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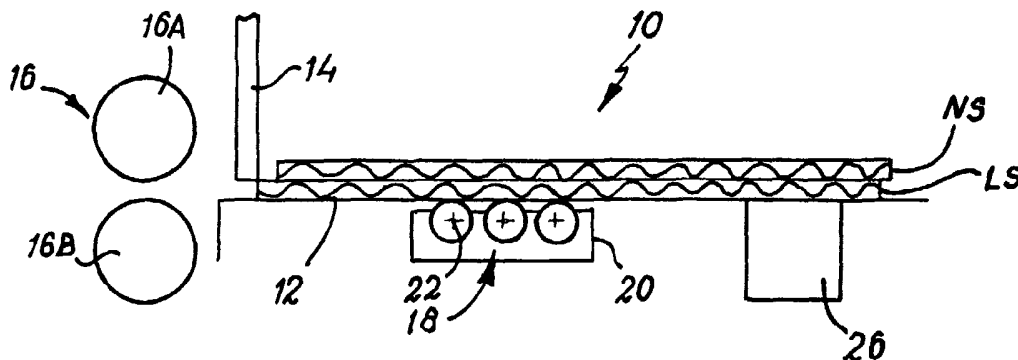
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(54) Title: METHOD AND APPARATUS FOR FEEDING SHEETS



(57) Abstract: A method for feeding sheets from a stack of individual sheets (12) of material involves the use of a sheet contacting means such as rollers (22) to register the next sheet (12) to be fed with a predetermined datum position during the cycle of reciprocation associated with feed of the lowermost sheet (12) in such a way that that sheet is registered with the datum position at the beginning of forward feed thereof during the next cycle of reciprocation.



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INTERNATIONAL SEARCH REPORT

International Application No
PC 7GB 01/04952

<p>A. CLASSIFICATION OF SUBJECT MATTER IPC 7 B65H3/12</p> <p>According to International Patent Classification (IPC) or to both national classification and IPC</p>														
<p>B. FIELDS SEARCHED</p> <p>Minimum documentation searched (classification system followed by classification symbols) IPC 7 B65H</p> <p>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched</p> <p>Electronic data base consulted during the international search (name of data base and, where practical, search terms used)</p>														
<p>C. DOCUMENTS CONSIDERED TO BE RELEVANT</p> <table border="1"> <thead> <tr> <th>Category °</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>X</td> <td>GB 2 274 276 A (SULLIVAN JOHN ANTHONY) 20 July 1994 (1994-07-20) cited in the application</td> <td>1-3, 8-10,14, 15</td> </tr> <tr> <td>Y</td> <td>page 2, paragraph 4 page 5, line 1 -page 7, line 21; figures 1,3</td> <td>4</td> </tr> <tr> <td>Y</td> <td>----- WO 00 58192 A (SULLIVAN JOHN ANTHONY) 5 October 2000 (2000-10-05) page 7, paragraph 2; figure 1 -----</td> <td>4</td> </tr> </tbody> </table>			Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	X	GB 2 274 276 A (SULLIVAN JOHN ANTHONY) 20 July 1994 (1994-07-20) cited in the application	1-3, 8-10,14, 15	Y	page 2, paragraph 4 page 5, line 1 -page 7, line 21; figures 1,3	4	Y	----- WO 00 58192 A (SULLIVAN JOHN ANTHONY) 5 October 2000 (2000-10-05) page 7, paragraph 2; figure 1 -----	4
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<p><input type="checkbox"/> Further documents are listed in the continuation of box C. <input checked="" type="checkbox"/> Patent family members are listed in annex.</p>														
<p>° Special categories of cited documents :</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"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</p> <p>"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</p> <p>"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.</p> <p>"&" document member of the same patent family</p>														
<p>Date of the actual completion of the international search</p> <p>10 April 2002</p>		<p>Date of mailing of the international search report</p> <p>26. 08. 2002</p>												
<p>Name and mailing address of the ISA</p> <p>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</p>		<p>Authorized officer</p> <p>David, P</p>												

INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB 01/04952

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. 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 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.:

1-4, 8-10, 14, 15

Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- 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: 1-4, 8-10, 14, 15

GB 2 274 276 A (referred to as D1 in the following) discloses (see figures 1, 3; page 2, 4th paragraph and page 5, line 1 to page 7, line 21) a method for feeding from a stack thereof individual sheets 12 of material, said method comprising:

stacking the sheets 12 above a feeding arrangement upstream of a gate 13 which holds back sheets 12 other than the lowermost sheet 12, the feeding arrangement comprising a reciprocating support 23 mounting sheet-contacting means 25 for contact with the lowermost sheet 12;

during a forward stroke of the support 23, feeding the lowermost sheet 12 forwardly beyond the gate 13 for take-up by sheet processing means 16 downstream of the gate 13, the sheet contacting means 25 being locked during such forward feed of sheet 12; and

during the return stroke of the support 23, allowing the sheet contacting means 25 to free wheel while in contact with the next sheet 12;

using the sheet contacting means 25 to register the next sheet 12 with a predetermined datum position during each cycle of reciprocation in such a way that that sheet 12 is registered with the datum position at the beginning of forward feed thereof during the next cycle of reciprocation.

D1 thus discloses the subject matter of independent method claim 1.

D1 also discloses the subject matter of dependent method claims 2 (see page 2, 4th paragraph) and 3 (see fig. 3).

The subject matter of dependent method claim 4 differs from the method disclosed in D1 in that the restraint of rearward movement of the next sheet to be fed is achieved by the application of suction to said next sheet thereby holding it with its leading edge in contact with the forward stop means.

The problem corresponding to these special technical features can be seen as how to maintain the next sheet while feeding the lowermost sheet.

D1 discloses also the subject matter of independent device claim 8 (see figures 1, 3; page 2, 4th paragraph and page 5, line 1 to page 7, line 21) and the additional features of dependent device claims 9, 10 (see fig. 1) and 14, 15 (see fig. 3).

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

2. Claims: 5-7

The subject matter of dependent method claim 5 differs from the method disclosed in D1 in that the registration of the next sheet to be fed is secured by using the fre-wheeling roller means to exert a rearward drag force on the next sheet so that the trailing edge of the next sheet is displaced by the roller means during the return stroke into contact with rearward stop means defining the datum position.

The problem corresponding to these special technical features can be seen as how to achieve a rearward registration.

3. Claims: 11-13

The subject matter of dependent claim 11 differs from the feeder disclosed in D1 in that the arrangement is such that transfer of the sheet from the sheet feeder to the take-up mechanism occurs when the forward motion of the support and hence the roller means is at or substantially at its peak speed.

The problem corresponding to these special technical features can be seen as how to improve transfer of the sheet.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/GB 01/04952

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
GB 2274276	A	20-07-1994	NONE	

WO 0058192	A	05-10-2000	WO 0058190 A	05-10-2000
			WO 0100514 A	04-01-2001
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