(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 143 068 A3

(12) EUROPEAN PATENT APPLICATION

(88) Date of publication A3:
28.04.2004 Bulletin 2004/18

(43) Date of publication A2:
10.10.2001 Bulletin 2001/41

(21) Application number: **01114439.1**

(22) Date of filing: **01.06.1995**

(51) Int Cl.[7]: **D21H 23/16**, D21H 17/28, D21H 21/10

(84) Designated Contracting States:
AT BE CH DE DK ES FR GB GR IE IT LI LU NL PT SE

(30) Priority: **01.06.1994 GB 9410965**

(62) Document number(s) of the earlier application(s) in accordance with Art. 76 EPC:
95921013.9 / 0 711 370

(71) Applicant: **Ciba Specialty Chemicals Water Treatments Limited**
Bradford, West Yorkshire BD12 0JZ (GB)

(72) Inventor: **Greenwood, Graham**
Blackburn, Lancashire BB1 9HU (GB)

(54) Manufacture of paper

(57) Paper strengthened by starch, typically in amounts of 3 to 15% dry weight, is made by flocculating a cellulosic suspension using a polymeric retention aid which can be dissolved cationic starch but is preferably a synthetic polymer having IV above 4dl/g, shearing the resultant flocculated suspension and reflocculating it by adding bentonite or other microparticulate anionic material, draining the flocculated or reflocculated suspension and drying the resultant wet sheet, wherein insoluble particles of starch are added to the suspension as a slurry of substantially freely dispersed particles in part or all of the aqueous solution of the polymeric retention aid.

EP 1 143 068 A3

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 01 11 4439

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A,D	EP 0 499 448 A (ALLIED COLLOIDS LTD) 19 August 1992 (1992-08-19) * the whole document *		D21H23/16 D21H17/28 D21H21/10
A	US 5 126 014 A (CHUNG DANIEL K) 30 June 1992 (1992-06-30) * the whole document *		
A	US 2 729 561 A (MARRONE) 3 January 1956 (1956-01-03) * the whole document *		

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

D21H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	27 February 2004	Songy, O

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 01 11 4439

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

27-02-2004

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0499448 A	19-08-1992	WO 9402681 A1	03-02-1994
		AU 1088792 A	20-08-1992
		AU 2329292 A	14-02-1994
		BR 9200502 A	20-10-1992
		CA 2061316 A1	16-08-1992
		EP 0499448 A1	19-08-1992
		FI 920615 A	16-08-1992
		JP 5140897 A	08-06-1993
		MX 9200640 A1	01-09-1992
		NO 920597 A	17-08-1992
		NZ 241603 A	27-09-1994
		ZA 9201052 A	28-04-1993
US 5126014 A	30-06-1992	CA 2062038 A1	17-01-1993
US 2729561 A	03-01-1956	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82