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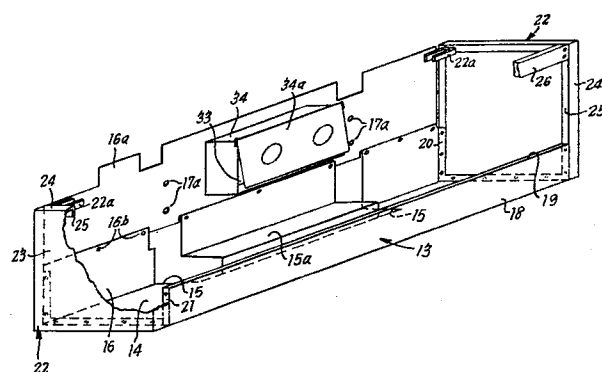
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⑤④ Improvements relating to carding engines.

⑤⑦ A carding engine having side frames between which the main cylinder and other rollers are rotatably mounted. Each side frame is covered by a cover assembly comprising an open-fronted trough (13), two end covers (22) secured to the trough and a front member (26) extending between and secured to the end covers. The trough is fixed to the sub-frame of the carding engine by bolts at (17), these being the only fixed connections between the cover assembly and the frame.



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IMPROVEMENTS RELATING TO CARDING ENGINES

This invention relates to carding engines.

Both for reasons of safety and cleanliness the sides of carding engines are provided with covers suitably secured to the side frames. Covers previously used have
5 been constructed from a large number of different sections with no inherent rigidity, the sections being supported on brackets extending from the carding engine frame. The bracket systems required have been complex and the removal of large numbers of bolts, brackets and
10 other fastening members have made the complete stripping down of the side of a carding engine a difficult and time-consuming operation. Even to gain access to restricted small areas of the side of a carding engine has presented considerable difficulties. The object of
15 the present invention is considerably to simplify the carding engine side cover structure and to improve access through that cover structure.

According to the invention a carding engine has a frame that includes side frames between which are rotatably
20 mounted the main carding cylinder and other rollers of the carding engine, and each side frame is covered by a cover assembly comprising an open fronted trough extending longitudinally of the carding engine and having a rear part secured to the frame, end covers secured to the
25 trough at opposite ends thereof and a front member

extending between the end covers and secured thereto.

It will thus be seen that the main elements of each cover assembly total as few as four in number and their only fixed connection to the frame is by way of
5 the rear part of the trough. The other main elements of each cover assembly are merely secured one to another and there is no direct fixed connection between them and the frame at the respective side of the card. Thus, a multiplicity of brackets and fastenings between each cover
10 assembly and the carding engine frame are avoided. Use of a small number of main elements for the cover assembly allows rapid stripping down and reassembly and thus leads to shorter maintenance down times for the carding engine. It also reduces loss or damage which can occur when a
15 cover assembly is formed from a multiplicity of smaller parts.

Preferably the trough, end covers and front member when secured together form a box-like structure, which has good resistance to bending forces. In this way the
20 only additional bracing or support of the assembly that is needed is support against torsional forces and further simplification is gained. Such an arrangement may be achieved by fabricating the cover sections from sheet metal and by bolting together flange sections of the
25 fabrications.

Conveniently, two parallel plates extend inwardly longitudinally of the trough from the upper rear part of each end cover to form a clip arrangement for engaging around opposite sides of a part of the frame. When
30 engaged around the frame parts the clip arrangements give the necessary degree of torsional rigidity to the assembled cover.

The trough of the cover assembly may be formed as a single unit or may be made up of sections bolted together.
35 Forming the rear wall and the base separately and bolting them together is particularly advantageous as this

simplifies fabrication of the trough.

A complete cover assembly also requires means closing the whole of the front of the cover if the front member does not itself do this. Where a separate front
5 cover is required this is preferably in the form of one or more doors removably mounted on the front member. For a single cylinder carding engine, preferably a single door is provided which closes the whole of the front of the cover assembly, the door extending from one end cover
10 to the other and extending from the front member at the upper part of the cover assembly to a front part of the trough at the lower part of the cover assembly. Provision of a single door in this way enhances immediate access to the interior of the whole of the cover assembly and thus
15 to the whole of the drive means and other components that are generally shielded by the cover assembly. Furthermore it enables total close-out of the side of the card to be achieved in a very simple manner, and requires only one safety interlock at the card side, responsive to the
20 door position. For a duo-card carding engine it is desirable that two doors be provided, abutting at the centre section of the duo-card, in order to keep the doors of a manageable size.

To allow access to the undercard area a rear wall of
25 the trough is desirably formed with an access opening in at least the longitudinally central region thereof. The access opening should preferably be of such a size that a cylinder screen may pass therethrough.

In order that the invention may be better understood
30 a description of a specific embodiment of a carding engine in accordance therewith will now be described in more detail, by way of example only, with reference to the accompanying drawings in which:-

Figure 1 is a side elevation of the frame structure
35 of a carding engine;

Figure 2 is a cross-section on the line II-II of Figure 1 with parts removed and showing a cover assembly;

Figure 3 is an isometric view of parts of the cover assembly; and

Figure 4 shows detail of the cover assembly.

The drawings show the frame structure and cover assembly at only one side of the carding engine, it being understood that at the other side of the carding engine the basic structure is similar and of opposite hand. The carding engine includes a floor engaging sub-frame comprising two U-shaped assemblies each comprising two
5 uprights 1 joined by a horizontal beam 1a, the two assemblies being joined by parallel horizontal beams 2. Each upright 1 terminates in an upper post 3 supporting a pivot bearing 4 on which is supported by bearing pads 5 a side frame 6 of the carding engine, the side frame being of any
10 suitable construction. The side frame 6 supports a bearing schematically indicated as 7 for a main carding cylinder, part of which is shown in outline at 8, the cylinder extending between the two side frames and tying those frame members together. The side frames also support
15 bearing assemblies 9 and 10 for takerin and doffer members indicated in outline at 11 and 12 respectively. It will be seen that each side frame 6 is allowed by the pivot bearing 4 a degree of universal swivelling movement relative to the sub-frame, so freeing the side frames from
20 stress transmission.
25

The side frame at each side of the carding engine is enclosed by a cover assembly, not shown in Figure 1, which will now be described with reference to Figures 2 and 3.

The cover assembly at each side of the carding
30 engine comprises an open fronted trough shown generally as 13 which extends longitudinally the full length of the carding engine. The trough has a base 14, cut away at 15 to accommodate the uprights 1, and with a stepped central section 15a fitting over the
35 respective beam 2. A rear wall of the trough is formed by part 16 integral with the base and part 16a secured by

bolts 16b to the part 16 and extending upwardly behind the uprights 1. The rear wall is secured to each of the uprights by bolts 17 passing through holes 17a in part 16a. The upper edge of the rear wall is restrained by
5 one or more clips 16c secured to the side frame 6. The trough also has a front wall 18 with a turned in lip 19. Inturned flanges 20, 21 are formed around the whole of each end of the trough.

The cover assembly includes end covers 22, one at
10 each end of the assembly, each end cover having an outer surface 23 from which projects an inturned lip 24 terminating in a further inturned flange 25 extending parallel to the plate 23 and around the full periphery of the end cover. The flanges 20, 21 of the trough and
15 the flanges 25 of the two end covers are formed with mating holes by way of which the end covers may be bolted to the trough. A top front bar 26 also extends the full length of the carding engine and has end flanges again formed with holes by way of which each end of the
20 bar may be bolted to the upper part of the flange 25 of the adjacent end cover.

The trough, the two end covers and the front bar form the main elements of the cover assembly and when secured together it will be seen that they form a structure having
25 good resistance to bending forces. The only direct fixed connection between this structure and the frame of the carding engine is by way of bolts 17, securing the trough to the uprights of the sub-frame. No other direct fixed connection to the frame is required for any of the other
30 three main elements of the cover assembly. However, in order to impart torsional rigidity to the assembled cover, each end cover 22 is formed with a U-shaped clip arrangement 22a formed by two parallel plates extending inwardly longitudinally of the trough from the upper rear part of
35 the end cover. Each clip arrangement 22a embraces part of the end of the side frame 6 to restrain the cover assembly against movement transversely of the side frame

member and thus give torsional rigidity. No bolted connection is made as it is necessary for there to be some freedom for relative movement between the side frame 6 and the cover assembly.

5 The cover assembly includes a single door 27 (not shown in Figure 3) which extends the full length of the carding engine between the two end covers 22 and which also extends the full height from the top member 26 to the top of the front wall 18 of the trough. The door 27 is
10 secured at each of the top corners by a hinge arrangement. The lower edge of the door may be secured to the cover assembly by a suitable lock. The hinge arrangement at one side of the door, as shown in Figure 4, may comprise a bolt supported in a holder 29 that is secured to the door
15 and spring biased by a compression spring 30 into a locking position wherein the bolt engages in a hole in a plate 31 secured to the respective end cover 22. The bolt has a handle 32 by way of which the bolt may be disengaged. The hinge at the other side may be similar, or may be a simple
20 axially separable hinge. By disengaging the bolts and separating the other hinge the door may rapidly be completely removed. Access is thus gained to the interior of the cover assembly and thus to the frame of the carding engine and to the drive assembly and other elements that
25 may be located within the cover assembly. The rear wall 16a of the trough is formed with an opening 33 having a surrounding guard 34 to which is pivoted an inspection cover 34a. The opening leads to the undercard region below the main carding cylinder and is desirably sufficiently large
30 to allow passage of a cylinder screen therethrough.

 Coverage of the side of the carding engine is completed where necessary by a top cover which is independent of the cover assembly and is integral with the outer top cover assembly 35 for the main cylinder
35 and its cooperating flat assembly.

 The elements of the cover assembly are desirably fabricated from sheet metal and are formed so as to fit

around the frame structure of the particular carding engine to be covered. They are also formed with the bolt holes required to assemble the parts of the cover, and also with locating and mounting holes for other parts

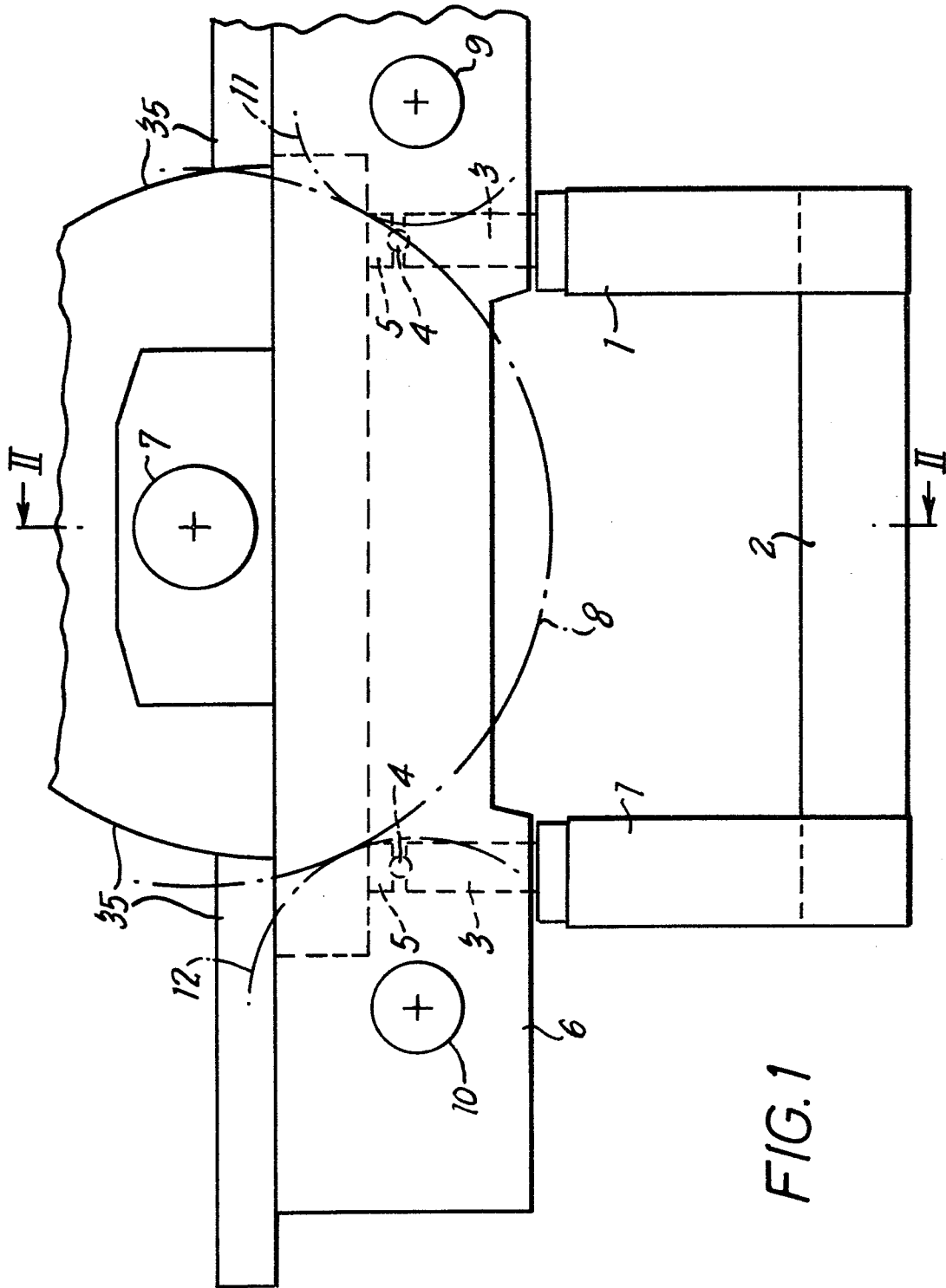
5 of the carding engine that may be housed within the cover assembly. These will particularly be openings in the rear wall parts 16 and 16a, not shown in the drawing as they may be planned so as to suit any required carding engine layout. The simplicity of the construction,

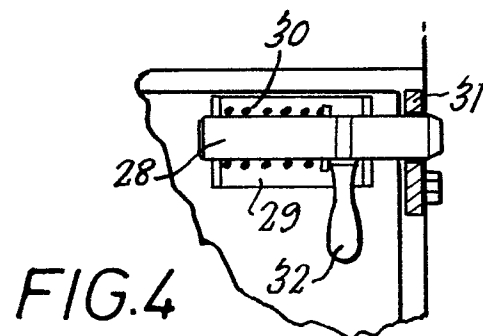
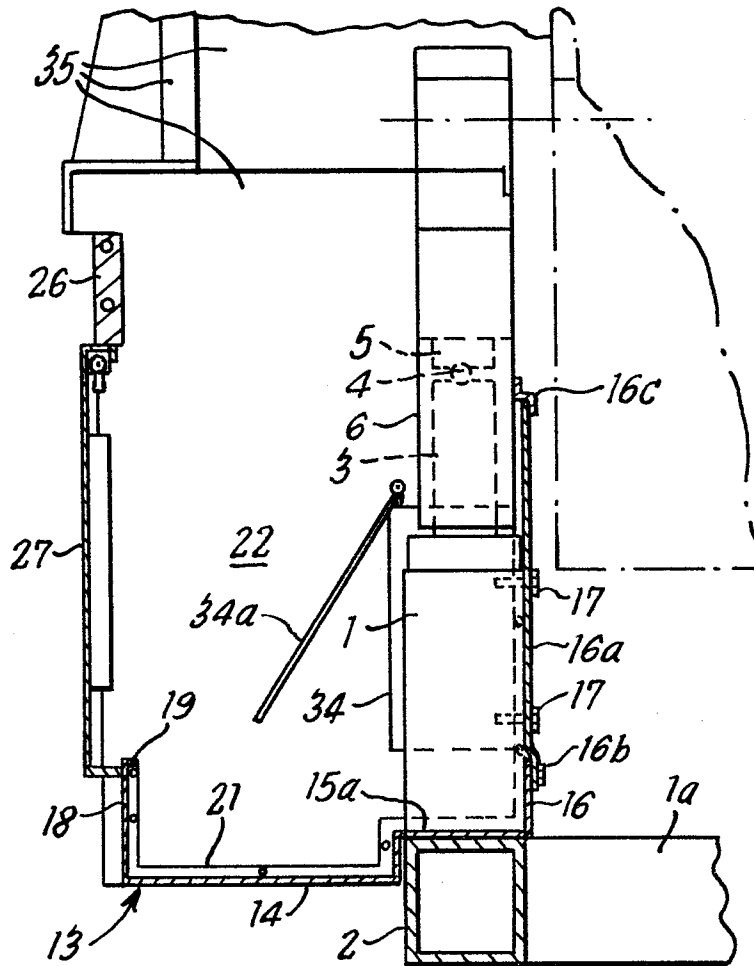
10 the rigidity of the finished assembly and the use of only four bolts to secure the assembly to the frame of the carding engine lead to enormous advantages when access needs to be gained to the side of the carding engine for maintenance purposes.

CLAIMS:

1. A carding engine having a frame that includes side frames one at each side of the carding engine, and a main cylinder and other rollers rotatably mounted between the side frames, in which each side frame is covered by
5 a cover assembly comprising an open fronted trough extending longitudinally of the carding engine and having a rear part secured to the frame, end covers secured to the trough at opposite ends thereof and a front member extending between the end covers and secured thereto.
- 10 2. A carding engine according to claim 1 in which the trough, end covers and front member when secured together form a box-like structure.
3. A carding engine according to claim 2 in which the trough, end covers and front member are fabricated
15 from sheet metal and are secured one to another by bolting together flange sections of the fabrications.
4. A carding engine according to any one of the preceding claims in which two parallel plates extend inwardly longitudinally of the trough from the upper rear
20 part of each end cover to form a clip arrangement for engaging around opposite sides of a part of the frame.
5. A carding engine according to any one of the preceding claims in which the trough is formed by a rear wall section and a base section bolted together.
- 25 6. A carding engine according to any one of the preceding claims in which the front member does not close the whole of the front of the cover assembly, the front being closed by at least one door removably mounted on the front member.
- 30 7. A carding engine according to claim 6 in which a single door is removably mounted on the front member and extends longitudinally from one end cover to the other, and vertically from the front member to a front part of the trough at the lower part of the cover assembly.
- 35 8. A carding engine according to any one of the preceding claims in which the rear part of the trough is

formed with an access opening in at least the longitudinally central region thereof.





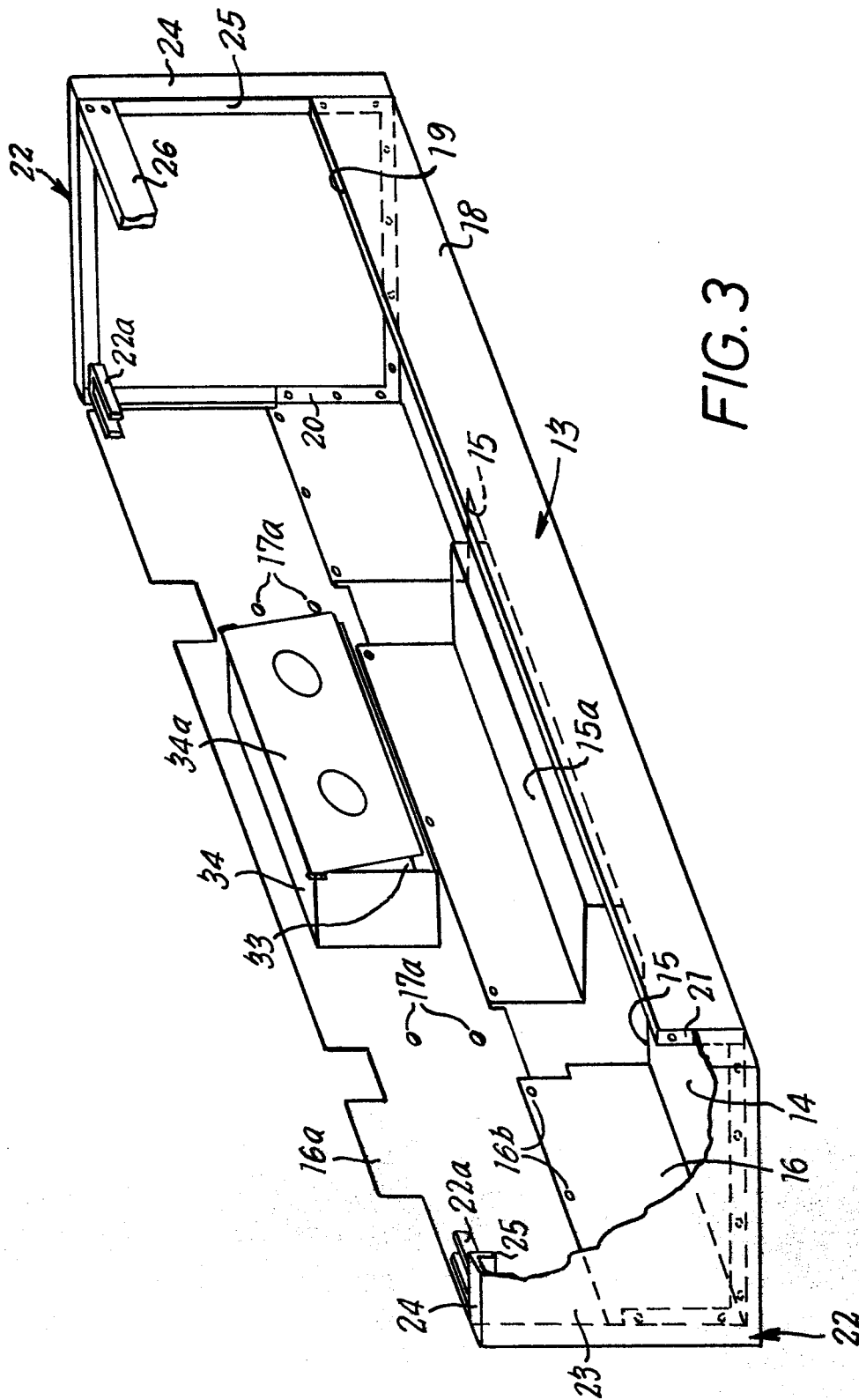


FIG. 3



European Patent
Office

EUROPEAN SEARCH REPORT

0097026

Application number

EP 83 30 3327

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. ³)
A	CH-A- 381 129 (EZIO BETTONI) * Page 2, lines 71-73; page 3, lines 1-13; figures 1,2 *	1	D 01 G 15/32
A	US-A-2 912 721 (MÜLLENSCHLÄDER, C.O.) * Column 6, lines 1-41; figures 2,3 *	1	
A	US-A-4 280 250 (GRAHAM, M.)		
			TECHNICAL FIELDS SEARCHED (Int. Cl. ³)
			D 01 G
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 03-10-1983	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	