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**D E C I S I O N**  
of 23 May 1996

**Case Number:** T 0262/93 - 3.4.1

**Application Number:** 86100997.5

**Publication Number:** 0192082

**IPC:** A61N 1/36

**Language of the proceedings:** EN

**Title of invention:**  
Lead connector

**Patentee:**  
MEDTRONIC, INC.

**Opponent:**  
BIOTRONIK Mess- und Therapiegeräte GmbH & Co Ingenieurbüro  
Berlin

**Headword:**  
-

**Relevant legal provisions:**  
EPC Art. 56

**Keyword:**  
"Inventive step (no) "

**Decisions cited:**  
-

**Catchword:**  
-



Case Number: T 0262/93 - 3.4.1

**D E C I S I O N**  
of the Technical Board of Appeal 3.4.1  
of 23 May 1996

**Appellant:**  
(Opponent)

BIOTRONIK  
Mess- und Therapiegeräte GmbH & Co  
Ingenieurbüro Berlin  
Woermannkehe 1  
D-12359 Berlin (DE)

**Representative:**

Christiansen, Henning, Dipl.-Ing.  
Patentanwalt  
Pacelliallee 43/45  
D-14195 Berlin (DE)

**Respondent:**  
(Proprietor of the patent)

MEDTRONIC, INC.  
7000 Central Avenue N.E.  
Minneapolis  
Minnesota 55432-3576 (US)

**Representative:**

Kopacz, William James  
83 Avenue Foch  
F-75116 Paris (FR)

**Decision under appeal:**

Decision of the Opposition Division of the  
European Patent Office dated 25 January 1993  
rejecting the opposition filed against European  
patent No. 0 192 082 pursuant to Article 102(2)  
EPC.

**Composition of the Board:**

**Chairman:** G. D. Paterson  
**Members:** U. G. O. Himmler  
Y. J. F. van Henden

## Summary of Facts and Submissions

- I. European patent No. 0 192 082 relating to a lead connector was opposed on the ground that the subject-matter of the patent was not new or did not involve an inventive step as required by Article 100(a) EPC in view of the following prior art documents:

D1: DE-A-2 739 552

D2: DE-A-2 654 623

D3: DE-A-2 740 944

D4: US-A-4 236 525

The Opposition Division decided to reject the opposition.

- II. The only independent claim of the granted patent has the following wording:

"A device for coupling a medical electrical lead to a medical electrical stimulator, comprising:

a first connector member (10, Fig. 1) having a first predetermined number, greater than two, of contact surfaces (24, 26, 28, 30), mutually insulated from one another, mounted linearly along said first connector member, with each of the contact surfaces spaced a first predetermined distance  $x$  from the contact surface immediately adjacent thereto,

a second connector member (32) for slidably engaging said first connector member and including a second predetermined number of electrical contact surfaces (64, 66, 68, 70) for contacting selected ones of the first contact surfaces on the first connector member when the first connector member is slideably engaged with the second connector member,

the second connector (32) member including first and second conductors (72, 74) with each of the second contact surfaces (64, 66, 68, 70) being electrically coupled to only one of the first or the second conductors (72, 74), and with the immediately adjacent contact surfaces of the second contact surfaces (64, 66, 68, 70) being connected to different ones of the first and second conductors (72, 74),

characterized in that there are at least three of said second contact surfaces (64 - 70), of which adjacent ones are spaced apart by a distance equal to  $nx$ ,  $n$  being an integer, and  $n$  differing for adjacent pairs of contact surfaces which have a common contact surface."

III. In the above decision, the Opposition Division reasoned essentially as follows:

Document D1 does not disclose either any slidable engagement between the first and second connector members, or that each of the contact surfaces of the second connector member is coupled to only one of two conductors. Document D4 does not disclose either the features of the characterizing portion of the claim or the feature of the preamble that the contact surfaces of the first connector member are mutually insulated from one another. The problem solved by the claimed invention in the light of the closest prior art, document D4, is to provide a coupling device which allows selective coupling of different pairs of mutually insulated terminals provided on one connector member to two electrical conductors provided on the second connector member. None of the cited documents is concerned with this problem, and none of the documents gives any hint to the claimed solution. In particular, the device of document D4 only allows for reversing the polarity of a single pair of electrodes; no other pair of electrodes

can be selected. Document D1 is concerned with a different technical problem, i.e. the problem of allowing the connection of two different electrical devices with selected terminals of a single second device. Thus, the coupling device disclosed in document D1 does not allow the selection of certain terminals of a single first connector member to be connected to two conductors of a second connector member. Therefore, the combination of documents D1 and D4 would not lead the skilled person to the claimed solution. Documents D2 and D3 are less relevant than D1 and D4.

- IV. The Opponent lodged an appeal against the above decision and requested the revocation of the patent in its entirety.
- V. The Respondent requested the dismissal of the appeal.
- VI. In a communication annexed to the summons to attend oral proceedings, the Rapporteur of the Board informed the parties that according to his preliminary view the cited documents did not prejudice the maintenance of the patent unamended.
- VII. Oral proceedings took place on 23 May 1996. In a letter dated 7 March 1996, the Respondent's representative declared that he would not attend the oral proceedings and thus relied on his written submissions.
- VIII. In written submissions and during the oral proceedings, the Appellant advanced essentially the following arguments in support of its request:

Document D1 relates to a device for coupling different units together. Although the specific example mentions accumulators, it is clear that the principle disclosed in the document could be used also for coupling a

medical electrical lead to a medical electrical stimulator. The document discloses a first connector member (Figure 1) having a first predetermined number, greater than two, of contact surfaces (11,12,13,14), mutually insulated from one another, mounted linearly along said first connector member. It can be seen in the Figure, and the skilled person would derive from the document, that each of the contact surfaces is spaced a first predetermined distance from the contact surface immediately adjacent thereto. Furthermore, there is a second connector member (Figure 3) which includes a second predetermined number of electrical contact surfaces (111,121,141) for contacting selected ones of the first contact surfaces on the first connector member. The contacts are said to be spring-loaded ("federnde Spitzkontakte"). The skilled person understands that for this kind of contacts one connector member can be slid into position against the second connector member, i.e. the first connector member is slidably engaging the second connector member. Furthermore, the second connector member (Figure 3) includes first and second conductors (any of the conductors leading to the contacts) with each of the second contact surfaces (111,121,141) being electrically coupled to only one of the first or the second conductors, and with the immediately adjacent contact surfaces of the second contact surfaces being connected to different ones of the first and second conductors. Moreover, there are at least three of said second contact surfaces (111,121,141). Since the contact surfaces of the member disclosed in Figure 3 are to engage the corresponding surfaces of the first member (Figure 1), it is clear that the distance between the contacts 141 and 121 is twice the distance between the contacts 111 and 121, i.e. in the wording of the claim:

adjacent contact surfaces are spaced apart by a distance equal to  $nx$ ,  $n$  being an integer, and  $n$  differing for adjacent pairs of contact surfaces which have a common contact surface. Document D1 thus discloses all the constructional features of claim 1.

Furthermore, Document D4 discloses all the features of the preamble of claim 1. Although the document discloses an embodiment with two electrodes, it is stated (column 3, lines 36 to 44) that any number of electrodes may be provided. Moreover, it is clear from the prior art described in the patent in suit (column 1, lines 12 to 23 and Figure 1) that a medical lead with four electrodes belong to the state of the art. The skilled person is thus faced with the problem of connecting any two of these electrodes with the two poles of a voltage supply. The electrodes disclosed in Figure 1 of the patent has a constant distance between them. This means that if any two of the electrodes of the member disclosed in Figure 1 of the patent should be connectable to two poles of a voltage source, then the second member must have electrodes spaced apart as defined in the second part of the claim. The skilled person would therefore arrive at the claimed solution only by facing the posed problem. Anyhow, in view of the teaching of document D1, which discloses contact surfaces spaced apart according to the feature of the second portion of claim 1 of the patent in suit, the skilled person would arrive at the claimed solution without having to exercise any inventive activity.

IX. The Respondent put forward essentially the following arguments in the written submissions:

According to the patent in suit the first connector member 10 can be slidably moved to different positions relative to the second connector member 32 so that

diverse combinations of first contact surfaces may be connected to the second contact surfaces and thereby to the two conductors included in the second connector member. In this way electrodes connected to the first contact surfaces can be programmed in a complex manner by a simple sliding movement of the two connector members.

Document D4 discloses a device in which the polarity of two electrodes can be reversed, and there is no indication of a first set of contact surfaces spaced apart by a predetermined distance  $x$  with a second set of contact surfaces spaced apart by a distance  $nx$ ,  $n$  being an integer which differs for adjacent pairs of contact surfaces. Document D4 does therefore not disclose any device related to the programmability such as specified in the present claim 1.

Document D1 is not related to the proprietor's invention. Figure 1 discloses a connector member for a charging device which has two different charge voltages  $U_1$  and  $U_2$  which can be connected to two different accumulators. If it is desired to charge an accumulator which requires the voltage  $U_1$ , then the coupling member of Figure 2 is connected to the member of Figure 1, whereby the contacts 110, 120, 130 are connected to the contacts 11, 12, 13 of the charging device. If it is desired to charge an accumulator with the required voltage  $U_2$ , then the member shown on Figure 3 will be connected to the member shown on Figure 1 whereby the contacts 111, 121, 141 are connected to the contacts 11, 12, 14 of the charging device. Each contact of the connector members of the accumulators is thus connected to a specific contact of the charging device. The specific distance between the contact surfaces in Figures 1 and 3 is therefore irrelevant to the operation of the device. Furthermore, according to the patent in suit the second

connector member includes a first and a second conductor and each of the contact surfaces is coupled to only one of the first and the second conductors, with adjacent ones of the contact surfaces being connected to different ones of the first and second conductors. This feature is totally absent in document D1, since according to this document each of the "second contact surfaces" 111, 121 and 141 is connected to a different one of three different conductors (-, H and U<sub>2</sub>). The device of document D1 has therefore nothing to do with a programming function like that of the patent in suit.

- X. At the conclusion of the oral proceedings it was announced that the patent is revoked.

#### Reasons for the Decision

##### 1. *Novelty*

Document D1 does not disclose any connector member in which each of the contact surfaces is connected to only one of a first and a second conductor, with the immediately adjacent contact surfaces being connected to different ones of said first and second conductors.

Document D4 does, inter alia (see below), not disclose the features of the second portion of claim 1 of the patent in suit.

The other cited documents are less relevant than documents D1 and D4.

For these reasons, the subject matter of claim 1 of the patent fulfils the requirement on novelty according to Article 54 EPC.

2. *Inventive step*

In the Board's view, the state of the art coming closest to the invention is represented by document D4, which, in the wording of claim 1 of the patent, discloses (the references within parentheses refer to document D4):

a device for coupling a medical electrical lead to a medical electrical stimulator (see column 2, lines 44 to 54), comprising:

a first connector member (Figure 1) having a first predetermined number, greater than two, of contact surfaces (5, 10, 20), mounted linearly along said first connector member,

a second connector member (8, Figure 6) for slidably engaging said first connector member (see column 6, lines 6 to 15) and including a second predetermined number of electrical contact surfaces (27, 28) for contacting selected ones of the first contact surfaces on the first connector member when the first connector member is slidably engaged with the second connector member,

the second connector member (8) including first and second conductors (the conductors leading to the contact surfaces 27 and 28) with each of the second contact surfaces (27, 28) being electrically coupled to only one of the first or the second conductors, and with the immediately adjacent contact surfaces of the second contact surfaces (27, 28) being connected to different ones of the first and second conductors.

Furthermore, since it is clear from the function disclosed in connection with Figures 6 and 7 that either the contact surfaces 5 and 10 or the contact surfaces 10 and 20 can be positioned at the location of the second contact surfaces 27 and 28, the distance between the contact surfaces 5 and 10 must be the same as the distance between the contact surfaces 10 and 20; i.e. in the wording of the claim: each of the contact surfaces of the first connector member is spaced a first predetermined distance  $x$  from the contact surface immediately adjacent thereto.

The fact that document D4 discloses the above features has not been disputed by the Respondent.

2.1 The subject matter of claim 1 of the patent in suit is thus distinguished over the prior art of document D4 by the following features:

- (i) the contact surfaces of the first connector member are mutually insulated from one another;
- (ii) there are at least three of the second contact surfaces; and
- (iii) adjacent ones of the second contact surfaces are spaced apart by a distance equal to  $nx$ ,  $n$  being an integer, and  $n$  differing for adjacent pairs of contact surfaces which have a common contact surface.

2.2 Starting from document D4, the distinguishing features (i), (ii) and (iii) solve the objective problem of providing a coupling device which allows for different combinations of contact surfaces of a first connector member to be connected to a first and a second conductor of a second connector member.

2.3 The embodiment disclosed in connection with Figures 1, 6 and 7 of document D4 concerns a medical stimulator with two electrodes (one electrode being coupled to the contact surfaces 5 and 20 and the other electrode being coupled to the contact surface 10), and consequently this embodiment relates to the possibility of reversing the polarity of these two electrodes. Nevertheless, it is explicitly mentioned in document D4 (see column 3, lines 36 to 44) that although the described embodiments relate to a bipolar electrode unit, any number of electrodes may be provided and is within the scope of the invention described therein. The skilled person thus directly derives from document D4 that the teaching disclosed therein also applies to a medical stimulator with more than two stimulating electrodes. Furthermore, it is disclosed in the patent in suit a lead with four electrodes and corresponding four contact surfaces as forming part of the state of the art (see column 1, lines 12 to 23, column 2, line 51 to column 3, line 10 and Figure 1). For such a lead, having more than two electrodes, it is evident that a selection must be made which electrodes to use for the stimulation; i.e. which contact surfaces of the first connector member to connect to the two conductors of the second connector member. The above mentioned objective problem is thus evident to the skilled person.

Furthermore, when selecting which two of a plurality of contact surfaces to connect to two conductors (as opposed to only reversing the polarity), it is obvious that the contact surfaces must be mutually insulated from one another, because otherwise it would not be possible to select any two surfaces without shortcircuiting the electrodes. Therefore, in the Board's view, feature (i) is obvious to the skilled person in view of the teaching of document D4 that a plurality of electrodes may be provided.

2.4 When seeking a solution to the problem of providing a coupling device which allows different combinations of contact surfaces of a first member to be connected to the conductors of a second connector member, the skilled person would not be limited to the technical field of medical stimulators, since the problem as such relates to electrical coupling in general.

The person skilled in the art would therefore be led to consider document D1.

This document discloses a coupling device which allows for different combinations of electrodes of a first member according to Figure 1 to be connected to a second member as disclosed in Figure 2 or as in Figure 3.

With reference to feature (i), the description of the first member with reference to Figure 1 of document D1 makes it clear that the first member has four contact surfaces 11, 12, 13 and 14 which are mutually insulated from one another.

With reference to feature (ii), the description of the second member with reference to Figure 3 makes it clear that the second member has three contact surfaces 111, 121 and 141.

With reference to feature (iii), the description at page 6, second paragraph of document D1 makes it clear that the contact surfaces 111, 121 and 141 on the second member may be connected to the contact surfaces 11, 12 and 14 of the first member. Furthermore, the contact surfaces 11, 12, 13 and 14 are shown in Figure 1 as being equidistant from one another, although the description does not specifically state this.

In accordance with the established case law of the Boards of Appeal, a technical feature which is not specifically described in the written text of a prior art document may nevertheless be disclosed to a skilled person merely by the drawings of the document, if such technical feature is clearly and unambiguously derivable from such drawings and is technically consistent with the written text of the document. In the present case, a skilled person would immediately recognize that the contact surfaces 11, 12, 13 and 14 as shown in Figure 1 are equally spaced, and would have no possible reason for making the device shown in any other way, having regard to the description of the device and the other Figures of document D1.

Consequently, in order to make the appropriate connections between the contacts on the first and second members, the distance between the second member contact surfaces 121 and 141 must be twice the distance between the second member contact surfaces 111 and 121.

In the wording of claim 1 of the patent: adjacent ones of the second contact surfaces are spaced apart by a distance equal to  $nx$ ,  $n$  being an integer, and  $n$  differing for adjacent pairs of contact surfaces which have a common contact surface. Document D1 thus also discloses the above feature (iii).

- 2.5 The skilled person searching for a solution to the objective problem mentioned under No. 2.2, would immediately realize from the embodiment disclosed in document D1 that because the second connector member shown in Figure 3 has contact surfaces which are spaced apart by different distances  $nx$ , different combinations of the first, mutually insulated, contact surfaces 11, 12, 13 and 14 could be connected to the second contact surfaces just by moving the second member disclosed in

Figure 3 to different positions along the member shown in Figure 1. The skilled person would therefore, in the Board's judgment, be led to apply this idea to the coupling device known from document D4 in order to adapt this device to the case when a larger number (at least three) of electrodes is used as mentioned in the document itself. Therefore, the use of features (ii) and (iii) in combination with a device as disclosed in document D4 would be obvious to the person skilled in the art.

2.6 The Board does not agree with the Respondent's submission that document D1 is irrelevant since it only concerns the coupling of accumulators to a charging device. As indicated above the problem of selecting different contact surfaces to be connected to the conductors is not limited to the field of medical stimulators and the skilled person would therefore also consider the teaching of document D1. Furthermore, although the Respondent may be right in saying that the contact surfaces of the second member shown in Figure 3 are connected to specific contact surfaces of the first member shown in Figure 1, document D1 clearly relates to different coupling combinations, since Figure 2 and Figure 3 show connector members used for such different coupling combinations. Moreover, in the Board's view, since the skilled person derives from Figure 3 of document D1 that the distance between the electrodes 141 and 121 is twice the distance between the electrodes 111 and 121, it is obvious just from looking at the drawings that this construction allows for the selection of different combinations of connections with the connector member of Figure 1, and this would lead the skilled person to the solution of the problem as claimed in claim 1 of the patent.

Dependent claims 2 and 3 fall with claim 1.

2.7 For the foregoing reasons, in the Board's judgement, the subject matter of claim 1 does not fulfil the requirement of inventive step within the meaning of Article 56 EPC.

### Order

For these reasons it is decided that:

1. The appeal is allowed.
2. European patent no. 0 192 082 is revoked.

The Registrar:

The Chairman:

M. Beer

G. D. Paterson