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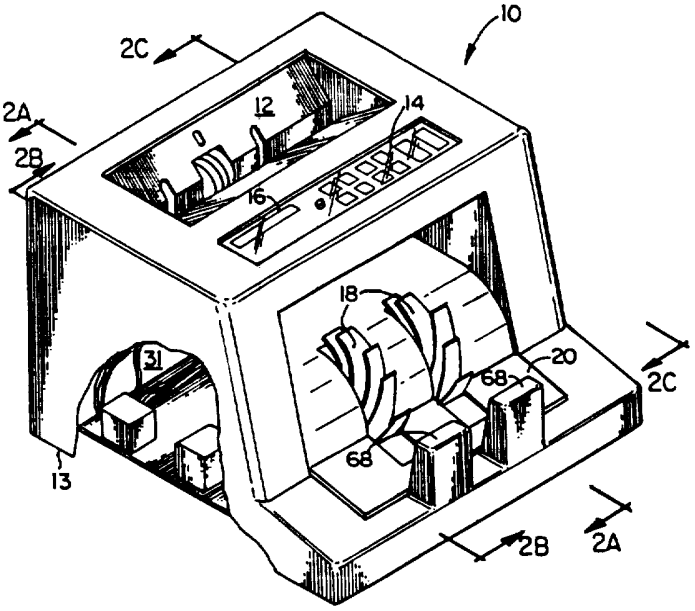
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Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.

(88) Date of publication of the international search report:
09 June 1994 (09.06.94)

(54) Title: DOCUMENT COUNTING AND BATCHING APPARATUS WITH COUNTERFEIT DETECTION



(57) Abstract

An apparatus for counting and verifying documents (10) includes an improved stripper assembly (36a) and a digital control network (6A). The stripper assembly includes a friction belt (38) which is rotated counter to the direction that documents are fed into the apparatus. The tension of the friction belt may be adjusted by rotating of an eccentric member (117). The digital control network coordinates the operations of counting and verifying documents. A transport mechanism (2D) moves documents along a guide path (50) through the apparatus. Sensors (80, 82, 84, 86) are located along the guide path for determining optical and magnetic characteristics of the documents and producing signals relative thereto. The measured signals are sampled and digitized by an analog-to-digital converter (304) under the control of a microprocessor (302). Multiple samples of the sensor signals are accumulated within memory as each document passes adjacent to the sensors. The accumulated values are compared with reference values in order to verify each document after it has passed adjacent to the sensors. Documents are counted after verification. Individual piece counts and monetary values of such piece counts are provided.

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INTERNATIONAL SEARCH REPORT

Int. ational Application No
PCT/US 93/06313

A. CLASSIFICATION OF SUBJECT MATTER
IPC 5 G07D7/00 B65H3/04 G06M7/00

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)
IPC 5 G07D B65H G06M

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 practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP,A,0 115 208 (LONGFORD) 8 August 1984 see page 3, line 22 - page 4, line 19 see page 9, line 15 - line 20; figure 4 ---	1
A,P	IBM TECHNICAL DISCLOSURE BULLETIN, vol.35, no.4A, September 1992, ARMONK pages 237 - 241, XP000314750 'ADAPTIVE FEED METHOD' see page 238 ---	1
A	EP,A,0 434 232 (HEWLETT-PACKARD COMPANY) 26 June 1991 see column 2, line 39 - column 4, line 35 ---	1
A	US,A,4 416 449 (MC. INERNY) 22 November 1983 cited in the application see abstract; figure 2 ---	1
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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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"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

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"&" document member of the same patent family

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Date of the actual completion of the international search	Date of mailing of the international search report
13 April 1994	20. 04. 94
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax (+31-70) 340-3016	**Authorized officer** Taccoen, J-F

Form PCT/ISA/210 (second sheet) (July 1992)

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US,A,3 982 107 (BUTLER) 21 September 1976 see abstract	6
X	US,A,4 608 704 (SHERMAN) 26 August 1986	25-27
A	see abstract	6
A	see column 3, line 42 - line 66 see column 6, line 63 - column 7, line 14 see column 7, line 55 - column 8, line 7 see column 8, line 43 - column 9, line 3 see column 21, line 21 - column 24, line 61 see claims 1-3	11,16, 28-30
A	EP,A,0 477 711 (OKI ELECTRIC) 1 April 1992 see abstract see column 2, line 43 - line 51 see column 3, line 50 - column 4, line 6 see column 4, line 21 - line 29 see column 7, line 34 - line 37	16
A	US,A,4 593 184 (BRYCE) 3 June 1986 see abstract; claims 7,10 see column 2, line 46 - column 3, line 29	16,33
A	EP,A,0 204 574 (DE LA RUE) 10 December 1986 see abstract see page 7, line 14 - line 26	16,33
A	EP,A,0 260 940 (LIGHT SIGNATURES) 23 March 1988 see abstract	16,33
A	EP,A,0 276 814 (RAND MC NALLY) 3 August 1988 see abstract see column 16, line 37 - column 17, line 26	16-19
A	EP,A,0 206 675 (DE LA RUE) 30 December 1986 see abstract see claim 1	30
A	EP,A,0 286 378 (LIGHT SIGNATURES) 12 October 1988 see abstract see column 1, line 19 - line 43 see column 2, line 20 - line 41 see column 6, line 20 - line 48 see column 8, line 16 - line 39 see column 10, line 52 - column 11, line 6 see column 11, line 22 - line 27 see column 12, line 7 - column 12, line 56	16,33

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP,A,0 366 306 (NIPPON) 2 May 1990 see abstract see claim 1	30
A	EP,A,0 451 882 (DE LA RUE) 16 October 1991 see abstract	30
A	EP,A,0 295 229 (INTER INNOVATION) 14 December 1988 see column 3, line 16 - line 27 see abstract	33
A	WO,A,91 10902 (BRYCE) 25 July 1991 see page 7, line 21 - page 9, line 8	33

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 93/06313

Box I Observations where certain claims were found unsearchable (Continuation of item 1 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 II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

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

1.Claims: 1-5
2.Claims: 6-15
3.Claims: 16-24,33
4.Claims: 25-29
5.Claims: 30-32

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 searches without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

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.:

Remark on Protest

☒ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/US 93/06313

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In. ..ional Application No
PCT/US 93/06313

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