

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY
(PCT Rule 43bis.1)**

To:

see form PCT/ISA/220

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/GB2018/052685

International filing date (day/month/year)
20.09.2018

Priority date (day/month/year)
28.09.2017

International Patent Classification (IPC) or both national classification and IPC
INV. A47L9/28

Applicant
BLACK & DECKER INC.

1. This opinion contains indications relating to the following items:

- Box No. I Basis of the opinion
- Box No. II Priority
- Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- Box No. IV Lack of unity of invention
- Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- Box No. VI Certain documents cited
- Box No. VII Certain defects in the international application
- Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA:




European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0
Fax: +49 89 2399 - 4465

Date of completion of this opinion

see form PCT/ISA/210

Authorized Officer

Telephone No. +49 89 2399-0



Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:
 - the international application in the language in which it was filed.
 - a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).
2. This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43bis.1(a))
3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:
 - a. forming part of the international application as filed:
 - in the form of an Annex C/ST.25 text file.
 - on paper or in the form of an image file.
 - b. furnished together with the international application under PCT Rule 13ter.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.
 - c. furnished subsequent to the international filing date for the purposes of international search only:
 - in the form of an Annex C/ST.25 text file (Rule 13ter.1(a)).
 - on paper or in the form of an image file (Rule 13ter.1(b) and Administrative Instructions, Section 713).
4. In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
5. Additional comments:

Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of

- the entire international application
- claims Nos. 18-22, 24(completely); 25, 26(partially)

because:

- the said international application, or the said claims Nos. relate to the following subject matter which does not require an international search (*specify*):
- the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):
- the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed (*specify*):
- no international search report has been established for the whole application or for said claims Nos. 18-22, 24(completely); 25, 26(partially)
- a meaningful opinion could not be formed without the sequence listing; the applicant did not, within the prescribed time limit:
 - furnish a sequence listing in the form of an Annex C/ST.25 text file, and such listing was not available to the International Searching Authority in the form and manner acceptable to it; or the sequence listing furnished did not comply with the standard provided for in Annex C of the Administrative Instructions.
 - furnish a sequence listing on paper or in the form of an image file complying with the standard provided for in Annex C of the Administrative Instructions, and such listing was not available to the International Searching Authority in the form and manner acceptable to it; or the sequence listing furnished did not comply with the standard provided for in Annex C of the Administrative Instructions.
 - pay the required late furnishing fee for the furnishing of a sequence listing in response to an invitation under Rule 13ter.1(a) or (b).
- See Supplemental Box for further details

Box No. IV Lack of unity of invention

1. In response to the invitation (Form PCT/ISA/206) to pay additional fees, the applicant has, within the applicable time limit:
- paid additional fees
 - paid additional fees under protest and, where applicable, the protest fee
 - paid additional fees under protest but the applicable protest fee was not paid
 - not paid additional fees
2. This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is
- complied with
 - not complied with for the following reasons:
see separate sheet
4. Consequently, this report has been established in respect of the following parts of the international application:
- all parts.
 - the parts relating to claims Nos. 1-17, 23(completely); 25, 26(partially)

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	<u>1-17, 23(completely); 25, 26(partially)</u>
	No: Claims	
Inventive step (IS)	Yes: Claims	<u>1-17, 23(completely); 25, 26(partially)</u>
	No: Claims	
Industrial applicability (IA)	Yes: Claims	<u>1-17, 23(completely); 25, 26(partially)</u>
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Item VIII

Claim 23 is not clear as claim 23 is directed to a method for a robotic device.

This wording does not define the features of the method. It is supposed that the subject-matter of claim 23 consists in a method for using a robotic device

Similar objection is raised for claim 24.

The following opinion is based on such interpretation.

Item IV

The present application contains independent claims directed to **at least two** different inventions which are not linked together in order to form a **single general inventive concept** (Rule 13(1) and (2) PCT), because they lack the same or corresponding potential special technical features as well as the same objective technical problem to solve.

The separated groups of inventions are:

Group 1: Claims 1,2-17, 23, 25 part. and 26 part.

A robotic device (claim 1) comprising:

- an energy storage device; and
- a controller configured to determine whether a quantity of energy stored in the energy storage device is below a predetermined energy level, wherein:
the robotic device is configured to perform a cleaning task if the determined quantity of energy is not below the predetermined energy level;
if the determined quantity of energy is below the predetermined energy level:
the controller is configured to estimate a likelihood of the robotic device being capable of locating a recharging base station; and
in dependence on the estimated likelihood, the robotic device is configured to seek the recharging base station or perform the cleaning task,

a method for using said robotic device (claim 23),

a computer program code for performing a method as claimed in claim 23 (claim 25 part), and

a non-transitory computer readable storage medium having stored thereon computer readable instructions that, when executed at a processor, cause a robotic device comprising the processor to perform the method as claimed in claim 23 (claim 26 part.).

Group 2: Claims 18, 19-22, 24, 25 part. and 26 part.

A robotic device (claim 18) comprising:

- an energy storage device;
- one or more charging contacts for receiving energy from a base station;
- a controller configured to determine whether the one or more charging contacts are receiving energy from the base station; wherein:

if the one or more charging contacts are not receiving energy from the base station: the controller is configured to estimate a likelihood of the base station being capable of providing energy to the one or more charging contacts; and in dependence on the estimated likelihood, the robotic device is configured to seek the recharging base station or not seek the recharging base station.

a method for using said robotic device (claim 24),

a computer program code for performing a method as claimed in claim 24 (claim 25 part), and

a non-transitory computer readable storage medium having stored thereon computer readable instructions that, when executed at a processor, cause a robotic device comprising the processor to perform the method as claimed in claim 24 (claim 26 part.).

Reasons

The minimum features in common of the two groups of inventions consists in a robotic device comprising:

- an energy storage device; and
- a controller

These features are not novel over US 2017/217019 A1 (D1) as said document describes unambiguously a robotic device (40) (*see page 3, paragraph [0033] and Fig.2A, 2B*) comprising:

- an energy storage device (*see page 1, paragraph [0007]*); and
- a controller (*see page 3, paragraph [0034]*)

The potential special technical features of group 1 over D1 consists in the controller being configured to determine whether a quantity of energy stored in the energy storage device is below a predetermined energy level, wherein:

- the robotic device is configured to perform a cleaning task if the determined quantity of energy is not below the predetermined energy level;
- if the determined quantity of energy is below the predetermined energy level: the controller is configured to estimate a likelihood of the robotic device being capable of locating a recharging base station; and
- in dependence on the estimated likelihood, the robotic device is configured to seek the recharging base station or perform the cleaning task,

This potential special technical feature solves the objective technical problem of

" Providing a robotic device which can autonomously find and dock with a recharging station to recharge its batteries and then continue performing its task without human intervention in an efficient manner " (see description, page 1, lines 21-24; first aspect).

The potential special technical features of group 2 over D1 consists in the robotic device comprising one or more charging contacts for receiving energy from a base station.

This potential special technical feature solves the objective technical problem of

" Providing a robotic device which can easily dock with the base station for automatically recharging the energy storage device" (see description, page 4, lines 8-9 in combination with page 7 lines 9-11; second aspect).

Therefore they lack the same or corresponding special technical feature as well as the same objective technical problem to solve.

Item V

It is pointed out that since the applicant has not paid any additional search fees under protest during the international search stage when lack of unity was objected, only the first group of the invention, namely claims 1,2-17, 23, 25 part. and 26 part, will be examined.

1° Prior art

The following document is referred to in this communication; the numbering will be adhered to in the rest of the procedure:

D1: US 2017/217019 A1 (COHEN DAVID A [US] ET AL) 3 August 2017 (2017-08-03)

2° Claim 1

2.1° Difference

The subject-matter of claim 1 differs from that of D1 in that the robotic device is configured to perform a cleaning task if the determined quantity of energy stored in the energy storage device is not below the predetermined energy level; if said determined quantity of energy is below the predetermined energy level:

- the controller is configured to estimate a likelihood of the robotic device being capable of locating a recharging base station; and
- in dependence on the estimated likelihood, the robotic device is configured to seek the recharging base station or perform the cleaning task.

The subject-matter of claim 1 can therefore be considered as novel in the sense of article 33(1) and (2) PCT.

2.2° Objective technical problem

Providing a robotic device which can autonomously find and dock with a recharging station to recharge its batteries and then continue performing its task without human intervention in an efficient manner.

2.3° Inventive step

There is no apparent or underlying motivation, which can be gleaned from the prior art documents, whether they are considered alone or in combination, that would lead the skilled person to configure the robotic device of D1 to perform a cleaning task if the determined quantity of energy stored in the energy storage device is not below the predetermined energy level; if said determined quantity of energy is below the predetermined energy level:

- the controller is configured to estimate a likelihood of the robotic device being capable of locating a recharging base station; and
- in dependence on the estimated likelihood, the robotic device is configured to seek the recharging base station or perform the cleaning task;

in order to solve the objective technical problem.

The subject-matter of claim 1 can therefore be considered as involving an inventive step (Article 33(1) and (3) PCT).

3° Claims 23

The subject-matter of claim 23 consists in method for using a robotic device of claim 1. The subject-matter of claim 23 can be, for similar reasons as those given for the subject-matter of claim 1, as both, novel and inventive (Article 33(1)-(3) PCT).

4° Claim 25 part.

The subject-matter of claim 25 part. consists in a computer program code for performing a method as claimed in claim 23.

The subject-matter of claim 25 part can be, for similar reasons as those given for the subject-matter of claim 23, as both, novel and inventive (Article 33(1)-(3) PCT).

5° Claim 26 part.

The subject-matter of claim 26 part. consists in a non-transitory computer readable storage medium having stored thereon computer readable instructions that, when executed at a processor, cause a robotic device comprising the processor to perform the method as claimed in claim 23.

The subject-matter of claim 26 part can be, for similar reasons as those given for the subject-matter of claim 23, as both, novel and inventive (Article 33(1)-(3) PCT).

6° Industrial applicability

The industrial applicability is obvious (Art.33(1) and (4) PCT).

Item VII

The features of the claims should be provided with reference signs placed in parentheses to increase their intelligibility (Rule 6.2(b) PCT). This applies to both the preamble and characterising portion.

Independent claims are not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art (document D1) being placed in the preamble (Rule 6.3(b)(I) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT). It should therefore be redrafted accordingly.

To meet the requirements of Rule 5.1(a)(ii) PCT, the document D1 should be identified in the description and its relevant contents should be indicated.

The applicant should ensure that it is clear from the description which features of the subject-matter of independent claim 1 are known from D1, which technical effect is generated by the differentiating features and which objective technical problem is solved by the invention (see Rule 5.1(a)(iii) PCT and Guidelines Chap.4.5).

The attention of the applicant is drawn to the fact that by introducing D1 and specifying the objective technical problem, the application should not contain subject-matter which extends beyond the content of the application as filed (Article 34(2)b PCT).