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File Number: T 281/92 - 3.4.2

Application No.: 87 308 844.7

Publication No.: 0 310 717

Title of invention: Battery pack

Classification: H01M 2/10, H01M 10/46, H01M 2/20, H02J 7/00

DECISION  
of 6 November 1992

Applicant: Black & Decker Inc.

Headword:

EPC Article 84

Keyword: "Clarity: yes (after amendments)"  
"A claim with functional features, with corresponding structural features in the only embodiment of the specification, is sufficiently clear"



Case Number : T 281/92 - 3.4.2

**D E C I S I O N**  
of the Technical Board of Appeal 3.4.2  
of 6 November 1992

**Appellant :** Black & Decker Inc.  
Drummond Plaza Office Park  
1423 Kirkwood Highway  
Newark  
Delaware 19711 (US)

**Representative :** Lucas, Brian Ronald  
Lucas, George & Co.  
135 Westhall Road  
Warlingham  
Surrey CR3 9HJ (GB)

**Decision under appeal :** Decision of the Examining Division of the  
European Patent Office dated 16 December 1991  
refusing European patent application  
No. 87 308 844.7 pursuant to Article 97(1) EPC.

**Composition of the Board :**

**Chairman :** E. Turrini  
**Members :** M. Chomentowski  
J.-C. Saisset

## Summary of Facts and Submissions

- I. European patent application No. 87 308 844.7 (publication No. 0 310 717) was refused by the Examining Division on the grounds that the valid Claim 1 was not clear (Article 84 EPC). According to the decision, although the application in general appeared to contain allowable matter, however Claim 1 was not clear in that formally it was directed to a device but in fact merely indicated a result to be achieved and did not specify the subject-matter in terms of reasonably broad, but nevertheless concrete, technical features of the claimed device.
- II. The Appellants (Applicants) lodged an appeal against this decision and requested that the decision under appeal be set aside and that a patent be granted either on the basis of the valid patent application documents without further amendments or, alternatively, on the basis of new claims corresponding to those which the Examining Division had already indicated as being allowable.
- III. In an official communication, the Board of Appeal expressed the opinion that the main claims of the requests did not appear to be clear because of ambiguities concerning the features thereof, but that an amended patent application based on the main request and containing the amendments shown on an attached copy could be considered as defining unambiguously the claimed device and could be allowable.
- IV. In a letter dated 28 October 1992, the Appellants expressed their agreement with the text suggested by the Board and filed a complete specification corresponding in all respects therewith except for editorial amendments.
- V. Claims 1 and 3 read as follows:

"1. A battery pack which can be carried by a person and has a socket (44) to which a power cord (86) of a tool or appliance may be detachably connected, characterized in that said socket (44) can accommodate, one at a time, a conventional cigar lighter socket-compatible plug (48) and a plug (42) which is capable of carrying higher currents but is incompatible with a conventional cigar lighter socket, and in that it includes means (90) to inhibit actuation of a conventional cigar lighter plug (96) on insertion therein."

"3. A battery pack which can be carried by a person and has a socket (44) to which a power cord (86) of a tool or appliance may be detachably connected, characterized in that said socket (44) is provided with a first abutment surface (99) and a second abutment surface (93) for abutment with contact members (103, 105) of a conventional cigar lighter socket-compatible plug (48), said first abutment surface (99) forms an end of a first wiping member (98) for wiping contact with a first wiping contact (110) of a plug (42) which is incompatible with a conventional cigar lighter socket and which is capable of carrying higher currents, and said socket (44) is further associated with a second wiping member (95) for wiping contact with a second wiping contact (117) of said plug (42) which is capable of carrying higher currents, and in that it includes means (90) to inhibit actuation of a conventional cigar lighter plug (96) on insertion therein."

Claims 2 and 4 to 9 are dependent claims.

VI. The Appellants submitted the following arguments in support of their request.

A number of portable electric appliances are provided with cigar-lighter socket compatible plugs and can be operated by inserting the plug in the standard cigar-lighter socket provided in most vehicles. Contact between the cigar-lighter socket compatible plug and the socket is made by spring abutment of the electrodes of the socket, said abutment being, by its very nature, only satisfactory for carrying relatively low current, as is the case for said portable appliances. A socket which is capable of receiving both a conventional cigar-lighter socket compatible plug and a plug which is capable of handling higher currents is not disclosed in the art and there is no prior art which is remotely relevant for the claimed battery pack. The Applicants have disclosed the best technique of which they were aware at the time of filing this application for putting the invention into effect. Once the man skilled in the art has been given the broad concept of the invention as defined in Claim 1, it is a relatively simple matter to devise a socket having all the required properties but which would not fall within the scope of Claim 3. Therefore, Claim 1 is clear and the patent application is allowable.

#### Reasons for the Decision

1. The appeal is admissible.
2. Allowability of the amendments
  - 2.1 Claim 1 is based on a combination of original Claims 1 to 4, whereby original Claims 2 to 4 are dependent claims and include the further features that the plug (42) capable of carrying higher currents is incompatible with a conventional cigar lighter socket and that the socket (44) can accommodate a conventional cigar lighter socket-

compatible plug (48) and a plug (42) which is capable of carrying higher currents, but only one at a time, which are based on the description as originally filed (see page 6, line 31 to page 7, line 6; Figure 12) and on the whole original specification (see for instance Figure 1), respectively. Independent Claim 3 is based on the same parts of the original application and is more precisely directed to the embodiment illustrated by original Figures 5 and 10 to 12.

Therefore, the European patent application has not been amended in such a way that it contains subject-matter which extends beyond the content of the application as filed (Article 123(2) EPC).

3. Clarity

3.1 According to the appealed decision, at that time valid Claim 1 was not clear in that formally it was directed to a device but in fact merely indicated a result to be achieved and did not specify the subject-matter in terms of reasonably broad, but nevertheless concrete, technical features of the claimed device; however, a main claim directed to the only embodiment of the invention in the application could be considered as patentable. Indeed, the socket of Claim 1 at the time of the appealed decision, as well as of present Claim 1, is defined only in terms of its functional relationship to the plugs to be detachably connected thereto, no specific technical features which can ensure the result to be achieved being mentioned in the claim. The question arises, whether or not the claimed device is sufficiently defined by the text of the claim.

3.2 According to the present application (see page 1, lines 2 to 3; page 3, line 26 to page 4, line 5; Claims 1 and 3), the invention relates to a battery pack for portable tools

and appliances and, more specifically, is concerned with the connection of said tool or appliance to said battery pack. Therefore, the application pertains to the field of portable tools and appliances, and more specifically to the field of the electrical connection of said tools or appliances to a battery pack.

3.3 First, before assessing whether or not the functional features correctly define the invention, it is to be noted that Claim 1 specifies that the socket (44) can accommodate, one at a time, a conventional cigar lighter socket-compatible plug and a plug for high current devices provided with a special high current plug and that, because of the intended compatibility with conventional cigar lighter socket-compatible plugs, the socket (44) has means for preventing insertion of a conventional cigar lighter plug; thus, the recited features are consistent with the description and the drawings (see page 2, lines 4 to 8; page 3, lines 3 to 8; page 7, lines 15 to 18 and lines 27 to 30; see also Figures 5, 10 and 11), in particular with the statements that, because the heat generated by activation of a cigar lighter plug (96) could damage the cylindrical housing (92) of the socket (44) which is made of a resilient plastics material, the battery pack is thus provided with means to inhibit actuation of a conventional cigar lighter on insertion in the socket.

3.4 A first functional feature of the socket (44) of the claimed battery pack results from the first condition, i.e. that it can accommodate a conventional cigar lighter socket-compatible plug. The application (see page 1, lines 4 to 16; page 5, lines 13 to 16 and 25 to 28; page 7, lines 4 to 14; page 8, line 28 to page 9, line 3; Figure 5, item (48), "in chains" and Figure 12, item (118)) discloses an example of a plug (48) including a

spring loaded contact (103) and a spring wire contact (105) for making abutting contact with the abutment surface (99) and the cylindrical metal casing of the socket, respectively, when inserted in the socket, and of a conventional cigar lighter socket (118). A second functional feature of the socket of the claimed battery pack is that it includes means (90) to inhibit actuation of a conventional cigar lighter plug (96) on insertion therein. Two types of conventional cigar lighter plugs (96, 96') are shown in broken lines in Figures 11 and 12 of the application (see page 5, lines 23 to 24; page 8, lines 13 to 27) with, moreover, the means (90, 102) in the socket (44) of the claimed battery pack, i.e. the boss (90) integrally formed in the cylindrical housing (92) and sized to intercept the axial face (94) of the cigar lighter (96) and space said axial face (94) from the contact (98) of the socket (44) to prevent an electrical connection, or the lip portion (102) of the housing extension (100) of the socket sized to intercept the flange (104) of the other type of cigar lighter (96'), which inhibit the actuation of a conventional cigar lighter on insertion in said socket (44). A third functional feature of the socket of the claimed battery pack is that it can also accommodate a plug which is capable of carrying higher currents. The application (see page 7, line 19 to page 8, line 9; page 8, line 28 to page 9, line 3; Figure 5, item (42) and Figure 12) discloses an example (42) thereof including a first wiping member in the form of a cylindrical sleeve (110) of brass at the first end of the plug and a second wiping member in the form of a U-shape member (117) which has portions which project radially outwardly from diametrically opposite sides of the resilient plastic casing (119) of said plug (42).



A fourth functional feature of the socket of the claimed battery pack is that it is such that the above-mentioned plug (42) capable of carrying higher current is not compatible with a conventional lighter socket. In other words, said plug (42) must include means which inhibit actuation of the connected appliance when said plug (42) is inserted in a conventional cigar lighter socket and therefore, prima facie, said fourth functional feature seems to be merely a feature of the plug and not of the socket. Indeed, it is derivable from the text of the claim that said inhibiting means are primarily concerned with the structure of said plug, because it is its relation with a conventional socket which is concerned; the application (see page 8, line 28 to page 9, line 3; Figure 12, item 120, in broken line) discloses an example of said means, i.e. a part (120) of said plug projecting beyond the cylindrical sleeve (110) thereby preventing electrical contact between cylindrical sleeve (110) and contact face (116) of cigar lighter socket (118), as well as the reasons which make such inhibiting means necessary. However, although said means disclosed in the description and the drawings are part of the plug (42) and not of the socket (44) of the claimed battery pack, it is to be noted that it is derivable from the text of Claim 1 that the socket (44) should include means complementary to the means of the plug (42) such that the latter have the wanted functions. Thus, also this fourth functional feature can be considered a feature of the socket of the claimed battery pack.

- 3.5 The Appellants have submitted in particular that they have disclosed the best technique of which they were aware at the time of filing this application for putting the invention into effect; once the man skilled in the art has been given the broad concept of the invention as defined in Claim 1, it is a relatively simple matter to devise a socket having all the required properties but which would

not fall within the scope of Claim 3; in effect, if the Appellants were obliged to accept a claim of the scope of Claim 3, the essence of their invention could readily be taken by a third party without a literal infringement of the claim; in this connection, a number of EPC countries, and in particular the United Kingdom, do not recognise the concept of "equivalents" when interpreting claims and it is essential to have broad coverage in these countries.

Indeed, in the opinion of the Board, the four above-mentioned features, which are mentioned in Claim 1 in a functional form, correspond to specific means which are disclosed in the only disclosed embodiment and it is important to assess whether or not the specific disclosed features could be replaced by other features having the same function. Having regard to the above-mentioned three first functional features of the socket, it is to be noted that there is no real ambiguity concerning their structure because they either correspond to or are adapted for conventional components which are generally known to skilled people or even available on the market (and there is no indication that it was not so at the date of filing the application), or are easy to design therefrom by adapting their materials or their dimensions to make them capable of carrying higher currents or of inhibiting electrical contact, respectively; referring to the embodiment disclosed in the application, although always possible, is not even needed. Although the information contained in the description and the drawings (see Figures 10 to 12) is necessary having regard to the fourth functional feature of the socket of the claimed battery pack, i.e. the means which inhibits actuation of the connected appliance when said plug (42) for higher current is inserted in a conventional cigar lighter socket, the following is to be noted; said means consists of a part (120) of said plug projecting beyond the cylindrical sleeve (110) thereby preventing electrical contact between

cylindrical sleeve (110) and contact face (116) of cigar lighter socket (118); however, the application discloses, in relation with other functional features, other means for inhibiting electrical contact of two conductive elements, such as the boss (90) stopping the insertion of the cigar lighter (96) into the socket (44), the conductive sleeve (110) of the plug (42) with the contact face (116) of cigar lighter socket (118), or the flange (104) on the other type of cigar lighter (96') with a corresponding adapted lip portion (102) on the socket. Therefore, the skilled person can directly and unambiguously derive already from the application alone other structural features having the same function and can apply said information and modify features such as material and dimensions in order to design, in an obvious way, a socket having said fourth functional feature. Thus, since said functional features define a technical result and, from an objective viewpoint, there is no indication that such features can otherwise be defined more precisely without restricting the scope of the invention, and since said features provide instructions which are sufficiently clear for the expert to reduce them into practice without undue burden, in particular by taking into account the information contained in the whole application, if necessary with reasonable experiments, the Appellants arguments can be accepted (cf. the Decision T 68/85, OJ EPO, 1987, 228).

3.6 Therefore, Claim 1 is clear in the sense of Article 84 EPC. Claim 3, which corresponds to a structure of the type claimed in Claim 1 and which is directed to the only disclosed embodiment, is also clear for the same reasons.

4. Novelty and inventive step

4.1 According to the decision under appeal, a clarified main claim should be patentable. Since the available prior art

does not include documents which allow a valid objection in this respect, the subject-matter of Claims 1 and 3 is novel and involves an inventive step in the sense of Articles 54 and 56 EPC, respectively.

5. Therefore, since the application and the invention to which it relates meet the requirements of the EPC, a European patent can be granted (Articles 52(1) and 97(2) EPC).

Order

For these reasons, it is decided that:

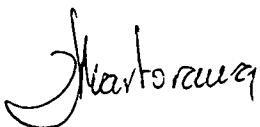
1. The decision under appeal is set aside.
2. The case is remitted to the first instance with the order to grant a patent on the basis of the following documents:

Description: pages 1 to 10 filed on the 29 October 1992 with Appellants' letter dated 28 October 1992,

Claims: 1 to 9 filed with Appellants' same letter, and

Drawings: sheets 1/7 to 7/7 (Figures 1 to 12) as originally filed.

The Registrar:



P. Martorana

The Chairman:



E. Turrini

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