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(11) Publication number:

0 405 382 A1

(12)

EUROPEAN PATENT APPLICATION

(21) Application number: **90111983.4**

(51) Int. Cl.⁵: **D03D 47/36**

(22) Date of filing: **25.06.90**

(30) Priority: **29.06.89 IT 6753389**

(43) Date of publication of application:
02.01.91 Bulletin 91/01

(84) Designated Contracting States:
CH DE ES FR GB LI SE

(71) Applicant: **L.G.L. ELECTRONICS S.p.A.**
Via Tasca 3
I-24100 Bergamo(IT)

(72) Inventor: **Pedrini, Giovanni Pietro**
Via Mosconi 29
I-24026 Leffe (Bergamo)(IT)

(74) Representative: **Modiano, Guido et al**
MODIANO, JOSIF, PISANTY & STAUB
Modiano & Associati Via Meravigli, 16 16 16
I-20123 Milano(IT)

(54) **Weft feeder device with swift-like drum for fluid-jet weaving looms.**

(57) A weft feeder device with swift-like drum (14), for fluid-jet weaving looms, wherein the hub (20) of the drum has a frustum-shaped adjustment element (25) on which the pad-like ends (35) of the spokes (36) of the swift, which have a corresponding and complementary taper, rest with an elastic contact. The adjustment element is axially guided and mov-

able and has a threaded axial seat with which an internally threaded shaft (27) cooperates. The internally threaded shaft is actuated from the outside and produces axial movements of the element and corresponding radial movements of the spokes in order to vary the polygonal perimeter of the swift.

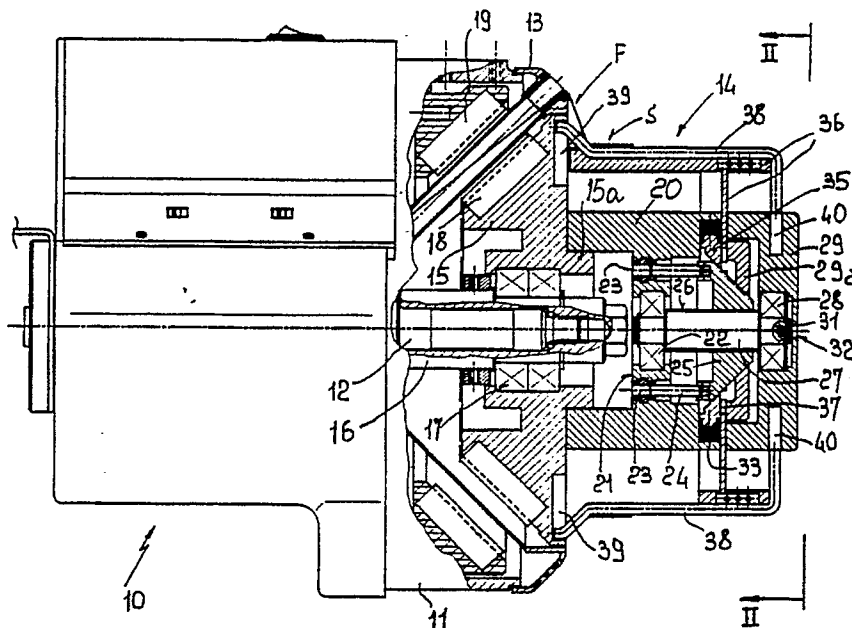


fig. 1

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WEFT FEEDER DEVICE WITH SWIFT-LIKE DRUM FOR FLUID-JET WEAVING LOOMS

The present invention relates to a weft feeder device for textile machines, particularly for high-speed fluid (air or water) jet looms.

Weft feeders, commonly termed weft holders, typically are devices provided with a fixed drum on which a rotating arm, driven by an electric motor, deposits and accumulates a reserve of turns of thread which are progressively removed by the loom or other textile machine with which the feeder is associated.

In the case of fluid-jet loom feeding, the weft reserve must -- as is known -- be constituted by a whole number of turns the overall extension whereof corresponds to a portion of thread equal to the height of the fabric being produced.

This requirement is met by shaping the drum of the weft holder in the shape of a swift and by subjecting the spokes of the swift to radial movements in order to correspondingly adjust the perimeter of the polygon along which the turns of thread become arranged.

Adjustment occurs by trial and error, and it is therefore important to provide the swift with means suitable on one hand to allow the simultaneous and gradual movement of the spokes and on the other to facilitate the adjustment operation and at the same time make it rapid and accurate.

The aim of the present invention is to provide a weft feeder device with swift-like drum as specified which has spoke adjusting means which are suitable for meeting said requirements.

A further object of the invention is to provide a feeder device which has a simplified structure, is highly reliable in operation and has modest production costs.

In order to achieve this aim, this object and others which will become apparent from the following detailed description, the present invention relates to a weft feeder device with swift-like drum which is characterized in that the hub of the drum has a frustum-shaped adjustment element on which the skid-like ends of the swift spokes rest with an elastic contact, said ends having a corresponding complementary taper; the frustum-shaped element being axially guided and movable and being provided with a threaded axial seat with which there co-operates an internally threaded shaft which, actuated from the outside, produces axial movements of said element and corresponding radial movements of the spokes in order to vary the polygonal perimeter of the swift.

Further characteristics, purposes and advantages of the invention will become apparent from the following detailed description and with reference to the accompanying drawings, which are

given by way of non-limitative example and wherein:

figure 1 is a partially longitudinally sectional view of the feeder device according to the invention in the configuration of maximum perimetric extension of the swift;

figure 2 is a front elevation view of the feeder taken in the direction of the arrows II-II of figure 1;

figure 3 is a partial reduced-scale view, similar to figure 1, of the device in the configuration of minimum perimetric extension of the swift.

In the drawings, the reference numeral 10 generally indicates the weft feeder device, which comprises a fixed base 11 which is traversed by an axially hollow drive shaft 12 to which a hollow cantilevered arm 13 is connected in a per se known manner. The thread F passes in the cavity of the shaft 12 and of the arm 13 and unwinds from a reel, not illustrated, and is wound by the arm 13 on a fixed swift 14 so as to form a reserve of turns S suitable for being removed by the loom or other textile machine.

The fixed swift 14 is rigidly coupled to a disk 15 which is mounted so as to be freely rotatable on the shaft 12 with the interposition of a bush 16 and of a pair of roller bearings 17.

In a per se known manner, the disk 15 is prevented from rotating with respect to the shaft 12 by virtue of the action of permanent magnets 18 which co-operate with corresponding magnets 19 supported by the fixed base 11. A cylindrical raised portion 15a is defined on the disk 15, and the hollow hub 20 of the swift 14 is fitted thereon. An annular radial raised portion 21 is defined in the median part of the hub 20 and bears the seat for a central bearing 22.

The raised portion 21 is furthermore provided with a plurality of through holes 23 in which columns 24 for the axial guiding and torsional retention of an adjustment element are slidable; said adjustment element is constituted by a frustum-shaped disk 25 which is axially movable in the cavity of the hub 20.

Said disk has a threaded axial seat which engages the correspondingly threaded portion 26 of an internally threaded actuation shaft 27 which is supported so as to be freely rotatable by the bearing 22 and by a further bearing 28 which is supported by a front flange 29 which is rigidly coupled to the hub 20 by means of peripheral screws 30 and acts as cover for the cavity of the hub.

A hexagonal seat 31 for the engagement of an actuation wrench is defined on the head of the internally threaded shaft 27; said wrench is passed

through a front opening 32 of the flange 29.

The pad-like ends 35 of the spokes 36 of the swift 14 rest on the adjustment element 25 and are pushed into elastic contact by corresponding radial springs 33 which are contained in respective blind seats 34 of the hub; the spokes are radially guided in corresponding radial seats 37 defined between the hub 20 and the front flange 29. A ring 29a, inserted between the flange 29 and the hub 20, acts as stop element for the maximum radial expansion of the spokes by limiting the axial stroke of the adjustment element 25.

The spokes 36, which are preferably made of polymeric material, are fitted with metallic rods 38 the ends whereof are accommodated in grooves 39 of the disk 15 and respectively in radial holes 40 of the front flange 29 in order to ensure the regular unwinding of the thread.

In order to adjust the polygonal perimeter of the swift, the connecting screws 30 of the flange 29 are first loosened, releasing the spokes 36 from the clamping action exerted by said flange; then, by acting on a suitable wrench such as an Allen wrench inserted into the opening 32, the internally threaded shaft 27 is rotated and the adjustment element 25 is consequently moved axially, and this leads to a corresponding simultaneous radial movement of the spokes 36 of the swift. When the adjustment has been performed, the screws 30 are tightened, locking the spokes in the required position by virtue of the clamping action of the flange 29. Adjustment occurs between the two extremes of maximum and minimum perimetric extension which are respectively illustrated in figures 1 and 3.

Without altering the concept of the invention, the details of execution and the embodiments may naturally be altered extensively with respect to what has been described and illustrated by way of non-limitative example without thereby abandoning the scope of the invention.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the scope of each element identified by way of example by such reference signs.

Claims

1. Weft feeder device with swift-like drum for fluid-jet weaving looms, characterized in that the hub of the drum has a frustum-shaped adjustment element on which the skid-shaped ends of the spokes of the swift rest with elastic contact, said ends having a corresponding and complementary taper;

the adjustment element being axially guided and movable and having a threaded axial seat with which an internally threaded shaft co-operates, said internally threaded shaft, when actuated from the outside, producing axial movements of said element and corresponding radial movements of said spokes in order to vary the polygonal perimeter of the swift.

2. Device according to claim 1, characterized in that the frustum-shaped adjustment element is axially movable in a cavity of the hub of the swift which is frontally closed by a flange-shaped cover.

3. Device according to claims 1 and 2, characterized in that the frustum-shaped adjustment element is torsionally coupled and axially guided by columns which pass in corresponding holes of an annular radial raised portion defined in the cavity of the swift's hub.

4. Device according to claims 1 to 3, characterized in that the spokes of the swift are guided in radial seats defined between the hub and the radial flange; the loosening and tightening of the flange allowing the movement and respectively the securing of the spokes in the selected adjustment position.

5. Device according to the preceding claims, characterized in that the internally threaded shaft has a front polygonal seat for the engagement of an actuation wrench which passes in a corresponding hole of the front flange.

6. Device according to claim 1, characterized in that the end skids of the spokes are pushed into contact with the frustum-shaped adjustment element by the action of radial springs which are contained in respective dead seats of the hub.

7. Device according to the preceding claims, characterized in that the hub of the swift is supported by a fixed disk which is mounted so as to be freely rotatable on the motor shaft of the device and is prevented from rotating by the action of permanent magnets which cooperate with corresponding magnets supported by the base of the device, and in that the spokes of the swift are fitted with rods which have one end slidable in respective grooves of said disk and the other end slidable in respective radial holes of the flange of the hub.

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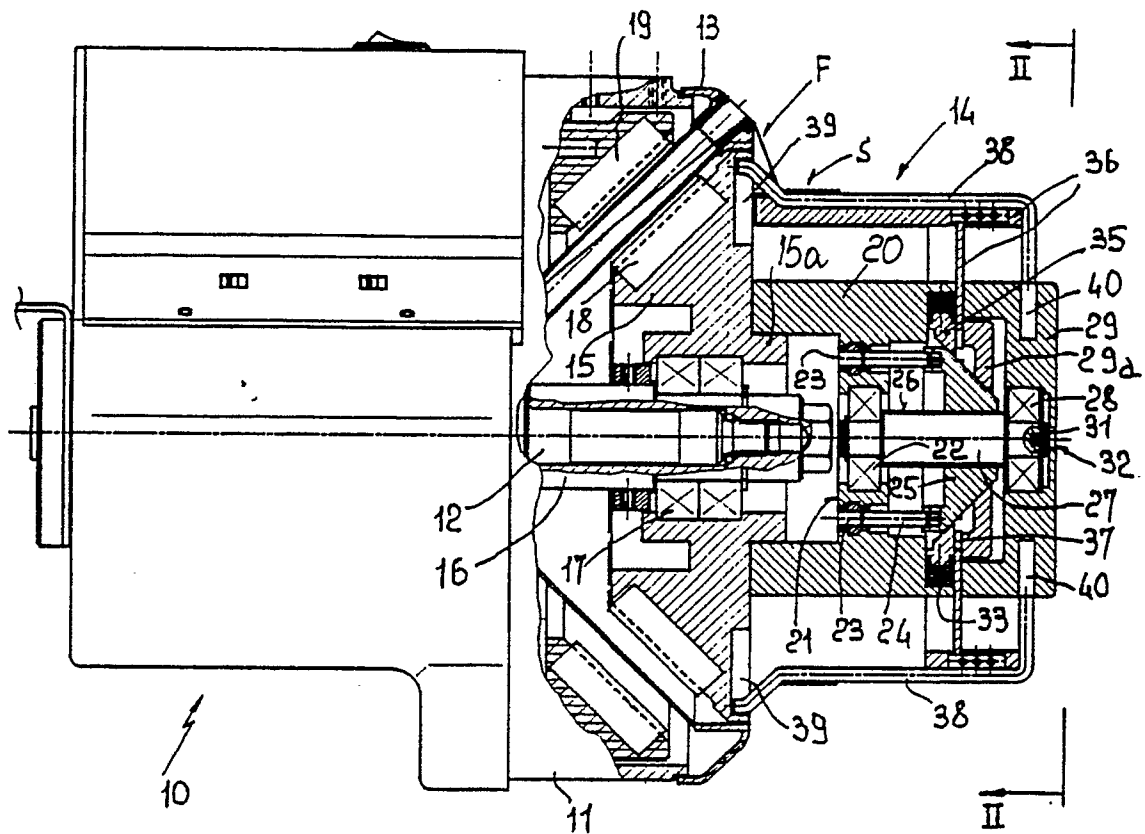


fig. 1

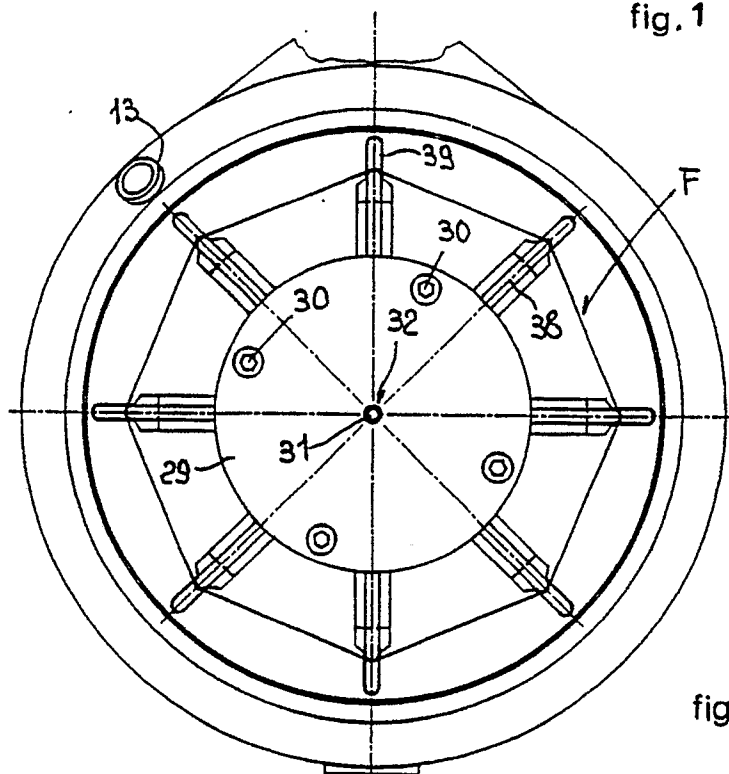


fig. 2

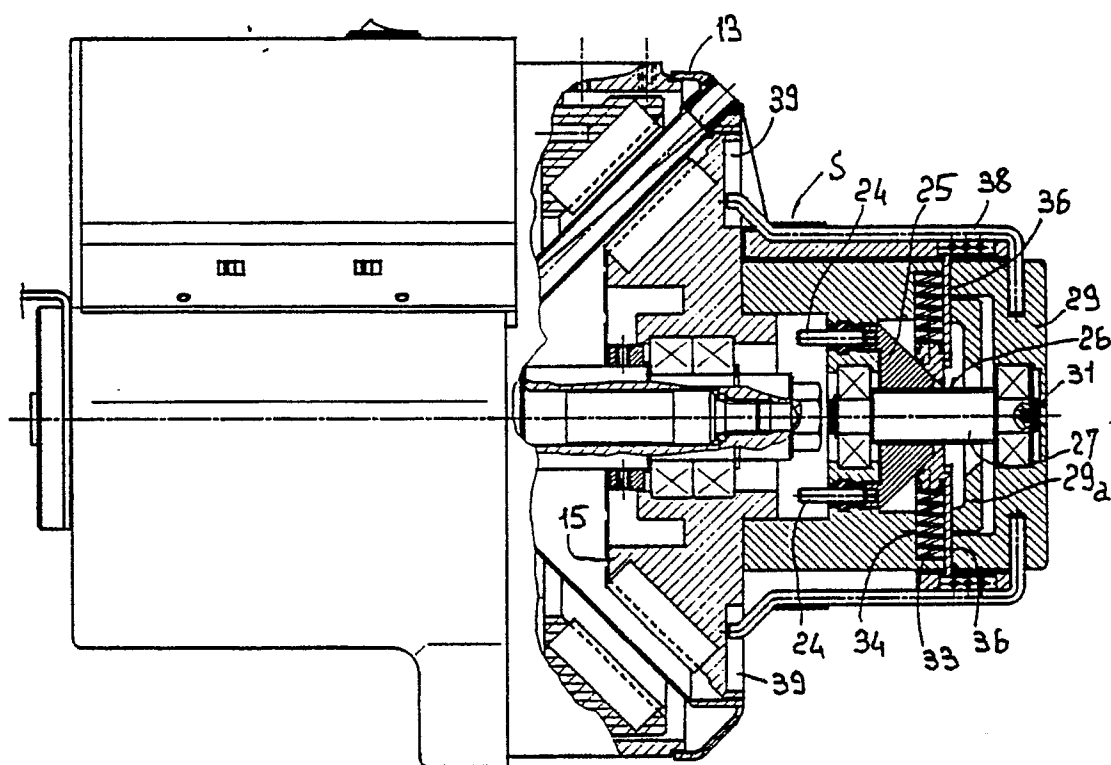


fig. 3



DOCUMENTS CONSIDERED TO BE RELEVANT			EP 90111983.4
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	<u>US - A - 4 756 344</u> (TAKEGAWA) * Fig. 5, 6 * --	1	D 03 D 47/36
A	<u>EP - A1 - 0 290 380</u> (SULZER) * Fig. 3a * --	1	
A	<u>DE - A1 - 3 429 219</u> (SOBREVIN) * Fig. 5 * -----	1	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			B 65 H 51/00 D 03 D 47/00
The present search report has been drawn up for all claims			
Place of search VIENNA		Date of completion of the search 10-10-1990	Examiner BAUMANN
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