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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, BN, BR, BW, BY,  
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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, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU,  
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MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM,  
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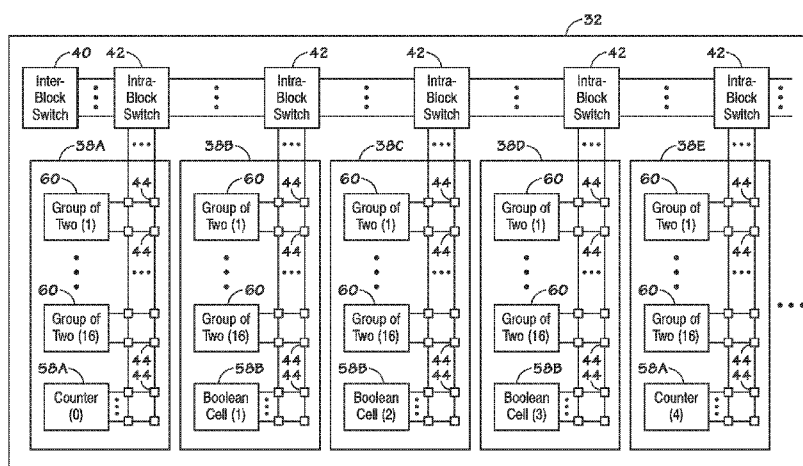
**Declarations under Rule 4.17:**

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

**Published:**

- with international search report (Art. 21(3))
- 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))

[Continued on next page]

(54) **Title:** COUNTER OPERATION IN A STATE MACHINE LATTICE**FIG. 10**

(57) **Abstract:** Disclosed are methods and devices, among which is a device that includes a finite state machine lattice (30). The lattice (30) may include a counter (58) suitable for counting a number of times a programmable element (34, 36) in the lattice (30) detects a condition. The counter (58) may be configured to output in response to counting the condition was detected a certain number of times. For example, the counter (58) may be configured to output in response to determining a condition was detected at least (or no more than) the certain number of times, determining the condition was detected exactly the certain number of times, or determining the condition was detected within a certain range of times. The counter (58) may be coupled to other counters (58) in the device for determining high-count operations and/or certain quantifiers.



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# INTERNATIONAL SEARCH REPORT

International application No

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A. CLASSIFICATION OF SUBJECT MATTER  
INV. G06F21/56 G06N5/04  
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)

G06F G06N G11C

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 A	US 2008/140661 A1 (PANDYA ASHISH A [US]) 12 June 2008 (2008-06-12) abstract figure 7b figure 8b figure 15 figure 17c figure 7 paragraph [0081] paragraph [0090] paragraph [0095] paragraph [0169] paragraph [0116] - paragraph [0117] ----- -/--	1,2,5, 13-18 3,4,6

☒ 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

13 June 2013

Date of mailing of the international search report

06/06/2014

Name and mailing address of the ISA/

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# INTERNATIONAL SEARCH REPORT

International application No

PCT/US2012/067988

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>US 2010/185647 A1 (NOYES HAROLD B [US])  22 July 2010 (2010-07-22)  figure 2  figure 9  paragraph [0023]  paragraph [0038] - paragraph [0039]  paragraph [0060]  -----</p>	<p>1-6,  13-18</p>

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US2012/067988

### 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.:  
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.:

1-6, 13-18

#### 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: 1-6, 13-18

Lattice of finite state machines for pattern matching

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2. claims: 7-12, 19-29

Method and apparatus for cascading counters

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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2012/067988

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2008140661	A1	12-06-2008	NONE
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US 2010185647	A1	22-07-2010	CN 102272715 A 07-12-2011
		EP 2386081 A2 16-11-2011	
		JP 5387866 B2 15-01-2014	
		JP 2012515378 A 05-07-2012	
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		WO 2010080445 A2 15-07-2010	
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