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01.07.21

Reference JE/ES/N36633-EP	Application No./Patent No. 18875150.7 - 1201 / 3707576 PCT/US2018059997
Applicant/Proprietor Quanta Associates, L.P.	

Communication

The extended European search report is enclosed.

The extended European search report includes, pursuant to Rule 62 EPC, the supplementary European search report (Art. 153(7) EPC) and the European search opinion.

Copies of documents cited in the European search report are attached.

☒ 0 additional set(s) of copies of such documents is (are) enclosed as well.

Refund of the search fee

If applicable under Article 9 Rules relating to fees, a separate communication from the Receiving Section on the refund of the search fee will be sent later.

Should you wish to further prosecute this application in the examination phase, your attention is drawn to the provisions of Rule 70a EPC. An invitation to respond to the extended European search report will be issued shortly (R. 70(2) EPC).



SUPPLEMENTARY EUROPEAN SEARCH REPORT

Application Number
EP 18 87 5150

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	CN 105 576 554 A (CHINA ELECTRIC POWER RES INST; STATE GRID CORP CHINA) 11 May 2016 (2016-05-11) * the whole document *	1-8, 10-15	INV. G05F1/565 B66F11/04
A	US 2016/356826 A1 (BALL DAVID JAMES [US] ET AL) 8 December 2016 (2016-12-08) * paragraphs [0005], [0006], [0032], [0041]; figures 3, 4 *	1,11	
			TECHNICAL FIELDS SEARCHED (IPC)
			B66F H02G H02H B66C E06C H01R G01R
The supplementary search report has been based on the last set of claims valid and available at the start of the search.			
Place of search The Hague		Date of completion of the search 23 June 2021	Examiner Starck, Thierry
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 18 87 5150

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

23-06-2021

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
CN 105576554	A	11-05-2016	NONE	

US 2016356826	A1	08-12-2016	AR 104903 A1	23-08-2017
			AU 2016270351 A1	18-01-2018
			BR 112017025786 A2	07-08-2018
			CA 2987059 A1	08-12-2016
			CL 2017003065 A1	22-06-2018
			CL 2018003399 A1	29-03-2019
			CN 107850640 A	27-03-2018
			CO 2017012469 A2	31-05-2018
			CR 20170548 A	03-04-2018
			EC SP17079886 A	31-03-2018
			EP 3304106 A1	11-04-2018
			HK 1248317 A1	12-10-2018
			PE 20180724 A1	26-04-2018
			PH 12017502214 A1	11-06-2018
			US 2016356826 A1	08-12-2016
			US 2019257859 A1	22-08-2019
			WO 2016196986 A1	08-12-2016

The examination is being carried out on the **following application documents**

Description, Pages

1-10 as published

Claims, Numbers

1-15 filed in electronic form on 27-05-2020

Drawings, Sheets

1/5-5/5 as published

Reference is made to the following documents; the numbering will be adhered to in the rest of the procedure.

- D1 CN 105 576 554 A (CHINA ELECTRIC POWER RES INST; STATE GRID CORP CHINA) 11 May 2016 (2016-05-11)
- D2 US 2016/356826 A1 (BALL DAVID JAMES [US] ET AL) 8 December 2016 (2016-12-08)

- 1 The application does not meet the requirements of Article 84 EPC, because claims 1, 6 and 10 are not clear.
- 1.1 The feature "wherein in use, when the worker .., the at least one inductor suppresses transients currents..." in the apparatus claim 1 relates to a method of using the apparatus rather than clearly defining the apparatus in terms of its technical features. The intended limitations are therefore not clear from this claim, contrary to the requirements of Article 84 EPC.
- Suggestion: replace the term "suppresses" by "is adapted to suppress".
- 1.2 Claims 6 and 10 refer to the energized electrical equipment which is not part of the claimed subject-matter. Such a reference to an external entity is not clear in these cases, as it is not possible to determine the voltage of this external entity with only the knowledge of the claimed system.(see EPO guidelines F-IV, 4.14).
- Suggestion: claims 6 and 10 should be amended to comprise the energized electrical equipment.

- 2 Furthermore, notwithstanding the above-mentioned lack of clarity, the subject-matter of claim 1 is not new within the meaning of Article 54(1) and (2) EPC, and the requirements of Article 52(1) EPC are therefore not met.

D1 (see the enclosed machine translation of the description) discloses:

A system for use with overhead energized electrical equipment for controlling transient currents generated during bond-on with the energized electrical equipment by a human worker (*"The present invention relates to live line working field, more specifically relate to control device and the control method of a kind of extra-high voltage electrified operation potential transfer electric current and electric arc"*), the system comprising:

an electrically insulating structure adapted to carry the worker at a first end of the electrically insulating structure and to position the worker adjacent the energized electrical equipment (implicite from *"equal potential working personnel carry the electric potential transferring stick with potential transfer electric current and function of electric arc control and enter hanging basket or flat ladder"*);

at least one inductor (2, Fig.1) operatively coupled to the first end of the electrically insulating structure (the inductor 2 is integrated in an insulating stick and electrically connected via splicing ear 6 to the screening clothing of the worker and implicitly to the basket where the worker stands: *"A control method for extra-high voltage electrified operation potential transfer electric current and electric arc, comprising: live line working personnel carry control device and enter hanging basket or flat ladder, is connected to by the splicing ear in the potential transfer loop in control device on the screening clothing of band point operating personnel; Band point operating personnel moves to the position of distance high-voltage wire 0.5m,;*

and wherein, in use, when the worker is positioned adjacent the energized electrical equipment and is bonding-on to the energized electrical equipment for achieving a common potential with the energized electrical equipment, the at least one inductor suppresses transient currents from the energized electrical equipment to thereby inhibit propagation of the transient currents through the insulating structure (*"An inductance 2 and resistance 3 loop is sealed in the loop of potential transfer, as shown in Figure 1, entering and exiting in equipotential process, by-pass switch 4 is in open mode, potential transfer and electric arc control loop enter mode of operation, due to the effect of inductance 2 and resistance 3, operating personnel and the transient state capacitance current of leading between line capacitance obtain obvious reduction"*)).

- The subject-matter of claim 1 is therefore not new (Article 54(1) and (2) EPC).
- 3 The same reasoning applies, *mutatis mutandis*, to the subject-matter of the corresponding independent claim 11, which therefore is also considered not new.
- 4 Dependent claims 2-8, 10-15 do not appear to contain any additional features which, in combination with the features of any claim to which they refer, meet the requirements of the EPC with respect to novelty and/or inventive step.
- 4.1 Claims 2 and 12: providing the hanging basket mentioned in D1 to an end of an insulating boom is an obvious and known way to carry workers in the vicinity of a high voltage equipment to be worked on, see for example D2, basket /lift platform 56, insulated boom 20. The inductor would then be operatively coupled to the first end of the boom/insulated section via the operator and the stick. The subject matter of claim 2 lacks therefore an inventive step.
- 4.2 Claims 3 and 13: the boom 20 disclosed in D2 houses several operating components such as hydraulic lines, leveling rods (see Fig.4). A worker with the clamping stick disclosed in D1 would inevitably place the inductor of the stick in series with these operating components through the worker and the basket which is obviously at the same potential as the worker. The subject matter of claim 3 lacks therefore an inventive step.
- 4.3 Claims 4 and 14: the plurality of operative components disclosed in D2 are all leading to the basket 56 and thus to a common connection point between basket and boom 20. The same argument as for claim 3 above apply. The subject matter of claim 4 lacks therefore an inventive step.
- 4.4 Claim 5: such operating components are shown in Fig. 4 in D2. The subject matter of claim 5 thus lacks an inventive step.
- 4.5 Claim 6: D1 mentions explicitly in the description under heading "background technology" that the problem to be solved applies especially for Ac and DC lines and for voltages from 110 kV and 500kV. The features of claim 6 are thus known.
- 4.6 Claims 7 and 8: these types of inductors are well known and cannot imply an inventive step.
- 4.7 Claim 10: although no precise value of the inductor is given in D1, it is mentioned that the inductance value is between 0,1% and 1% of the capacitive reactance of equivalent capacity between operating personnel and wire. Such a value is deemed to be greater than 100 μ H.

4.8 Claim 15: these features are disclosed in D1 and the stick with integrated inductor.

5 The additional features of dependent claim 9 are not disclosed in their present form in any of the documents cited in the search report. A new independent claim may be drafted to include these features, bearing in mind that the features known in combination in D1 should be placed in the preamble of such a claim in accordance with Rule 43(1) EPC.

It is noted that this suggestion is made only for assisting the applicant in deciding how to proceed. It in no way precludes consideration of alternative solutions submitted by the applicant. The responsibility for determining the text of the application (Article 113(2) EPC) and, in particular, for defining the subject-matter for which protection is sought remains with the applicant.

6 When filing new claims, the applicant is kindly requested to carefully consider the following points:

6.1 Independent claim 1 is not in the two-part form in accordance with Rule 43(1) EPC, which in the present case would be appropriate, with those features known in combination from the prior art being placed in the preamble (Rule 43(1)(a) EPC) and the remaining features being included in the characterising part (Rule 43(1)(b) EPC).

Independent claim 1 should therefore be redrafted accordingly. If, however, the applicant is of the opinion that the two-part form would be inappropriate, reasons therefor should be provided. In addition, the applicant should ensure that it is clear from the description which features of the subject-matter of claim 1 are already known in combination from D1 (see Guidelines F-IV, 2.3.2).

6.2 The features of the claims should be provided with reference signs placed in parentheses to increase the intelligibility of the claims (Rule 43(7) EPC). This applies to both the preamble and characterising portion (see Guidelines F-IV, 4.18).

6.3 To meet the requirements of Rule 42(1)(b) EPC, D1 should be identified in the description and the relevant background art disclosed therein should be briefly discussed.

- 6.4 In order to comply with the requirements of Rule 137(4) EPC, the applicant should clearly identify the amendments made, irrespective of whether they concern amendments by addition, replacement or deletion, and indicate the passages of the application as filed on which these amendments are based (see Guidelines H III, 2.1).

If the applicant considers it appropriate, these indications could be submitted in handwritten form on a copy of the relevant parts of the application as filed or in documents with tracked changes.

Amendments should be made by filing replacement pages. Unnecessary recasting of the description should be avoided. An amended abstract is not required. The applicant should also take account of the requirements of Rule 50(1) EPC. According to Rule 50(1) in conjunction with Rule 49(8) EPC, amendments shall be typed or printed. Handwritten amendments may only be made in documents other than those replacing application documents (Rule 50(2) EPC); they may, for example, be used to fulfil the requirements of Rule 137(4) EPC (identifying amendments and indicating basis for them).

Information on Search Strategy - Pilot phase (see OJ 2015, A86)

The type of information contained in this sheet may change during the pilot for improving the usefulness of this new service.

Application Number

EP 18 87 5150

TITLE: INDUCTOR TO CONTROL TRANSIENT CURRENTS DURING ENERGIZED BOND ON

APPLICANT: Quanta Associates, L.P.

IPC CLASSIFICATION: G05F1/565, B66F11/04

EXAMINER: Starck, Thierry

CONSULTED DATABASES: WPI

CLASSIFICATION SYMBOLS DEFINING EXTENT OF THE SEARCH:

IPC:

CPC: B66F11/044, H02H9/005, 2H9/02/LOW, B66C15/065, E06C5/44, B66F17/006, H01R11/14, G01R15/14, G01R31/1245

FI/F-TERMS:

KEYWORDS OR OTHER ELEMENTS FEATURING THE INVENTION:

System for use in live working on HV lines. Problem: when the worker connects the insulated working basket to the line via a clamp, transient currents can occur that can negatively impact the insulating structure supporting the basket. Solution: an inductor is operatively coupled in series with the high voltage end of the insulating structure such that when bonding on the energized line, the inductor suppresses transient currents and thereby inhibits propagation of the transient currents through the insulating structure.