

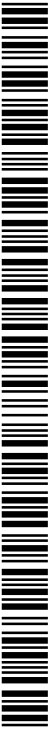


- (51) International Patent Classification:
G07D 11/00 (2006.01) G07F 19/00 (2006.01)
- (21) International Application Number:
PCT/IB2016/052123
- (22) International Filing Date:
14 April 2016 (14.04.2016)
- (25) Filing Language:
Italian
- (26) Publication Language:
English
- (30) Priority Data:
102015000011791 14 April 2015 (14.04.2015) IT
- (71) Applicant: R & D AND SERVICE CONSULTING SA [CH/CH]; Via Lambertenghi 5, 6900 Lugano (CH).
- (72) Inventor: SPERONI, Carlo Enrico; c/o R & D AND SERVICE CONSULTING SA, Via Lambertenghi 5, 6900 Lugano (CH).
- (74) Agent: DI GENNARO, Sergio; c/o Barzanò & Zanardo Milano S.p.A., Via Borgonuovo, 10, 20121 Milano (IT).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

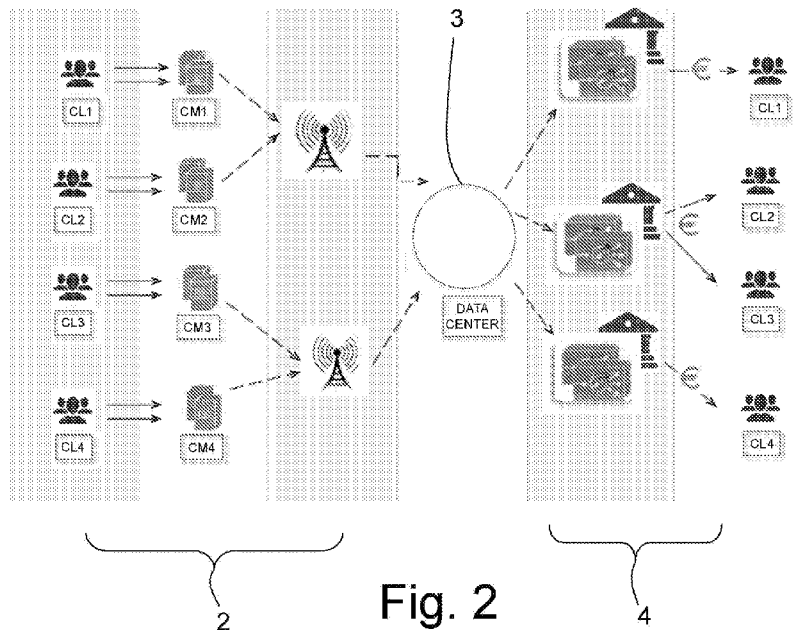
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:
— with international search report (Art. 21(3))



WO 2016/166693 A1

(54) Title: ELECTRONIC SYSTEM TO MAKE CASH TRANSFERS



(57) Abstract: Electronic system to make cash transfers comprising a plurality of electronic devices (2) for receiving cash that communicate wirelessly with at least one electronic central processing unit (3) that is connected with bank data processing centres (CED) of reference banks (4). Such receiving devices are suitable for receiving cash in the form of banknotes or coinage, cheques (or equivalent payment models) and for verifying the authenticity of the same. Such receiving devices comprise a local electronic processing unit including electronic means for the recognition of cash inside it that certifies the amount paid, and electronic means for the real-time wireless transmission of information related to such an amount paid to such a central unit (3).

ELECTRONIC SYSTEM TO MAKE CASH TRANSFERS

The present invention concerns a system and an electronic method for making cash transfers.

5 In particular, the present invention refers to a system and an electronic method for making cash transfers from one or more deposit points provided with at least one currency receiving device according to the teachings of the present invention, of one or more communication
10 systems and of a data processing centre, which at the end of the process connects with the financial subject certifying values and qualities of the cash cashed in.

It is known that currency transfers (cash, cheques) are made with a standardised procedure that takes place in
15 predetermined times not shorter than three-four work days. The problems inherent to cash management have their main core in the ability and the possibility of providing incoming and outgoing flows: the need to control a large amount of information and to quickly
20 calculate the effects of movements that had not been foreseen make this activity very difficult without the help of an automated system, in both large and small businesses, and in the same way in credit institutions.

For this reason, on the market integrated systems are
25 developing, understood to be the «rib» of the management systems: the availability of data in a single database allows the information to be exploited without the need to import it from outside or to interface it with other sources.

30 The main reason that pushes a firm to have a cash system, therefore, is to have the information to be able to deal with cash shortfalls or surpluses. This makes it possible to solve potentially dangerous

situations to the life of the company in advance, such as the lack of liquidity or the lack of credit. The interventions as a consequence of the availability of information also allow a positive economic result, deriving from the activation and from the priority use of less expensive financial sources, from the verification of the absence of unused deposits, from the greater contractual strength with regard to financiers: all activities that are carried out as soon as the information is collected and managed to lead to a decision process. The economic benefit is increased by the greater control that the application allows for the company to have towards the contractual conditions made by financiers.

The purpose of the present invention is to provide a system and an electronic method for making currency transfers capable of transforming the conventional approach, and to propose an evolved system to the credit firm, capable of bypassing the typical problems of the area in question.

The electronic system of the present invention is a technology that harmonises the financial flows with the mobility of cash payments so that the time currently taken to collect, verify and validate the cash is immediate, secure and controlled.

The purpose of the process is therefore to immediately provide liquidity in a certified manner for all possible uses. The cash involved is in fact in the form of a flow that generates an entry as occurs in management processes of credit cards.

The integration of the electronic system according to the present invention in the management systems of a bank allows the collection and analysis times of

information linked to cash flows to be zeroed: moreover, the immediacy of knowing the amounts cashed also means immediate availability of the same to the credit institution.

5 This process innovation thus brings with it a series of very substantial economic advantages for the beneficiary institution: from the positive impact on the management costs of the cash (transportation and connected insurance costs) to the market conditions
10 applicable to the customers that benefit from the system.

For this reason, the security and certainty of the data represent the most evident advantage of the process, capable of following up with a corollary of further
15 advantages.

The current status of the payment and validation process comprises a minimum of four days linked to the different steps: from the moment of payment some physical steps are necessary linked to the cash in
20 order to be able to obtain the validation and subsequent availability at the bank (and thereafter of the current account of the customer).

The process innovation and the receiving device according to the present invention (thanks to the
25 communication of the data in terms of M2M) definitively abbreviates the process, to the point of making the information available in real time. In this way, the collateral issues (physical movements, insurances, count) assume a relative importance, and do not have a
30 substantial impact like in the state of the art.

The characteristics and advantages of the system and of the method according to the present invention will become clearer from the following description, given as

an example and not for limiting purposes, of an embodiment with reference to the attached figures, in which:

- 5 • figure 1 is an example block diagram of the various steps of the process according to the present invention;
- figure 2 is an example block diagram of the electronic communication system according to the present invention;
- 10 • figure 3a and 3b illustrate respective side and front views of the receiving device according to the present invention.

With reference to the quoted figures the system according to the present invention comprises a
15 plurality of electronic devices 2 for receiving cash that communicate wirelessly with at least one electronic central processing unit 3 that is connected with bank data processing centres (CED) of reference banks 4.

20 Such a receiving device is adapted for receiving the cash in the form of coinage, banknotes or cheques (personal cheques, certified cheques and banker's drafts) and for verifying the authenticity of the same. By verify we mean that if the cash for whatever reason
25 is irregular, it is refused. Therefore, the device allows the acceptance of out-of-circulation, dubious as well as counterfeit paper cash to be reduced to the minimum if not actually prevented; that is to say, exactly what would occur at the bank cashier's window
30 at the time of deposit.

The receiving device is an innovative cash deposit and security system; it is positioned at the customer sales

point, and it is connected on line to such a central processing unit and thus to the reference banks.

The receiving device comprises electronic means for the recognition of the currency inserted and in particular
5 it includes a first area 21 of communication with the user, consisting of at least one interactive screen and/or a data entry pad 211. Such an area also comprises a printer 212 for issuing receipts, etc...

The receiving device comprises a second insertion area
10 22 of at least one mouth for the insertion of cash per banknotes, coinage and cheques. Such a mouth comprises counter devices for reading the banknotes and the coinage and for verifying the serial numbers and the authenticity of the banknotes and cheques.

15 The receiving device comprises a third area 23 for depositing and securely holding cash (safe).

Such counter devices in a first embodiment also comprise wavelength sensors and optical sensors with advanced algorithms for the recognition and validation
20 of banknotes, sensors capable of detecting and diverting liquids to prevent tampering attempts

Such counter devices in a further embodiment also comprise, in addition to the aforementioned elements for the first embodiment, at least one scanner with an
25 OCR recogniser for obtaining a scan of the banknotes and of the cheques (with attached serial number).

The receiving device comprises a local electronic processing unit that coordinates the operation of the electronic devices of the three areas and through a
30 suitable recognition programme inside it that certifies the amount paid, issues a receipt.

In particular, such a local electronic processing unit includes electronic means for the recognition of cash

inside it that certifies the amount paid, and electronic means for the real-time wireless transmission of information relating to such an amount paid to such a central unit 3.

5 The architecture of the system allows the passage of the data relating to the currency in real time, and also the transmission of the same data from the central unit to the CED of the bank according to the flow of data relating to the cash indicated in the diagram of
10 figure 1.

In particular, the recognition and certification of the currency already carried out locally in the single receiving device allows the real-time transfer of the same cash to the reference bank and consequently its
15 crediting to the current account of the customer.

The system allows the cash, banknotes and/or metal coinage or cheques to be managed electronically by generating a certified data flow that is equivalent to the currency, replacing (even only temporarily) the
20 physical cash.

CLAIMS

1. Electronic system to make cash transfers comprising
a plurality of electronic devices for receiving (2)
5 cash that communicate wirelessly with at least one
electronic central processing unit (3), which is
connected with bank data processing centres (CED) of
reference banks (4),
characterised in that such receiving devices are
10 suitable for receiving cash in the form of banknotes or
coinage, cheques or equivalent payment models and for
verifying the authenticity of the same, such receiving
devices comprising a local electronic processing unit
including electronic means for the recognition of cash
15 inside it that certifies the amount paid, and
electronic means for the real-time wireless
transmission of information related to such an amount
paid to such a central unit (3).
2. System according to claim 1, wherein said central
20 unit (2) comprises means for the real-time transmission
of the data related to the amount paid in such a
receiving device to the central unit at the CED of the
bank.
3. System according to claim 1, wherein such a
25 receiving device comprises electronic means for the
recognition of inserted cash in the form of banknotes
or coinage, cheques (or equivalent payment models),
which includes a first area (21) of communication with
the user, consisting of at least one interactive screen
30 and/or one data entry pad, a second insertion area (22)
provided with at least one mouth for the insertion of
cash in the form of banknotes or coinage, cheques (or

equivalent payment models), which comprises counter devices for reading banknotes and coinage, cheques (or equivalent payment models) and verifying serial numbers and the authenticity of paper currency and cheques (or
5 equivalent payment models).

4. System according to claim 1, wherein in such a first communication area (21) there is a printer for issuing receipts.

5. System according to claim 1, wherein the receiving
10 device comprises a third area (23) of deposit and safekeeping of cash in the form of banknotes or coinage, cheques (or equivalent payment models).

6. System according to claim 3, wherein such counter devices comprise wavelength sensors and optical sensors
15 for the recognition and validation of banknotes, cheques (or equivalent payment models), sensors capable of detecting and diverting liquids to prevent tampering attempts.

7. System according to claim 3, wherein such an
20 insertion mouth comprises a scanner with an OCR recogniser to get a scan of cash in the form of inserted banknotes or coinage, cheques (or equivalent payment models).

8. Device for receiving and recognising cash,
25 banknotes or coinage, cheques (or equivalent payment models) and verifying the authenticity of the same, comprising a local electronic processing unit including electronic means for the recognition of cash in the form of banknotes or coinage, cheques (or equivalent
30 payment models) inside it that certifies the amount paid,

characterised in that it comprises wireless electronic means for the real-time transmission of information related to such an amount paid to such a central unit (3), such electronic means for the recognition of
5 inserted cash in the form of banknotes or coinage, cheques (or equivalent payment models) comprising a first area (21) of communication with the user, consisting of at least one interactive screen and/or one data entry pad, a second insertion area (22)
10 provided with at least one mouth for the insertion of banknotes, coinage and cheques, which comprises counter devices for reading banknotes and coinage and verifying serial numbers and the authenticity of cash in the form of banknotes or coinage, cheques or equivalent payment
15 models.

9. Device according to claim 8, wherein in such a first communication area (21) there is a printer for issuing receipts.

10. Device according to claim 8, wherein the receiving
20 device comprises a third area (23) of deposit and safekeeping of cash in the form of inserted banknotes or coinage, cheques (or equivalent payment models).

11. Device according to claim 8, wherein such counter
25 devices comprise wavelength sensors and optical sensors for the recognition and validation of banknotes and cheques, sensors capable of detecting and diverting liquids to prevent tampering attempts.

12. Device according to claim 8, wherein such an
30 insertion mouth comprises a scanner with an OCR recogniser to get a scan of cash in the form of banknotes, coinage, cheques or equivalent payment models.

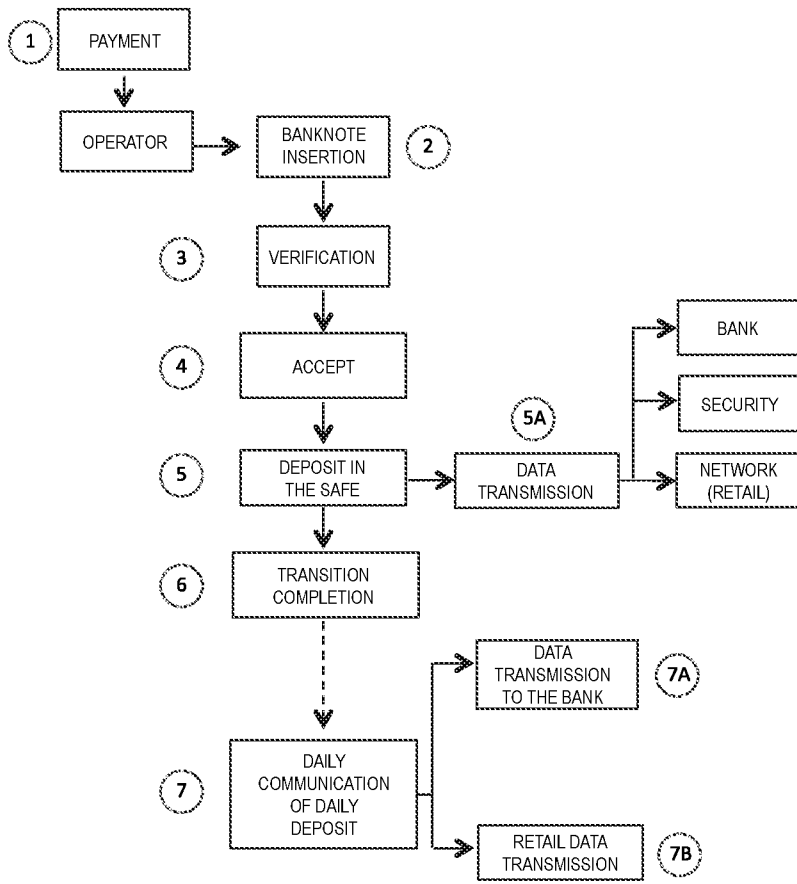


Fig. 1

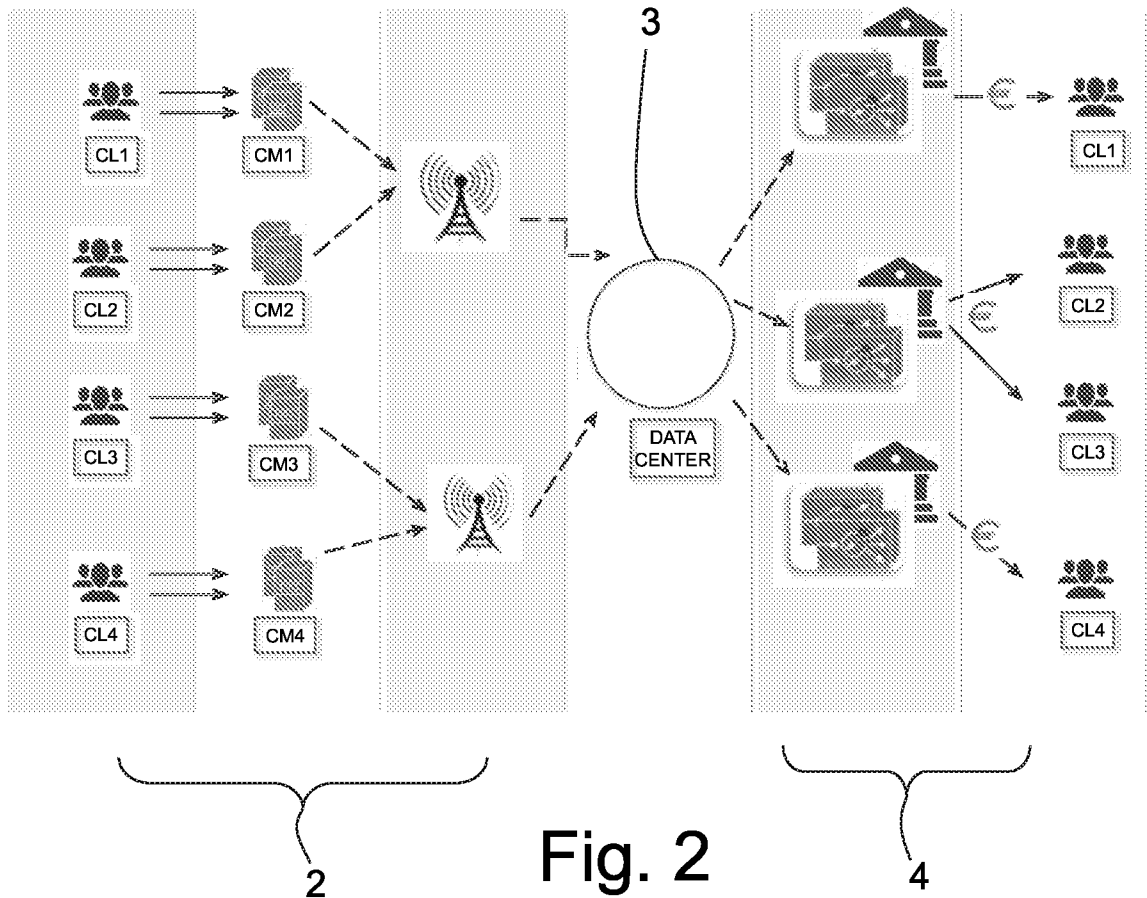


Fig. 2

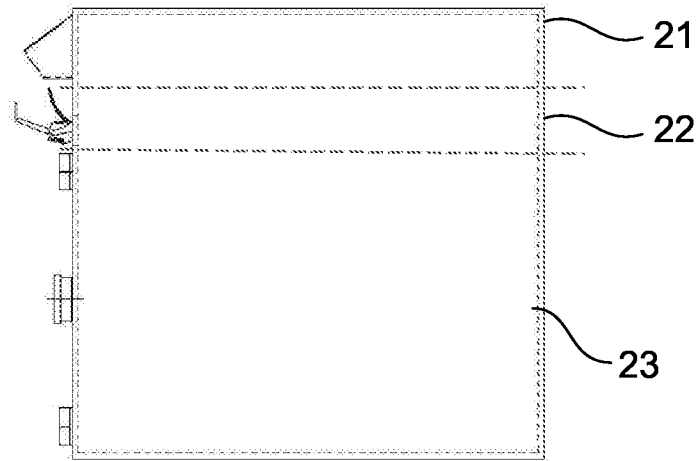


Fig. 3a

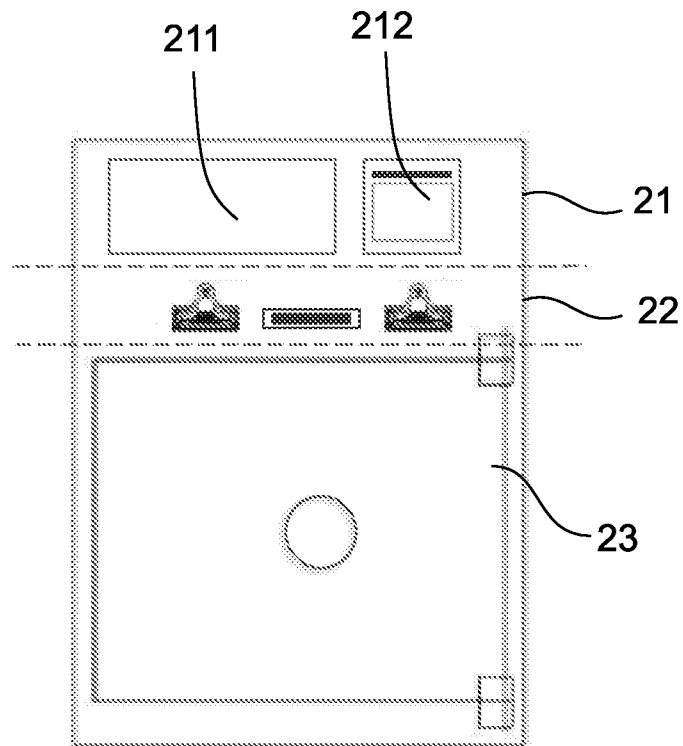


Fig. 3b

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2016/052123

A. CLASSIFICATION OF SUBJECT MATTER
INV. G07D11/00 G07F19/00
ADD.
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
Minimum documentation searched (classification system followed by classification symbols)
G07D G07F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2011/114442 A1 (SOUSSA ANDRE [AU] ET AL) 19 May 2011 (2011-05-19) paragraph [0006] - paragraph [0015] paragraph [0028] - paragraph [0036] paragraph [0041] - paragraph [0055] paragraph [0064] - paragraph [0072] paragraph [0077] - paragraph [00100] paragraph [0140] - paragraph [0146] paragraph [0159] - paragraph [0165] paragraph [0172] - paragraph [0174] paragraph [0182] - paragraph [0183] paragraph [0187] - paragraph [0188] paragraph [0205] paragraph [0213] - paragraph [0216] figures 1-3B ----- -/--	1-12

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 21 June 2016	Date of mailing of the international search report 29/06/2016
---	--

Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Espuela, Vicente
--	--

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2016/052123

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>US 2014/297433 A1 (BIELAMOWICZ MICHAEL EUGENE [US] ET AL) 2 October 2014 (2014-10-02) paragraph [0006] - paragraph [0007] paragraph [0018] - paragraph [0028] paragraph [0030] - paragraph [0034] paragraph [0037] - paragraph [0038] paragraph [0048] - paragraph [0052] figures 1-3</p> <p style="text-align: center;">-----</p>	1-12
X	<p>WO 2014/010368 A1 (OKI ELECTRIC IND CO LTD) 16 January 2014 (2014-01-16) the whole document & US 2015/170454 A1 (SASAKI AKIHIRO [JP] ET AL) 18 June 2015 (2015-06-18) paragraph [0009] - paragraph [0015] paragraph [0035] - paragraph [0070] paragraph [0098] - paragraph [0106] figures 1-3,11-13</p> <p style="text-align: center;">-----</p>	1-12

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/IB2016/052123

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2011114442	A1	19-05-2011	AU 2010241389 A1
			US 2011114442 A1

US 2014297433	A1	02-10-2014	CN 105229709 A
			EP 2979258 A1
			GB 2512408 A
			US 2014297433 A1
			WO 2014154892 A1

WO 2014010368	A1	16-01-2014	CN 104364829 A
			JP 5413490 B2
			JP 2014016854 A
			US 2015170454 A1
			WO 2014010368 A1
