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

(11) EP 1 577 430 A1

(12) EUROPEAN PATENT APPLICATION
published in accordance with Art. 158(3) EPC

(43) Date of publication:
21.09.2005 Bulletin 2005/38

(21) Application number: **03782074.3**

(22) Date of filing: **24.12.2003**

(51) Int Cl.[7]: **D04H 1/40**

(86) International application number:
PCT/CN2003/001114

(87) International publication number:
WO 2004/059057 (15.07.2004 Gazette 2004/29)

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PT RO SE SI SK TR
Designated Extension States:
AL LT LV MK

(30) Priority: **26.12.2002 CN 2295564.X**

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(54) STUFFING MATERIAL OF DOWN STEMS FOR THERMAL PROTECTION

(57) The present invention relates to a kind of stuffing material for thermal protection including down stems. The stuffing with web piece structure is formed by one process of intercrossing and interlinking the stems with each other and bonding the crossing and linking points with adhesive, intercrossing and winding the stems together by textile fibers, and affixing the crossing and winding points between the stems and the textile fibers by textile fibers with lower melting point. Since the invention provides an even and neat structure, which is tailorable and non-fuzzing, the production process for the products is very simple and efficient. Products with the stuffing appear to be pretty and decent, and not to be bulky. The stuffing can even make use of the big feather and the branches at low cost, and is suitable material for producing the down products.

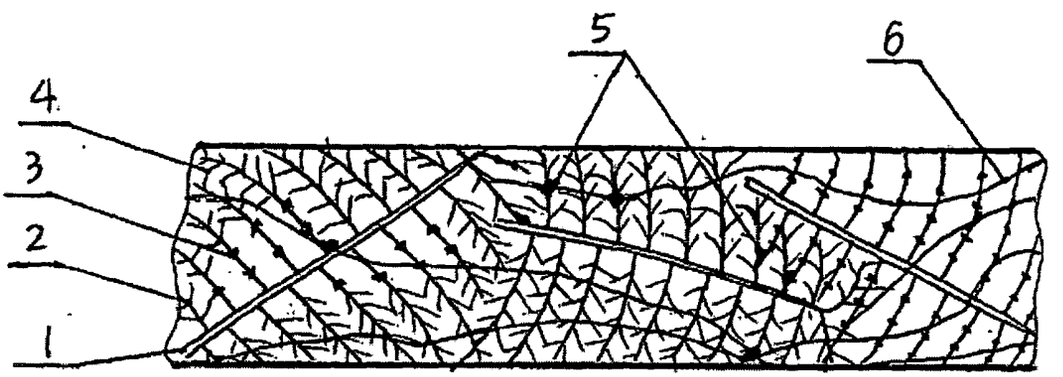

Fig. 1

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Description

Field of the Invention

[0001] The present invention relates to a stuffing material of down and feathers for thermal protection, particularly to a stuffing material of down stems for thermal protection.

Description of the Prior Art

[0002] Down and feathers are excellent natural stuffing materials for thermal protection and widely used in down coat, down quilt, down mattress and other beddings in batting forms. Since a down is flower shaped, that is, the down stems radiate from the calamus, its natural physical structure determines that it is unstable in the products, and easy to fuzz the production process for the products is very complex, low efficient and material-consuming; and the product with the stuffing material is uneven and appears unsightly and bulky, thus resulting in a low grade. A feather is flat and with a shaft in the middle distributed with barbules every 50μ moutward. Only a few amounts of small soft feathers can be used as batting material for stuffing, and most of the big feathers are abandoned due to the stiffness of the shaft, thus resulting in a waste of resource.

Summary of the Invention

[0003] The object of the present invention is to provide a tailorable stuffing material of down stems for thermal protection in order to solve the problems including the conventional down and/or feather batting stuffing materials in the products are unstable and easy to fuzz; the production process for the products is complex, low efficient and material-consuming; the surface is uneven and the appearance is unsightly and bulky, thus resulting in a low grade. Only a few amounts of small soft feathers can be used as batting material for stuffing, and most of the big feathers are abandoned, thus resulting in a waste of resource.

[0004] The object of the present invention is accomplished by stuffing with down stems, in which the down stems are intercrossed and interlinked with each other, and the crossing and linking points are bonded with the adhesive forming a web piece structure.

[0005] The down stems intercross and wind together by textile fibers.

[0006] The crossing and winding points between the stems and the textile fibers are affixed by textile fibers with lower melting point.

[0007] The stems employ at least one of the single stems made from the washed duck down/feather, goose down/feather, and down stems produced during the conventional down processing.

[0008] The adhesive employs natural resins, polyurethanes, polyacrylates, polyethylacetates, polyvinyl chlorides or acrylic emulsion.

[0009] The textile fibers employ at least one of natural fibers, such as cotton, hemp, wool and silk, chemical fibers, such as terylen, polyamide, acrylon, chlorofiber, polyurethanes, viscose, PE/PET bicomponent fiber, ES composite fiber, and polypropylene fiber with lower melting point.

[0010] The present invention has the advantages of: (1) the stuffing material provides an even and flat structure, which is tailorable and non-fuzzing, and the manufacture process for the products is very simple, efficient and material saving; (2) fine barbules are distributed outward along the stems every 50μm, and with the nodes and/or barbicels thereon forming more tiny spaces for retaining more still air, thereby providing good performance of wind-proofing and thermal protecting, and providing a good look without bulky appearance, thus resulting in a high grade; (3) the combination of stems and textile fibers can utilize the advantages of excellent strength, hydroscopicity and cohesion, thus producing stuffing materials of down stems having various properties; (4) big feathers and branches can be used so as to sufficiently utilize the resource instead of waste.

Brief description of the drawings

[0011]

FIG. 1 is a schematic view of the structure according to the present invention.

Detailed Description

[0012] With reference to the figure, stem 1 employs at least one of the single stems made of the washed duck or goose down/feather by removing off the calamus or shaft. The barbules 2 distributed outward along the main stem of the stem 1 every 50μm are allowed to intercross and interlink with nodes 3 and/or barbicels 4 distributed on the barbules by nonwoven techniques, and then the crossing and linking points are bonded together by applying adhesive 5 to form a web piece structure; or textile fibers 6 are added into the stem 1, and intercrossed and wound with the barbules 2, nodes 3 and/or barbicels 4 on the stem 1 by nonwoven techniques to form a web piece structure; or at least one kind of textile fibers 6 with lower melting point are added into the stem 1 and intercrossed and wound with the barbules 2, nodes 3 and/or barbicels 4 on the stem 1 by nonwoven techniques, and then the crossing and winding points are affixed by the textile fibers with lower melting point, thus forming a web piece structure. The adhesive 5 employs natural resins, polyurethanes, polyacrylates, polyethylacetates, polyvinyl chlorides and/or acrylic emulsions. The textile fibers 6 employ at least one of: natural fibers such as cotton, hemp, wool and silk, chemical fibers, such as terylen, polyamide, acrylon, chlorofiber, polyurethanes, viscose, PE/PET bicom-

ponent fiber, ES composite fiber, and polypropylene fiber with lower melting point.

Claims

1. A stuffing material of down stems for thermal protection comprising stems (1), **characterized in that** the stems (1) are intercrossed and interlinked with each other, and the crossing and linking points are bonded with an adhesive (5), thus forming a web piece structure.

2. The stuffing material of down stems for thermal protection as claimed in Claim 1, **characterized in that** the adhesive (5) employs natural resins, polyurethanes, polyacrylates, polyethylacetates, polyvinyl chlorides or acrylic emulsions.

3. The stuffing material of down stems for thermal protection as claimed in Claim 1, **characterized in that** the stems (1) are intercrossed and wound with each other by the textile fibers (6).

4. The stuffing material of down stems for thermal protection as claimed in Claim 3, **characterized in that** the crossing and winding points between the stems (1) and the textile fibers (6) are affixed by textile fibers with lower melting point.

5. The stuffing material of down stems for thermal protection as claimed in Claim 1, 3 or 4, **characterized in that** the stem (1) employs at least one of the single stems made of washed duck down/feather or goose down/feather, or the branches produced during the conventional down processing.

6. The stuffing material of down stems for thermal protection as claimed in Claim 3 or 4, **characterized in that** the textile fibers (6) employ at least one of natural fibers such as cotton, hemp, wool and silk, chemical fibers such as terylen, polyamide, acrylon, chlorofiber, polyurethanes, viscose, PE/PET bicomponent fiber, ES composite fiber, and polypropylene fiber with lower melting point.

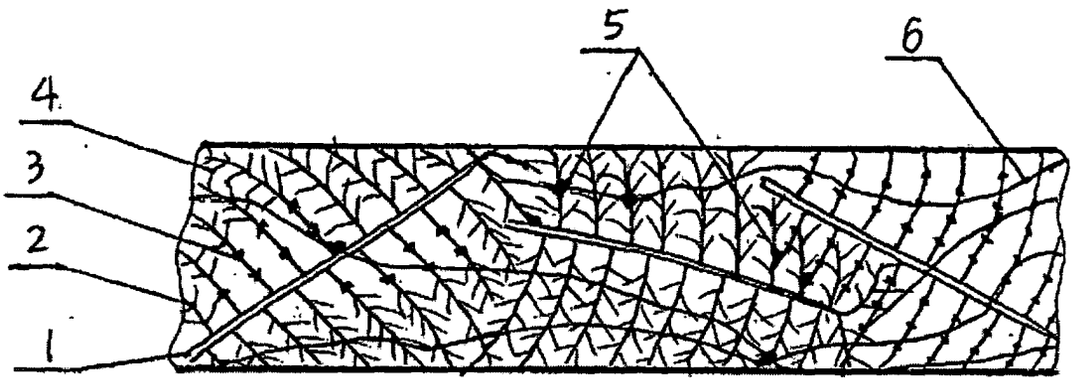

Fig. 1

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN 03/01114

A. CLASSIFICATION OF SUBJECT MATTER

IPC[7] D04H1/40

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[7] B32B9/02,9/00,D04H1/60,1/58,1/54,1/40,1/00,D01B9/00,D04H3/16,3/14,3/08,3/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

CHINESE INVENTION 1985-2004, CHINESE UTILITY MODELS 1985-2004

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CNPAT WPI EPODOC PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN.A.1384236 (ZHANG L)11 Dec.2002 (11.12.02) page5, line- page6, line7	1-2
Y		3
Y	US.B.6232249(KAWADA Y) 15 May.2001(15.05.01) Claim 1	3
A	CN.A.1332273 (ZHANG L) 23 Jan.2002 (23.01.02) The whole document.	1
A	JP.A.10266053 (ISHIHARA YAKUHIN KK) 06 Oct.1998 (06.10.98) The whole document.	1
A	JP.A.10310962 (ISHIHARA YAKUHIN KK) 24 Nov.1998 (24.11.98) The whole document.	1

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

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

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"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	Date of mailing of the international search report
24.Mar.2004 (24.03.04)	29 APR 2004 (29.04.2004)
Name and mailing address of the ISA/CN 6 Xitucheng Rd., Jimen Bridge, Haidian District, 100088 Beijing, China Facsimile No. 86-10-62019451	Authorized officer Zhu.Zhengqiang Telephone No. (86-10)62085485

Form PCT/ISA /210 (second sheet) (July 1998)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN 03/01114

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
CN1384236A	2002-12-11	NONE	
US6232249B1	2001-05-15	JP3383855B2	2003-03-10
		JP10331061A	1998-12-15
CN1332273A	2002-01-23	WO03035957A1	2003-05-01
JP10266053A	1998-10-06	NONE	
JP10310962A	1998-11-24	NONE	

Form PCT/ISA /210 (patent family annex) (July 1998)