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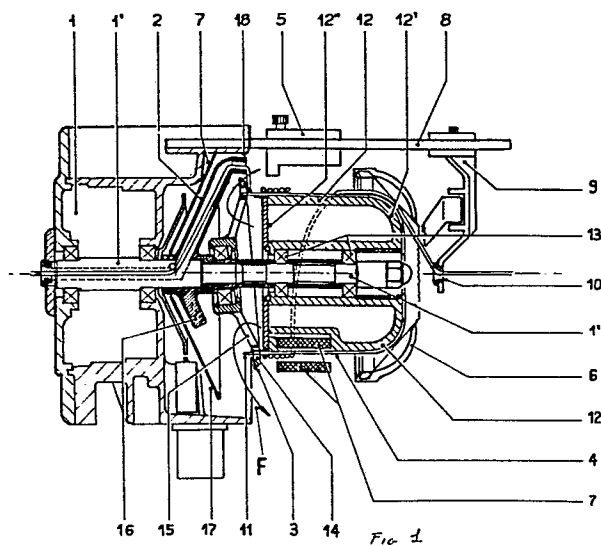
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54 Yarn feeding device, particularly for weaving machines.

57 Device for feeding yarn with a constant adjustable tension, for use in weaving machines, wherein - in order to limit the dust settlements within the device itself - closed spaces are created inside the yarn winding drum and an air stream is produced in order to prevent the settlement of dust between said drum and the remaining parts of the device.



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"YARN FEEDING DEVICE, PARTICULARLY FOR WEAVING MACHINES"

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The present invention relates to a device for feeding yarn with a constant adjustable tension, for use in weaving looms and in other
5 weaving machines, wherein important structural improvements have been introduced with the object of preventing the settlement of dust into undesired spots of the device itself.

It is known that a lot of yarns being weaved in weaving machines have the characteristic of leaving filaments and dust along their
10 path, which settle on all the surfaces where they can find a rest. Small projections on said surfaces are enough to allow the scattered filaments, and then dust, to cling thereon. As can easily be understood, dust forms a great problem for the yarn feeding devices in that, when it heaps to a certain extent, it can drop onto the yarn as the latter comes
15 out of the feeder, adhering thereto and often forming around it deposits in the form of large knots, which are seriously prejudicial to the feeding and working of the machine being fed. It is hence necessary to prevent the forming, in said devices, of dangerous heaps of dust, particularly in those spots where they could disturb the yarn as it
20 comes out, as well as in the spots where they could compromise the functionality of the feeders or of their parts.

The object of the present invention is to solve this problem, - which has so far been fairly neglected in the planning and construction of devices for feeding yarns to weaving machines - by in-
25 troducing some structural modifications in such feeding devices, apt

to prevent the settlement of dust in those spots which are fundamental for the working of said devices.

For this purpose, the present invention provides a yarn feeding device for weaving machines, of the type comprising a yarn winding drum, held stationary, a rotary winding arm coaxial to the drum, means for leading forward on the drum the wound yarn, means for detecting the yarn wound around the drum and for controlling the rotation of the winding arm, and means for braking the outcoming yarn, cooperating with an end cap of the winding drum, characterized in that -
in order to limit the dust settlements within the device - said drum is shaped like a closed body from whose end, opposite to the cap end, project a plurality of peripheral bars extending the winding surface of the drum; in that said means for leading forward the yarn wound on the drum consist of a frustoconical disc coaxial to the drum, close thereto and engaging said bars with its periphery; and in that the winding arm rotates, close to said disc and coaxial thereto and to the winding drum, between the disc itself and a wall of separation from the other members of the feeder, in order to produce an air stream apt to prevent the settlement of dust.

The invention will now be illustrated in detail, with reference to the accompanying drawing, which shows a practical embodiment thereof and in which:

Fig. 1 is an axial section view of the yarn feeding device according to the invention; and

Fig. 2 is a front view of the disc leading forward the yarn wound on the drum of the device according to figure 1.

The yarn feeding device according to the invention comprises, in a manner known per se, a casing 1 housing an electric driving motor and an electronic control circuit, not shown, and moreover - in part externally to said casing 1 - a winding arm 2, a disc 3 leading the yarn forward, a yarn winding drum 4, means 5 for detecting the wound yarn, and means 6 for braking the outcoming yarn.

The winding arm 2 of the device is driven into rotation by the

electric motor housed in the casing 1, onto the shaft 1' of which are mounted, by means of bearings, both the disc 3 and the drum 4. The drum 4 is prevented from rotating by a pair of permanent magnets 7, one fixedly connected to the drum itself and the other fixed to the casing 1, while the disc 3 is not apt to rotate in that its periphery is engaged with the drum, as explained hereinafter. A rod 8, fixed to the casing 1, carries the detection means 5 and an adjustable arm 9 for the support of the braking means 6. Said arm 9 also carries a ceramic eyelet 10 for the outlet of the yarn.

According to the invention, the drum 4 is shaped like a closed body, formed of a plurality of bars 11 arranged like the generating lines of a cylinder and embodied, practically throughout their whole length, into the outer cylindrical wall of a completely closed box 12 of synthetic plastic material, said box 12 having, in addition to said outer wall, a headwall 12' forming the end cap of the drum 4, a flat disc wall 12" opposite to the wall 12', and an inner cylindrical wall carrying the seats for the bearings 13, by means of which the drum is mounted on the motor shaft 1'. The bars 11 project from the disc wall 12" of the box 12 along the whole periphery thereof and they engage into the peripheral holes 14 of the disc 3, which has a frustoconical shape and is widely slotted, as shown by reference 15 in figure 2. The magnet 7 of the drum 4 is also embodied, or anyhow inserted into the outer wall of the box 12 which embodies the bars 11. The winding arm 2 is hollow, to allow the passage of the yarn, and it carries a balancing counterweight 16.

Still according to the invention, a generally frustoconical wall or cover 17 separates the members described so far, and in particular the winding arm 2, from the other members of the feeding device, as the driving motor and the electronic control circuit, said wall or cover 17 being radiused to the wall of the casing 1, and a wide port 18 being thus left open between the periphery of the casing wall and the drum 4, through said port appearing the winding arm 2 and the disc 3.

The operation of the feeding device takes place in known manner for what concerns the feeding of the yarn, which gets wound by the arm 2 into several turns (to an extent being controlled by the detection means 5) around the drum 4, where said turns are led forward
5 by the disc 3, the yarn being then drawn by the eyelet 10, after having been braked on the cap of the drum 4 by the braking means 6.

It can easily be seen that the structure adopted in the device according to the invention allows to prevent any settlements of dust within the whole inner area of the drum, which has been constructed
10 around the closed box 12. But also the particular configuration of the parts housed between the casing 1 and the box 12 of the drum 4 allows to prevent the settlement of dust: in fact, when the device is working, the winding arm 2 rotates at speeds varying between 200 and 2800 revolutions per minute and anyhow behaves - together with the coun-
15 terweight 16 - like a centrifugal pump, which sucks air from the space surrounding the shaft 1' of the device, between the frustoconical disc 3 and the drum wall 12", and blowing said air through the slots 15 of the disc itself, drives it outwardly through the peripheral port 18.

20 This air stream, which is clearly indicated by the arrow F in figure 1, prevents the forming and heaping of dust settlements in the areas where the arm 2 and the disc 3 operate, on these members, and between the bars 11 of the drum and the disc 3.

The object of the invention has thus been reached to a very satisfactory extent.
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It is understood that the invention has been described and illustrated in detail by mere way of example, and that its objects may hence be reached even through other embodiments or variants differing from that described, which will of course fully fall within the scope
30 of the invention itself.

CLAIMS

1) Device for feeding yarn with a constant adjustable tension, particularly for weaving machines, of the type comprising a yarn winding drum, held stationary, a rotary winding arm coaxial to the drum, means for leading forward on the drum the wound yarn, means for detecting the amount of yarn wound around the drum and for controlling the rotation of the winding arm, and means for braking the outcoming yarn, cooperating with an end cap of the winding drum, characterized in that - in order to limit the dust settlements within the device - said drum is made as a closed box-like body from whose end, opposite to the cap end, project a plurality of peripheral bars extending the winding surface of the drum; in that said means for leading forward the yarn wound on the drum consist of a frustoconical disc coaxial to the drum, close thereto and engaging said bars with its periphery; and in that the winding arm rotates, close to said disc and coaxial thereto and to the winding drum, between the disc itself and a wall of separation from the other members of the feeder.

2) Yarn feeding device as in claim 1, wherein the closed box-like body making up the winding drum with said bars is in the form of a plastic material box, into the outer wall of which are embodied the bars and the inner wall of which carries the bearings onto which the drum is mounted.

3) Yarn feeding device as in claims 1 and 2, wherein the disc leading the yarn forward comprises a plurality of peripheral holes into which engage the ends of the bars projecting from the drum, and

a plurality of internal slots for the passage of an air stream.

4) Yarn feeding device as in claims 1 to 3, wherein the winding arm comprises a balancing counterweight.

5) Yarn feeding device as in claims 1 to 4, wherein the wall separating the winding arm from the other members of the feeder is a frustoconical wall applied on the part of the casing from which the drum emerges, and is apt to create a wide peripheral port between the opposing parts of the casing and of the drum.

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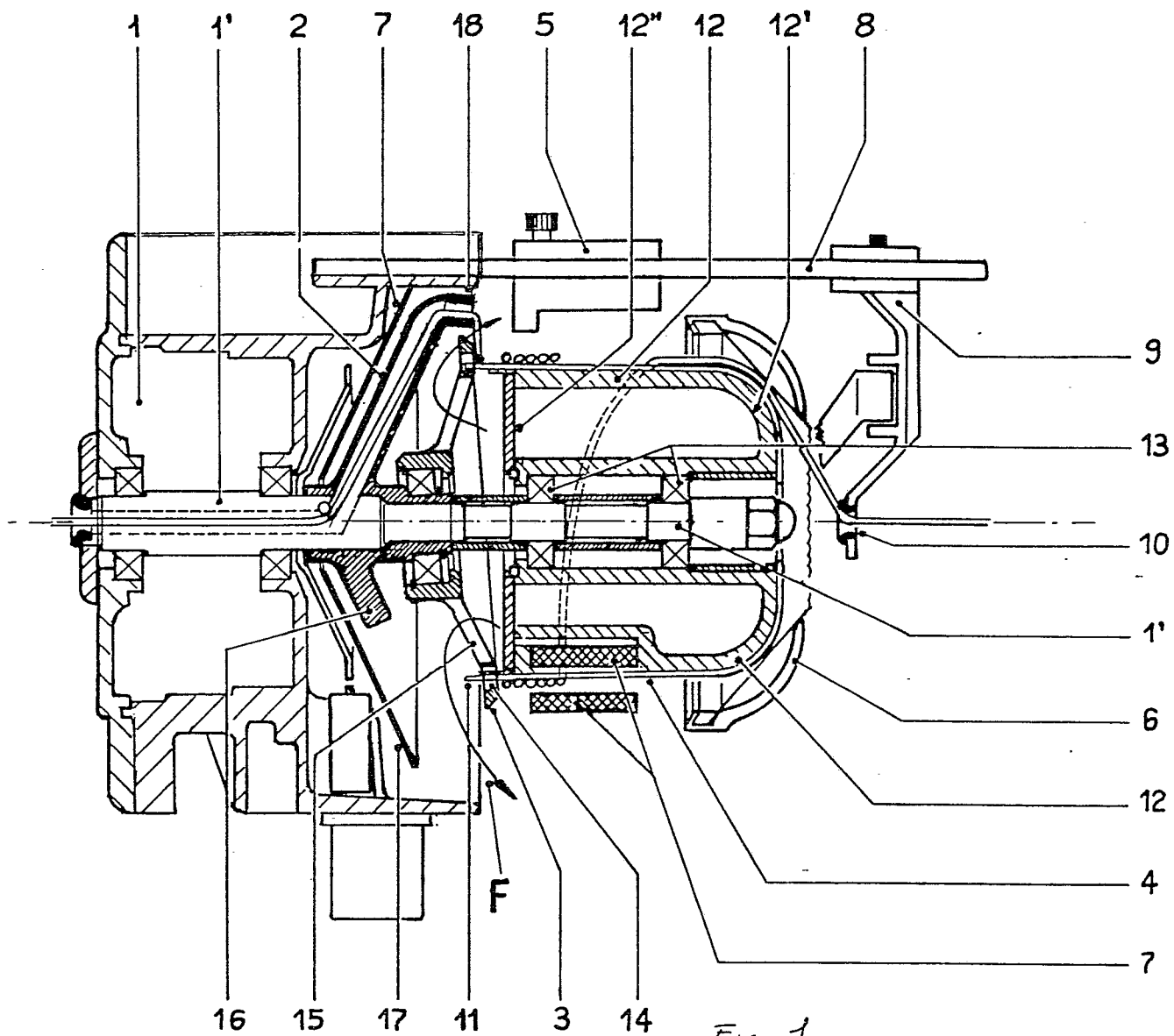
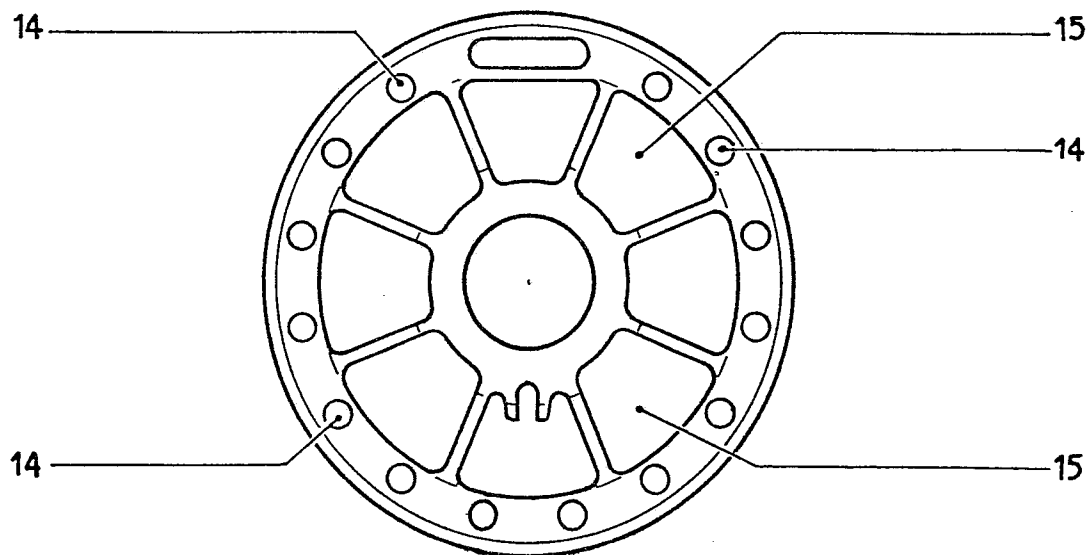


FIG. 1

FIG. 2





European Patent
Office

EUROPEAN SEARCH REPORT

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Application number

EP 81 10 8269

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
Y	<u>DE - B - 2 843 548 (IRO)</u> * figures 1,5; column 5, line 65 to column 6, line 16 * -----	1,4,5	B 65 H 51/22 D 03 D 47/36
Y	<u>DE - B - 2 701 718 (IRO)</u> * the whole document * --	1,5	
A	<u>FR - A - 2 416 187 (SULZER)</u> * figures 1,2 * -----	1	TECHNICAL FIELDS SEARCHED (Int.Cl. 3) B 65 H D 03 D D 04 B
			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
The present search report has been drawn up for all claims			
Place of search The Hague	Date of completion of the search 18-01-1982	Examiner BOULEGIER	