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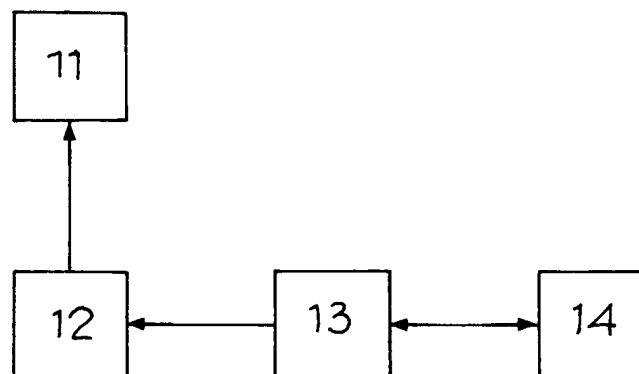
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(54) **Positive yarn feeder for circular knitting machines**

(57) A yarn feeder (11) for circular knitting machines is controlled by a servomechanism (12), which can be programmed and can be operated by the electronics (14) responsible for controlling the operation of a circular knitting machine. The feeder is ready to positively inter-

vene in response to the demands or to the take-up of yarn by the machine, constantly adjusting the supply and the tension of the yarn when the knitwear being manufactured and/or the knitting speed of the machine varies.



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Description

[0001] The present invention pertains to the field of circular knitting machines and, in particular, it pertains to yarn feeders in such machines.

[0002] Yarn feeders for circular knitting machines having the function of adjusting the amount and the tension of each yarn supplied to a machine have already become known. The difficulty, which also represents a problem, of such feeders is "feeling" the variations in the knitted article or of the types of knitted article involving a different yarn take-up and/or a different knitting speed, even if within the framework of the same rotation, and of temporarily intervening in order to readjust the tension of the yarn fed in. Actually, such feeders are rather passive and have a poor sensitivity to the tension of the yarn and a remarkable inertia in intervening to restore the optimal conditions of supplying yarn to the machine, which may have a negative effect on the uniformity and quality of the knitted product especially if the variations are repeated frequently.

[0003] The object of the present invention is to solve such a problem and to eliminate the implicit drawbacks with an improved yarn feeder which is predisposed to be ready to intervene positively in any variation in the demand and tension of the yarn due to the change in the type of knitwear during the performance and/or in the manufacturing speed.

[0004] The object is accomplished, according to the present invention, with a positive feeder, which is controlled by a servomechanism that can be programmed and operated by the control electronics of the knitting machine to be ready to intervene in response to the demands for yarn by the machine, appropriately adjusting the tension of the yarn.

[0005] In other words, the invention involves creating an interface between the machine and the yarn feeding devices so that it is possible to inform, in advance, the feeder of the yarn of the need of the machine to make sure that the tension of the yarn remains within the preselected parameters.

[0006] The various features of novelty which characterize the invention are pointed out with particularity in the claims annexed to and forming a part of this disclosure. For a better understanding of the invention, its operating advantages and specific objects attained by its uses, reference is made to the accompanying drawing and descriptive matter in which a preferred embodiment of the invention is illustrated.

In the drawings:

The only figure is a block diagram showing the device of the present invention.

[0007] Referring to the drawings in particular, the invention comprises a yarn feeder indicated by 11, which is actuated by a servomechanism 12. The servomechanism 12 is operated by a programmer 13 controlled by electronics 14. The electronics 14 is responsible for the control of a circular knitting machine.

[0008] The structure of the yarn feeder 11 is known in itself. The method the yarn feeder uses of supplying yarn to the machine to be fed is also known. The servomechanism 12 may consist of an electric motor with variable speed in response to signals coming from the programmer 13. The signals may indicate the variations of supply and/or tension of the yarn directed to the knitting machine.

[0009] Thus, the feeder becomes active in the sense that, with each variation of the knitwear being produced on the knitting machine according to a specific program, the feeder proper is programmed correspondingly and is controlled to intervene positively, without delays and inertia, to always keep the tension of the yarn uniform.

[0010] The interface between machine and each feeder device is, e.g., created with mixed analog-digital technology. This is because the selection is made for an analog speed reference in order to inform the feeder of the yarn of the exact instantaneous speed of the machine, and a digital system reference, which makes it possible for the machine software to inform, in advance, the feeder of the yarn to make it possible for the yarn feeder to operate at a speed in time to satisfy the textile requirements of the machine.

[0011] While a specific embodiment of the invention has been shown and described in detail to illustrate the application of the principles of the invention, it will be understood that the invention may be embodied otherwise without departing from such principles.

Claims

1. A circular knitting machine yarn feeder, the yarn feeder comprising:

a yarn feeder device;
a servomechanism controlling the yarn feeder device, said servomechanism being programmed and operated by electronics responsible for the control of the operation of a circular knitting machine to positively intervene in response to the demands or take-up of yarn by the circular knitting machine, constantly adjusting the supply and tension of the yarn when the knitted article being manufactured varies and/or the knitting speed of the machine varies.

2. A yarn feeder in accordance with claim 1, further comprising:

a programmer unit including the servomechanism programming to intervene and to adjust the supply and tension of the yarn even with knitting variations in the same rotation.

3. A circular knitting machine system, comprising:

a circular knitting machine;

electronics for controlling the operation of said circular knitting machine;
a yarn feeder device;
a servomechanism controlling the yarn feeder device;

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a servomechanism programmer unit with programming controlled and operated by said electronics responsible for the control of the operation of a circular knitting machine to positively intervene in response to the demands or take-up of yarn by the circular knitting machine, constantly adjusting the supply and tension of the yarn when the knitted article being manufactured varies and/or the knitting speed of the machine varies.

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4. A method of operating a circular knitting machine yarn feeder, the method comprising the steps of:

providing a yarn feeder device;

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providing a servomechanism controlling the yarn feeder device;

programming the servomechanism and operating the servomechanism by electronics responsible for the control of the operation of a circular knitting machine to positively intervene in response to the demands or take-up of yarn by the circular knitting machine, constantly adjusting the supply and tension of the yarn when the knitted article being manufactured varies and/or the knitting speed of the machine varies.

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5. A method in accordance with claim 4, further comprising:

employing a programmer unit including the servomechanism programming to intervene and to adjust the supply and tension of the yarn even with knitting variations in the same rotation.

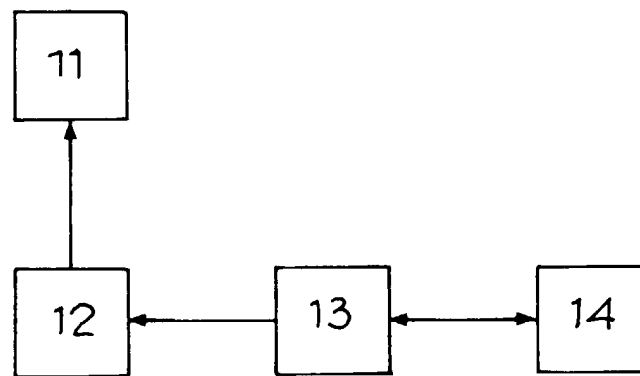
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EUROPEAN SEARCH REPORT

Application Number
EP 00 83 0691

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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 21 February 2001	Examiner Van Gelder, P
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			

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82