

FORM 2

THE PATENTS ACT, 1970
(39 of 1970)
AND
THE PATENTS RULES, 2003

**COMPLETE
SPECIFICATION**

(See Section 10; rule 13)

TITLE OF THE INVENTION

“YARN FEEDER OF STORAGE TYPE WITH MAGNETIC BRAKE”

APPLICANT

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The following specification particularly describes
the invention and the manner in which
it is to be performed

CLAIMS

1. A yarn (18) feeder for textile applications, of storage type, comprising:
- a body (12) carrying a drum (16) on which turns (20) of yarn (18) originating from a spool are wound;
 - a braking member (22) associated with the drum arranged to act on the yarn (18) as it leaves the drum (16) under withdrawal by a textile machine, the braking member (22) being of the type using magnets (30, 36, 38) and comprising
 - a first permanent magnet (30) movable relative to the drum (16) and at least one fixed second magnet (36, 38),
 - regulator means (38, 39) to vary the action exerted by the second magnet (36, 38) on the first magnet,
 - a control unit arranged to operate on said regulator means to control its intervention on said second magnet,
 - a tension sensor (24) to measure the value of the tension in the yarn (18) leaving the drum;
- characterised in that:
- the first permanent magnet (30) is shaped as a ring freely movable parallel to the axis of the drum (16) and along it, and arranged to cooperate with a counteracting element (32) rigid with the drum, the yarn (18) being disposed, on undergoing braking, between said annular first magnet (30) and said counteracting element (32), said annular first magnet (30) having a diameter greater than that of the drum (16) so as to be able to move along and parallel to this latter such as to assume a working first position (30A) in which the first permanent magnet (30) presses the yarn (18) exiting the drum (16) against the counteracting element (32), and a second position (30B) in which this effect does not take place, the braking action taking place by squeezing the yarn between said first freely movable annular magnet (30) and said counteracting element (32) rigid with the drum (16) in the direction of movement of the yarn (18) exiting the drum (16),
 - the fixed second magnet (36; 38) enabling the first permanent magnet (30) to be maintained in the first (30A) or in the second (30B) of its said positions; the control unit (26) receiving the tension values measured by the tension

sensor (24), comparing them with a predetermined tension value and intervening in real time on said regulator means (38; 39) such that they regulate the action exerted by the second magnet (36, 38) on the annular first magnet (30) to obtain a braking action of this latter on the yarn such as to adjust the tension value to the predetermined value.

2. A yarn (18) feeder as claimed in claim 1, characterised in that the regulator means comprise an electromagnet (38) constituting the second magnet, the intensity of the magnetic field generated by the electromagnet (38) being able to be varied by the control unit (26) to regulate the tension in the exiting yarn (18).

3. A yarn (18) feeder as claimed in claim 1, characterised in that the second magnet is a permanent magnet (36), the regulator means comprising an electromagnet (38), the intensity of the magnetic field generated by the electromagnet (38) being able to be varied by the control unit (26) to vary the action of the magnetic field of the second permanent magnet (36) on the first permanent magnet (30).

4. A yarn (18) feeder as claimed in claim 1, characterised in that the regulator means comprise a permanent magnet (36) constituting the second magnet, and a motorized mechanism (39) arranged to vary in real time the position of the second magnet (36) relative to the first permanent magnet (30) under the control of the control unit (26), in order to regulate the tension in the exiting yarn (18).

5. A yarn (18) feeder as claimed in claim 1, characterised in that the predetermined tension value is variable in time in a manner programmable by the control unit (26) as a function of the different operative stages of the textile machine.

6. A yarn (18) feeder as claimed in claim 1, characterised in that the braking member (22) comprises a further magnet, of permanent type (36) or an electromagnet (38), which enables the first permanent magnet (30) to be centred relative to the drum (16).

7. A yarn (18) feeder as claimed in claim 1, characterised in that if the drum (16) has a vertical axis, the braking member (22) comprises a magnet, of permanent type (36) or an electromagnet (38), which enables the weight of

the first permanent magnet (30) to be nullified.

8. A yarn (18) feeder as claimed in claim 1, characterised in that the counteracting element (32) and the first permanent magnet (30) are covered, at least on those of their parts which come into contact with the yarn (18), with an antiwear material.

9. A yarn (18) feeder as claimed in claim 8, characterised in that the antiwear covering material is a textile ceramic.

10. A yarn (18) feeder as claimed in claim 8, characterised in that the antiwear covering material is obtained by chromium plating.

11. A yarn (18) feeder as claimed in claim 1, characterised in that the annular first magnet (30) cooperates with a portion shaped to interact directly with the counteracting element (32) to brake the yarn (18).

12. A yarn (18) feeder as claimed in claim 11, characterised in that said portion is conical.

13. A yarn (18) feeder as claimed in claim 1, characterised in that the predetermined tension value is variable and programmable.

14. A yarn (18) feeder as claimed in claim 13, characterised in that the reference value variation is a function of the textile machine operative stages.

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