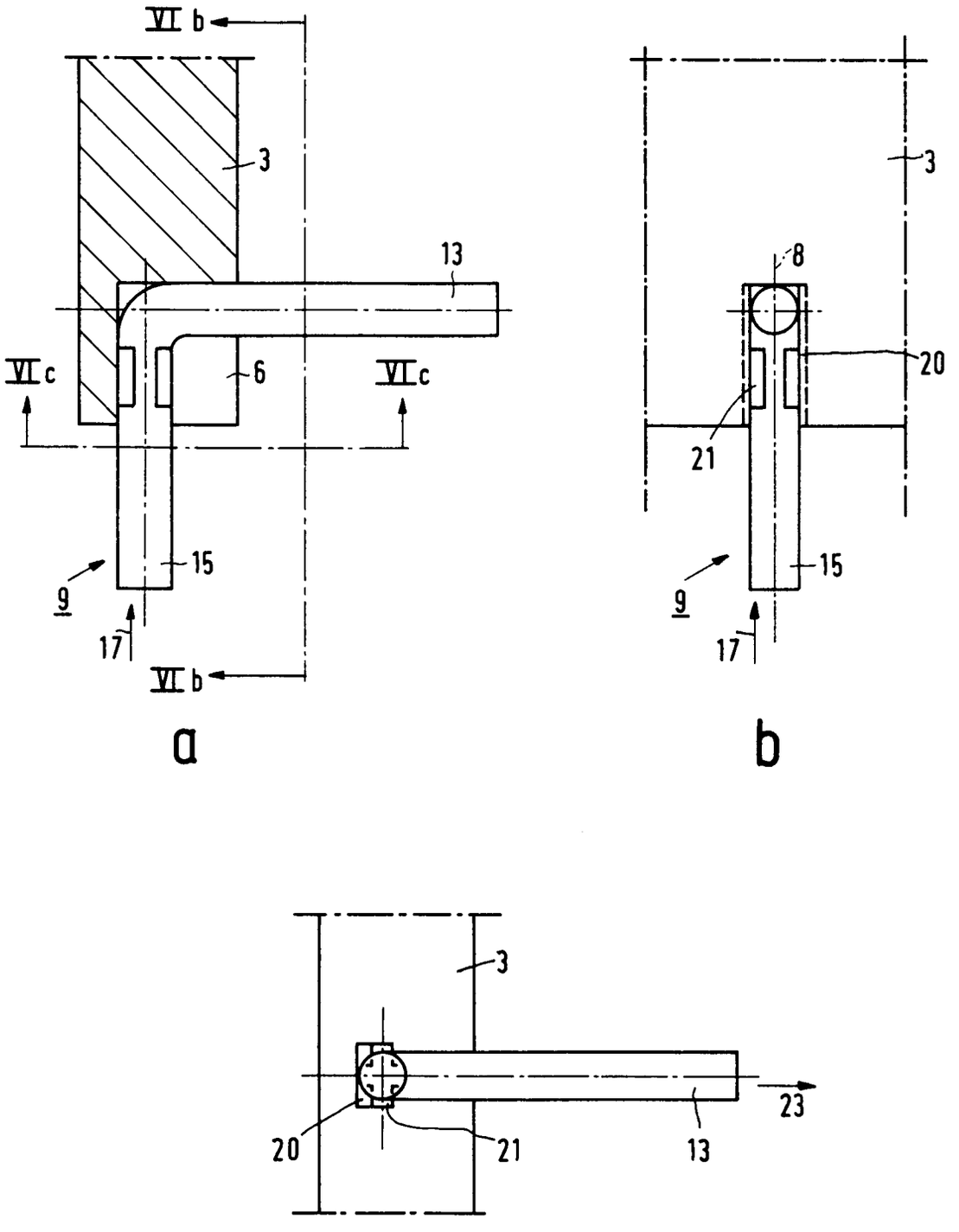

FIG.6

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EUROPEAN SEARCH REPORT

Application Number

EP 91 20 2663

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
Y	FR-A-2 349 198 (SIEMENS) * page 3, line 22 - line 29; figures 4,5 * ---	1	H01F15/10 H01F5/04 H01F41/10
Y	FR-A-2 420 284 (WEINER) * page 3, line 4 - line 16; figures 1,3 * -----	1	

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

H01F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	22 NOVEMBER 1991	BIJN E.A.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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