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(72) Inventor : **Vedani, Augusto
Via San Francesco 16
I-20022 Castano Primo, (Milano) (IT)**

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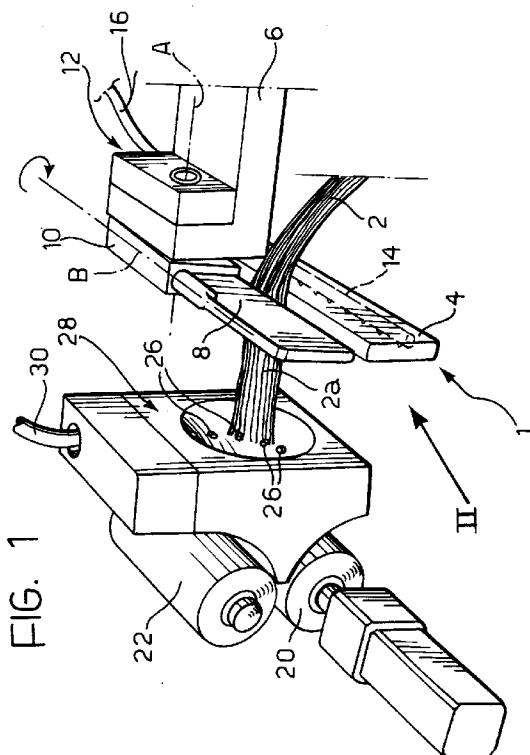
(74) Representative : **Notaro, Giancarlo et al
c/o Jacobacci-Casetta & Perani S.p.A. Via
Alfieri, 17
I-10121 Torino (IT)**

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(71) Applicant : **SANT'ANDREA NOVARA S.p.A.
Via Leonardo da Vinci 18
I-28100 Novara (IT)**

(54) **A device for manipulating an end of a sliver of textile fibres.**

(57) The device includes a gripper (1) with a pair of jaws (4, 8) for gripping a sliver of textile fibres (2) between them so that an end portion (2a) extends on the opposite side of the gripper (1) from the rest of the sliver (2). The gripper (1) has a plurality of nozzles (18) for delivering onto the end portion (2a) an air-flow which tends to keep the end portion (2a) aligned in a predetermined direction.



The present invention relates to a device for manipulating an end of a sliver of textile fibres.

During operations carried out on textile fibres collected into slivers, for example, during the drawing or combing of the slivers, there is a need to supply the end of a sliver to an entrainment device constituted, for example, by a pair of contrarotating rollers. Difficulties are encountered in carrying out this operation automatically, because the end of the sliver tends to bend under its own weight so as to be arranged in a configuration in which it is not easily supplied to the rollers.

The object of the present invention is to provide a simple and reliable device which enables the end of a sliver to be supplied to an entrainment device automatically.

According to the present invention, this object is achieved by means of a device including a gripper with a pair of jaws for gripping a sliver of textile fibres between them so that an end portion of the sliver extends on the opposite side of the gripper from the rest of the sliver, the gripper having a plurality of nozzles connected to a compressed-air source for delivering onto the end portion of the sliver an air-flow which tends to keep that end portion aligned in a predetermined direction.

By virtue of these characteristics, the sliver is positioned in an optimal manner relative to the entrainment device which can thus grip the sliver securely.

Further characteristics and advantages of the present invention will become clear in the course of the detailed description which follows with reference to the appended drawings provided purely by way of non-limiting example, in which:

Figure 1 is a schematic, perspective view of a device according to the present invention,

Figure 2 is a perspective view taken on the arrow II of Figure 1,

Figure 3 is a schematic longitudinal section of the device of Figure 1, and

Figure 4 shows the device of Figure 1 in a different working configuration.

With reference to the drawings, a gripper, indicated 1, is adapted to grip a sliver 2 of textile fibres. The gripper 1 is constituted by a lower plate 4 carried by an arm 6 and an upper plate 8 carried by a support 10 which is articulated to the arm 6 about an axis A perpendicular to the common plane of the two plates 4 and 8. An actuator, indicated 12, is adapted to pivot the support 10 about the axis A. The upper plate 8 is pivotable relative to the support 10 about an axis B which lies in the common plane of the plates 4, 8 and is perpendicular to the axis of rotation A of the support 10.

The lower plate 4 has a longitudinal duct 14 which is connected to a compressed-air source (not shown) by a flexible pipe 16. The lower plate 4 also has a

plurality of transverse holes 18, the inner ends of which open into the longitudinal duct 14.

The gripper 1 is intended to supply the sliver 2 to an entrainment device constituted by a pair of contrarotating rollers 20, 22, of which the first is motor-driven and the second is idle and is urged against the cylindrical surface of the first. The roller 22 can be moved in a direction perpendicular to its own axis to enable the end of the sliver 2 to be inserted between the cylindrical surfaces of the rollers 20, 22.

In front of the rollers 20, 22 is a funnel-shaped member 24 for receiving the end of the sliver 2 carried by the gripper 1. The internal wall of the funnel-shaped member 24 has a plurality of holes 26 which are inclined towards the portion of the member 24 with the smallest diameter. The holes 26 communicate with an annular chamber 28 which is connected to a compressed-air source by a pipe 30.

As can be seen in Figures 1 and 3, the gripper 1 holds the sliver 2 so that an end portion 2a of the sliver 2 extends on the opposite side of the gripper 1 from the rest of the sliver 2. Due to its own weight, the portion 2a of the sliver 2 is arranged as shown by the broken lines in Figure 3. In order to enable the end 2a to be inserted in the funnel-shaped member 24, a jet of compressed air is directed onto the portion 2a through the holes 18. The holes 18 are inclined downwardly relative to an axis perpendicular to the common plane of the plates 4 and 8 so as to prevent excessive flapping and fraying of the portion 2a. The downward inclination of the holes 18 means that, in the rest condition, (which is shown by the broken lines in Figure 3), the force acting on the portion 2a has a longer lever arm than would be the case if the holes 18 were inclined upwardly.

The effect of the jet of compressed air on the portion 2a keeps that portion aligned in a predetermined direction (shown by continuous lines in Figure 3). In this condition, the gripper 1 is brought up to the funnel-shaped member 24 in which the jet of compressed air coming from the holes 26 entrains the end 2a, leading it between the rollers 20, 22. When the end 2a of the sliver is fed between the rollers 20, 22, the roller 22 is spaced from the roller 20. When the arm 6 reaches the end of its travel, the roller 22 is brought close to the roller 20 again, gripping the end 2a of the sliver 2. When this occurs, the gripper 1 is still closed, but the sliver 2 is nevertheless taken in by the rollers 20, 22 since the upper plate 8 is pivoted about the axis B by the force with which the rollers 20, 22 entrain the sliver 2 (Figure 3). The gripper 1 is then immediately opened and the sliver is entrained by the rollers 20 and 22.

Figure 4 shows a step in which the sliver 2 is added to a bundle of slivers 3 which have previously been supplied to the rollers 20, 22. The slivers 3 extend through the funnel-shaped member 24 and between the cylindrical surfaces of the rollers 20, 22. In

this case, the roller 22 is also moved away from the roller 20 before the end 2a of the sliver is inserted in the funnel-shaped member 28 to create a space for the insertion of the new sliver 2.

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Claims

1. A device for manipulating an end of a sliver of textile fibres, characterised in that it includes a gripper (1) with a pair of jaws (4, 8) for gripping a sliver (2) of textile fibres between them so that an end portion (2a) of the sliver extends on the opposite side of the gripper (1) from the rest of the sliver (2), the gripper (1) having a plurality of nozzles (18) which are connected to a compressed-air source for delivering onto the end portion (2a) of the sliver (2) an air-flow which tends to keep that end portion (2a) aligned in a predetermined direction. 10
2. A device according to Claim 1, characterised in that the jaws are constituted by a lower fixed plate (4) which carries the nozzles and an upper movable plate (8) which is articulated to the lower plate (4) about an axis (A) perpendicular to the common plane of the plates (4, 8). 15
3. A device according to Claim 2, characterised in that the nozzles (18) are constituted by holes in the body of the lower plate (4), the axes of the holes (18) being inclined downwardly relative to an axis perpendicular to the common plane of the plates (4, 8). 20
4. A device according to Claim 1, characterised in that it includes a pair of entrainment rollers (20, 22) for taking the end portion (2a) from the gripper (1), a first roller (20) being motor-driven and the second roller (22) being urged against the cylindrical surface of the first roller (20) and being movable away from the first roller to enable the end portion (2a) to be inserted between the rollers (20, 22). 25
5. A device according to Claim 4, characterised in that it includes a funnel-shaped member (24) which is interposed between the rollers (20, 22) and the gripper (1) and, in its internal surface, has a plurality of holes (26) connected to a compressed-air source, for directing an air-flow towards the entrainment rollers (20, 22). 30
6. A device according to Claim 1, characterised in that the upper plate (8) is pivotable about an axis which lies in the plane of the plate (8) and is perpendicular to the axis of articulation (A) of the upper plate (8). 35

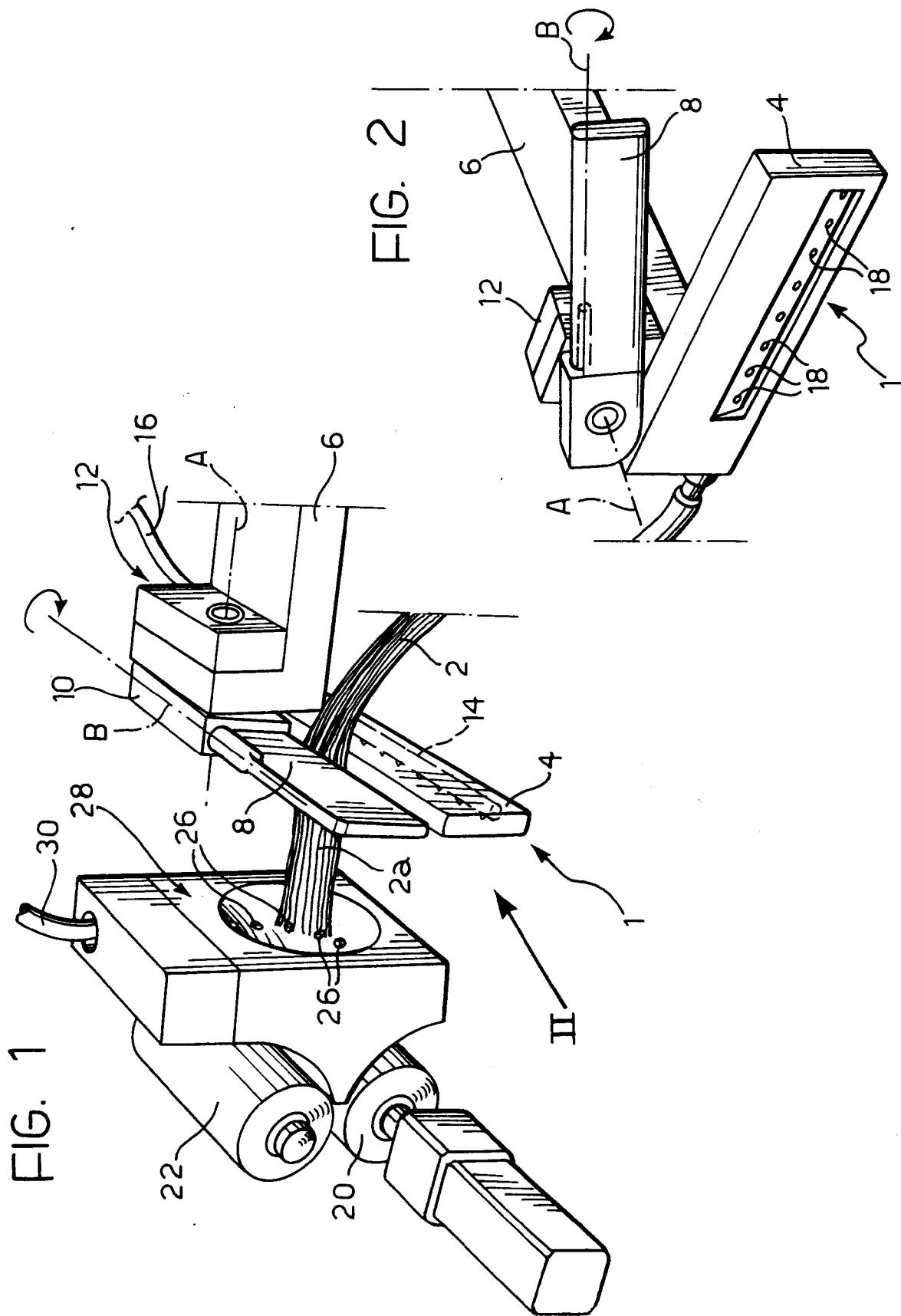


FIG. 3

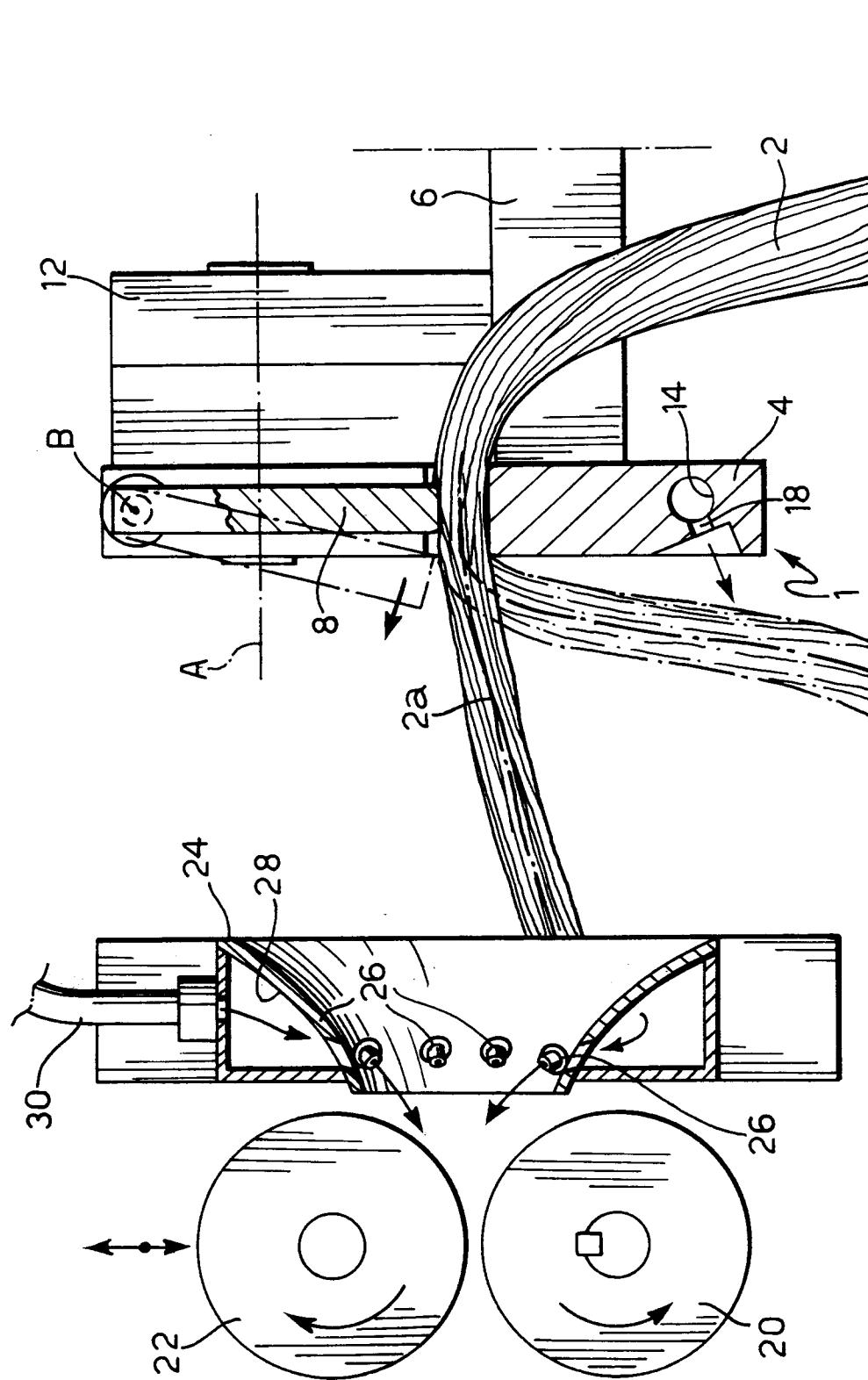
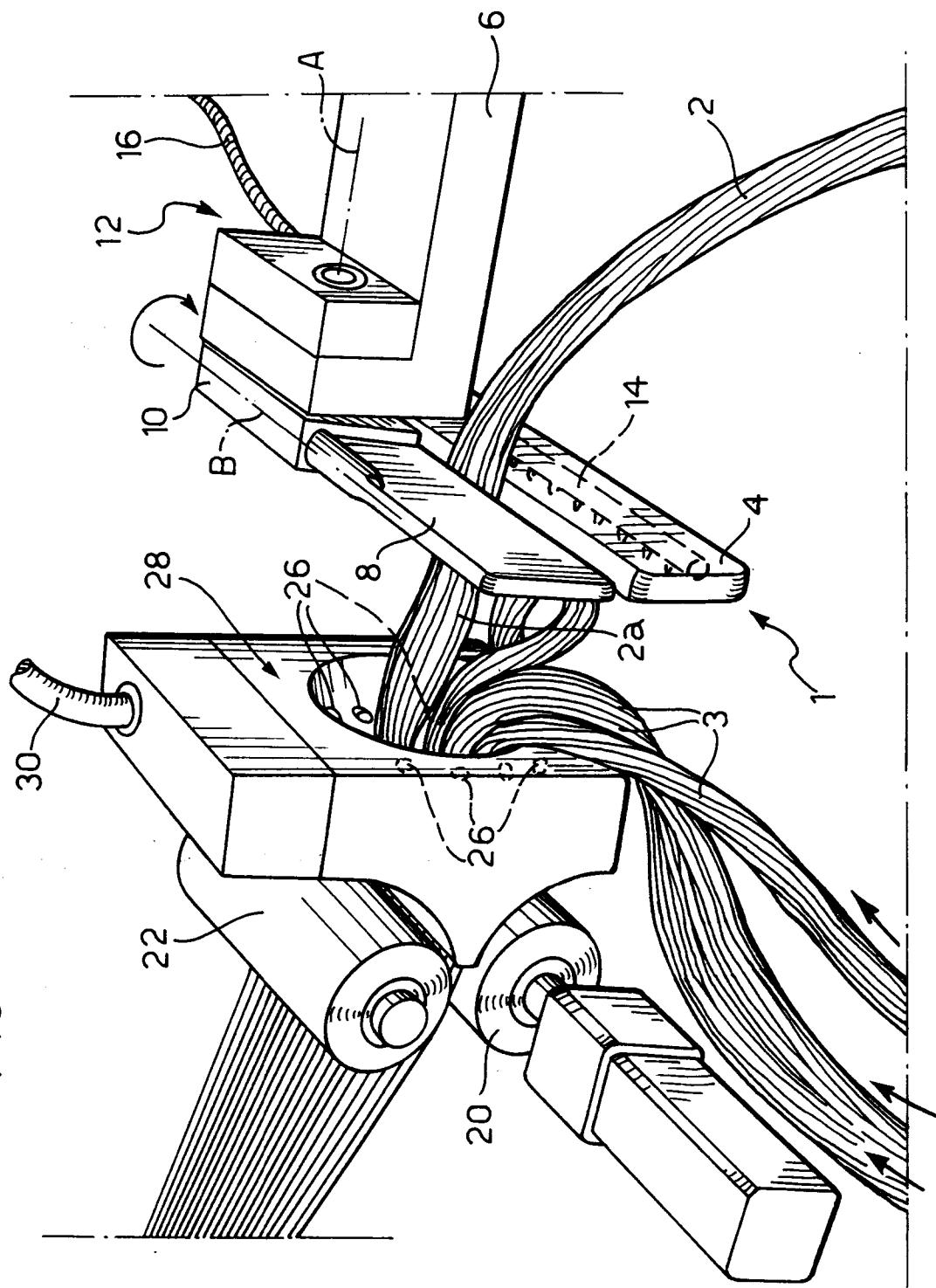


FIG. 4





EP 91 83 0565

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl.5)						
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim							
Y	FR-A-2 611 217 (N. SCHLUMBERGER ET CIE, S.A.) * the whole document *	1	D01G19/08 D01H5/72 B65H51/16						
A	---	3							
Y	DE-U-8 705 740 (SPINNEREIMASCHINENFABRIK SEYDEL & CO GMBH) * page 13 - page 15; figures 1,2,6 *	1							
A	---	5,6							
A	FR-A-2 601 661 (N. SCHLUMBERGER & CIE) * the whole document *	1							
A	---								
A	EP-A-0 417 614 (MASCHINENFABRIK RIETER AG) -----								
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)						
			D01G D01H B65H						
<p>The present search report has been drawn up for all claims</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Place of search</td> <td style="width: 33%;">Date of completion of the search</td> <td style="width: 34%;">Examiner</td> </tr> <tr> <td>THE HAGUE</td> <td>03 APRIL 1992</td> <td>MUNZER E.</td> </tr> </table>				Place of search	Date of completion of the search	Examiner	THE HAGUE	03 APRIL 1992	MUNZER E.
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