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(54) **Device for supporting the temple and associated cover in a terry cloth loom with movable bench**

Vorrichtung zum Unterstützen eines Breithalters und die dazugehörende Abdeckung in einer Webmaschine für Frottiergewebe

Dispositif pour soutenir un templet et son couvercle dans un métier à tisser un tissu éponge

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Description

[0001] The present invention relates to a device for supporting the temple and associated cover, in a loom with movable bench for the weaving of terry cloth.

[0002] As is well known to persons skilled in the art, in terry cloth looms the bench of the loom is movable alternately in the forward direction of the fabric and in the opposite direction, so as to allow the formation of terry cloth loops by the warp yarns.

[0003] Equally well known, in terry cloth looms, is the function of the so-called "temples"; these consist of a pair of devices which are located on the sides of the fabric being woven and each of which is formed by a cylinder rotating idle on a cylindrical shaft perpendicular to the moving direction of the fabric and provided externally with a plurality of idle rotating rings having needles which allow gripping of the fabric; said idle rotating rings are mounted on said cylinder with an inclined axis of rotation so as to cause widening of the fabric during their rotation. The cylindrical shaft of the temple is mounted on a support fixed in turn to the loom in the manner described below and a cover for the temple is fixed on the same support. Said cover surrounds the temple by an amount sufficient to cause the fabric, which just passes between the temple and the cover, to adhere to the body of the temple through a predetermined winding angle depending on the degree of gripping required. The function of the temples is in fact precisely that of keeping outstretched the newly formed fabric in the vicinity of the zone where the weft is inserted.

[0004] In terry cloth looms with a movable bench, the temples support must be moved integrally with the bench so as to assist the consequent movement of the fabric with which the temples are constantly engaged. In looms of the known type, this is achieved by mounting the abovementioned temple support on a slide sliding in a direction parallel to the warp yarns, said slide being actuated by a connecting rod connected to the movable bench.

[0005] Fig. 1 illustrates in schematic form a loom of the type mentioned above, in which it is possible to see the various component parts of the loom in the zone of the movable bench, as described previously. In particular, it shows the temple 1 and the associated cover 2, which are both fixed to a common support 3. The support 3 is rigidly connected to a slide 4 sliding longitudinally with respect to the body G of the loom, parallel to the warp yarns, said slide 4 being connected by a connecting rod 5 to the movable bench 6 pivotably mounted on the body G of the loom.

[0006] When looms of this type must be equipped with a selvedge device arranged on the lateral edges of the fabric, namely when it is required to form an inset selvedge in the terry cloth, the problem arises that it is not possible to install the temples 1 in the most appropriate position, since this position is already occupied by the selvedge device. In particular, the temple support 3, which extends also in the zone located above the fabric T being formed in order to support the cover 2, is really bulky and then interferes in this zone with the selvedge device elements which perform reinsertion of the weft ends inside the fabric being formed.

[0007] A generic selvedge device 7 in fact consists of an actuating unit 7a, which is fixed to the body G of the loom, and an external unit 7b which comprises the needle, the cutting blade and the gripper which are intended, respectively, to take up the weft yarn, cut it to size and reinsert it inside the fabric. The external unit 7b, however, must be installed precisely in the same position which is normally occupied by the temple 1 and therefore would interfere mechanically therewith, as indicated schematically in Figures 1 and 2 where this unit is shown in broken lines, since the temple support 3 necessarily also extends above the fabric T.

[0008] The object of the present invention is therefore that of providing a novel support device for the temple and associated cover which is devoid of the drawbacks mentioned above and which therefore allows the installation, on the loom, of a selvedge device without causing mechanical interference between these two devices and without the temple having to be moved into a position further downstream, in the forward direction of the fabric, this position being less suitable for proper execution of its function.

[0009] A further object of the present invention is also that of ensuring that a correct winding of the fabric onto the temples is maintained during movements of the bench.

[0010] These objects are achieved, according to the present invention, by means of a device for supporting the temple and associated cover, in a terry cloth loom with movable bench equipped with a selvedge device, of the type in which the support for said temple is mounted on a slide movable longitudinally in a direction parallel to the warp yarns and connected mechanically to the movable bench by means of a connecting rod, characterized in that the cover of said temple is supported, independently of the temple support, by means of a pair of articulated rods, the first of said rods being connected to a part of the loom arranged above the cover and the second of said rods being connected to a second support integral with said slide and arranged downstream of the temple with respect to the forward direction of the fabric.

[0011] Further characteristic features and advantages of the present invention will emerge, however, more clearly from the following detailed description of a preferred embodiment, schematically illustrated in the accompanying drawings, in which:

[0012] Fig. 1 is a schematic side-elevation view of the device for supporting the temple in a terry cloth loom, of the type used in the prior art;

[0013] Fig. 2 is a front, partial, schematic view of the device according to Fig. 1 which shows the relative position of the temple support and the selvedge device;

[0014] Fig. 3 is a schematic side elevation view of the device for supporting a temple in a terry cloth loom, ac-

cording to the present invention, with the bench in the normal position (1); and

[0015] Fig. 4 is a view - similar to that of Figure 3 - showing the loom with the bench pivoted into the displaced position (2).

[0016] Figs. 1 and 2, as already mentioned above in the introductory part of the present description, illustrate a known arrangement of the device for supporting the temple and associated cover, in a terry cloth loom. It has also already been described how, in a loom of this type, it is not possible to install a selvedge device, for performing an inset selvedge using the cut weft ends, without having to move the temple into a less advantageous position.

[0017] In fact, in order for these devices to operate efficiently, it is necessary for both of them to be positioned in the immediate vicinity of the fabric edge, at the weft insertion zone. The selvedge device must in fact operate precisely in that zone, in order to perform cutting of the last weft inserted and reinsertion into the shed; the temple also, however, must be positioned in the same zone, namely where the fabric is initially formed, so as to avoid lateral curling of the fabric in the extremely delicate weft insertion zone. Fig. 2 just illustrates in schematic form the mechanical interference which would occur between the selvedge device 7, and in particular the external unit 7b thereof, and the support 3 for the temple 1 and associated cover 2.

[0018] According to the present invention, this problem may be solved by designing in a mutually independent manner the support for the temple 1 and the one for the associated cover 2. It should be pointed out in fact that the selvedge device 7, and more precisely its external unit 7b, is mounted on the loom in a zone completely above the fabric T being formed. The problem identified in the looms of the prior art, as discussed above, therefore effectively arises only in respect of the part of the support 3 which supports the cover 2 and which therefore extends above the fabric T and not in respect of the part of the support 3 which supports the temple 1.

[0019] On the basis of this first ingenious intuition, the inventors of the present invention have therefore thought to design the support of the temple 1 in a manner completely separate from that of the associated cover 2 and moreover to position this latter support into a zone of the loom where it would not interfere with the selvedge device, thus overcoming the drawbacks present in the known devices, as will become perfectly clear from the following detailed description of a preferred embodiment of the device.

[0020] With reference in fact now to Fig. 3, which shows the device provided in accordance with the present invention, it is possible to note that the support for the temple 1, the dimensions of which have been suitably reduced, extends completely underneath the fabric T and the said temple 1 and therefore is no longer able to interfere at all with the external selvedge unit 7b (not shown for the sake of clarity of the drawing, in Figs. 3 and 4) which, as already mentioned, is instead arranged entirely above the fabric itself. The cover 2 of the temple 1 is instead kept in its correct position, in accordance with an essential feature of the present invention, by means of a pair of articulated rods and in particular a first rod 8 extending approximately vertically and a second rod 9 extending approximately horizontally.

[0021] The rod 8 is pivotably mounted at one of its ends on the top part of the cover 2, while at the other end it is pivotably mounted on a support 10 fixed to the driving unit 7a of the selvedge device 7; the rod 8 therefore determines the height of the cover 2 with respect to the temple 1. The rod 9 on the other hand is rigidly fixed at one of its ends to a side zone of the cover 2, while at the other end it is connected, by means of an elastic joint 11, to a pin 12 projecting from a support 13 in turn integral with the said slide 4 to which the support 3 for the temple 1 is fixed. The elastic joint 11 is such as to allow the rod 9, at least within the limits of the relatively small movements thereof, two degrees of freedom, i.e. rotation about the joint 11 and sliding along the axis of the pin 12.

[0022] As it should be obvious from an examination of Figs. 3 and 4, the support 13 of the pin 12 comprises a main portion integral with the slide 4, arranged entirely underneath the fabric, and a substantially separate portion 13a - to which the pin 12 is fixed - arranged entirely above the fabric. The portion 13a is joined to the main portion of the support 13 by means of a thin wall arranged laterally with respect to the fabric and in the immediate vicinity thereof. Moreover, the longitudinal position of the support 13 is set decidedly further back with respect to the position of the temple 1, such that it is possible to install also a selvedge device 7 on the loom, without the problems of interference of the movable parts 7b of the selvedge device with the temple or the cover 2 or their supports and without the need for moving the temple 1 from its most advantageous position.

[0023] During the movement of the bench 6 for formation of the terry cloth loops, the bench passes from the angular position A1 shown in Fig. 3 into the position A2 shown in Fig. 4 and therefore the rod 8 undergoes a small rotation about the point where it is pivoted on the support 10. Since this oscillating movement nevertheless has a very limited amplitude, it does not cause significant variations in the height of the cover 2 with respect to the temple 1 and positioning of the parts is designed so that in the position of maximum angular rotation of the rod 8, with respect to its bottom dead centre - and therefore of maximum height of the cover 2 with respect to the temple 1 - the angle of winding of the fabric T onto the temple 1 is nevertheless sufficiently large.

[0024] On the other hand, the particular connection, i.e. comprising two degrees of freedom, of the cover 2 to the support 13, by means of the rod 9, allows the cover 2 to perform relatively small oscillations about the point where it is pivotably hinged with the rod 8, in response to the global forces transmitted to its end edges by the fabric T. This therefore allows these forces to be auto-

matically balanced, producing a continuous automatic repositioning of the cover 2 with a substantially constant orientation relative to the fabric T, as can be clearly seen in the drawings (Figs. 3 and 4) from the fact that the angle between the axis of the cover 2 and a vertical reference line practically does not vary in the two limit positions of movement of the bench (B1/B2). This therefore ensures that a constant correct winding of the fabric T on the temple is maintained during all the alternating movements of the bench, as it is necessary for the formation of the terry cloth.

[0025] From the above description it is clear how the invention has fully achieved the predefined objects since it allows the installation, in the correct position on the loom, both of the selvedge device and of the temple, so they are both in their right position of maximum efficiency. Moreover, owing to the particular method of supporting the temple cover, it is ensured that correct winding of the fabric onto the temple during the movements of the bench is constantly maintained.

[0026] The invention has been described with reference to a preferred embodiment thereof provided merely by way of example, but it is obvious that the scope of the invention is not limited to this embodiment, but extends to all the possible variants thereof within the competence of a person skilled in the art, provided that it falls within the definitions given in the accompanying claims.

Claims

1. Device for supporting the temple and associated cover in a terry cloth loom with movable bench equipped with a selvedge device, of the type in which the support for said temple is mounted on a slide movable longitudinally in a direction parallel to the warp yarns and connected mechanically to the movable bench by means of a connecting rod, **characterized in that** the cover of said temple is supported, independently of the temple support, by means of a pair of articulated rods, the first of said rods being connected to a part of the loom arranged above the cover and the second of said rods being connected to a second support integral with said slide and arranged downstream of the temple with respect to the forward direction of the fabric.

2. Support device as claimed in Claim 1), in which said first rod extends approximately vertically and is pivotably mounted, at one of its ends, on the top of the cover and, at the other end, on said loom part arranged above the cover.

3. Support device as claimed in Claim 2), in which said loom part arranged above the cover is a third support fixed to said selvedge device.

4. Device as claimed in Claim 1, in which said second support comprises a first main portion fixed to said slide and arranged entirely underneath the fabric and a substantially separate second portion which is arranged entirely above the fabric and to which said second rod is connected, said first and second portion being joined together by a thin plate arranged laterally with respect to the fabric and in the immediate vicinity thereof.

5. Device as claimed in Claim 4), in which said second rod extends approximately horizontally and is rigidly fixed at one of its ends to the cover in a lateral position and fastened at the other end to said second support by means of an elastic joint having two degrees of freedom.

6. Device as claimed in Claim 5), in which said joint is formed between said rod and a pin projecting from the second portion of said second support, arranged entirely above the fabric.

Patentansprüche

1. Vorrichtung zum Unterstützen eines Breithalters und die dazugehörige Abdeckung in einer Webmaschine für Frottiergewebe mit einer beweglichen Bank, die mit einer Webkanteneinrichtung versehen ist, von der Art, bei dem die Unterstützung für den Breithalter auf einem Schlitten montiert ist, der längs in einer Richtung parallel zu den Kettfäden beweglich ist und mit der beweglichen Bank mechanisch mittels einer Verbindungsstange verbunden ist, **dadurch gekennzeichnet, dass** die Abdeckung des Breithalters unabhängig von der Breithalterunterstützung mittels eines Paares von angelenkten Stangen getragen wird, wobei die erste der Stangen mit einem Teil der Webmaschine verbunden ist, das oberhalb der Abdeckung angeordnet ist, und die zweite der Stangen mit einer zweiten Unterstützung verbunden ist, die mit dem Schlitten einstückig ist und stromabwärts des Breithalters bezüglich der nach vorne gerichteten Richtung des Gewebes angeordnet ist.

2. Unterstützungsvorrichtung nach Anspruch 1, wobei die erste Stange sich annähernd vertikal erstreckt und an einem ihrer Enden schwenkbar an der Oberseite der Abdeckung montiert ist und an dem anderen Ende an dem Webmaschinenteil, das oberhalb der Abdeckung angeordnet ist, montiert ist.

3. Unterstützungsvorrichtung nach Anspruch 2, wobei der Webmaschinenteil, der oberhalb der Abdeckung montiert ist, eine dritte Unterstützung ist, die an der Webkanteneinrichtung befestigt ist.

4. Vorrichtung nach Anspruch 1, wobei die zweite Unterstützung einen ersten Hauptteil, der an dem

Schlitten befestigt ist und vollständig unterhalb des Gewebes angeordnet ist und einen im wesentlichen separaten zweiten Abschnitt, der vollständig oberhalb des Tuchs angeordnet ist und mit dem die zweite Stange verbunden ist, aufweist, wobei der erste und der zweite Teil miteinander durch eine dünne Platte verbunden ist, die lateral in Bezug auf das Tuch und in dessen unmittelbarer Nähe angeordnet ist.

5. Vorrichtung nach Anspruch 4, **dadurch gekennzeichnet, dass** die zweite Stange sich annähernd horizontal erstreckt und fest an einem seiner Enden mit der Abdeckung in eine lateralen Position befestigt und an dem anderen Ende mit der zweiten Unterstützung mittels der elastischen Verbindung, die zwei Freiheitsgrade hat, befestigt ist.

6. Vorrichtung nach Anspruch 5, wobei die Verbindung zwischen der Stange und einem Stift, der von dem zweiten Abschnitt der zweiten Unterstützung, die vollständig oberhalb des Tuchs angeordnet ist, vorragt, gebildet ist.

Revendications

1. Dispositif pour supporter le templet et un élément de recouvrement associé dans un métier à tisser les tissus éponge doté d'un banc mobile équipé d'un dispositif de formation de lisière, du type dans lequel le support dudit templet est monté sur un coulisseau mobile longitudinalement dans une direction parallèle aux fils de chaîne et est lié mécaniquement au banc mobile au moyen d'une tige de liaison, **caractérisé en ce que** l'élément de recouvrement dudit templet est supporté, indépendamment dudit support de templet, au moyen d'une paire de tiges articulées, la première desdites tiges étant liée à une partie du métier agencée au-dessus de l'élément de recouvrement, et la seconde desdites tiges étant liée à un second support d'un seul tenant avec ledit coulisseau et agencée en aval dudit templet par rapport au sens d'avance du tissu.

2. Dispositif de support selon la revendication 1, dans lequel ladite première tige s'étend sensiblement verticalement et est montée de manière pivotante, au niveau de l'une de ses extrémités, sur la partie supérieure de l'élément de recouvrement et, au niveau de l'autre extrémité, sur ladite partie de métier agencée au-dessus de l'élément de recouvrement.

3. Dispositif de support selon la revendication 2, dans lequel ladite partie de métier agencée au-dessus de l'élément de recouvrement est un troisième support fixé audit dispositif de formation de lisière.

4. Dispositif selon la revendication 1, dans lequel ledit second support comprend une première partie principale fixée audit coulisseau et agencée complètement au-dessous du tissu, et une seconde partie sensiblement distincte qui est agencée complètement au-dessus du tissu et à laquelle ladite seconde tige est liée, ladite première partie et ladite seconde partie étant liées l'une à l'autre par une plaque mince agencée latéralement par rapport au tissu et à proximité immédiate de celui-ci.

5. Dispositif selon la revendication 4, dans lequel ladite seconde tige s'étend sensiblement horizontalement et est rigidement fixée, au niveau de l'une de ses extrémités, à l'élément de recouvrement dans une position latérale, et est fixée, au niveau de l'autre extrémité, audit second support au moyen d'une liaison élastique ayant deux degrés de liberté.

6. Dispositif selon la revendication 5, dans lequel ladite liaison est formée entre ladite tige et une broche en saillie de ladite seconde partie dudit second support, agencées complètement au-dessus du tissu.

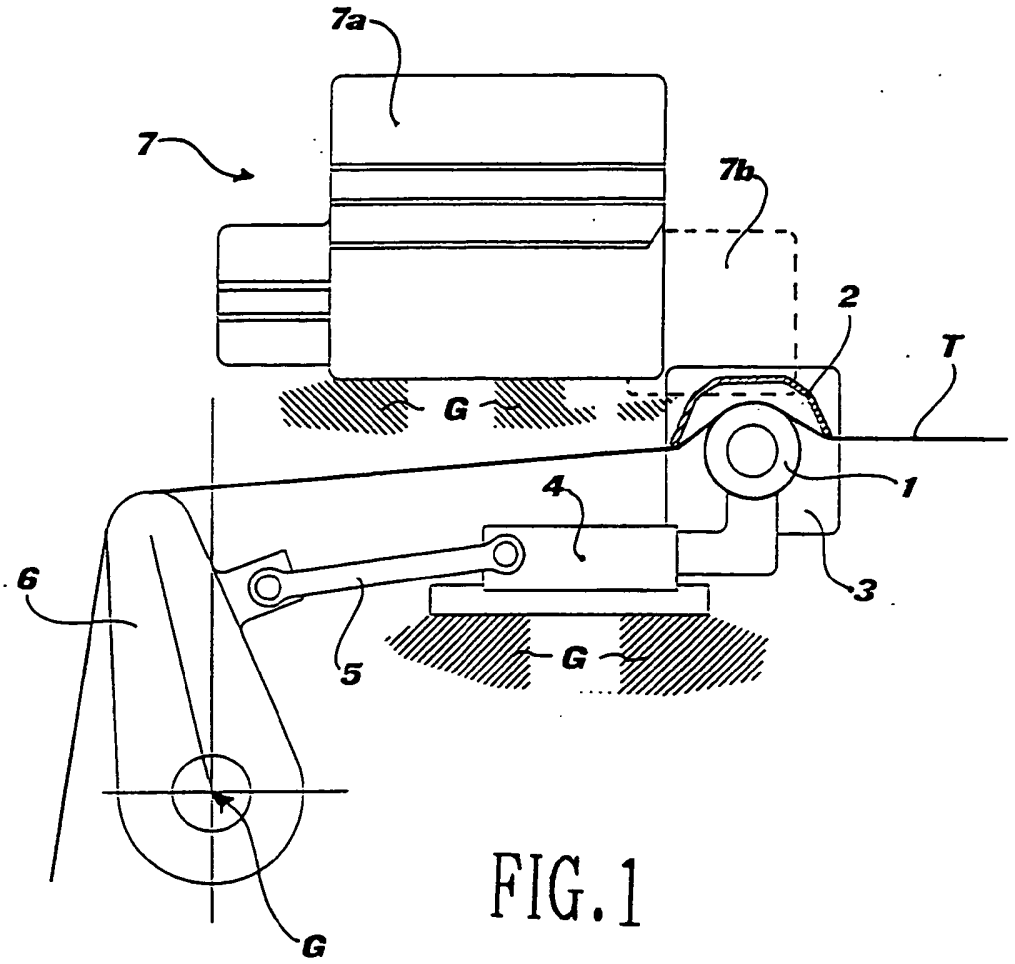

FIG.1

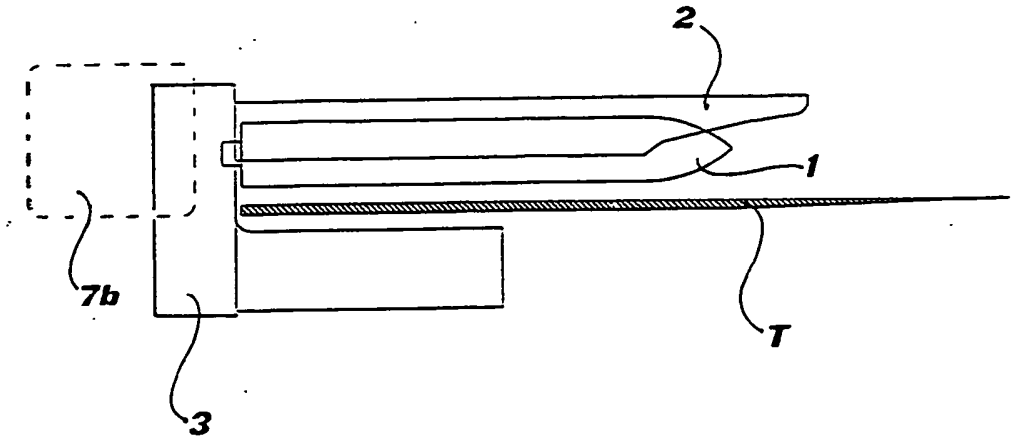

FIG.2

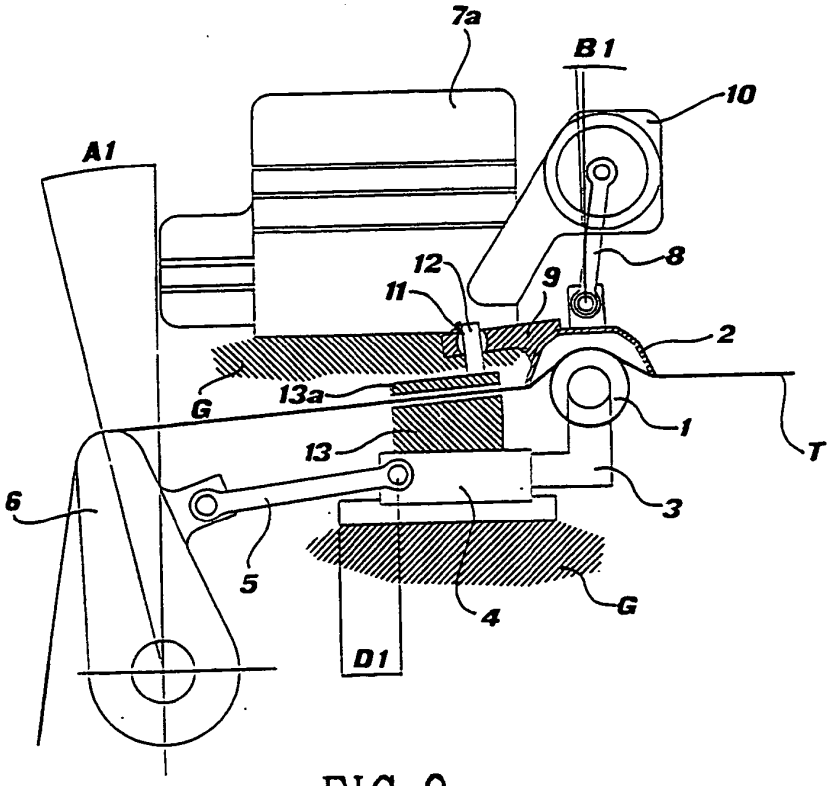

FIG.3

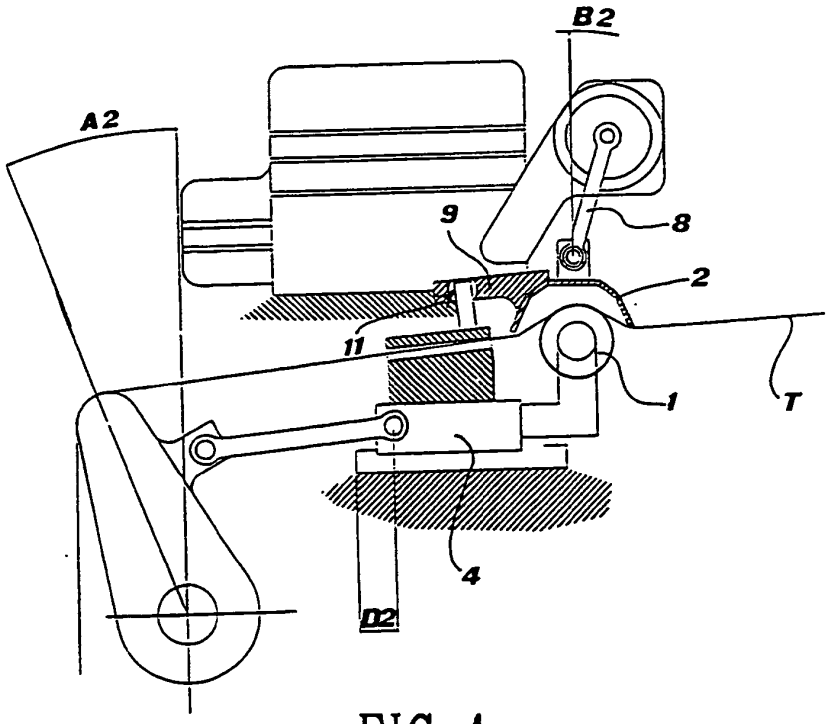

FIG.4