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D E C I S I O N
of 4 March 1998

Case Number: T 0576/97 - 3.4.2

Application Number: 90203138.4

Publication Number: 0427354

IPC: G02B 6/44

Language of the proceedings: EN

Title of invention:
Apparatus for introducing a cable into a cable guide tube

Patentee:
Koninklijke PTT Nederland N.V.

Opponent:
British Telecommunications public limited company

Headword:
-

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step (yes) after amendment"

Decisions cited:
-

Catchword:
-

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Case Number: T 0576/97 - 3.4.2

D E C I S I O N
of the Technical Board of Appeal 3.4.2
of 4 March 1998

Appellant: (Opponent)
British Telecommunications public limited company
81 Newgate street
London EC1A 7AJ (GB)

Representative:
Roberts, Simon Christopher
BT Group Legal Services
Intellectual Property Department
8th Floor, Holborn Centre
120 Holborn
London, EC1N 2TE (GB)

Respondent: (Proprietor of the patent)
Koninklijke PTT Nederland N.V.
P.O. Box 95321
2509 CH Den Haag (NL)

Representative:
-

Decision under appeal:
Interlocutory decision of the Opposition Division of the European Patent Office posted 20 March 1997 concerning maintenance of European patent No. 0 427 354 in amended form.

Composition of the Board:

Chairman: E. Turrini
Members: S. V. Steinbrener
L. C. Mancini

Summary of Facts and Submissions

I. The appellant (opponent) lodged an appeal against the interlocutory decision of the Opposition Division finding European patent No. 0 427 354 as amended by the patent proprietor during the opposition proceedings to meet the requirements of the EPC. The patent in suit relates to European patent application No. 90 203 138.4 being a divisional application of parent application No. 88 200 793.3.

The opposition filed by the appellant against the patent as a whole was based on Article 100(a), (b) and (c) EPC respectively, since the subject-matter of the patent in suit allegedly lacked an inventive step, was not sufficiently disclosed and extended beyond the application as filed.

In its decision, the Opposition Division held that the subject-matter of claim 1 as granted, which was maintained in unamended form, was inventive with respect to the available prior art comprising (in the numbering of the Opposition Division), inter alia, the following documents:

D1: EP-A-0 108 590
D6: FR-A-1 557 074,
D9: EP-B-0 185 788,
D10: US-A-4 469 267,
D11: WO-A-87/02522, and
D12: GAST Air Motors and Air-Powered Gearmotors, Gast Manufacturing Corporation, Benton Harbor (03.85).

During the appeal proceedings, the appellant additionally referred to the following textbooks in order to illustrate the common general knowledge in the field of fluid power before the priority date of the impugned patent:

D14: H. L. Stewart et al.: "Fluid Power", H.W. Sama & Co., Indianapolis 1968, Foreword, Preface and pages 11, 181 to 185, 190 to 197, 231 to 233 and 355 to 365;

D15: H. L. Stewart et al.: "ABC's of Fluid Power", W. Foulsham & Co., Slough, Bucks 1967, Foreword, Preface and pages 7 to 27 and 120 to 126;

D16: J. A. Sullivan: "Fluid Power", Reston Publishing Co., Reston 1982, pages vii to x; chapters 1-1 to 1-6 and 11-6; and

D17: F. D. Yeaple: "Fluid power design handbook", Marcel Dekker, Inc., New York 1984, pages iii to iv and 385, 386, 391, 395, 397, 408 and 411, and

further filed a statutory declaration of Professor Edge with its letter of 2 March 1998.

II. In the communication of 6 February 1998 pursuant to Article 11(2) of the Rules of Procedure of the Boards of Appeal, the Board considered the assessment of inventive step to be the main issue at oral proceedings appointed at the appellant's auxiliary request, and in this context summarised the relevance of the prior art identified.

Upon enquiry by the Board, both parties agreed at short notice to consolidate the present case with the pending appeal proceedings T 0152/94-3.4.2 in the parent application to the extent that both cases were to be dealt with by the Board in identical composition at oral proceedings already scheduled for 4 March 1998 in the parent case.

III. Oral proceedings then took place on the agreed date. At the end of the oral proceedings, the decision of the Board was pronounced.

IV. The appellant requested that the European patent be revoked.

V. The respondent requested that the appeal be dismissed and that the patent be maintained in amended form as presented at the oral proceedings.

VI. The wording of claim 1 on file at the time of the present decision reads as follows:

"1. Apparatus for introducing a cable into a cable duct from an inlet end towards an exit end of said duct by inserting a compressed gas into the duct in the same direction, said apparatus comprising

cable advancing means including

- a hollow, substantially rectilinear cable leadthrough channel (3) with an entrance end (4) and an exit end (5) for leading in and leading out a cable (26) which is to be introduced into the relevant duct (6),

- at least one pair of wheels (8, 10; 9, 11) mounted opposite to each other for advancing a cable (26) disposed between these wheels in the direction of the outlet end (21) of a relevant duct, the wheels being capable of being pressed against the cable for exerting transverse forces on the cable, and

- a motor (15) coupled to at least one of said wheels for providing a driving couple to it, cable advancing forces being exerted by the wheels on the cable (26) as a consequence of the cooperative effect of the driving couple and the transverse forces, and

gas inserting means comprising a gas channel (7), which debouches into the cable lead-through channel (3) and which is adapted for inserting compressed gas into said lead-through channel (3) between said wheels and the exit end (5) of said lead-through channel (3),

wherein

+ a piston (13) is provided, which is movably mounted in a pneumatic cylinder (14) and which is also coupled to at least one of said wheels (8; 9), in such a way that when compressed gas is supplied to the pneumatic cylinder (14), said transverse forces will be exerted on a cable (26) disposed between the wheels (8, 10; 9, 11), and in that

+ the motor (15) is a pneumatic motor capable of providing said driving couple, which is larger than the driving couple which has to act on the cable (26) to compensate for the pressure difference which exists at

the inlet end of the duct between the pressure inside and the pressure outside the cable lead-through channel (3) as a consequence of said inserting of the compressed gas via said gas channel into said cable lead-through channel;

the apparatus further including a coupling unit (18) comprising

- means for coupling said unit (18) to the outlet end (21) of a duct (24) in a gastight way;

- means (23) for diverting a flow of gas from the direction of a cable (26), which flow may leave said outlet end (21) when said unit is coupled to said outlet end of said duct in which a cable is being introduced;

- means (27') for slowing down particles, which may be carried along by said gas flow;

- means for leading a cable (26) which is being introduced in the direction of the entrance end (4) of said cable lead-through channel (3);

the coupling unit further comprising

- a main hollow housing (19);

- a duct inlet opening in said housing for receiving and coupling the outlet end of a cable duct (24);

- an outlet pipe (23), extending from the interior of said housing (19) through said housing, which pipe is suitable for leading away from said

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housing a high velocity flow of compressed gas, which flows from the outlet end of the cable duct section (24) into the housing as a consequence of the insertion of compressed gas at its inlet end, in a controlled manner; and

- a cable outlet opening (22) in said housing mainly directly across from the duct inlet opening, which cable outlet opening is provided with a cover valve (27) pivotally mounted on the outside of the housing (19), which cover valve (27) is capable of closing firmly said outlet opening (22), by attaching itself firmly to the outside of the housing due to the acceleration of the flow of air there, when there is no cable at that place, and which cable outlet opening is further provided with a lining (27') capable of slowing down quick particles dragged along with the high velocity flow of compressed gas and/or a cable (26) being introduced in said duct section (24), the interior of said housing having at least partly a profile such as to lead the front end of a cable (26) which is being introduced in the direction of said cable outlet opening (22)."

In the above wording, a printer's error has been removed by inserting "is" in the expression "which movably mounted" in the line commencing with "+ a piston (13)".

Claims 2 to 7 are appended to claim 1.

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VII. The appellant argued as follows:

Apart from clarity problems due to inconsistent terminology and redundancy of wording, a large number of features of claim 1 now under consideration would be automatically envisaged by a skilled person when following the teaching of document D1.

Firstly, as has been shown by the documents submitted in the opposition and appeal proceedings, pneumatic piston/cylinder combinations and pneumatic motors are generally known in the technical field concerned and would be considered for putting the apparatus of D1 into practice without involving any inventive merit.

The remaining features are more or less dictated by the obvious requirements that the compressed gas must escape from the outlet end of the duct to which the coupling unit is coupled, and the cable must pass through the coupling unit to the entrance end of the cable advancing means. Therefore, the provision of some type of T-piece would readily occur to a skilled person. Moreover, safety measures, in particular concerning the retention of high speed particles, are common in compressed air systems.

The only unusual feature seems to be the cover valve, the function of which is, however, not fully understood. Therefore, if the Board were inclined to uphold the patent with the present claim, possibly because of this unusual feature, then the decision should explicitly reflect this fact.

VIII. The respondent's argument in support of its request may be summarised as follows:

In view of the decision given by the Board in the case of the parent application, the subject-matter of claim 1 has now been restricted to a combination of claims 1, 8 and 9 of the patent in the amended version considered allowable by the Opposition Division.

As a result of said combination, claim 1 is certainly not drafted in an ideal way, and the respondent would be prepared to rewrite the claim if this were considered necessary. Nevertheless, the present wording avoids any problems under Article 123 EPC and can be understood by a skilled reader despite some redundancy.

An inventive step has to be seen in particular in the provision of said cover valve. The valve serves the purpose of an efficient particle retention device excluding any safety risks in this respect. It is kept closed without any spring, due to the underpressure generated by the air escaping from the outlet pipe. On the other hand, if a cable is introduced, it will run straight into the valve so as to open it. Thus, due to the physical conditions the valve is always closed if safety so requires, whereas linings are not fully reliable with respect to particle retention.

Reasons for the Decision

1. *Admissibility of appeal*

The present appeal is admissible.

2. *Amendments*

2.1 Claim 1 now under consideration corresponds to claim 1 as granted, additionally including all the features of dependent claim 8 as granted and of dependent claim 9 as amended before the Opposition Division, the dependent claims directly and indirectly referring back to claim 1. The Board is thus convinced that claim 1 meets the requirements of Article 123(2) and (3) EPC. The same applies to the amended description submitted at the oral proceedings and taking account of amended claim 1 and of the prior art identified. Admissibility of the amendments was, in fact, not contentious between the parties.

2.2 Despite some inconsistency and redundancy of wording, the parties basically agreed that the technical meaning of claim 1 can be understood by a skilled person. In the Board's view, claim 1 meets the requirements of Article 84 EPC and should therefore not be redrafted since the respondent's attempts in this respect clearly showed the risks existing under Article 123 EPC in the present case.

3. *Patentability*

3.1 The subject-matter of claim 1 is not disclosed in any of the above-cited documents, as can also be seen from the discussion of inventive step below. In particular, none of said documents discloses a cover valve for particle retention. Novelty has not been contested in the present proceedings.

3.2 Having regard to the issue of inventive step, there was also general agreement that document D1 comes closest to the present invention.

This prior art already discloses the features of the cable advancing means and the gas inserting means according to the first portion of claim 1 extending until "wherein" (see D1, in particular Figure 7 and associated text: cable lead-through channel 74; cable 76; duct 12; pair of wheels 77, 78 exerting transverse forces on the cable by suitable means (see e.g. page 16, lines 25 to 30); motor implicit from page 16, lines 14 to 30; gas channel 75).

Furthermore, it appears from D1 that the motor must also be **capable** of providing a driving couple "which is larger than the driving couple which has to act on the cable to compensate for the pressure difference which exists at the inlet end of the duct between the pressure inside and the pressure outside the cable lead-through channel as a consequence of said inserting of the compressed gas via said gas channel into said cable lead-through channel" (see D1, page 16, lines 14 to 30 and page 13, lines 14 to 28).

Moreover, the known apparatus is already provided to function as a coupling unit in a tandem arrangement (see D1, page 17, lines 7 to 14), apparently comprising

- means for coupling said unit to the outlet end of a duct in a gas-tight way (see Figure 7, air seal 73);

- means for slowing down particles (air seal 73 appears to be suitable for this purpose); and

- means for leading a cable in the direction of the entrance end of the cable lead-through channel (see Figure 7: duct containing air seal 73 and narrowing towards the pair of wheels 77, 78).

In consequence, the subject-matter of claim 1 differs from the closest prior art mainly in that

(i) the means for exerting the transverse forces on the cable consist of a piston movably mounted in a pneumatic cylinder and actuated by compressed gas whereas D1 does not specify this means;

(ii) the motor is a pneumatic motor whereas the type of motor producing the torque is not disclosed in D1;

(iii) the coupling unit appears to be a "separate" unit having a hollow housing with a duct inlet opening and a cable outlet opening whereas no "separate" coupling unit is provided in D1;

(iv) the cable **outlet** opening is provided with a cover valve on the outside of the housing whereas a cover valve does not exist in D1; and finally

(v) an outlet pipe for safely leading away the flow of compressed gas streaming in from the outlet end of the duct due to the gas-tight coupling whereas D1 is silent on the handling of the arriving compressed air.

The effect associated with these differences may be seen in the optimisation of a tandem arrangement of the type disclosed in D1, in particular with respect to an advantageous driving mechanism for the cable-advancing unit (differences (i) and (ii); see page 3, lines 24 to 31 of the patent as granted) and to safety of operation (differences (iii) to (v); see page 5, lines 5 to 8, 12 to 15 and 18 to 20, of the patent as granted).

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The formulation of the technical problem of optimising the prior art apparatus in these respects seems to be based on self-evidence and therefore cannot contribute to patentability.

The Board also considers the measures corresponding to differences (i) and (ii) to be obvious from the existing prior art which shows that pneumatic piston/cylinder combinations are well-known per se (see e.g. textbooks D14 to D17) and used in the technical field of cable tension and transport for their specific advantages (see documents D9 (in particular column 1, line 65 to column 2, line 11 and column 3, lines 13 to 25; the corresponding A-document being prepublished) and D10 (in particular column 4, lines 24 to 35) with respect to pneumatic piston/cylinder applications and documents D6 (in particular page 1, right-hand column, second paragraph, to page 2, left-hand column, second paragraph, and claim 1) and D11 (in particular page 8, lines 16 to 27 and page 9, lines 8 to 18) with respect to pneumatic motor applications). Therefore, when putting the teaching of D1 into practice a skilled person would readily take such pneumatic solutions into consideration, thus making use of the compressed air anyway needed for cable blowing as a conventional power source for drive purposes as well.

However, the available prior art does not provide any incentive with regard to a detachable coupling unit for safe operation in a tandem arrangement (measures corresponding to differences (iii) -(v)),. Even if the appellant's argument were accepted that individual safety measures per se, such as the provision of a lining for particle retention or an outlet pipe for disposing of the arriving compressed air in a controlled manner, fall within the competence of an average practitioner in the field of compressed air systems, then in the Board's view such an argument

would not apply to the provision of a separate coupling unit allowing controlled and safe tandem operation (see page 2, lines 48 to 51, of the patent as granted). The Board is also convinced that in the context of operational safety the specific cover valve configuration could not be derived from the prior art without hindsight.

Therefore, the subject-matter of claim 1 involves the inventive step required by Articles 52(1) and 56 EPC, and claim 1 is accordingly allowable.

3.3 Dependent claims 2 to 7 concerning specific embodiments of claim 1 correspond to claims 2 to 7 as granted and are also allowable.

The description of the patent specification has been adapted to the amended version of claims and also meets 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 maintain the patent in amended form as presented at the oral proceedings:

claims: 1 to 7, claim 1 including an additional correction by inserting "is" in the expression "which movably mounted" in the line commencing with "+ a piston (13)";

description: pages 2 to 5; and

Figure: 1.

The Registrar: The Chairman:

P. Martorana E. Turrini