



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) Publication number : **0 284 573 B1**

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication of patent specification :
05.06.91 Bulletin 91/23

(51) Int. Cl.⁵ : **D01G 15/62, B65H 54/00**

(21) Application number : **88830113.2**

(22) Date of filing : **23.03.88**

(54) **Process and equipment for forming and collecting a double sliver of carded fibres in a collecting container so that the two slivers can then be drawn off at the same time.**

(30) Priority : **24.03.87 IT 935687**

(43) Date of publication of application :
28.09.88 Bulletin 88/39

(45) Publication of the grant of the patent :
05.06.91 Bulletin 91/23

(84) Designated Contracting States :
BE CH DE ES FR GB LI

(56) References cited :
FR-A- 1 179 532
FR-A- 1 374 350
FR-A- 2 101 955
US-A- 3 104 790

(73) Proprietor : **Giuliani, Marcello**
Via Cellerese 33
I-50013 Campi Bisenzio Firenze (IT)

(72) Inventor : **Giuliani, Marcello**
Via Cellerese 33
I-50013 Campi Bisenzio Firenze (IT)

(74) Representative : **Mannucci, Gianfranco,**
Dott.-Ing.
Ufficio Tecnico Ing. A. Mannucci Via della
Scala 4
I-50123 Firenze (IT)

EP 0 284 573 B1

Note : Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid (Art. 99(1) European patent convention).

Description

A first subject of the invention is a process for forming, collecting and using slivers of carded material which are collected in containers by means of collectors whose movement usually consists of two circumferential movements to form layers of progressively offset coils. Slivers of carded material are produced in a known way, as it is illustrated for example in FR-A-2.101.955. The process according to the invention is characterised in that at least two slivers, formed from respective sections of the front of the web coming off the carder and condensed and drawn by their own drawing units, are conveyed to the same collector, collected in the container beneath it and kept adjacent to each other; and in that the said slivers are drawn from the collecting container at the same time with the layers of coils being unwound, and are conveyed to the units for the next stage of processing either separately or together.

A second subject of the invention is equipment for forming, collecting and using slivers of carded material which are collected in containers by means of collectors whose movement usually consists of two circumferential movements to form layers of progressively offset coils, characterised in that it comprises the following combination of units: at the output end of the carding machine, devices for dividing the front of the web into at least two sections with their own condensing and drawing units; a single container for collecting sliver with its own collector; and devices for conveying the adjacent slivers and winding them into layers of adjacent coils which can be drawn off at the same time in order to send the said slivers to the next stages of use either separately or together.

In one version of equipment of this kind comprising a moving, hinged arm connected to the sliver collector above the collecting container, the said hinged arm comprises adjacent grooved wheels or equivalent guide devices for two (or more) adjacent slivers.

Separate devices with guide openings for each sliver or one device with one guide opening for both slivers may be fitted upstream of the sliver return rollers.

A further subject of the invention is a collecting container for carded sliver wound into layers of coils in which at least two slivers, forming the said layers of coils, are kept adjacent to each other in order to be drawn off at the same time and sent to the subsequent processing units either separately or together.

A better understanding of the invention will be gained from the description and the attached drawing which shows a practical, non-limiting embodiment of the invention itself. In the drawing,:

Fig. 1 is a front view of a two-output carder with associated collector and collecting container;

Fig. 2 is a view through II-II in Fig. 1;

Fig. 3 is a transverse section of a single guide

opening;

Fig. 4 is a view through IV-IV in Fig. 3;

Fig. 5 is a transverse section of a double guide opening;

Fig. 6 is a view through VI-VI in Fig. 5;

Fig. 7 is a schematic diagram of a number of offset coils of slivers which are adjacent to each other in the collecting container.

According to the illustration in the attached drawing, at the output end of carder 1 is a doffer 3 which works in conjunction with a web detachment cylinder 4 which is able to convey the web being formed to a set of grooved wheels 5, 7. The middle of doffer 3 is milled and this milling 9 creates a discontinuity in the clothing of the cylinder itself. The said discontinuity in the clothing causes the web being formed to divide and be separated into two portions V1 and V2; the V1 portion is then conveyed to grooved wheels 5 whilst the V2 portion is conveyed to grooved wheels 7. The said grooved wheel assemblies collect the two portions of web into two slivers N1 and N2 respectively and send them to two condensing and drawing assemblies 11, 13. When they leave the said condensing and drawing assemblies 11, 13 slivers N1 and N2 are passing over a pair of pulleys 15, 17 on a collector 19. The said pulleys may have two races as shown in Fig. 2.

Top covers 12 of the said collector has guide devices for slivers N1 and N2. The said guide devices may be of the type illustrated in Figs. 3 and 4, i.e. with a single opening 23 in which both slivers N1 and N2 meet. The said guide devices may, however, also be of the type illustrated in Figs. 5 and 6, with two separate openings 25 and 27 for the two slivers N1 and N2.

The usual motor-driven rollers (not shown) which return the slivers to be collected in container 29 beneath are fitted underneath the guide devices.

When the two slivers N1 and N2 are conveyed to collector 19 – which has the usual movements for conveying the sliver sent into collecting container 29 beneath – the said slivers are wound into a series of offset coils around the circumference, as shown in Fig. 7. When slivers N1 and N2 are drawn from the container for the subsequent drawing and/or spinning operations they unwind in parallel and do not twist together, the movement being the reverse of that which took place when they were collected in container 29.

The process and equipment illustrated enable a double sliver from a double-output and hence high-productivity carder to be collected in a single container. This enables the overall dimensions of the equipment as a whole to be reduced whilst retaining the option of feeding the two slivers collected in the joint container to two separate units on the machine which carries out the next operation. In practice the two slivers N1 and N2 are drawn from container 29 at the same time and so they can be conveyed to the

next stages of the process either separately or together. In the former case a single sensor will monitor the presence and completeness of a pair of slivers, whilst in the latter it is possible simultaneously to verify the presence and completeness of both slivers individually with two separate systems of sensors ; the said two slivers can be re-united in the subsequent sections of the machine to which they are fed.

Claims

1. Process for forming, collecting and using slivers of carded material which are collected in containers (29) by means of collectors (19) whose movement usually consists of two circumferential movements to form layers of progressively offset coils, characterised in that at least two slivers (N1, N2) formed from respective sections of the front of the web coming off the carder (1) and condensed and drawn by their own drawing units (11, 13), are conveyed to the same collector (19), collected in the container (29) beneath it and kept adjacent to each other ; and in that the said slivers (N1, N2) are drawn from the collecting container (29) at the same time with their layers of coils being unwound, and are conveyed to the units for the next stage of processing.

2. Process according to the preceding claim, characterised in that the said two slivers (N1, N2) are drawn off to be conveyed together to the same unit for the next stage of processing.

3. Process according to Claim 1, characterised in that the said two slivers (N1, N2) are conveyed to the units for the next stage of processing separately

4. Equipment for forming, collecting and using slivers (N1, N2) of carded material which are collected in containers (29) by means of collectors (19) whose movement usually consists of two circumferential movements to form layers of progressively offset coils, characterised in that it comprises the following combination of units : at the output end of the carding machine (1, 3, 4), devices (5, 7, 9) for driving the front of the web into at least two sections (N1, N2) with their own condensing and drawing units (11, 13) ; a single container (29) for collecting sliver with its own collector (19) ; and devices (15, 17, 19) for conveying the adjacent slivers (N1, N2) and for winding them into layers of adjacent coils which can be drawn off at the same time in order to send the said slivers to the next stages of use either separately or together.

5. Equipment according to Claim 4, comprising a moving, hinged arm connected to the sliver collector above the collecting container, characterised in that the said hinged arm comprises adjacent grooved wheels (15, 17) or equivalent guide devices for two (or more) adjacent slivers.

6. Equipment according to Claims 4 and 5, with a collector comprising a pair of motor-driven sliver

return rollers, characterised in that separate devices with guide openings (25, 27) for each sliver are fitted upstream of the said rollers.

7. Equipment according to Claims 4 and 5, with a collector comprising a pair of motor-driven sliver return rollers, characterised in that a single device with a guide opening (23) for both slivers is fitted upstream of the said rollers.

Ansprüche

1. Verfahren zum Bilden, Sammeln und Verwenden von Fasersträngen aus kardiertem Material, die im Behälter (29) mittels Sammler (19) gesammelt werden, deren Bewegung normalerweise aus zwei umfangsgerichteten Bewegungen zur Bildung von Lagen aus fortschreitend gegeneinander versetzten Windungen besteht, dadurch **gekennzeichnet**, daß mindestens zwei Faserstränge (N1, N2), die aus entsprechenden Abschnitten der Front der von der Karde kommenden Bahn gebildet und durch ihnen zugeordnete Zieheinheiten (11, 12) kondensiert und abgezogen werden, zu dem gleichen Sammler (19) gefördert und in dem darunter befindlichen Behälter (29) gesammelt und dabei einander benachbart gehalten werden ; und daß die Faserstränge (N1, N2) gleichzeitig unter Abwicklung ihrer Windungslagen von dem Sammelbehälter (29) abgezogen und den Einheiten für die folgende Behandlungsstufe zugeführt werden.

2. Verfahren nach dem vorstehenden Anspruch, dadurch **gekennzeichnet**, daß die besagten zwei Faserstränge (N1, N2) abgezogen werden, um der gleichen Baueinheit für die nächste Behandlungsstufe zusammen zugeführt zu werden.

3. Verfahren nach Anspruch 1, dadurch **gekennzeichnet**, daß die besagten zwei Faserstränge (N1, N2) den Baueinheiten für die nächste Behandlungsstufe getrennt zugeführt werden.

4. Vorrichtung zum Bilden, Sammeln und Verwenden von Fasersträngen aus kardiertem Material, die in Behälter (29) mittels Sammlern (19) gesammelt werden, deren Bewegung normalerweise aus zwei umfangsgerichteten Bewegungen zur Bildung von Lagen aus fortschreitend gegeneinander versetzten Windungen besteht, dadurch **gekennzeichnet**, daß die Vorrichtung die folgende Kombination an Baueinheiten aufweist : Einrichtungen (5, 7, 9) am Ausgangsende der Kardiermaschine (1, 3, 4) zum Teilen der Front der Bahn in wenigstens zwei Abschnitte (N1, N2) mit jeweils eigenen Kondensier- und Zieheinheiten (11, 13), einem einzigen Behälter (29) zum Sammeln von Fasersträngen mit einem eigenen Sammler (19), und Einrichtungen (15, 17B, 19) zum Fördern der benachbarten Faserstränge (N1, N2) und Aufwickeln derselben in Lagen von einander benachbarter Wicklungen, die gleichzeitig abgezogen wer-

den können, um die Faserstränge zu den nächsten Behandlungsstufen entweder getrennt oder gemeinsam zu schicken.

5. Vorrichtung nach Anspruch 4 mit einem beweglichen Gelenkausleger, der am Faserstrangsammler oberhalb des Sammlergehäuses angeordnet ist, dadurch **gekennzeichnet**, daß der Gelenkausleger nebeneinanderliegende Kehlräder (15, 17) oder äquivalente Führungseinrichtungen für zwei oder mehr nebeneinanderliegende Faserstränge aufweist.

6. Vorrichtung nach Anspruch 4 und 5 mit einem Sammler, der ein Paar motorgetriebener Faserstrang-Rücklaufwalzen hat, dadurch **gekennzeichnet**, daß separate Einrichtungen mit Führungsöffnungen (25, 27) für jeden Faserstrang in Bewegungsrichtung oberhalb dieser Walzen befestigt sind.

7. Vorrichtung nach Anspruch 4 und 5 mit einem Sammler mit einem Paar motorgetriebener Faserstrang-Rücklaufwalzen, dadurch **gekennzeichnet**, daß eine einzelne Einrichtung mit einer Führungsöffnung (23) für beide Faserstränge in Bewegungsrichtung oberhalb dieser Walzen befestigt ist.

Revendications

1. Procédé et dispositif pour former, collecter et utiliser des rubans de carde qui sont rassemblés dans des pots (29) au moyen de collecteurs (19) dont le mouvement consiste habituellement en deux mouvements circonférentiels pour former des couches de spires progressivement décalées, caractérisé en ce qu'au moins deux rubans (N1, N2) formés à partir de sections respectives de la partie avant de la bande provenant de la cardeuse (1) et condensés et étirés dans leurs propres unités d'étirage (11, 13), sont acheminés vers le même collecteur (19), collectés dans le pot (29) situé au-dessous et maintenus adjacents l'un à l'autre ; et en ce que lesdits rubans (N1, N2) sont retirés du pot collecteur (29) en même temps que leurs couches de spires sont déroulées, et sont acheminés vers les unités de l'étage de traitement suivant.

2. Procédé selon la revendication 1, caractérisé en ce que lesdits deux rubans (N1, N2) sont retirés de manière à être acheminés ensemble vers la même unité de l'étage suivant du traitement.

3. Procédé selon la revendication 1, caractérisé en ce que lesdits deux rubans (N1, N2) sont acheminés séparément vers les unités de l'étage suivant du traitement.

4. Equipement pour former, collecter et utiliser des rubans de carde (N1, N2) qui sont collectés dans des pots (29) au moyen de collecteurs (19) dont le mouvement consiste habituellement en deux mouvements circonférentiels pour former des couches de

spires progressivement décalées, caractérisé en ce qu'il comprend la combinaison d'unités suivantes : à l'extrémité de sortie de la cardeuse (1, 3, 4) des dispositifs (5, 7, 9) pour diviser la partie avant de la bande en au moins deux sections (N1, N2) avec leurs propres unités de condensation et d'étirage (11, 13), un unique pot (29) pour collecter le ruban avec son propre collecteur (19) ; et des dispositifs (15, 17, 19) pour acheminer les rubans adjacents (N1, N2) et pour les enrouler en couches de spires adjacentes qui peuvent être retirées en même temps de manière à envoyer lesdits rubans aux étages d'utilisation suivants, soit séparément soit ensemble.

5. Equipement selon la revendication 4, comprenant un bras à charnière mobile relié au collecteur de ruban au-dessus du pot collecteur, caractérisé en ce que ledit bras à charnière comprend des roues à gorge adjacentes (15, 17) ou des dispositifs de guidage équivalents pour deux (ou plusieurs) rubans adjacents.

6. Equipement selon les revendications 4 et 5, avec un collecteur comprenant une paire de rouleaux de renvoi de ruban entraînés par un moteur, caractérisé en ce que des dispositifs séparés à ouvertures de guidage (25, 27) pour chaque ruban sont montés en amont desdits rouleaux.

7. Equipement selon les revendications 4 et 5, avec un collecteur comprenant une paire de rouleaux de renvoi de ruban entraînés par un moteur, caractérisé en ce qu'un unique dispositif avec une ouverture de guidage (23) pour les deux rubans est monté en amont desdits rouleaux.

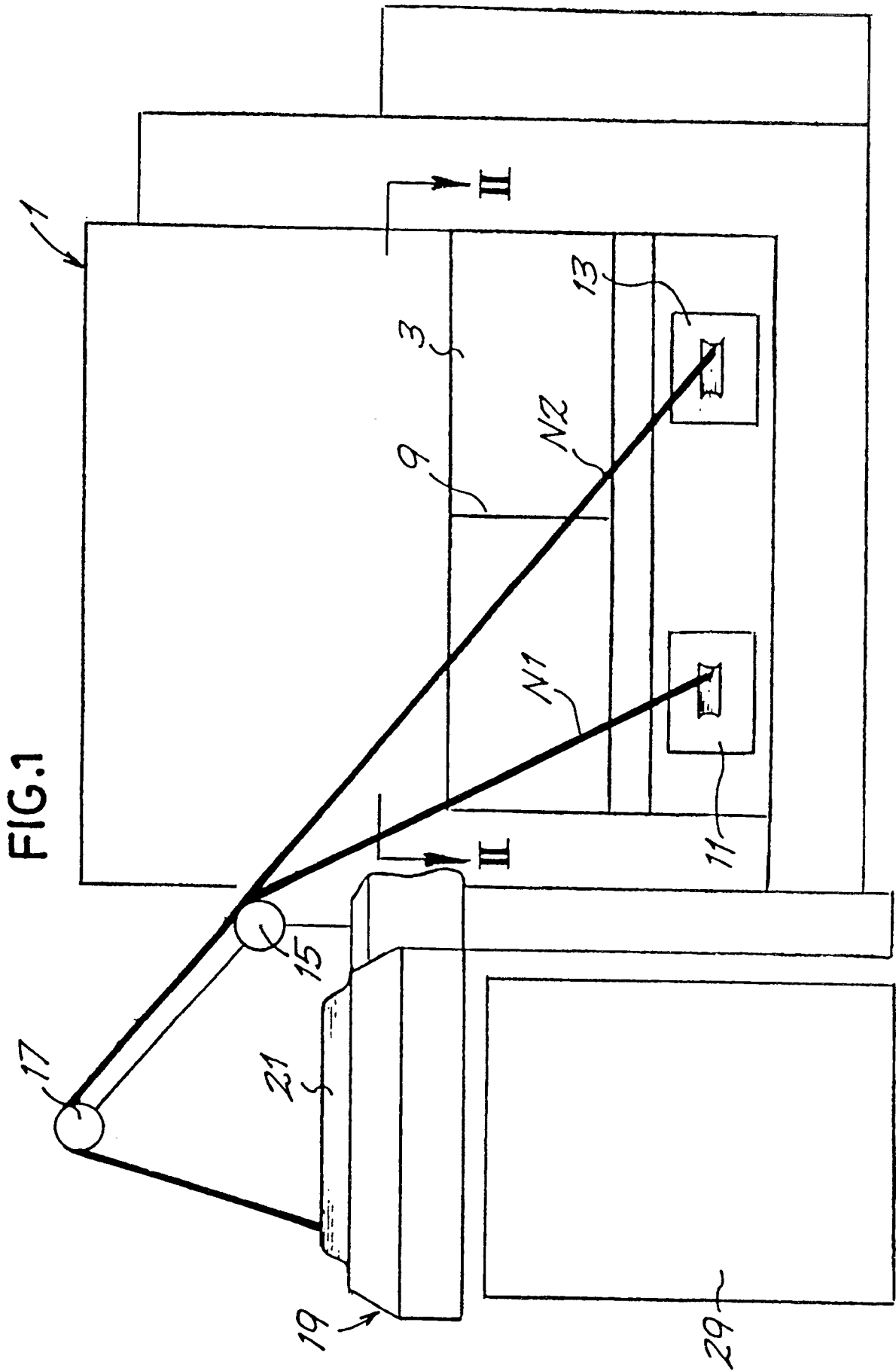


FIG.2

