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(54) **Fibre processing apparatus**

(57) An apparatus for use in processing of fibres, comprising a number of pins 23 mounted in bores 22 in a body 21, the body interlocking with a support formed

of a plurality of pieces 25, 26, such that a central channel 27 is formed by the body and the support in combination. The support interlocks with the body by means of ribs 24, 28, 29, 30 extending from the body.

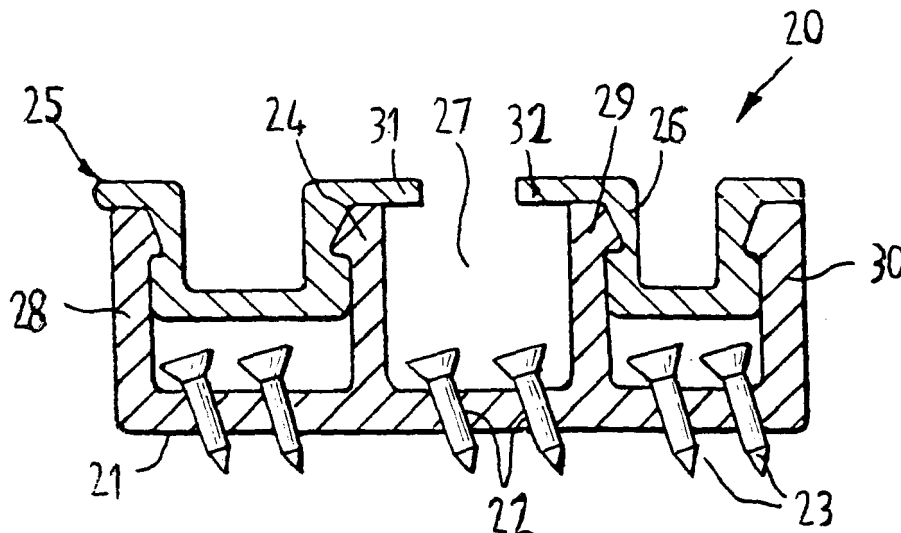


Fig. 3

Description

[0001] The present invention relates to fibre processing apparatus, and in particular, but not exclusively, to apparatus forming part of a cotton card.

[0002] During processing of raw cotton, or of similar natural fibres, the cotton fibres are separated from one another by means of a cotton card. The card comprises a rotating cylinder which bears a large number of wire points. Cotton is carried by the main cylinder through a set of stationary pre-carding flats, and through a number of subsequent carding flats. Similar cards may also be used in the processing of a number of synthetic fibres, or of natural/synthetic mixtures.

[0003] These carding flats are typically formed of three blades, each blade extending across the cylinder surface parallel to the cylinder axis. Each blade (Figure 1) carries a large number of "wires", that is, metal strips blanked out to form a number of teeth. The strips are mounted together on a thin bar and clipped to a support.

[0004] An improved form of carding flat is disclosed in UK Patent Application GB 2323099. The carding flat (shown in Figure 2) comprises a body in which are mounted, through respective bores, a number of wire pins. The pins are passed into the respective bores from the rear surface of the body such that the points of the pins are shown from the front face of the body. The pins are then secured in place, by means of adhesive.

[0005] The body is adapted to be mounted on a support. Conveniently, the body and support take the form of extruded parts which snap-fit together. The support is further adapted to engage with a blade mounting fitting in a card. In one arrangement (Figure 2) the support is formed as a single piece, with a central undercut channel shaped to engage a corresponding profile in the mounting fitting.

[0006] According to one aspect of the present invention, there is provided an apparatus for use in fibre processing, the apparatus comprising: a body defining a plurality of points; and a support for the body, the body and support in combination defining a channel for engaging a corresponding mounting profile.

[0007] Preferably, said channel is an undercut channel.

[0008] Preferably, said body includes a number of ribs, for interlocking with said support. Preferably also said ribs are adapted to snap-fit together with said support. Preferably also all or some of said ribs define part of said channel.

[0009] Preferably, said support includes a plurality of sections. More preferably, said support includes two longitudinal sections.

[0010] Preferably said points comprise a plurality of pins mounted in corresponding bores in said body. Preferably also said pins have tails of greater diameter than said bores, such that the pin tails will not enter the bores. Preferably also said pins are fixed in said bores by means of adhesive.

[0011] For use in a card, use of pins rather than wires offers the advantage that the pins may be arranged at an angle to the cylinder centre line. Conventional wires are typically produced with lines of teeth at an angle of 90° to the centre line, such that each leading tooth shields the following teeth. This problem may be avoided by the use of appropriately located pins; preferably, laterally adjacent rows of points are offset longitudinally. In a preferred embodiment, the offset is such that lateral lines of teeth are at an angle of 86° to the longitudinal axis of the body.

[0012] According to a second aspect of the present invention there is provided an apparatus for use in fibre processing the apparatus comprising a body defining a longitudinal axis and a lateral axis, a plurality of points and a support for the body, the points being arranged in longitudinally-extending rows, laterally adjacent rows being longitudinally offset.

[0013] This and other aspects of the invention shall now be described, by way of example, by reference to the accompanying drawings, in which:

Figure 1 is a cross-section of a prior art carding flat; Figure 2 is a cross-section of a carding flat, as described in UK Patent Application 2323099;

Figure 3 is a cross-section of a carding flat in accordance with one embodiment of the present invention; and

Figure 4 is a schematic view of a section of a carding flat in accordance with an embodiment of the present invention.

[0014] Reference is first made to Figure 1, depicting a prior art carding flat. The flat 40 comprises a number of "wires" 41, that is small sections of metal which have been blanked to form pointed teeth 42. The wires 41 each define a rectangular aperture 43 to permit the wires to be mounted on a bar 44. The wires are then clipped onto a support 45 defining a channel 46 for co-operation with an inverted T-shaped flat-mounting profile on a card.

[0015] Reference is now made to Figure 2 of the drawings, which illustrates an alternative carding flat as described in GB 2323099. The flat 10 comprises a body 11 with a number of bores 12 through which are mounted many pins 13. The pins may have a tail of greater diameter than the bores, thus preventing the tails from entering the bores. The pins may also be fixed in position by means of an adhesive. The body 11 carries two ribs 14 to interlock with a support 15. The support is of unitary construction and defines a central undercut channel 16 for mounting the flat on the card.

[0016] Reference is now made to Figure 3 of the accompanying drawings, which illustrates a cross-section of a flat 20 in accordance with one embodiment of the present invention. The flat 20 comprises a body 21 with a number of bores 22 through which are mounted many pins 23, as described in GB 2323099. The body 21 de-

finer four longitudinally extending ribs 24, 28, 29, 30 profiled to interlock with two separate supports 25, 26. These supports 25, 26 together define a central undercut channel 27 for co-operation with an inverted T-shaped flat-mounting profile on a card.

[0017] In cross-section, the supports 25, 26 define two substantially "U"-shaped pieces, the lower portions of the legs of each "U" being profiled so as to interlock with corresponding profiling on the ribs of the body. The supports further possess flanges 31, 32 extending inwardly to partially enclose the area between the ribs 24, 29. The profile defined by the flanges 31, 32 in co-operation with the ribs 24, 29 and the body 21 is of a suitable shape for mounting the entire flat assembly on an inverted T-shaped flat-mounting profile on a card.

[0018] The ribs 24, 28, 29, 30 are further placed so as to provide sufficient access to the rear of the body, when the supports are not present, for insertion and mounting of the pins 23 through the bores 22 during production of the flats.

[0019] As illustrated in figure 4 a flat 20 in accordance with the present invention has a plurality of pins 23 arranged in longitudinally extending rows. Laterally adjacent rows 50, 52 are longitudinally offset. This staggering of the pins reduces the obstruction of following pins by leading pins when compared with conventional wire flats, and so increases efficiency and prolongs the life of the flat. In a preferred embodiment, the pins have an offset such as to form lateral rows at 86° to the longitudinal axis of the flat.

[0020] The arrangements depicted in Figures 1 and 2 necessitate a tall profile, and the use of a relatively large quantity of material to construct the flat. The embodiment described in Figure 3 has a significantly lower profile and uses less construction material than the arrangements illustrated by Figures 1 and 2.

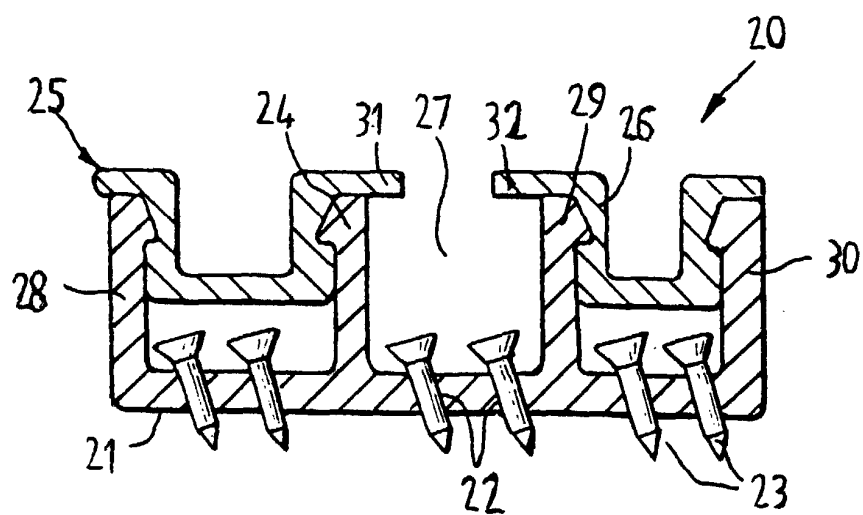
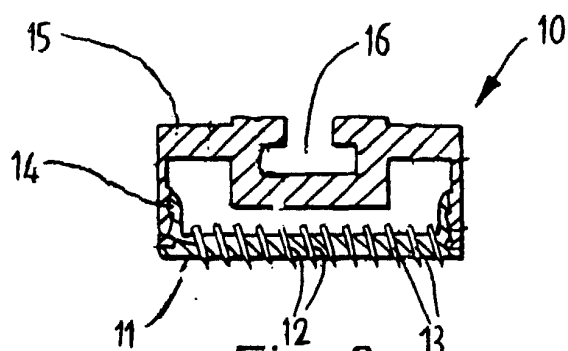
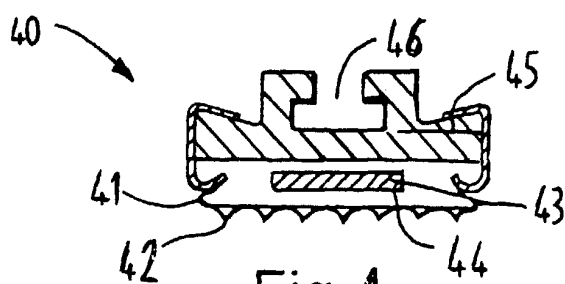
[0021] It will be appreciated that various modifications may be made to the illustrated embodiment without departing from the scope of the present invention.

together with said support.

5. The apparatus of claims 3 or 4 wherein all or some of said ribs define part of said channel.
6. The apparatus of any preceding claim wherein said support includes a plurality of sections.
7. The apparatus of claim 6 wherein said support includes two longitudinal sections.
8. The apparatus of any preceding claim wherein said points comprise a plurality of pins mounted in corresponding bores in said body.
9. The apparatus of claim 8 wherein said pins have tails of greater diameter than said bores.
10. The apparatus of claim 8 or 9 wherein said pins are fixed in said bores by means of adhesive.
11. The apparatus of any preceding claim wherein said points are arranged in longitudinally-extending rows, laterally adjacent rows being longitudinally offset.
12. An apparatus for use in fibre processing, the apparatus comprising a body defining a longitudinal axis and a lateral axis, a plurality of points and a support for the body, the points being arranged in longitudinally-extending rows, laterally adjacent rows being longitudinally offset.

Claims

1. An apparatus for use in fibre processing, the apparatus comprising a body defining a plurality of points; and a support for said body, said body and said support in combination defining a channel for engaging a corresponding mounting profile on a card.
2. The apparatus of claim 1 wherein said channel is an undercut channel.
3. The apparatus of claims 1 or 2 where said body includes a number of ribs, for interlocking with said support.
4. The apparatus of claim 3 wherein said ribs snap-fit



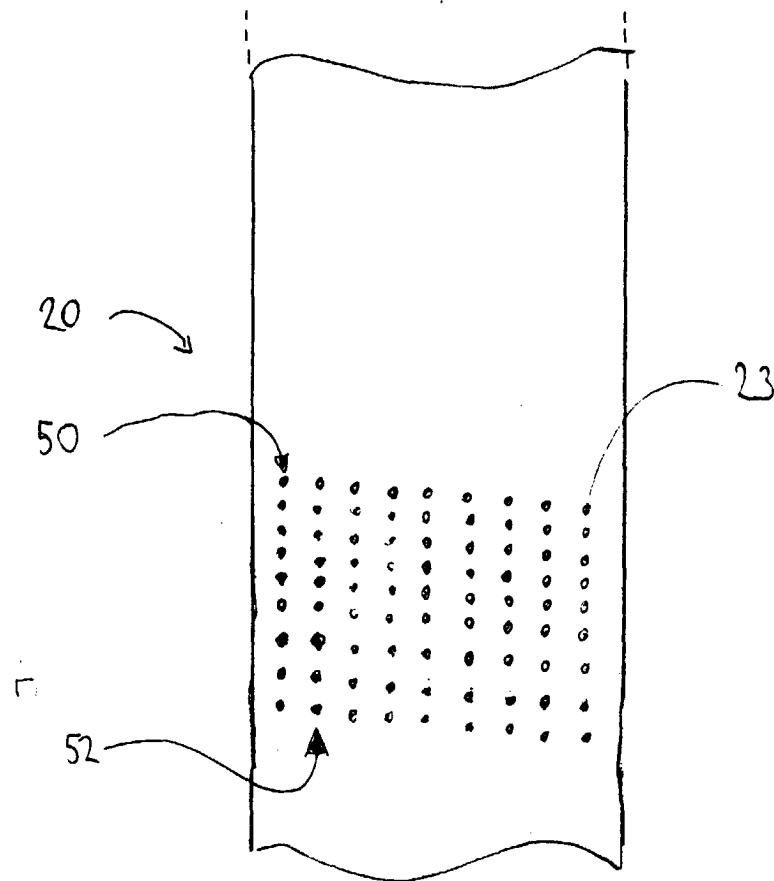


Fig. 4



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 99 30 5502

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)
X, P, D	GB 2 323 099 A (WM R STEWART & SONS (HACKLEMAKERS) LTD) 16 September 1998 (1998-09-16) * the whole document *	1, 2, 4, 8, 9	D01G15/24 D01G15/92
X	WO 92 14873 A (CARCLO ENGINEERING GROUP PLC) 3 September 1992 (1992-09-03) * page 4, line 23 - page 6, line 13; claims 1-3; figure 1 *	1, 3, 4	
Y	---	8-12	
Y	DE 20 11 373 A (WM.R.STEWART & SONS, HACKLEMAKERS.LTD.) 24 September 1970 (1970-09-24) * page 6 - page 8 * * page 10, paragraph 2 - page 11, paragraph 3; claims 1-4; figures 1, 2, 8, 9 *	8-12	
A	EP 0 336 222 A (MASCHINENFABRIK RIETER AG) 11 October 1989 (1989-10-11) * column 5, line 15 - column 7, line 45; claims 1, 12; figures 1, 4 *	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			D01G
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 29 October 1999	Examiner Munzer, E
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 99 30 5502

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
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29-10-1999

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 2323099 A	16-09-1998	NONE	
WO 9214873 A	03-09-1992	NONE	
DE 2011373 A	24-09-1970	BE 747158 A	10-09-1970
		CH 552687 A	15-08-1974
		ES 377348 A	01-01-1973
		FR 2037850 A	31-12-1970
		GB 1298561 A	06-12-1972
		NL 7003407 A,B,	14-09-1970
		US 3730802 A	01-05-1973
EP 336222 A	11-10-1989	DE 3811681 A	19-10-1989
		JP 1306623 A	11-12-1989
		US 4974295 A	04-12-1990