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Datasheet for the decision of 14 January 2010

Case Number: T 0879/09 - 3.4.03

Application Number: 06120524.1

Publication Number: 1768174

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Language of the proceedings: EN

Title of invention:
Robotized device to move an object

Applicant:
AFCO C.V.

Headword:
-

Relevant legal provisions:
EPC Art. 123(2)
EPC R. 42(1)(c)

Relevant legal provisions (EPC 1973):
EPC Art. 84

Keyword:
"Clarity (yes)"
"Amendments originally disclosed (yes)"

Decisions cited:
T 0461/05, T 0962/98

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0879/09 - 3.4.03

D E C I S I O N
of the Technical Board of Appeal 3.4.03
of 14 January 2010

Appellant: AFCO C.V.
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Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 22 December 2008 refusing European patent application No. 06120524.1 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman: G. Eliasson
Members: V. L. P. Frank
P. Mühlens

Summary of Facts and Submissions

I. This is an appeal from the refusal of application 06 120 524.1 for the reasons that claim 1 had been amended in such a way that it contained subject-matter which extended beyond the content of the application as filed (Article 123(2) EPC), that the device of claim 1 was not clear (Article 84 EPC 1973) and that the application did not comply with Rule 42(1)(c) EPC.

II. The appellant applicant requests that the decision under appeal be set aside and that a patent be granted on the basis of the following documents:

Claims:

1 to 6 filed with letter of 19 August 2009.

Description pages:

1 and 1a filed with letter of 5 October 2007:
5 and 7 filed with letter of 19 August 2009;
2, 3, 4 and 6 as originally filed.

Drawings: sheets 1 to 5 as originally filed.

III. Claim 1 now reads as follows (the differences with respect to the version refused by the examining division have been marked by the board):

"1. Robotized device to move an object (12), comprising manipulator means (14) having gripping elements (16) lying on a determinate plane of manipulation (P), first motor means (22) with a first rotor (22b) of which a first movement unit (25) is associated, in turn associated with said

manipulator means (14), and second motor means (23) with a second rotor (23b) of which a second movement unit (26) is associated, in turn associated with said manipulator means (14), said first movement unit (25) and said second movement unit (26) defining with the respective first and second motor means (22, 23) and with said manipulator means (14) a pantograph mechanism, the device further comprising a support element (20) on which said first motor means (22) and said second motor means (23) are mounted, a third motor means (28) ~~being~~ provided to selectively rotate said support element (20) together with first and second motor means (22, 23) mounted thereto with respect to an axis of rotation (Y1) substantially orthogonal to said plane of manipulation (P), characterized in that said first movement unit (25) comprises:

- a pair of first arms (30) parallel to each other and connected to said first rotor (22b) and by means of a toggle lever (31) to a tubular element (32) pivoted in turn to said manipulator (14);
- a pair of **rigid** tie-rods (34) pivoted to said support element (20) by means of a respective armlet (35) and connected by means of said toggle lever (31) to a first rod (37) pivoted in turn to said manipulator (14) with respect to a different pivoting axis from that of said tubular element (32);

and wherein said second movement unit (26) comprises a pair of second arms (38) connected to said second rotor (23b) and to a second rod (40) pivoted in turn to the manipulator (14) with respect to a pivoting axis coinciding with that of

said tubular element (32), wherein the mounting reciprocal configuration of arms (30), tie—rods (34), first rod (37) and tubular element (32) being such that a variation of an angular position of said rotor (22b) is transformed in a movement of said two first arms (30) parallel to said two tie—rods (34), a movement of said tubular element (32) parallel to said first rod (37), and a movement of said manipulator (14) that always maintains said gripping means (16) lying on a plane substantially parallel to said determinate plane of manipulation (P)."

IV. The examining division argued as follows:

– Amended claim 1 comprised the feature that the first movement unit comprised a pair of first arms parallel to each other and connected to the first rotor and by means of a toggle lever to a tubular element pivoted in turn to the manipulator. It was however omitted that the tubular element was made of carbon. Additionally, it was omitted that the first movement unit comprised a pair of rigid tie-rods pivoted to the support elements. The two features of using a tubular element and a pair of tie-rods were inextricably linked to the omitted features of the specific embodiment.

– The added third feature that the mounting reciprocal configuration of arms, tie rods, first rod and tubular element were such that a variation of an angular position of the rotor was transformed in a movement of the two first arms parallel to the two tie-rods, a movement of the

tubular element parallel to the first rod, and a movement of the manipulator that always maintained the gripping means lying on a plane substantially parallel to the plane of manipulation had no explicit basis in the originally filed application. Hence, claim 1 did not comply with Article 123(2) EPC.

– Claim 1 related to a method of using the apparatus rather than clearly defining the apparatus in terms of its technical features (viz, a variation of the rotor is transformed in a movement of the two first arms…). The intended limitations were therefore not clear contrary to the requirements of Article 84 EPC 1973.

The examining division finally objected that:

"The invention as claimed is not disclosed in such a way that the technical problems with which it deals can be appreciated and the solution can be understood. In this respect, the description is not accordingly adapted to the newly filed claims. Consequently, the requirements of Rule 42(1)(c) EPC are not fulfilled."

Reasons for the Decision

1. The appeal is admissible.

2. *Amendments (Article 123(2) EPC)*

2.1 The examining division objected in the decision under appeal that it had not been specified in claim 1 that the tubular element 32 was made of carbon and that the pair of tie-rods 34 was rigid, arguing that these features were inextricably linked to the other features disclosed in the specific embodiment that had been incorporated into claim 1.

2.1.1 The description as filed specified that the present invention was set forth and characterized in the main claim (page 2, lines 11 and 12). Claim 1 as originally filed is worded as follows:

> "Robotized device to move an object (12), comprising manipulator means (14) having gripping elements (16) lying on a determinate plane of manipulation (P), first motor means (22) with which a first movement unit (25) is associated, in turn associated with said manipulator means (14), and second motor means (23) with which a second movement unit (26) is associated, in turn associated with said manipulator means (14), said first movement unit (25) and said second movement unit (26) defining with the respective first and second motor means (22, 23) and with said manipulator means (14) a pantograph mechanism, characterized in that at least one of said movement units (25, 26) comprises connection means

(31, 34, 35, 37) able to keep said gripping elements (16) substantially parallel to said plane of manipulation (P) during the functioning of said pantograph mechanism."

Hence, the originally filed application disclosed the invention in the general terms of claim 1 without specifying how the first movement unit 25 was built.

2.1.2 A patent application describes an invention in general terms together with one or more detailed embodiments. In order to overcome an objection of lack of novelty and/or inventive step the applicant often adds some but not all the features from the detailed embodiments to the general disclosure. This results in an object that lies between the original general disclosure and the detailed embodiments. This is called an "intermediate generalization" in the patent jargon, although a more proper naming would be "intermediate restriction" to make clear that it is in fact a restriction from the more general original disclosure (T 461/05, point 2.3).

2.1.3 Such an intermediate restriction or generalization is permissible under Article 123(2) EPC only if the skilled person would recognize **without any doubt** from the application as filed that characteristics taken from a detailed embodiment were not closely related to the other characteristics of that embodiment and applied directly and unambiguously to the more general context (T 962/98, point 2.5, emphasis in the original).

2.1.4 The examining division did not give reasons for the finding in the decision under appeal that the features that the tubular element was made of **carbon** and that

the first movement unit comprised a pair of **rigid** tie-rods were inextricably linked to the other features of the embodiment of the invention.

2.1.5 On the first point, the board agrees with the appellant applicant that a skilled person would understand that the feature "a tubular element 32 made of **carbon**", disclosed on page 5, line 22, is not related to solving the problem addressed by the invention, namely to design a robotized manipulator whose surface stays parallel to the same plane when moved around. In fact, the skilled person would recognize immediately and without any doubt that the material of the tubular element is irrelevant for the present invention.

As the test mentioned in point 2.1.3 above is fulfilled, not specifying the material of the tubular element 32 in claim 1 does not offend against Article 123(2) EPC.

2.1.6 For the second point, namely the rigidity of the tie-rods, the working principle of the robotized device has to be understood. The gripping element 16 is kept substantially parallel to the same plane of manipulation through the combined use of

(a) a first parallelogram defined by the pivoting axis on armlet 35, the rotation centre Z1 of the first rotor 22b and pivoting axis A and B on toggle lever 31, and

(b) a second parallelogram defined by pivoting axis A and C on toggle lever 31 and the pivoting axis of the tubular element 32 and the first rod 37 on manipulator 14 (see figures 5 and 6 below).

2.1.7 This combination assures that the angle between a line joining the pivoting axis on armlet 35 and the rotation centre Z1 of the first rotor 22b (imaginary line 1) and a line joining the two pivoting axis on manipulator 14 (imaginary line 2) is fixed, since line AB on toggle lever 31 is always parallel to line 1 and line AC is always parallel to line 2 due to the presence of the first and second parallelograms, while angle BAC defines the angle between the imaginary lines 1 and 2. As the manipulator 14 is still free to move in a circle around the toggle lever 31, the spatial position of the manipulator 14 is determined by the rotor of the second motor means 23 and the second movement unit 26.

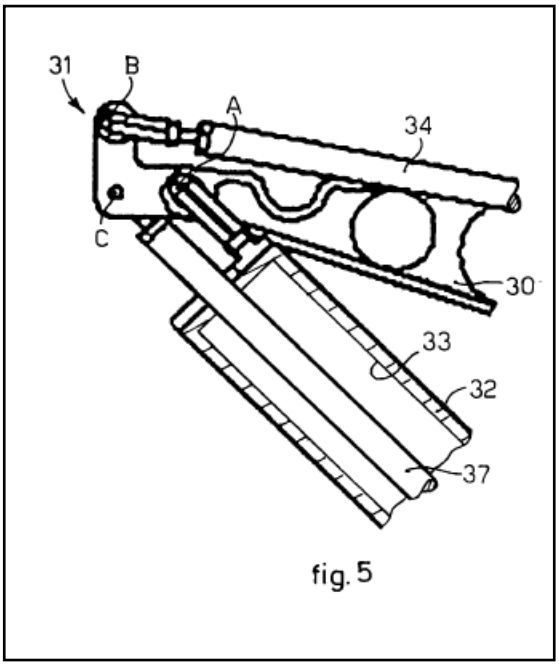

fig. 5

2.1.8 A tie-rod, however, is a slender structural unit used as a tie and (in most applications) capable of carrying tensile loads only; it can be articulated or flexible.

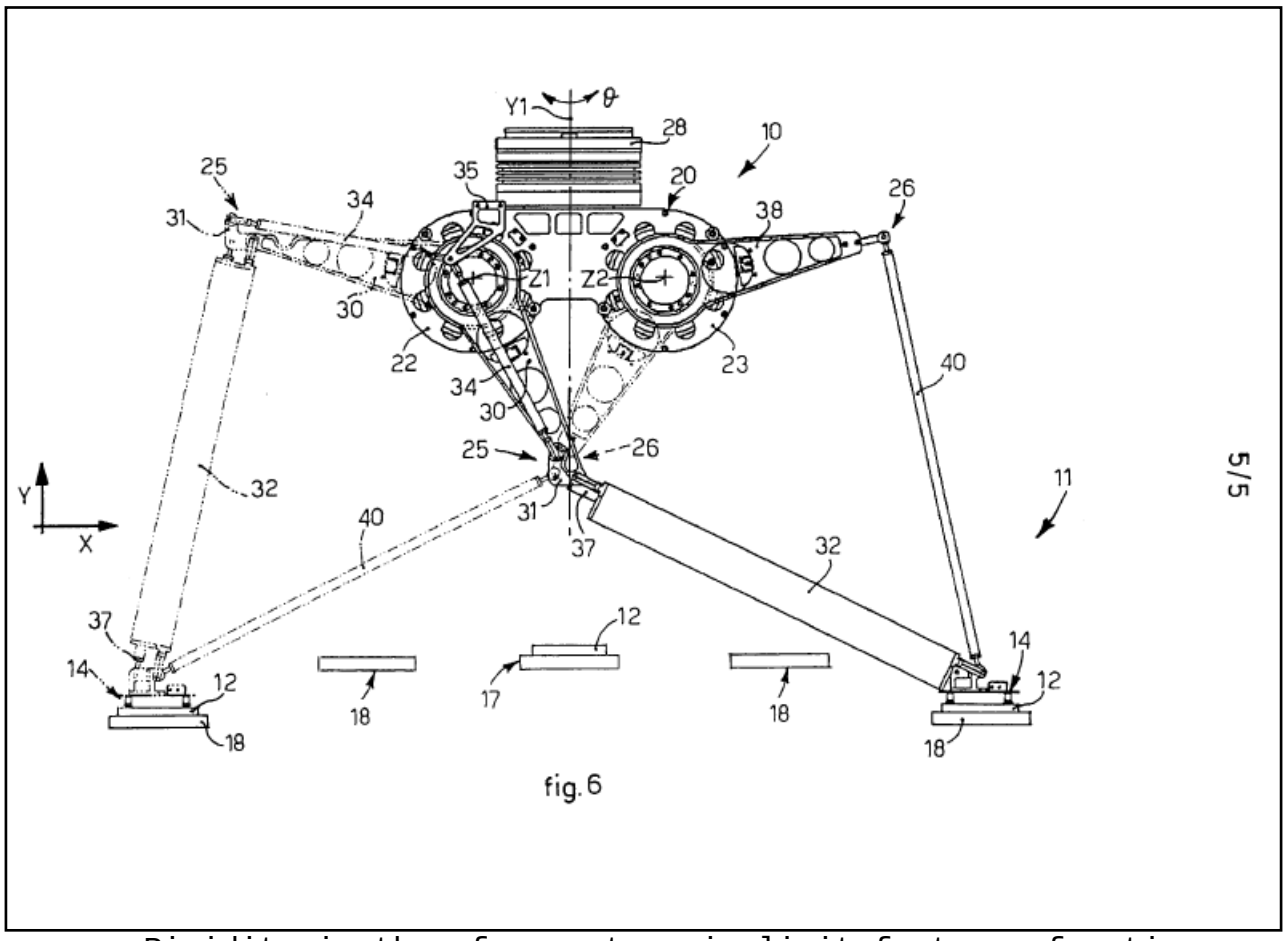

fig.6

Rigidity is therefore not an implicit feature of a tie-rod and has to be explicitly stated.

2.1.9 The feature that "a variation of an angular position of said rotor 22b is transformed in a movement of said two first arms 30 **parallel** to said two tie-rods 34" does not implicitly disclose that the tie-rods are rigid nor is it sufficient to specify the existence of the first parallelogram, since a parallel movement between arms 30 and tie-rods 34 would not result in a parallelogram if the length of the tie-rods, ie the distance between the pivoting axis on armlet 35 and pivoting axis B on

toggle lever 31, is not fixed (eg if a telescopic tie-rod is used).

2.1.10 As the first parallelogram is only realized with "rigid" tie rods 34, the feature "rigid" cannot be dissociated from the other features relating to the construction of the first arms and has therefore to be specified in claim 1, as it is now the case.

2.2 The examining division further objected that the feature that "the mounting reciprocal configuration of arms, tie rods, first rod and tubular element were such that a variation of an angular position of the first rotor was transformed in a movement of the two first arms parallel to the two tie-rods, a movement of the tubular element parallel to the first rod, and a movement of said manipulator that always maintained the gripping means lying on a plane substantially parallel to the plane of manipulation" had no **explicit** basis in the originally filed application.

2.2.1 Although it is usually sufficient for fulfilling Article 123(2) EPC that an amendment has an explicit basis in the application as filed, this is in no way necessary. The test for deciding whether an amendment contains subject-matter extending beyond the content of the application as filed is whether the skilled person would be presented with information which is not **directly and unambiguously derivable** from what was presented by the application as filed, even when account is taken of matter which is implicit to a person skilled in the art (Guidelines C VI-5.3.1, December 2007).

2.2.2 The objected feature specifies that when the first rotor 22b moves a) the two first arms 30 move parallel to the two tie-rods 34 and b) the tubular element 32 moves parallel to the first rod 37 so that c) the movement of the manipulator always maintains the gripping means lying on a plane substantially parallel to the plane of manipulation. This is thus nothing more than saying that each of the two elements (30/34 on one hand and 32/37 on the other) are the opposed sides of a parallelogram, since their lengths are fixed. Stating that the manipulator always maintains the gripping means lying on a plane substantially parallel to the plane of manipulation is nothing more than the direct consequence of the combined action of both parallelograms, as explained in points 2.1.6 and 2.1.7.

2.2.3 The objected feature is therefore directly and unambiguously derivable from the application as filed.

2.3 The description has been amended by correcting a mistake on page 5 (angle instead of axis) and by deleting the two last paragraphs on page 7 which shed doubts on the scope of protection.

The terminology used in claim 2 was made consistent with that of the other claims.

2.4 The board finds, for these reasons, that the requirement of Article 123(2) EPC is fulfilled.

3. *Article 84 EPC 1973*

3.1 The examining division objected that claim 1 related to a method of using the apparatus rather than clearly

defining the apparatus in terms of its technical features.

3.2 The board however considers that, as explained above in points 2.1.6 ands 2.1.7, claim 1 not only specifies the constituents forming the robotized device, but also defines how they achieve moving the manipulator so that its gripping surface stays always parallel to the same plane. The functional feature objected by the examining division is not directed on how the apparatus is used, but on how it works, ie a technical feature of the apparatus.

3.3 The board cannot therefore recognize any lack of clarity in the components of the robotized device or in how they interact with each other.

4. *Rule 42(1)(c) EPC*

4.1 The examining division objected that the invention was not disclosed in such a way that the technical problem and its solution could be understood. The board cannot share this view for the following reasons.

4.1.1 The application discloses the problem to be solved as follows:

"Known devices generally comprise one or more robotized arms connected to the manipulator, which do not guarantee, however, that the manipulator, and therefore the plate, is maintained perfectly horizontal, unless extremely complex and expensive mechanical and electronic solutions are used. One purpose of the present invention is to achieve a device to move a

manipulator element which allows to position objects at least between a feed line and one or more work stations, also disposed on different and offset planes with respect to the pick-up point, and which at the same time guarantees that the manipulator element, and hence the object to be manipulated, is kept horizontal, even when there are high pick-up and depositing speeds" (page 1a, line 26 to page 2, line 5).

4.1.2 This is achieved by the robotized device specified in claim 1 which, as already discussed, comprises all the features required for solving the above problem.

4.1.3 The board finds consequently that Rule 42(1)(c) EPC is fulfilled.

5. *Novelty and inventive step.*

5.1 Although all the prior art documents cited in the European Search Report are marked "X" (ie particularly relevant prior art) none of them addresses the purpose of the present invention, namely "to achieve a device to move a manipulator element which allows to position objects at least between a feed line and one or more work stations, also disposed on different and offset planes with respect to the pick-up point, and which at the same time guarantees that the manipulator element, and hence the object to be manipulated, is kept horizontal, even when there are high pick-up and depositing speeds" (page 1a, line 26 to page 2, line 5).

5.2 Document D1 (=US 6 286 387 A) discloses instead a three-dimensional **input** manipulator used by an operator to input a sequence of movements into a computer by moving a bar shaped operation grip 11. A reaction force is applied to the operation grip to signal to the

operator that the virtual pointer is in contact with a virtual object (column 2, lines 2 to 41; column 12, line 66 to column 13, line 42; Figures 1 and 18).

5.3 Document D2 (= WO 03/076225 A) also relates to an **input** manipulator ("organe de commande") through which an operator moves a robot arm ("télémanipulation") (page 1, lines 6 to 11; page 4, lines 8 to 20).

5.4 Document D3 (= US 2003/0151379 A) discloses a control arm. The function of a control arm is to transfer movements applied to it by an operator into control instructions for an instrument or a system, usually a remote robot called a slave arm or a computer simulation ([0001], [0002]). It is thus also an **input** manipulator.

5.5 It is evident that documents D1 to D3 have no bearing at all on the present invention, as it is important that an input manipulator be easily movable to any desired position by the operator while the present manipulator should maintain the gripping means parallel to a determined plane. These documents could therefore only be accidentally relevant when assessing novelty. The manipulators disclosed in these documents however are not a robotized device **for moving** an object, as defined in claim 1, since the input manipulator **is moved** by the operator.

5.6 The robotized device of claim 1 is therefore new and involves an inventive step.

6. The board judges, for the above reasons, that the patent application fulfils the requirements of the EPC.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the department of first instance with the order to grant a patent in the following version:

Claims:

1 to 6 filed with letter of 19 August 2009.

Description pages:

1 and 1a filed with letter of 5 October 2007:
5 and 7 filed with letter of 19 August 2009;
2, 3, 4 and 6 as originally filed.

Drawings: sheets 1 to 5 as originally filed.

Registrar Chair

S. Sánchez Chiquero G. Eliasson