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Bezeichnung der Erfindung: A device for guiding a submersible pump unit
Title of invention:
Titre de l'invention :

Klassifikation / Classification / Classement : F04D 29/62

ENTSCHEIDUNG / DECISION

vom / of / du 9 August 1989

Anmelder / Applicant / Demandeur :

Patentinhaber / Proprietor of the patent /
Titulaire du brevet : Flygt AB

Einsprechender / Opponent / Opposant : OI Klein, Schanzlin & Becker
OII ABS Pumpen AG

Stichwort / Headword / Référence :

EPÜ / EPC / CBE Article 56

Schlagwort / Keyword / Mot clé : "Inventive step (affirmed)"

Leitsatz / Headnote / Sommaire

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Case Number : T 174/88 - 3.2.2

D E C I S I O N
of the Technical Board of Appeal 3.2.2
of 9 August 1989

Appellant : (Opponent II)
ABS Pumpen AG
Schneiderhöhe
D-5204 Lohmar 1 (DE)

Representative :
Vierkötter, Hans-Ulrich
Patentanwalt Dipl.-Ing. Vierkötter

Respondent : (Proprietor of the patent)
Flygt AB
Box 1309
S-17125 Solna (SE)

Representative :

Decision under appeal :
Decision of the Opposition Division of the European Patent Office dated 26 February 1988 rejecting the opposition filed against European patent No. 80 982 pursuant to Article 102(2) EPC.

Composition of the Board :

Chairman : G. Szabo
Members : K. Stamm
L. Mancini

Summary of Facts and Submissions

I. European patent No. 80 892 was granted on 12 March 1986 with six claims - relating to a device for guiding a submersible pump unit - in response to the European patent application No. 82 850 218.7, filed on 2 November 1982.

Claim 1 reads as follows:

"A device in a tank for moving a submersible pump unit (1) in a tank in a vertical direction to and from the operation level of the pump unit (1), including a single guide fixed in the tank, the single guide gradually changing into a broader part (12) near the operation level and cooperating with guide means arranged on the pump unit, **characterized in that** the guide is formed by a single wire (11) fixed at one end to the top of the tank, the other end of the wire (11) being attached to a gradually broadening part (12) fixed near the bottom of the tank, and that said guide means is provided with two forkformed legs (8, 9) vertically displaced in relation to each other and facing each other with a certain overlap, the upper end of the wire (11) defining a bend for obtaining an easily releasable connection of the pump unit."

II. Notices of Opposition were filed against the European patent by two parties on 2 October 1986 (OI) and on 10 December 1986 (OII). Revocation of the patent was requested on the grounds of Articles 52, 54 and 56 EPC, i.e. under Article 100(a) EPC. During the procedure before the Opposition Division the following documents were, inter alia, cited:

(1) DE-C-2 004 168
(2) US-A-4 060 345
(3) DE-C-1 912 963
(4) DE-A-1 235 747
(5) DE-A-1 231 562.

III. The Opposition Division refused the Opposition in a decision on 26 February 1988 since the grounds raised under Article 100 did not prejudice the maintenance of Claim 1 in its form as granted.

IV. The Appellant (Opponent II) filed a Notice of Appeal received on 23 March 1988 against the decision of the Opposition Division with the payment of fee and submitted a Statement of Grounds on 25 June 1988. The Appellant repeated the grounds advanced during the Opposition procedure against the patentability of the contested invention. He referred to document (6) DE-A-2 012 750, which had been originally cited in the search report as particularly relevant, and which in his view had not been taken duly into account in the assessment of the prior art. Accordingly, Claim 1 lacked clarity and did not disclose sufficiently the solution which, as he saw it, consisted only in the reduction of material consumption. If an additional problem had existed requiring an alignment between guiding rod and pump unit on the one hand, joining of guiding elements on the pump unit with a guiding rod arranged on the tank, such a problem was already solved, as shown by documents (1) and (2). A skilled person would not have been hindered or prejudiced in replacing a tube by a single wire according to (2) as also the use of wires had already been known (cf. (3), equivalent to SE-C-354 324). Therefore, the subject-matter of Claim 1 was, in his opinion, obvious.

V. The Respondent (Proprietor of the patent) refrained from answering the Appellant's observations.

VI. The Appellant requests that the patent be revoked in its entirety having regard to Articles 52, 54 and 56 EPC. The Respondent has not submitted any requests in the appeal proceedings.

Reasons for the Decision

1. The Appeal is admissible.

2. **Novelty**

None of the documents (1) to (6) discloses all the features of Claim 1. Although the Appellant alleges that Article 54 EPC was contravened, he nevertheless did not substantiate this - leaving open which document would in his view disclose all the features of Claim 1. Document (6), Figure 5, shows a guide which is formed by a solid rod to be turned around its axis, i.e. the feature "guide is formed by a single wire .." of Claim 1 is missing in (6). Furthermore, the "broader part" at the lower end of the guide rod, i.e. the cone, is a separate component which moves vertically along the rod in response to the turning of the latter. In addition, there are no forkformed legs provided around the guide in any embodiment. The other documents, representing even less similar arrangements, differ also in other respects when compared with the subject-matter of Claim 1. The device according to Claim 1 is, therefore, novel; it complies with Article 54 EPC.

3. The closest state of the art

The claimed subject-matter relates to devices which enable lowering pumps into a submersible tank so that the pump reaches the end point in a unique predetermined position for coupling its own outlet to an outlet pipe. Document (6) appears - among the cited documents - to be closest to the contested invention and describes several possibilities to achieve this. The means suggested in Figure 5 comprises a single guide rod allowing loose contact and even rotation around the axis of the rod by positioning around this a guide ring attached to the pump to be lowered. However, at the lower end, the guide rod is threaded in order to carry first a bush formed as a widening cone, and then below that a rectangular block slidably received in a corresponding guide block. The turning of the guide rod from above enables the threaded conical part to rise and engage in the guide ring to position the pump exactly to the outlet pipe.

4. Problem and solution

4.1 Starting from this document, the technical problem to be solved consists of improving and simplifying the technique to guide submersible pump units and of reducing the material consumption and thus the costs to a minimum.

This aim is in the first place achieved by providing in the device (a) a single wire as a unique main guide, (b) a broadening part thereof, (c) a particularly shaped and disposed forkformed pair of legs, and finally (d) a particularly formed upper end of the wire. These features have to be understood in their mutual technical inter-relationship, as supported by the description.

The Board cannot follow the view of the Appellant that a wire is not less material consuming than a rod or pipe, - a simple and rough comparison of the respective cross-sections proves the opposite. The Board cannot agree that the invention should be dismantled into separate features and seen as relating to isolated problems, as alleged by the Appellant. All of the above mentioned four features (a) to (d) are working together, form an inseparable unit and are involved in both aspects of the problem to be solved. Feature (a) together with (b) and (c) brings about an automatically guided movement, these features being efficaciously restricted to few important elements. At least (a) is smallest in cross-section and is flexible, and therefore together with (d), as a whole, enables easier work as well as reduced material consumption. It is to be emphasised that features (a), (b) and (c) are dependent from each other and from (d), since legs, wire, bend and broadening parts have to remain adapted during all the phases to the coordinated movement of the pump unit: at the bottom, the upper part, but also in the top position. The claimed device achieves its aim with flexibility during lowering but also with accuracy at the final position by using relatively simple means.

5. Inventive step

5.1 As already explained, document (6), Figure 5 provides the broadening part at the lower end of the guiding system in a manner which involves the lifting of an attached part by turning the guiding rod. There can be no suggestion to replace this with a less rigid guiding system, since this would render the necessary rise of the conical broader part inoperative. There is no room either for replacing the ring around the rod by a pair of specially shaped interrelated forks since this would make the fixing engagement with the broadening cone part impossible.

5.2 The other Figures in the same document use no broadening lower conical element to provide rigid engagement in the end-position at all, and any alignment of the pump to the outlet pipe is again provided by the interaction of other features in response to turning the guide rod at the top. Apart from this distinction, the upper parts are, therefore, also unsuitable to be modified in respect of a bend enabling easy release, which is required by the subject-matter of the patent in suit.

5.3 Other documents cited in the case provide no better starting point for trying to derive the invention in an obvious manner, or to supplement the missing features by combination with other documents. It is a remarkable feature of all citations that considerable flexural or torsional rigidity is required along the guide by relying on rods (cf. (1) and (2), in addition to (6)), or by providing at least two parallel wires to prevent torsion in a horizontal plane (cf. (3), (4) and (6)).

5.4 Document (1) for instance suggests also a pipe as a guide and particular aligning elements which allow rotation of the pump unit around the vertical axis near the lowest position until correct alignment is achieved. Here, rotation other than around the vertical axis is not shown. Document (2) shows several particular elements mounted on the main guide (rod 3) for the same purposes as mentioned in respect of document (1).

None of these constructions would, however, appear to be feasible if a single rod were to be replaced by a single wire, since the technical interrelation between guiding elements of the pump unit and the rod presupposes a sufficiently rigid component.

5.5 Documents (3), (4) and (5) disclose embodiments using two parallel wires which cooperate with two claws ((3): "Befestigungsklauen 3") for aligned movement along the wires. The top of the wire is bent and curved back to the second one of the two parallel wires. Although here an idea similar to the contested invention is used for obtaining an easily releasable connection of the pump unit - there is no hint or implication revealing that only a single wire should be used and how this is to be done. Again, the remaining features of Claim 1 are neither mentioned nor deducible.

5.6 The other essential features of the invention, i.e. the vertically displaced forkformed legs, facing each other, adapted to allow guidance of the pump unit when the broad part is engaged, could not be foreseen without the reliance of a correspondingly flatly shaped broadening. Contrary to closed rings linking the guide rods to the pump in the prior art, the open forkformed legs also allow easily releasable connection when the top bend is to be passed. The cited documents do not contain any disclosure or motivation for the skilled person to envisage such components for the device.

Therefore, the totality of features of contested Claim 1 is not obvious to a person skilled in the art, neither having regard to each one of the cited documents, nor to their combined teaching.

The device defined in Claim 1 therefore complies with Article 56 EPC and is patentable according to Article 52.

5.7 Dependent Claims 2 to 6 remain valid with Claim 1.

Order

For these reasons, it is decided that:

The Appeal is dismissed.

The Registrar: **The Chairman:**

S. Fabiani G. Szabo

Order

For these reasons, it is decided that:

The Appeal is dismissed.

The Registrar: The Chairman:

S. Fabiani

S. Fabiani G. Szabo

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