Description

The present invention relates generally to a mandrel for use with a loom for the formation of the loops according to the prior art portion of Claim 1.

U. S. Patent No. 3,009,235, issued November 21, 1961 discloses, as reillustrated here in Figures 6 and 7, such a mandrel A used for the formation of loops B on a woven fabric C. The disclosed mandrel includes a loop-forming portion D of reduced section on which the loops B are formed, and a loop-setting portion E of larger section adapted to tension the loop B after their formation for insuring the formation of a firm fabric with the upstanding loops positioned in a uniform manner.

Since the loop-forming portion D of the disclosed mandrel A has a uniform height throughout the length thereof, it is not possible to rectify or correct the deviation of a loop-forming warp thread F from its desired course which would occur when the warp thread F is looped successively around the loop-forming portion D due to, for example, the flexibility of or the initial twisting of the warp thread F. Consequently, successive loops B are formed at different positions on the loop-forming portion D and hence they are subjected to random tensioning forces when advanced to the loop-setting portion E. The final loops B set on the loop-setting portion E have different shapes and configurations and are positioned in a non-uniform manner. Due to the above-mentioned deviation, the loop-forming warp thread F is likely to interfere with a foundation weft thread G prior to the latter is interlaced with a series of foundation warp threads H (two being shown) and with the warp thread F. This interference result in a weaving failure and non-uniform loop formation.

A further disadvantage associated with the mandrel A is in that since the loop-setting portion E has a uniform height, the loops B, as they are advanced along such portion E, are subjected to undue frictional forces which would cause deformation or twisting of the loops B.

The present invention seeks to provide an improved loop-forming mandrel which can overcome or substantially eliminate the foregoing drawbacks of the known mandrel.

The present invention further seeks to provide a mandrel adapted to be incorporated in a loom and having structural features capable of forming loops of a uniform shape and configuration without obstructing the weaving operation of the loom.

According to the present invention, there is provided a mandrel for use with a loom for the formation of loops projecting from a foundation fabric as the latter is woven on the loom, said mandrel comprising an elongate bar for being disposed closely over one surface of a foundation fabric while being woven and extending perpendicularly across a fell of the foundation fabric, said elongate bar including a longitudinal loop-forming portion adapted to be disposed substantially upstream of the fell for supporting thereon the loops during their formation, and a longitudinal loop-setting portion contiguous to said loop-forming portion and adapted to be disposed substantially downstream of the fell for tensioning the loops after their formation to set the latter in upstanding positions, characterized in that said longitudinal bar further includes a generally V-shaped first recess defined in an upper longitudinal edge of said elongate bar and extending in and between said loop-forming portion and said loop-setting portion for receiving therein the loops before their formation, and an elongate second recess defined in a lower longitudinal edge of said elongate bar and extending along a limited longitudinal part of said loop-setting portion for releasing a tension on the loops.

Particular embodiments of the invention are set out in dependent Claims 2 -6.

Many other advantages and features of the present invention will become manifest to those versed in the art upon making reference to the detailed description and the accompanying sheets of drawings in which a preferred structural embodiment incorporating the principles of the present invention is shown by way of illustrative example.

Figure I is a side elevational view of a mandrel embodying the present invention;

Figure 2 is a schematic view of a loom in which the mandrel of Figure I is incorporated, the view illustrating the manner in which successive loops are formed on the mandrel the weaving a foundation fabric advances;

Figure 3 is an enlarged cross-sectional view taken along line III - III of Figure 2;

Figure 4 is a view similar to Figure 2, but showing a different operation mode of the loom;

Figure 5 is a schematic fragmentary cross-sectional view showing a looped fastener member and a hooked fastener member joined together to form a surface-type fastener manufactured by the loom shown in Figure 2;

Figure 6 is a schematic side elevational view of a known mandrel; and

Figure 7 is an enlarged fragmentary side elevational view of a loom in which the mandrel of Figure 6 is incorporated, the view illustrating the operation of the loom.

The principles of the present invention are particularly useful when embodied in a mandrel, generally denoted by the reference numeral I0 in Figure I, for the formation of loops of a looped fabric which is suitable for use as a surface-type fastener member having number of interlocking elements such as loops or hooks projecting from a foundation fabric.

In practice, a number of such mandrels I0 are incorporated in a loom II (Figure 2), however, only one mandrel I0 is shown and described here for clarity.

The loom II is of the general type employed in weaving a velvet ribbon and is constructed to produce a foundation fabric I2 by interlacing a series of warp threads I3 with a weft thread I4 progressively at a fell I5. The mandrel I0 is disposed between a selected pair of the warp threads I3 and extends parallel to the warp threads I3 perpendicularly across the fell I5 of the foundation fabric I2 while being woven. Loops I6 on the foundation fabric I2 are formed in a supplementary warp thread I7

passed over the mandrel 10 and woven into the foundation fabric 12 as the latter is woven on the loom 11. The supplementary warp thread 17 preferably is made of thermoplastic synthetic resin, such as nylon or other material capable of being heat-set into a predetermined form, so that the warp thread 17 is capable of retaining, by a heat treatment, the shape which has been imparted thereto during weaving.

As shown in Figure 1, the mandrel 10 comprises an elongate bar preferably press-formed from a thin steel blade and surface-treated by plating to provide a smooth external surface so as not to damage the warp thread 17 as the latter is formed into the loops 16 around the mandrel 10. The mandrel or elongate bar 10 has at one of its ends a hook 18 enabling it to be hooked on the weaving loom. The mandrel 10 further includes a loop-forming portion 19 on which the loops 16 are formed, and a loop-setting portion 20 adapted to tension the loops 16 after their formation. The two portions 19, 20 are separated by a generally V-shaped first recess 21 defined in an upper longitudinal edge 22 of the mandrel 10, the loop-setting portion 20 extending between the recess 21 and the other end 23 of the mandrel 10. The loop-forming portion 19 has a first guide surface 24 extending along the upper longitudinal edge 22 and sloping downwardly toward the loop-setting portion 20. The loop-setting portion 20 has a second guide surface 25 extending contiguously from a lower end of the first guide surface 24 and sloping upwardly away from the loop-forming portion 20 so as to define the recess 21 jointly with the first guide surface 24. The first guide surface 24 extends substantially throughout the length of the loop-forming portion 19 and has an angle of inclination smaller than that of the second guide surface 25.

The mandrel 10 further has an elongate second recess 26 defined in a lower longitudinal edge 27 of the mandrel 10 and extending along the loop-setting portion 20 through a limited longitudinal part thereof which is intermediate the first recess 21 and the other end 23 of the mandrel 10. The second recess 26 is disposed closer to the other end 23 than to the first recess 21 for a purpose described below.

The operation of the mandrel 10 in the loom 11 is illustrated in Figure 2 in which are shown the foundation fabric 12 woven of the warp threads 13 and the weft thread 14, and the mandrel 10 extending closely over the foundation fabric 12 with the first recess 24 disposed adjacent to, and more particularly, immediately upstream of the fell 15 of the foundation fabric 12 while being woven. The foundation fabric 12 moves progressively across a support plate 28 in a direction from the left to the right in the same figure, as the weaving proceeds. During that time, the loops 16 slide along the mandrel 10 progressively engaging the loop-forming portion 19 and the loop-setting portion 20. The supplementary warp thread 17 which forms the loops 16 is directed first to one side and then to the other side of the mandrel 10 to assume a zig-zag or meandering formation.

When the supplementary warp thread 17 is looped around the loop-forming portion 19 to form a loop 16 thereon, the warp thread 17 slides downwardly along the first guide surface 24 into the bottom of the first recess 21. This guided sliding movement of the warp thread 17 is always attained even though the warp thread 17 is likely to deviate from its predetermined course as indicated by phantom lines shown in Figure 2, due to its own flexibility or the initial twisting or torque given thereto. Thus, the loops 16 are formed at a fixed position on the loop-forming portion 19, i.e. the bottom of the recess 21 as the foundation fabric 12 advances rightwards in the same figure. As indicated by the solid line shown in Figure 2, the warp thread 17 is retained in the bottom of the recess 21 disposed adjacent to the fell 15, so that this thread 17 does not interfere with the weft thread 14 which has been inserted in a shed between the separated warp threads 13, 13.

Then the weft thread 14 is beated against the fell 15 by a reed 29, as shown in Figure 4, whereupon one of the loops 16 slides up the second guide surface 25 and on to the loop-setting portion 20 during which time the loop 16 is tensioned. As described above, all the loops 16, which have been formed on the loop-forming portion 19, are guided to a fixed position or the bottom of the recess 21 before their tensioning with the result that uniform tensioning of the individual loops 16 is effected on the loop-setting portion 20. The loops 16 thus tensioned uniformly have a uniform shape and configuration. Although not shown, all the mandrels 10 are disposed in the loom 11 with their recesses 21 held in lateral alignment with one another, such uniform tensioning of all the loops 16 on the loop-setting portions 20 of the respective mandrels 10 ensures that the formation of a firm foundation fabric 12 with the upstanding loops 16 positioned in a uniform manner.

The loops 16 are preferably heat set by means of a heater 30 while they remain on the loop-setting portion 20 of the mandrel 10. The heater 30 is disposed above the mandrel 10 and extends over the loop-setting portion 20 so that the loops 16 are subjected to a heating treatment after they have been tensioned to assume a desired upstanding form. After the heat treatment has proceeded to some extent, the loops 16 are then advanced along the recessed longitudinal part 26 during which time they are released from tensioning forces. The recess 26 thus provided enables the loops 16 to pass smoothly through the loop-setting portion while keeping the desired form as shown in Figure 3, without causing deformation or twisting thereof. If the loop-setting portion 20 were constructed to have a uniform height, the loops 16 would be deformed or twisted due to undue frictional forces generated between the loop-setting portion 20 and the tensioned loops 16 as the loops 16 advance along the loop-setting portion 20.

The mandrel 10 of the present invention can be emplyed both in the formation of a hooked fabric fastener member 31 and in the formation of a looped fabric fastener member 34, as shown in Figure 5. To form the hooked fabric fastener member 31, the supplementary warp thread 17 forming loops 16 is preferably made of a thermoplastic monofilament capable of heat-setting as described above. After heat-setting, the loops 16 of monofilament are cut to form hooks 32 projecting from a woven foundation

fabric 33. In case the looped fabric fastener member 34 is to be produced, the warp thread I7 is preferably made of a multifilament so that when subjected to a known brushing treatment, each parent loop of multifilament produce a plurality of loop elements 35 projecting from a foundation fabric 36.

Claims

I. A mandrel (I0) for use with a loom (II) for the formation of loops (I6) projecting from a foundation fabric (I2) as the latter is woven on the loom, said mandrel comprising an elongate bar (I0) for being disposed closely over one surface of a foundation fabric (I2) while being woven and extending perpendicularly across a fell (I5) of the foundation fabric, said elongate bar (I0) including a longitudinal loop-forming portion (I9) adapted to be disposed substantially upstream of the fell (I5) for supporting thereon the loops (I6) during their formation, and a longitudinal loop-setting portion (20) contiguous to said loop-forming portion (I9) and adapted to be disposed substantially downstream of the fell (I5) for tensioning the loops (I6) after their formation to set the latter in upstanding positions, characterized in that said longitudinal bar (I0) further includes a generally V-shaped first recess (2I) defined in an upper longitudinal edge (22) of said elongate bar (I0) and extending in and between said loop-forming portion (I9) and said loop-setting portion (20) for receiving therein the loops (I6) before their formation, and an elongate second recess (26) defined in a lower longitudinal edge (27) of said elongate bar (I0) and extending along a limited longitudinal part of said loop-setting portion (20) for releasing a tension on the loops (I6).

2. An apparatus according to claim I, said first recess (2I) being disposed in use immediately upstream of the fell (I5).

3. A mandrel according to claim I or 2, said loop forming portion (I9) having a first guide surface (24) extending along said upper longitudinal edge (22) of said elongate bar (I0) and sloping downwardly toward the fell (I5), said loop-setting portion (20) having a second guide surface (25) extending contiguously from said first guide surface (24) and sloping upwardly away from the fell (I5), said first and second guide surfaces (24, 25) jointly defining therebetween said first recess (2I).

4. A mandrel according to claim 3, said first guide surface (24) extending substantially along the entire length of said loop-forming portion (I9).

5. A mandrel according to claim 3 or 4, said first guide surface (24) having an angle of inclination which is smaller than that of said second guide surface (25).

6. A mandrel according to one of the claims I to 5, said elongate bar (I0) having one end adapted to be connected to the loom (II), said loop-setting portion (20) extending between said first recess (2I) and the other end (23) of said elongate bar (I0), said second recess (26) being disposed closer to said other end (23) of said elongate bar (I0) than to said first recess (2I).

Patentansprüche

1. Dorn (10) zur Verwendung bei einer Webmaschine (11) zur Ausbildung der Schlingen (16), die von einem Grundgewebe (12) abstehen, während das letztere in der Webmaschine gewebt wird, wobei der Dorn eine längliche Stange (10) umfaßt, die nahe über einer Oberseite eines Grundgewebes (12) angeordnet ist, während dieses gewebt wird, und die sich rechtwinklig zu einem Warenschluß (15) des Grundgewebes erstreckt, wobei diese längliche Stange (10) einen sich in Längsrichtung erstreckenden Schlingenbildungsbereich (19) aufweist, der im wesentlichen stromaufwärts von dem Warenschluß (15) angeordnet werden kann, um darauf die Schlingen (16) während ihrer Bildung abzustützen, und einen sich in Längsrichtung erstreckenden, an den Schlingenbildungsbereich (19) angrenzenden Schlingenfixierungsbereich (20) aufweist, der im wesentlichen stromabwärts von dem Warenschluß (15) angeordnet werden kann, um die Schlingen (16) nach ihrer Bildung zu spannen, um sie in aufrechter Lage zu fixieren, dadurch gekennzeichnet, daß die längliche Stange (10) ferner eine im allgemeinen V-förmige erste Ausnehmung (21) aufweist, die in einem oberen Längsrand (22) der länglichen Stange (10) ausgebildet ist und sich in und zwischen dem besagten Schlingenbildungsbereich (19) und dem besagten Schlingenfixierungsbereich (20) erstreckt, um darin die Schlingen (16) vor ihrer Ausbildung aufzunehmen, und eine längliche zweite Ausnehmung (26) aufweist, die in einem unteren Längsrand (27) der länglichen Stange (10) ausgebildet ist und sich entlang einem begrenzten Längenabschnitt des Schlingenfixierungsbereichs (20) erstreckt, um eine Spannung auf die Schlingen (16) aufzuheben.

2. Dorn nach Anspruch 1, wobei die erste Ausnehmung (21) unmittelbar stromaufwärts von dem Warenschluß (15) angeordnet ist.

3. Dorn nach Anspruch 1 oder 2, wobei der Schlingenbildungsbereich (19) eine erste Führungsfläche (24) hat, die sich entlang dem besagten oberen Längsrand (22) der länglichen Stange (10) erstreckt und nach unten zum Warenschluß (15) abfällt, wobei der Schlingenfixierungsbereich (20) eine zweite Führungsfläche (25) aufweist, die an die erste Führungsfläche (24) angrenzt und von dem Warenschluß (15) ansteigt, wobei die erste und die zweite Führungsfläche (24, 25) gemeinsam zwischen sich die besagte erste Ausnehmung (21) begrenzen.

4. Dorn nach Anspruch 3, wobei sich die erste Führungsfläche (24) im wesentlichen über die gesamte Länge des besagten Schlingenbildungsbereichs (19) erstreckt.

5. Dorn nach Anspruch 3 oder 4, wobei die erste Führungsfläche (24) einen Neigungswinkel hat, der kleiner ist als derjenige der zweiten Führungsfläche (25).

6. Dorn nach einem der Ansprüche 1 bis 5, wobei die längliche Stange (10) ein Ende hat, das mit der Webmaschine (11) verbindbar ist, wobei sich der besagte Schlingenfixierungsbereich (20) zwischen der besagten ersten Ausnehmung (21) und dem anderen Ende (23) der länglichen Stange (10) erstreckt, wobei die besagte zweite Ausnehmung (26) näher an

fabric 33. In case the looped fabric fastener member 34 is to be produced, the warp thread I7 is preferably made of a multifilament so that when subjected to a known brushing treatment, each parent loop of multifilament produce a plurality of loop elements 35 projecting from a foundation fabric 36.

Claims

I. A mandrel (I0) for use with a loom (II) for the formation of loops (I6) projecting from a foundation fabric (I2) as the latter is woven on the loom, said mandrel comprising an elongate bar (I0) for being disposed closely over one surface of a foundation fabric (I2) while being woven and extending perpendicularly across a fell (I5) of the foundation fabric, said elongate bar (I0) including a longitudinal loop-forming portion (I9) adapted to be disposed substantially upstream of the fell (I5) for supporting thereon the loops (I6) during their formation, and a longitudinal loop-setting portion (20) contiguous to said loop-forming portion (I9) and adapted to be disposed substantially downstream of the fell (I5) for tensioning the loops (I6) after their formation to set the latter in upstanding positions, characterized in that said longitudinal bar (I0) further includes a generally V-shaped first recess (2I) defined in an upper longitudinal edge (22) of said elongate bar (I0) and extending in and between said loop-forming portion (I9) and said loop-setting portion (20) for receiving therein the loops (I6) before their formation, and an elongate second recess (26) defined in a lower longitudinal edge (27) of said elongate bar (I0) and extending along a limited longitudinal part of said loop-setting portion (20) for releasing a tension on the loops (I6).

2. An apparatus according to claim I, said first recess (2I) being disposed in use immediately upstream of the fell (I5).

3. A mandrel according to claim I or 2, said loop forming portion (I9) having a first guide surface (24) extending along said upper longitudinal edge (22) of said elongate bar (I0) and sloping downwardly toward the fell (I5), said loop-setting portion (20) having a second guide surface (25) extending contiguously from said first guide surface (24) and sloping upwardly away from the fell (I5), said first and second guide surfaces (24, 25) jointly defining therebetween said first recess (2I).

4. A mandrel according to claim 3, said first guide surface (24) extending substantially along the entire length of said loop-forming portion (I9).

5. A mandrel according to claim 3 or 4, said first guide surface (24) having an angle of inclination which is smaller than that of said second guide surface (25).

6. A mandrel according to one of the claims I to 5, said elongate bar (I0) having one end adapted to be connected to the loom (II), said loop-forming portion (20) extending between said first recess (2I) and the other end (23) of said elongate bar (I0), said second recess (26) being disposed closer to said other end (23) of said elongate bar (I0) than to said first recess (2I).

Patentansprüche

1. Dorn (10) zur Verwendung bei einer Webmaschine (11) zur Ausbildung der Schlingen (16), die von einem Grundgewebe (12) abstehen, während das letztere in der Webmaschine gewebt wird, wobei der Dorn eine längliche Stange (10) umfaßt, die nahe über einer Oberseite eines Grundgewebes (12) angeordnet ist, während dieses gewebt wird, und die sich rechtwinklig zu einem Warenschluß (15) des Grundgewebes erstreckt, wobei diese längliche Stange (10) einen sich in Längsrichtung erstreckenden Schlingenbildungsbereich (19) aufweist, der im wesentlichen stromaufwärts von dem Warenschluß (15) angeordnet werden kann, um darauf die Schlingen (16) während ihrer Bildung abzustützen, und einen sich in Längsrichtung erstreckenden, an den Schlingenbildungsbereich (19) angrenzenden Schlingenfixierungsbereich (20) aufweist, der im wesentlichen stromabwärts von dem Warenschluß (15) angeordnet werden kann, um die Schlingen (16) nach ihrer Bildung zu spannen, um sie in aufrechter Lage zu fixieren, dadurch gekennzeichnet, daß die längliche Stange (10) ferner eine im allgemeinen V-förmige erste Ausnehmung (21) aufweist, die in einem oberen Längsrand (22) der länglichen Stange (10) ausgebildet ist und sich in und zwischen dem besagten Schlingenbildungsbereich (19) und dem besagten Schlingenfixierungsbereich (20) erstreckt, um darin die Schlingen (16) vor ihrer Ausbildung aufzunehmen, und eine längliche zweite Ausnehmung (26) aufweist, die in einem unteren Längsrand (27) der länglichen Stange (10) ausgebildet ist und sich entlang einem begrenzten Längenabschnitt des Schlingenfixierungsbereichs (20) erstreckt, um eine Spannung auf die Schlingen (16) aufzuheben.

2. Dorn nach Anspruch 1, wobei die erste Ausnehmung (21) unmittelbar stromaufwärts von dem Warenschluß (15) angeordnet ist.

3. Dorn nach Anspruch 1 oder 2, wobei der Schlingenbildungsbereich (19) eine erste Führungsfläche (24) hat, die sich entlang dem besagten oberen Längsrand (22) der länglichen Stange (10) erstreckt und nach unten zum Warenschluß (15) abfällt, wobei der Schlingenfixierungsbereich (20) eine zweite Führungsfläche (25) aufweist, die an die erste Führungsfläche (24) angrenzt und von dem Warenschluß (15) ansteigt, wobei die erste und die zweite Führungsfläche (24, 25) gemeinsam zwischen sich die besagte erste Ausnehmung (21) begrenzen.

4. Dorn nach Anspruch 3, wobei sich die erste Führungsfläche (24) im wesentlichen über die gesamte Länge des besagten Schlingenbildungsbereichs (19) erstreckt.

5. Dorn nach Anspruch 3 oder 4, wobei die erste Führungsfläche (24) einen Neigungswinkel hat, der kleiner ist als derjenige der zweiten Führungsfläche (25).

6. Dorn nach einem der Ansprüche 1 bis 5, wobei die längliche Stange (10) ein Ende hat, das mit der Webmaschine (11) verbindbar ist, wobei sich der besagte Schlingenfixierungsbereich (20) zwischen der besagten ersten Ausnehmung (21) und dem anderen Ende (23) der länglichen Stange (10) erstreckt, wobei die besagte zweite Ausnehmung (26) näher an

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diesem anderen Ende (23) der länglichen Stange (10) angeordnet ist als an der ersten Ausnehmung (21).

Revendications

1. Tige (10) destinée à être utilisée dans un métier (11) en vue de la formation de boucles (16) qui font saillie à partir d'un tissu de base (12) au moment où celui-ci est tissé dans le métier, ladite tige, comprenant une tige oblongue (10) destinée à être disposée très près au-dessus de la surface d'un tissu de base (12) pendant le tissage de celui-ci, et s'étendant perpendiculairement en travers de la lisière (15) d'un tissu de base, ladite tige oblongue (10) comprenant une partie (19) longitudinale de formation de boucles apte à être disposée sensiblement en amont de la lisière (15) pour maintenir sur elle les boucles (16) pendant leur formation, et une partie (20) longitudinale de fixation des boucles contiguë à ladite partie (19) de formation de boucles et apte à être disposée sensiblement en aval de la lisière (15) en vue de placer les boucles (16) sous tension après leur formation afin de mettre celles-ci en position verticale, caractérisé en ce que ladite tige (10) longitudinale comprend en outre un premier creux (21) en forme générale de V, défini dans le bord longitudinal supérieur (22) de ladite tige oblongue (10) et s'étendant dans ladite position (19) de formation de boucles et ladite partie (20) de fixation de boucles, et entre celles-ci en vue de recevoir les boucles (16) avant leur formation, et un second creux oblong (26) défini dans le bord longitudinal inférieur (27) de ladite tige oblongue (10) et s'étendant sur une partie longitudinale limitée de ladite partie (20) de fixation des boucles afin de relâcher la tension qui s'exerce sur les boucles (16).

2. Appareil selon la revendication 1, ledit premier creux (21) étant disposé immédiatement en amont de la lisière (15).

3. Tige selon la revendication 1 ou 2, ladite partie (19) de formation de boucles comportant une première surface de guidage (24) qui s'étend le long dudit bord longitudinal supérieur (22) de ladite tige (10) oblongue et inclinée vers le bas en direction de la lisière (15), ladite partie (20) de fixation de boucles comportant une seconde surface de guidage (25) s'étendant de façon contiguë à partir de ladite première surface de guidage (24) et étant inclinée vers le haut en s'écartant de la lisière (15) lesdites première et seconde surfaces de guidage (24, 25) délimitant entre elles ledit premier creux (21).

4. Tige selon la revendication 3, ladite première surface de guidage (24) s'étendant sensiblement sur toute la longueur de ladite partie (19) de formation de boucle.

5. Tige selon la revendication 3 ou 4, ladite première surface de guidage (24) présentant un angle d'inclinaison inférieur à celui de ladite seconde surface de guidage (25).

6. Tige selon l'une des revendications 1 à 5, ladite tige allongée (10) présentant une extrémité apte à être reliée au métier (11), ladite partie (20) de fixation de boucles s'étendant entre ledit premier creux (21) et l'autre extrémité (23) de ladite tige allongée (10), ledit second creux (26) étant disposé plus près de l'autre extrémité (23) de ladite tige allongée (10) que ledit premier creux (21).