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(54) **DEVICE AND METHOD FOR FEEDING AN ELASTOMERIC YARN TO A TEXTILE MACHINE**
VORRICHTUNG UND METHODE ZUR BELIEFERUNG EINER TEXTILMASCHINE MIT EINEM ELASTOMEREN GARN
DISPOSITIF ET PROCEDE PERMETTANT D'ALIMENTER UN FIL ELASTOMERE DANS UNE MACHINE A TEXTILE

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Description

[0001] The present invention relates to a device for feeding an elastomeric yarn to a textile machine with the aim of obtaining an article of constant quality in all its parts, in accordance with the introduction to the main claim. The present invention also relates to a method implemented by said device in accordance with the introduction to the corresponding independent claim.

[0002] In the textile industry, devices known as yarn feeders are used basically for feeding yarn to the textile machine under conditions either of "constant quantity" or of "constant tension".

[0003] The first are composed of mechanical members or electronic actuators, electric motors of various kind able to feed the yarn at a speed synchronized with the operative speed of the textile machine in each of its productive stages. In this manner the parameter relative to the "quantity of yarn" fed during the productive process is maintained constant in each of said operative stages, the machine hence operating under "constant quantity" tension feed conditions.

[0004] These devices are also used to feed an elastomeric yarn for example in large-diameter circular knitting machines; such devices are composed of a pulley synchronized with the main transmission shaft of the textile machine by means of a belt, the elastomeric yarn resting on said pulley which by rotating enables the yarn fed to the textile machine to be unwound in a controlled manner.

[0005] Other devices of this type are for example those used to feed a controlled quantity of elastomeric yarn during its processing within a circular textile machine for producing stockings, tights etc. These devices normally use a yarn feed roller or pulley operated by electric motors synchronized with the rotational speed of the cylinder of the textile machine, to ensure a yarn feed of controlled or variable quantity depending on the processing stage reached.

[0006] Those devices aimed at feeding yarn "at constant quantity" do not however sufficiently solve the problem of feeding the elastomeric yarn in an exactly controlled quantity, because as the yarn originating from the spool or bobbin is "elastic" it undergoes variable elongation as a function of the yarn unwinding tension.

[0007] To overcome these problems, other yarn feed devices known as second generation devices have been developed, able to feed the yarn at "constant tension".

[0008] These devices are composed of a yarn tension sensor connected to a measurement and processing circuit, able to provide "closed-loop" control of a motor acting on a roller or pulley operating directly on the yarn in order to feed it under "constant tension" feed conditions.

[0009] Such a device is known, for example, from EP950742 relating to a device for controlling the feed of a yarn fed to a textile machine such as a knitting machine, stocking machine or a bobbin winder; the yarn possesses an intrinsic tension and is fed to the machine with an intrinsic speed, means being provided for sensing this

tension and means for measuring this speed. The sensing and measuring means are both associated with the body of the device and are both connected to control and regulator means for said tension and speed parameters, these control and regulator means continuously measuring the values of both said parameters during the yarn feed to the textile machine and comparing at least one of them with a predetermined homogeneous datum in order to also establish with precision the value of the other parameter.

[0010] This prior patent states, inter alia, that speed measurement means are associated with motor means enabling the speed of the fed yarn to be modified on the basis of the sensed tension value, said motor means being the textile machine with which the rotary member is associated via known mechanical transmission members. These motor means are connected to the control means defined by a microprocessor unit, this latter being connected to the textile machine control member, by which it operates on the motor means acting on the speed measurement means.

[0011] Although these devices represent a considerable forward step with regard to the quality of the fabric or article produced by the textile machine to which they are applied, they can no longer be considered as sufficient for satisfying the requirement for continuous increase in the quality of the textile article produced by elastomeric yarn. In this respect, although said devices feed the yarn at constant tension and are hence able to react actively to any variation in the tension of the yarn unwinding from the bobbin, they are not able to ensure an effective "constant quantity" because of the elongation of the yarn as a function of its bobbin unwinding tension.

[0012] In this respect, such "constant tension" feed devices are able to provide a so-called "constant quantity" of yarn feed which is more precise the less elastic the yarn to be fed.

[0013] In contrast, an elastomeric yarn originating from a yarn bobbin which is still full has an unwinding tension less than and hence an elongation less than an elastomeric yarn originating from a yarn bobbin which is at least partly empty. From this it follows that if yarn is fed from two of such bobbins to one and the same textile machine via two identical "constant tension" yarn feed devices, an article (formed from these two yarns) of imperfect quality would be obtained. This is because each yarn, even though fed at constant tension, undergoes different "treatment" by the corresponding feed device: the yarn originating from that bobbin which is still full would be fed at a lower speed (i.e. in a smaller quantity) than the yarn fed from the more empty bobbin in order to compensate for the two different unwinding tensions of the yarns from the two bobbins. This different feed would result in an article such as the aforesaid, in which the different yarn treatment would be identifiable, i.e. a poor quality product would be obtained.

[0014] Another device of the aforesaid type is described in GB2162971 which relates to a device for feed-

ing a yarn to a textile machine such as a knitting machine, a loom or the like. This device comprises a yarn feed member controlled by an electric guide motor of controlled speed, said speed being controlled by an output signal which controls the speed of movement of the yarn. The speed of the guide motor is synchronized with said output signal, representative of the yarn feed speed. Tensioning means are provided to automatically maintain the yarn tension at a preselected value.

[0015] An object of the present invention is therefore to provide an improved device and method for feeding an elastomeric yarn to a textile machine with the aim of obtaining an article of excellent and constant quality.

[0016] This and further objects which will be apparent to the expert of the art are attained by a device and method in accordance with the accompanying claims.

[0017] The present invention will be more apparent from the accompanying drawing, which is provided by way of non-limiting example and in which:

Figure 1 is a front view of the device according to the invention;

Figure 2 is a side view of a part of the device according to the invention;

Figure 3 is a block diagram of one embodiment of the method of the invention; and

Figure 4 is a flow diagram showing one stage in the method of the invention.

[0018] With reference to said figures, and in particular to Figures 1 and 2, these show a device 1 for feeding an elastomeric yarn 11 at "constant tension" to a textile machine 10. This device, indicated by DTC in Figure 4, comprises a body 2 (for example box-like). With this body there are associated a grooved wheel or pulley 3 associated with an actuator (not shown) for its movement. This actuator can be an electric motor (for example of brushless type) associated with that face of the body 2 opposite the face 6 on which the pulley 3 is present. Such a device 1 is associated with each elastomeric yarn 11 fed to the machine, said yarn unwinding from a bobbin B and winding one or more times about the pulley 3.

[0019] This pulley is directly or indirectly connected to a member 12 which measures its rotation and hence the speed of this rotation. This member can be a magnetic sensor 13 associated with the body 2 and cooperating with a magnet 15 associated with the pulley or a known Hall sensor associated with the motor (brushless motor with a Hall sensor incorporated) which provides the movement of the pulley 3.

[0020] The body 2 also supports a member 18 for measuring the tension of the yarn 11 directed to the machine 10; this member is of known type and can comprise a usual magnetic sensor, a piezoelectric sensor, a load cell, an elastically supported armlet or another known sensor.

[0021] The tension sensing member 18, the measurement member 13 for the rotational speed of the pulley

and the motor connected to this latter are connected to a unit 20 for controlling and regulating the feed of the yarn 11 to the textile machine 10. Advantageously, this unit 20 is associated with the device 1 (inserted into its body 2) and is able, via the connection to said measurement members, to measure correctly and precisely the quantity of yarn (in metres per minute) fed to the machine, using evaluation algorithms which consider both the measured tension of the yarn 11 and the speed of rotation of the pulley. In this respect in determining a yarn count (expressed in DENIER or DECITEX), knowing the relationship existing between the yarn quantity in metres and the unit weight thereof, the exact weight of yarn or its quantity in terms of weight fed to the textile machine (and used in the article) can be calculated, and hence the cost of the product. To the unit 20, for example of microprocessor type, there are connected usual setting members associated with the body 2; these members are an interface keypad 22 or usual potentiometers 23 connected to the unit. To this unit there is also advantageously connected a display 25 on which the unit 10 displays the data measured by it, such as the yarn feed speed, the quantity of yarn fed to the textile machine 10, its tension and other data related to the yarn or to the unit itself (programmed tension and other functions programmable by the unit, alarms, etc.).

[0022] According to the invention, between the bobbin and the device 1 there is positioned a member 30 for compensating the variation in elongation of the elastomeric yarn 11, having known elastic characteristics. This member 30 is able to compensate the physical variation in the diameter of the yarn 11 as the diameter of the bobbin from which it unwinds decreases, and to maintain its elongation, and hence the quantity of yarn fed to the textile machine 10, constant.

[0023] Specifically, in the embodiment of the invention under examination, the member 30 comprises a wheel means 31 supported laterally by an actuator 33, for example electrical (such as an electric motor for example of brushless type or similar) or air operated, which rotates it about its axis. This wheel means presents a groove 31A in which the yarn 11 is wound and acts as a braking member or a member for feeding the yarn to the DTC device 1. The actuator 33 is connected (see Figure 3) to a control unit such as a microprocessor 34 (for example associated with said motor as in Figure 2) connected to the unit 20 of said device. The unit 20 and the unit 34 exchange data relative to the speed at which the yarn 11 is fed to the textile machine 10, to enable the speed of the wheel means 31 to be varied so as to induce a corresponding correction to the speed of the yarn leaving the device 1 (via the pulley 3) and then to maintain the speed of the yarn 11 or the quantity of said yarn fed to the machine 10 constant. As shown in Figure 3, the unit 20 can also cooperate with a control unit 27 for the textile machine 10.

[0024] Specifically, the wheel means 31 either brakes or feeds more yarn to the device 1 on the basis of a

desired set yarn speed (or quantity) (indicated by SPV in Figure 4). This setting can be in the form of:

- a) the mean value of all the speeds of the yarns fed to a multi-feeder textile machine. After this latter is activated, the speed of each individual yarn can be measured in a few milliseconds, hence by collaborating with the control unit 27 of the machine 10 and measuring all the speed data of the pulleys 3 cooperating with each yarn 11, the unit 34 of each member 30 can act on the corresponding wheel means 31 to brake the respective yarn or to increase its feed speed to the pulley 3. As the actuator of this latter is controlled by the corresponding unit 20, it is able to act on the yarn to decrease or increase its speed with the aim of making that quantity thereof fed to the textile machine 10 equal to the quantity of all the other yarns fed to the machine and used for producing one and the same article;
- b) a value set for each individual yarn: in that case the units 24 and 34 interact to maintain, in the manner described under the preceding point a), the preselected speed of the yarn 11 and hence the desired constant quantity of yarn fed to the textile machine 10;
- c) a variable value depending on the processing stage of the article. In that case the operation proceeds as under the preceding point b).

[0025] With reference to Figure 4, the method of the invention operates in accordance with the following procedure: after start-up (block 40), the yarn feed speed is measured (block 41) by the DCT device 1; the speed (SPV for example equal to 50 m/min) set in the unit 34 (block 42) is compared with the measured speed. If the yarn feed speed via the DCT device 1 is greater than the speed SPV, the unit 34 acts on the wheel means 31 to decrease the amount of yarn braking (block 43) and draw more yarn 11 from the bobbin B so that the DCT device operates at the speed set in the unit 34 with its own pulley 3. If instead the yarn feed speed of the DCT device 1 is less than the speed SPV, the unit 34 controlling the wheel means 31 increases the amount of braking of the yarn 11 (block 44). These braking increase/decrease adjustments by the wheel means 31 and consequently by the pulley 3 are repeated until the DCT device 1, which is feeding the yarn 11 at "constant tension", has been compelled to attain a yarn feed speed equal to the speed set and programmed in the unit 34.

[0026] These adjustments hence result in a variation in the yarn tension controlled by the wheel means 31 and pulley 3, the regulation of which causes the DCT yarn feed device 1 to balance out at a "constant quantity" yarn feed equal to the speed value SPV set in the unit 34. This method hence enables the DCT device 1 to feed an elastomeric yarn at "constant tension" and at "constant quantity".

[0027] Obviously the speed value SPV can be varied

in relation with the operative stage achieved by the textile machine, in order to obtain a variable yarn pretension value based on the processing point.

[0028] It is also obvious that the DCT device 1 could easily accommodate the member 30 of the present invention, hence advantageously forming a single device for yarn feed at "constant tension and quantity".

[0029] It is likewise obvious that the yarn pre-feed actuator or wheel means 31 could be of different form than that described: for example in the form of a known braking device, or a pulley or roller directly or indirectly keyed onto the shaft of the actuator 33 to act on the pre-feed so that more or less yarn is fed, with the purpose of compelling the DCT device 1 to feed the elastomeric yarn at "constant tension and quantity".

[0030] The aforesaid represent only some of the possible solutions; other different constructions and/or solutions will be apparent to an expert of the art on reading the foregoing and hence lie within the scope of protection of the present text.

[0031] By virtue of the invention, a device for feeding an elastomeric yarn to a textile machine is obtained which acts on the yarn before it passes to the textile machine, such that the elastic characteristics of the yarn do not influence or cannot be seen to influence the production of the article. In other words, the device of the invention with a member for compensating the variation in the diameter and elongation of the elastomeric yarn before it cooperates with a known device for feeding this yarn at constant tension and quantity. The said compensation member acts on the yarn to brake it or to increase the speed with which it is unwound from the bobbin (i.e. by removing more yarn from the bobbin) on the basis of a yarn withdrawal speed by said device which, in its turn, responds to a request for yarn by the textile machine. This braking or acceleration of the yarn directed to the known device for feeding the yarn at constant tension and quantity prevents said yarn being able to leave this device with variations in its physical elongation and diameter (even if at constant tension) such as to result in the production of an article of imperfect appearance: in the absence of the compensator member, said yarn when combined with another yarn of unvaried physical characteristics would give rise to an article in which the different elongation and diameter of the yarns would be recognizable. This does not happen if the aforesaid compensator member is present, this enabling the yarn to be "processed" by the feed device as if the yarn were without elasticity. Moreover, said member enables the yarn to absorb the elongation and diameter variation occurring on its withdrawal from the bobbin before entering the feed device; in other words, the yarn returns to its pre-stretch conditions at the moment in which its tension is evaluated by the DCT device.

Claims

1. A device for controlling the feed of an elastomeric yarn (11), of known elastic characteristics, withdrawn from a bobbin (B) and fed to a textile machine (10) such as a knitting machine, a stocking machine, a bobbin winder or other textile machine, said yarn possessing an intrinsic elasticity and being fed to said machine with an intrinsic speed, there being provided means (18) for sensing the tension of the yarn (11) and means (3, 12) for measuring and modifying this speed, said sensing means (18) and said measuring and modifying means (3, 12) being both connected to means (20) for controlling and regulating said tension and speed parameters, said control and regulating means (20) continuously measuring the values of both said parameters during the feed of the yarn (11) to the textile machine,
characterised in that the device further comprises compensator means (30) arranged to - compensate the variations in the dimensional characteristics of the elastomeric yarn (11) withdrawn from the bobbin (B) before the yarn (11) cooperates with the tension sensing means (18) and with the speed measurement means (3, 12) to enable a yarn with constant dimensional characteristics to be fed to said textile machine (10) for the entire duration of an article production, and **in that** the compensator means (30) comprise a member (31) in contact with the yarn and arranged to modify, if necessary, its speed of movement during its path from the bobbin (B) to said tension sensing means (18) and said speed measuring and modifying means (3, 12), said member being connected to actuator means (33) which enable the member (31) to act on the yarn when necessary.
2. A device as claimed in claim 1, **characterised in that** the member (31) is a wheel means such as a pulley or the like.
3. A device as claimed in claim 1, **characterised in that** the member (31) is a yarn braking member.
4. A device as claimed in claim 1, **characterised in that** the actuator means (33) are an electric motor, an air-operated motor or the like.
5. A device as claimed in claims 2 and 4, **characterised in that** the member (31) is connected to the output shaft of the electric motor defining the actuator means (33).
6. A device as claimed in claim 1, **characterised in that** the actuator means (33) are commanded and controlled by a control unit (34) cooperating with the control means (20) for the tension sensing means (18) and for the speed measurement and modifying means (3, 12), said control means (20) exchanging information with said unit (34) relative to the speed with which the yarn (11) is fed to the textile machine (10), to enable said control unit (34) to cause the actuator means (33) to act on the member (31) in contact with the yarn (11) in order to modify the yarn speed and, vice versa, to enable said control means (20) to regulate the speed of the yarn (11) fed to the textile machine (10) on the basis of the yarn speed modification effected by the said member (31), said control unit (34), the actuator means (33), the member (31) controlled by said actuator means (33), the control means (20), the tension sensing means (18) and the speed measurement and modifying means forming a control loop for the constant tension and constant speed feed of the elastomeric yarn of the textile machine.
7. A device as claimed in claim 6, **characterised in that** the control means (20) cooperate with means (27) for controlling the operation of the textile machine.
8. A device as claimed in claim 1, **characterised in that** the sensing means (18) and the measurement and modifying means (3, 12) are both associated with a single support defining the body (2) of the device (1).
9. A method for feeding an elastomeric yarn to a textile machine such as to obtain an article of constant quality in each of its parts by using a device according to claim 1, said method comprising measuring the tension and speed or quantity of the yarn (11) fed to the textile machine and unwinding from a bobbin (B), said method being **characterised in that** the yarn (11), after being unwound from the bobbin (B), is acted upon in such a manner as to modify its flow speed to the textile machine, said action being effected by the compensator means of said device at a point on the path of the yarn upstream of the measurement of its speed and tension, while continuously measuring the speed of the yarn downstream of said point on the path, and acting on the yarn on the basis of said measured speed so as to maintain a dimensional, i.e. diameter and elongation, stability of the yarn (11) fed to the textile machine.
10. A method as claimed in claim 9, **characterised in that** the action on the yarn (11) is a braking action.
11. A method as claimed in claim 9, **characterised in that** the action on the yarn (11) is an acceleration action.

Patentansprüche

1. Vorrichtung zum Anpassen der Zufuhr eines elasto-

- meren Garns (11) mit bekannten elastischen Eigenschaften, welches von einer Garnspule (B) abgezogen und einer Textilmaschine (10), wie einer Strickmaschine, einer Strumpfmachine, einem Spuler oder einer anderen Textilmaschine, zugeführt wird, wobei das Garn eine intrinsische Elastizität aufweist und der genannten Maschine mit einer intrinsischen Geschwindigkeit zugeführt wird, wobei Mittel (18) zum Bestimmen der Spannung des Garns (11) und Mittel (3, 12) zum Messen und Modifizieren dieser Geschwindigkeit vorgesehen sind, wobei die Bestimmungsmittel (18) und die Mess- und Modifizierungsmittel (3, 12) jeweils mit Mitteln (20) zum Steuern und Regulieren der Spannungs- und Geschwindigkeitsparameter verbunden sind, wobei die Steuer- und Regulierungsmittel (20) kontinuierlich die Werte der beiden genannten Parameter während dem Zuführen des Garns (11) zu der Textilmaschine messen, **dadurch gekennzeichnet**, **dass** die Vorrichtung weiterhin Kompensatormittel (30) aufweist, welche dazu ausgebildet sind, die Variationen der Abmessungseigenschaften des elastomeren Garns (11), welches von der Garnspule (B) abgezogen wird, zu kompensieren, bevor das Garn (11) mit den Spannungsbestimmungsmitteln (18) und mit den Geschwindigkeitsmessmitteln (3, 12) zusammenwirkt, um die Zufuhr eines Garns mit gleich bleibenden Abmessungseigenschaften zu der Textilmaschine (10) während der gesamten Dauer der Herstellung eines Gegenstands zu ermöglichen, und dass die Kompensatormittel (30) ein Element (31) umfassen, welches in Kontakt mit dem Garn ist und welches dazu ausgebildet ist, bei Bedarf dessen Bewegungsgeschwindigkeit auf dessen Weg von der Garnspule (B) zu den Spannungsbestimmungsmitteln (18) und den Geschwindigkeits-Mess- und Modifizierungsmitteln (3, 12) zu verändern, wobei das Element mit Betätigungsmitteln (33) verbunden ist, welche es dem Element (31) ermöglichen, bei Bedarf auf das Garn einzuwirken.
2. Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet**, **dass** das Element (31) ein Radmittel ist, wie eine Rolle oder dergleichen.
 3. Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet**, **dass** das Element (31) ein Garntremselement ist.
 4. Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet**, **dass** die Betätigungsmittel (33) als ein Elektromotor, ein druckluftbetätigter Motor oder dergleichen ausgebildet sind.
 5. Vorrichtung nach Anspruch 2 und Anspruch 4, **dadurch gekennzeichnet**, **dass** das Element (31) mit der Abtriebswelle des Elektromotors verbunden ist, welcher die Betätigungsmittel (33) definiert.
 6. Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet**, **dass** die Betätigungsmittel (33) durch eine Steuereinheit (34) befehlsgesteuert sind, welche mit den Steuermitteln (20) für die Spannungsbestimmungsmittel (18) und für die Geschwindigkeits-Mess- und Modifizierungsmittel (3, 12) zusammenwirkt, wobei die Steuermittel (20) Informationen mit der Einheit (34) bezüglich der Geschwindigkeit austauschen, mit welcher das Garn (11) der Textilmaschine (10) zugeführt wird, um es der Steuereinheit (34) zu ermöglichen, die Betätigungsmittel (33) zu veranlassen, auf das in Kontakt mit dem Garn (11) befindliche Element (31) einzuwirken, um die Garngeschwindigkeit zu verändern, und um umgekehrt die Steuermittel (20) in die Lage zu versetzen, die Geschwindigkeit des der Textilmaschine (10) zugeführten Garns (11) auf der Grundlage der von dem Element (31) vorgenommenen Veränderung der Garngeschwindigkeit zu regulieren, wobei die Steuereinheit (34), die Betätigungsmittel (33), das von den Betätigungsmitteln (33) gesteuerte Element (31), die Steuermittel (20), die Spannungsbestimmungsmittel (18) und die Geschwindigkeits-Mess- und Modifizierungsmittel einen Steuer-/Regelkreis der Textilmaschine für die Zufuhr des elastomeren Garns mit konstanter Spannung und konstanter Geschwindigkeit bilden.
 7. Vorrichtung nach Anspruch 6, **dadurch gekennzeichnet**, **dass** die Steuermittel (20) mit Mitteln (27) zum Steuern des Betriebs der Textilmaschine zusammenwirken.
 8. Vorrichtung nach Anspruch 1, **dadurch gekennzeichnet**, **dass** die Bestimmungsmittel (18) und die Mess- und Modifizierungsmittel (3, 12) jeweils einer einzelnen gemeinsamen Haltevorrichtung zugeordnet sind, welche den Körper (2) der Vorrichtung (1) definiert.
 9. Verfahren zum Zuführen eines elastomeren Garns zu einer Textilmaschine, um einen Gegenstand gleich bleibender Qualität in jedem seiner Bestandteile zu erhalten, indem eine Vorrichtung gemäß Anspruch 1 verwendet wird, wobei das Verfahren ein Messen der Spannung und Geschwindigkeit oder Menge des Garns (11) beinhaltet, welches der Textilmaschine zugeführt und von einer Garnspule (B) abgezogen wird, wobei das Verfahren **dadurch gekennzeichnet ist**, **dass** das Garn (11), nachdem es von der Garnspule (B) abgezogen wurde, derart beeinflusst wird, dass seine Zulaufgeschwindigkeit zu der Textilmaschine

modifiziert wird, wobei diese Einflussnahme durch die Kompensatormittel der Vorrichtung in einem Punkt entlang des Wegs des Garns stromaufwärts der Messung seiner Geschwindigkeit und Spannung erfolgt, während kontinuierlich die Geschwindigkeit des Garns stromabwärts dieses Wegpunkts gemessen wird, und wobei auf der Grundlage der gemessenen Geschwindigkeit auf das Garn eingewirkt wird, um eine auf Durchmesser und Längung bezogene Abmessungsstabilität des Garns (11) zu erhalten, welches der Textilmaschine zugeführt wird.

10. Verfahren nach Anspruch 9, **dadurch gekennzeichnet, dass** die Einwirkung auf das Garn (11) eine Bremsenwirkung ist.
11. Verfahren nach Anspruch 9, **dadurch gekennzeichnet, dass** die Einwirkung auf das Garn (11) eine Beschleunigungseinwirkung ist.

Revendications

1. Dispositif pour commander l'alimentation d'un fil élastomère (11), ayant des caractéristiques élastiques connues, retiré d'une bobine (B) et fourni à une machine textile (10) telle qu'une machine à tricoter, une machine à débourrer, une enrouleuse de bobine ou une autre machine textile, ledit fil possédant une élasticité intrinsèque et étant fourni à ladite machine avec une vitesse intrinsèque, un moyen (18) étant fourni pour détecter la tension du fil (11) et un moyen (3, 12) pour mesurer et modifier cette vitesse, ledit moyen de détection (18) et ledit moyen de mesure et de modification (3, 12) étant tous deux reliés à un moyen (20) de commande et de régulation desdits paramètres de tension et de vitesse, ledit moyen de commande et de régulation (20) mesurant en continu les valeurs desdits deux paramètres pendant l'alimentation de la machine textile en fil (11), **caractérisé en ce que** le dispositif comprend en outre un moyen compensateur (30) agencé pour compenser les variations des caractéristiques dimensionnelles du fil élastomère (11) retiré de la bobine (B) avant que le fil (11) ne coopère avec le moyen de détection de tension (18) et avec le moyen de mesure de vitesse (3, 12) pour permettre à un fil ayant des caractéristiques dimensionnelles constantes d'être fourni à ladite machine textile (10) pour toute la durée d'une production d'articles, et **en ce que** le moyen compensateur (30) comprend un organe (31) en contact avec le fil et agencé pour modifier, si nécessaire, sa vitesse de déplacement au cours de son trajet de la bobine (B) audit moyen de détection de tension (18) et audit moyen de mesure et de modification de la vitesse (3, 12), ledit organe étant relié

à un moyen d'actionnement (33) qui permet à l'organe (31) d'agir sur le fil si nécessaire.

2. Dispositif selon la revendication 1, **caractérisé en ce que** l'organe (31) est un moyen de roue tel qu'une poulie ou similaire.
3. Dispositif selon la revendication 1, **caractérisé en ce que** l'organe (31) est un organe de freinage de fil.
4. Dispositif selon la revendication 1, **caractérisé en ce que** le moyen d'actionnement (33) est un moteur électrique, un moteur à air ou similaire.
5. Dispositif selon les revendications 2 et 4, **caractérisé en ce que** l'organe (31) est relié à l'arbre de sortie du moteur électrique définissant le moyen d'actionnement (33).
6. Dispositif selon la revendication 1, **caractérisé en ce que** le moyen d'actionnement (33) est commandé et contrôlé par une unité de commande (34) coopérant avec le moyen de commande (20) pour le moyen de détection de tension (18) et pour le moyen de mesure et de modification de vitesse (3, 12), ledit moyen de commande (20) échangeant des informations avec ladite unité (34) concernant la vitesse à laquelle le fil (11) est fourni à la machine textile (10), pour permettre à ladite unité de commande (34) de faire agir le moyen d'actionnement (33) sur l'organe (31) en contact avec le fil (11) afin de modifier la vitesse de fil et vice versa, pour permettre audit moyen de commande (20) de réguler la vitesse du fil (11) fourni à la machine textile (10) sur la base de la modification de vitesse de fil effectuée par ledit organe (31), ladite unité de commande (34), le moyen d'actionnement (33), l'organe (31) commandé par ledit moyen d'actionnement (33), le moyen de commande (20), le moyen de détection de tension (18) et le moyen de mesure et de modification de vitesse formant une boucle de commande pour l'alimentation à tension constante et à vitesse constante de la machine textile en fil élastomère.
7. Dispositif selon la revendication 6, **caractérisé en ce que** le moyen de commande (20) coopère avec un moyen (27) pour commander le fonctionnement de la machine textile.
8. Dispositif selon la revendication 1, **caractérisé en ce que** le moyen de détection (18) et le moyen de mesure et de modification (3, 12) sont tous deux associés à un support unique définissant le corps (2) du dispositif (1).
9. Procédé d'alimentation d'une machine textile en fil élastomère de sorte à obtenir un article de qualité constante dans chacune de ses parties à l'aide d'un

dispositif selon la revendication 1, ledit procédé comprenant la mesure de la tension et de la vitesse ou de la quantité de fil (11) fourni à la machine textile et se déroulant d'une bobine (B), ledit procédé étant **caractérisé en ce que** le fil (11), après avoir été déroulé de la bobine (B), subit une action de sorte à modifier sa vitesse de déplacement vers la machine textile, ladite action étant effectuée par le moyen compensateur dudit dispositif à un point du trajet du fil en amont de la mesure de sa vitesse et de sa tension, tout en mesurant en continu la vitesse du fil en aval dudit point sur le trajet, et en agissant sur le fil sur la base de ladite vitesse mesurée de façon à maintenir une stabilité dimensionnelle, c'est-à-dire de diamètre et d'allongement, du fil (11) fourni à la machine textile.

10. Procédé selon la revendication 9, **caractérisé en ce que** l'action sur le fil (11) est une action de freinage.
11. Procédé selon la revendication 9, **caractérisé en ce que** l'action sur le fil (11) est une action d'accélération.

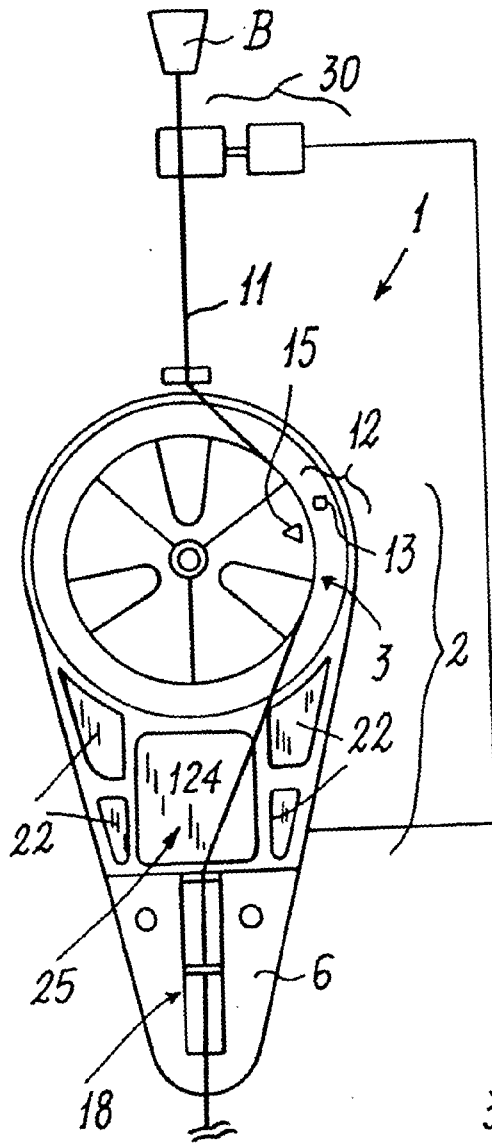


FIG. 1

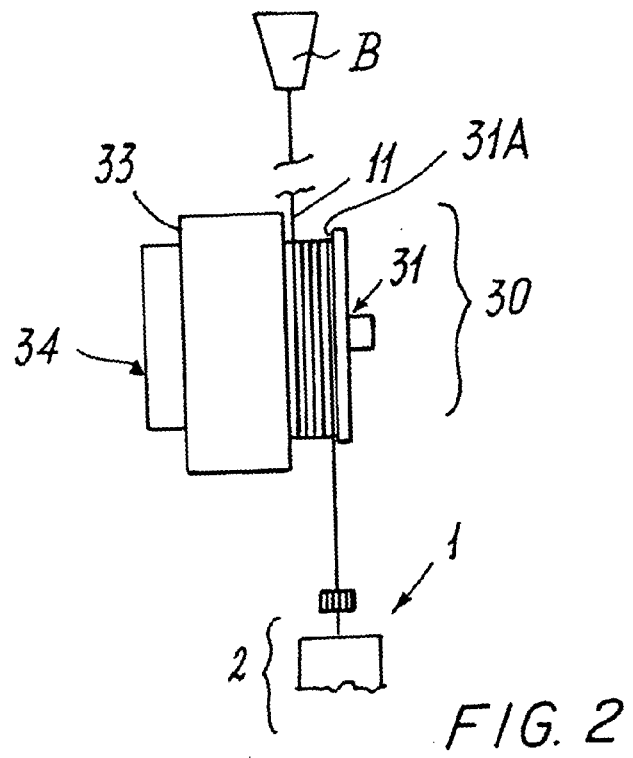


FIG. 2

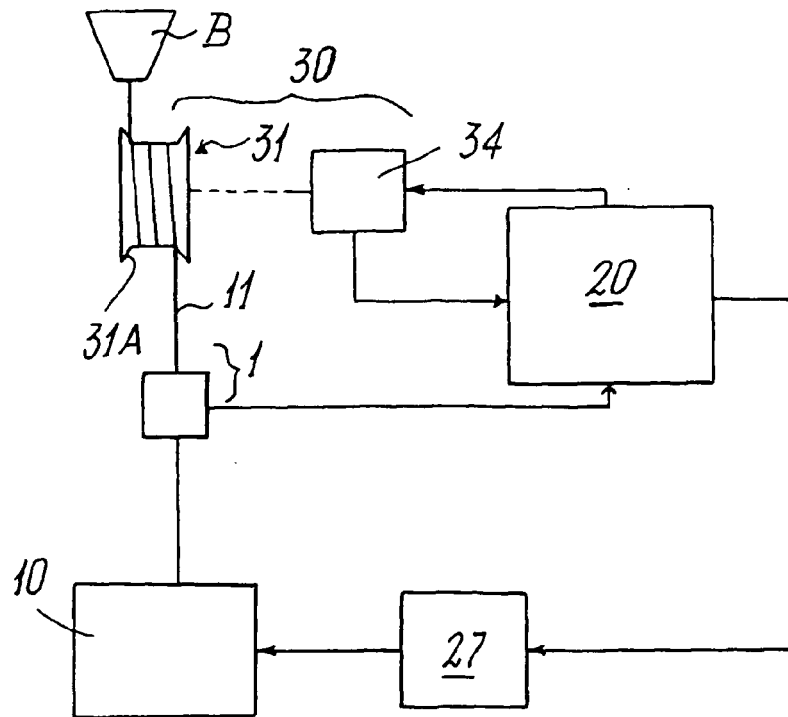


FIG. 3

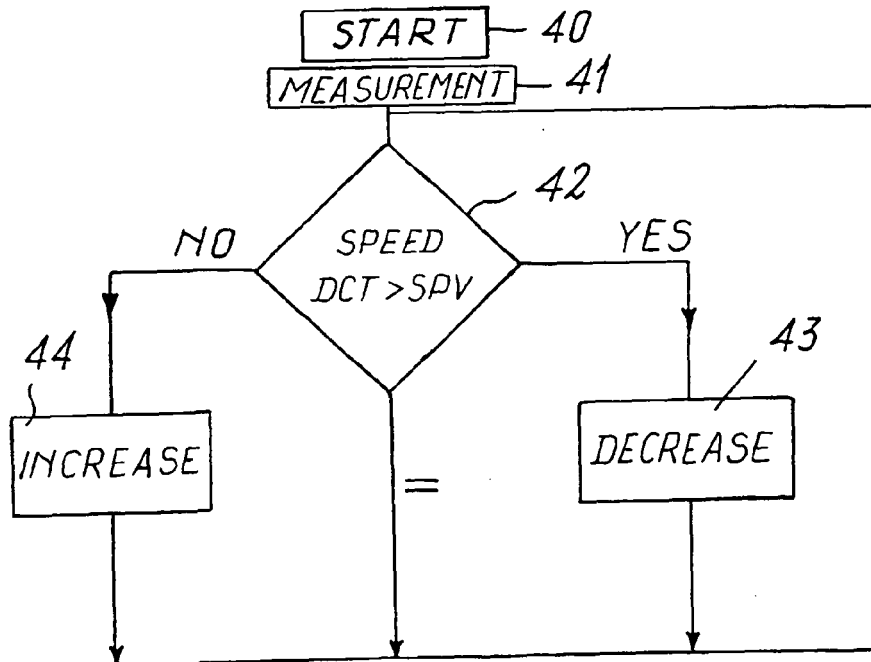


FIG. 4

REFERENCES CITED IN THE DESCRIPTION

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