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(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, 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, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, 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.

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(54) Title: SCREEN PRINTING MACHINE AND METHOD

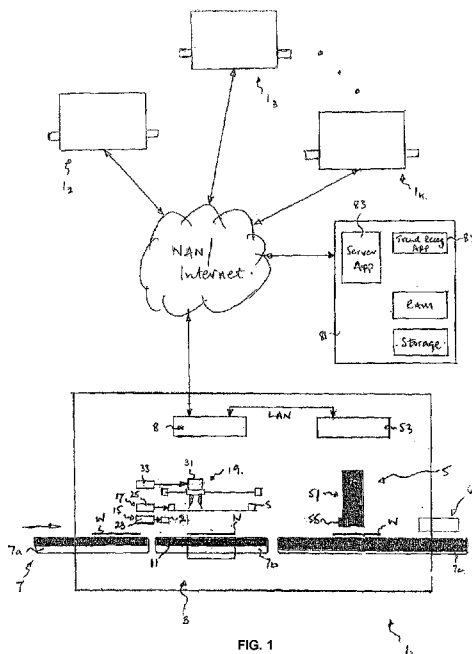


FIG. 1

(57) Abstract: A screen printing machine and method, the screen printing machine comprising : a printing station at which work-pieces are printed; an inspection station downstream of the printing station for inspecting printed workpieces; and a printing machine controller for controlling one or more operating parameters of the screen printing machine based on results obtained from inspections performed at the inspection station and/or results obtained from inspections performed at one or more other screen printing machines.



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- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))* (88) **Date of publication of the international search report:**
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INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2011/000535

A. CLASSIFICATION OF SUBJECT MATTER

INV. B41F33/00 B41F15/00 B41F15/04 H05K3/12
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)
B41F H05K

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)

EP0-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 362 132 A (MATSUSHITA ELECTRIC IND CO LTD [JP]) 14 November 2001 (2001-11-14) page 9, line 13 - page 12, line 17; figures 2,5	1,2,20, 82,84, 85,109, 172
X	----- EP 1 677 584 A2 (MATSUSHITA ELECTRIC IND CO LTD [JP]) 5 July 2006 (2006-07-05) paragraph [0047] - paragraph [0056] -----	1,2,20, 82,84, 85,109, 172



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

"E" earlier application or patent but published on or after the international filing date

"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)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"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

"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

"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

"&" document member of the same patent family

Date of the actual completion of the international search

28 August 2013

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03/03/2014

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB2011/000535

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.: 174-176
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

82, 172(completely); 1, 2, 20, 84, 85, 109(partially)

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 82, 172(completely); 1, 2, 20, 84, 85, 109(partially)

1. A screen printing machine according to claims 1a, 20(partly), 82, 84a, 85(partly), 109 (partly) 172 linked by the common feature that the parameters are controlled based on results obtained from the inspections performed at the inspection station.

2. claims: 83, 173(completely); 1, 2, 20, 84, 85, 109(partially)

2. A screen printing machine according to claims 1b, 2(partly), 20 (partly), 83, 84b, 85(partly), 109(partly), 173 linked by the common feature that the parameters are controlled based on results obtained from inspections performed at one or more other screen printing machines.

3. claims: 30-59, 71-81, 119-147, 161-171

A screen printing machine according to claims 30-59, 71-81, 119-147 and 161-171 linked by the common feature that a remote processing station which is in communication with the plurality of screen printing machines receives inspection results associated with inspected workpieces as printed by the screen printing machines.

4. claims: 60-70, 148-160

A screen printing machine according to claims 60-70 and 148-160 linked by the common feature that it comprises a storage which stores inspection results for printed workpieces.

5. claims: 3-8, 86-97

A screen printing machine according to claims 3-8 and 86-97 linked by the common feature that it comprises a controller with a trend recognition application which provides for identification of trends in the results obtained from the inspection results.

6. claims: 9-14, 98-103

A screen printing machine according to claims 9-14 and 98-103 linked by the common feature of the inspection moment, i.e. that the inspection operation is performed in parallel with the printing operation, within a print cycle or subsequently to the printing operation.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

7. claims: 15, 104

A screen printing machine according to claims 15 and 104 linked by the common feature that the screen printing machine comprises a user interface.

8. claims: 16-19, 105-108

A screen printing machine according to claims 16-19 and 105-108 linked by the common feature that it comprises a storage of the inspection results.

9. claims: 21-24, 110-113

A screen printing machine according to claims 21-24 and 110-113 linked by the common feature that it comprises an alignment mechanism of the printing station.

10. claims: 25-29, 114-118

A screen printing machine according to claims 26-29 and 115-118 linked by the common feature that it comprises details of the construction of the inspection station.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/GB2011/000535

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
GB 2362132	A	14-11-2001	GB 2362132 A	14-11-2001
			US 2002007743 A1	24-01-2002
			US 2004149151 A1	05-08-2004

EP 1677584	A2	05-07-2006	AU 2003260948 A1	03-03-2004
			DE 60306389 T2	19-10-2006
			DE 60316998 T2	14-02-2008
			EP 1532850 A2	25-05-2005
			EP 1677584 A2	05-07-2006
			KR 20050033649 A	12-04-2005
			US 2004031406 A1	19-02-2004
			WO 2004017703 A2	26-02-2004
