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(12) # EUROPEAN PATENT APPLICATION

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(54) **Procedure for the controlled transformation and application of fibers in situ in civil and road constructions.**

(57) A procedure for the controlled transformation and application of fibres in situ in civil and road constructions, characterized essentially in that in principle a continuous band 1 is unwound from a ball of raw material 2, said band entering a turret 3 which absorbs any overtensions and distensions produced as the fibre is unwound and which is provided with a knot detector 13 which brings the entire process to a halt if any irregularity in the strand of material is located, the band of material, now at a constant tension, then entering a cutting station 6 consisting of a cylinder provided on its peripheral edge with a plurality of blades and over which the band of material winds such that two effects are produced, the first of these being one of traction by friction whilst the blades and fibres are in contact and the second comprising the final cutting of the fibre. Finally, once cut into segments of a convenient length, the fibre is conveyed to the mixing station 7 by means of an articulated tube 8 through which the material runs, driven pneumatically by an impulsion gang 10.

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The object of the present invention comprises a procedure for the controlled transformation and application of fibres in situ in civil and road constructions.

BACKGROUND OF THE INVENTION

These fibres are manufactured in large fibre-producing plants which are remote from the construction sites and mixing stations, and from where they are served in bags, the form in which they arrive there. Once there, the mixture is made manually in the mixing station by one or more operators who constantly feed the station from the bags of manufactured fibres or by pouring them manually into dispensing devices.

This method of working has a significant drawback in that operators have to be used permanently for the job of feeding the fibres, said operators, as competent as they might be, never achieving a totally homogeneous product, and furthermore the manufacture of the raw fibre in factories which are remote from the construction site implies a lack of control over the product for those responsible since they find themselves having to place orders according to the current stocks and the standard sizes of fibres used by said stations.

DESCRIPTION OF THE INVENTION

The present invention substantially improves the procedures for the incorporation of fibres in road and civil construction stations which are currently used.

In particular, said procedure enables the fibre to be manufactured on site, personalizing its properties according to the requirements at every moment such that it is possible to vary said properties at any time in an exceptionally simple way. Furthermore, it makes it possible to continuously feed the mixing station automatically, without the intervention of any personnel, ensuring a perfectly homogeneous product at all times.

There is an accompanying drawing to illustrate the procedure of the present invention.

DESCRIPTION OF A PREFERRED EMBODIMENT

The novel procedure for the controlled transformation and application of fibres in civil and road constructions comprises three phases. The first of these consists of unwinding the ball of raw fibre to produce a continuous strand or sheet of material of uniform tension. The second phase consists of cutting the band of material into segments of a certain length depending on the properties of the material with which said segments are to be mixed. The third phase consists of transportation to the mixing station and dispensing the product in the volume required.

In the first phase, a continuous band 1 unwound from a ball of raw material 2 enters a turret 3 by means of a foot with an input guide 4, said guide being provided with a plurality of rollers or pulleys, whose function is to neutralize the overpressures and distensions produced during the unwinding of the fibre, as well as a knot detector 13 which brings the entire process to a halt if any irregularity in the strand of material is located.

Following this the second phase begins in which the band of material, now at a constant tension, enters a guide 5 which introduces the material into the cutting station which comprises a cylinder provided on its peripheral edge with a plurality of blades 6 and over which the band of material winds such that two effects are produced, the first of these being one of traction whilst the blades and fibres are in contact and as a result of which the entire strand of fibre advances and the ball of raw material is unwound, the second effect comprising the final cutting of the fibre into segments of a certain length. All of this is possible since the cutting action of the blades is progressive rather than an instantaneous sectioning.

The volume of fibre cut is determined by the speed with which the cutting cylinder rotates and the tension of the continuous strand of material, the weight of the strand being constant along its entire length, this length depending on the distance between the blades.

Once the fibre has been cut into segments of a convenient length the last phase of the process is begun, wherein the fibre is conveyed to the construction sites own mixing station 7 by means of a tube 8 provided with flexible zones 9 for making bends and avoiding obstacles and through which the material runs, driven pneumatically by an impulsion gang 10. The volume dispensed is determined by means of the cutting speed and the pneumatic pressure in the tube, said pressure always being in accordance with the volume of the product which is cut in the previous phase.

All of the mechanical elements are situated on a travelling platform 11 which is also provided with a control panel 12 for controlling the entire process. Said panel may be provided on a transportable console in order that it may be transferred to a specific part of the site where the rest of the controls for other machines and processes are situated so that a single person can control them all simultaneously.

The details of realization of the invention may be subject to slight changes providing they do not alter the basic concept outlined in the above description.

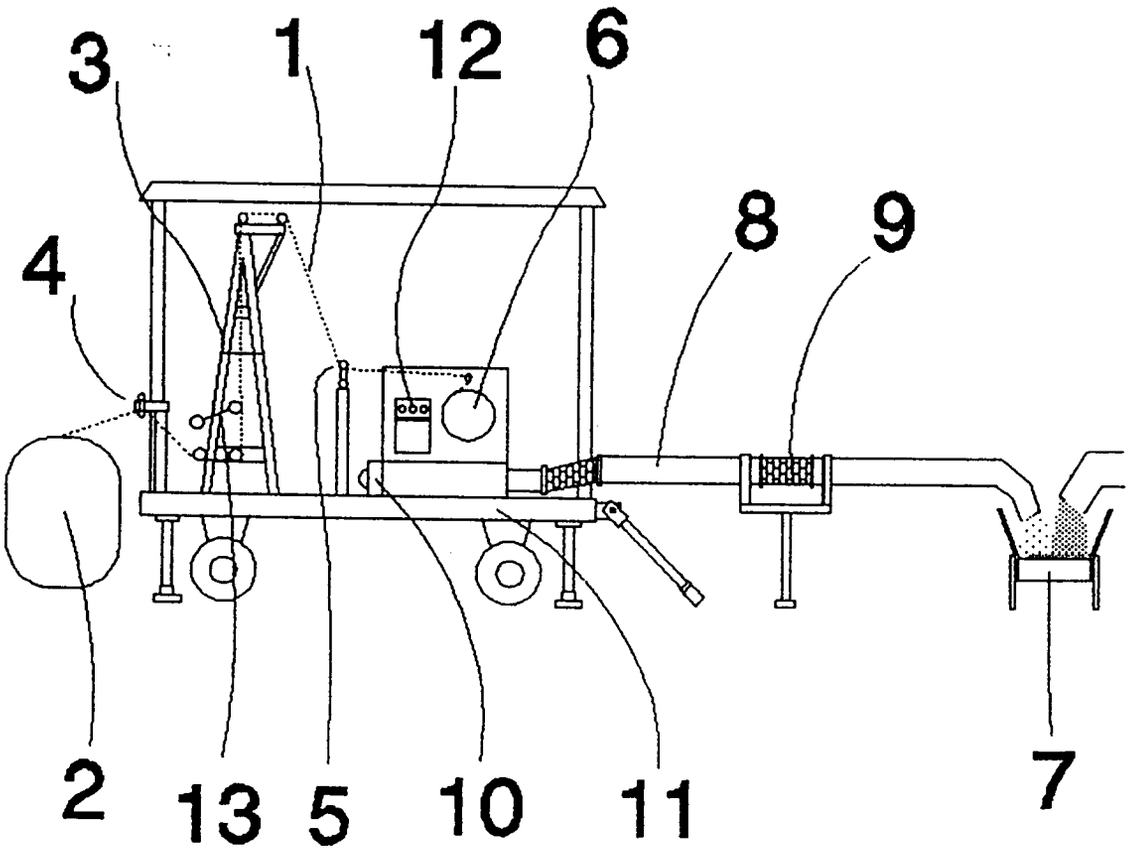
Claims

1. A procedure for the controlled transformation and application of fibres in situ in civil and road constructions, characterized in that in principle a continuous band 1 is unwound from a ball of raw material 2, said band entering a turret 3 which absorbs any overtensions and distensions produced as the fibre is unwound and which is provided with a knot detector 13 which brings the entire process to a halt if any irregularity in the strand of material is located, the band of material, now at a constant tension, then entering a cutting station 6 consisting of a cylinder provided on its peripheral edge with a plurality of blades and over which the band of material winds such that two effects are produced, the first of these being one of traction by friction whilst the blades and fibres are in contact and the second comprising the final cutting of the fibre which, once cut into segments of a convenient length, is finally conveyed to the mixing station 7 by means of an articulated tube 8 through which the material runs, driven pneumatically by an impulsion gang 10.

2. A procedure for the controlled transformation and application of fibres in situ in civil and road constructions according to the previous claim, characterized in that the length of the segments of fibre cut is determined as a function of the distance between the blades situated on the cylinder, the production volume being determined by regulating the speed of rotation of said blade-carrying cylinder and the tension at which the continuous strand of fibre is supplied, said strand being of constant weight along its entire length.

3. A procedure for the controlled transformation and application of fibres in situ in civil and road constructions according to the previous claims, characterized in that the dispensing of the amount of fibres poured into the mixing station is determined by means of the cutting speed and the pneumatic pressure maintained inside the tube, said pressure being in accordance with the volume of the product delivered by the cutting station.

4. A procedure for the controlled transformation and application of fibres in situ in civil and road constructions according to the previous claims, characterized in that all the mechanical elements are situated on a travelling platform 11 which is also provided with a transportable control panel 12 for controlling the entire process.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EUROPEAN SEARCH REPORT

Application Number
EP 93 50 0117

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.6)
A	FR-A-2 631 356 (TEXSOL) * the whole document *	1,4	E02D3/00 E01C21/00
A	GB-A-2 175 032 (FIBREDEC) * the whole document *	1	
A	EP-A-0 456 502 (COLAS) * abstract; figures *	1	
A	FR-A-2 661 929 (SCREG) * the whole document *	1,3,4	
A	EP-A-0 017 548 (ETAT FRANCAIS) * abstract; figures *	1	

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

E02D
E01C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	3 December 1993	Dijkstra, G

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
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T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
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