(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 504 899 A1**

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **92104815.3**

(51) Int. Cl.5: **D03D 47/23**

(22) Date of filing: **19.03.92**

PRIORITY 220391 IT MI91000785.

(30) Priority: **22.03.91**

(43) Date of publication of application:
23.09.92 Bulletin 92/39

(84) Designated Contracting States:
AT BE CH DE DK ES FR GB GR IT LI LU MC NL PT SE

(71) Applicant: **SOMET SOCIETA' MECCANICA TESSILE S.p.A.**
Provinciale Valseriana Km. 23
I-24020 Colzate-Bergamo(IT)

(72) Inventor: **Viscardi, Ettore**
Via G. Rossini, 12
I-24027 Nembro, Bergamo(IT)

(74) Representative: **Faggioni, Marco, Dr. Ing. et al**
Fumero Studio Consulenza Brevetti
Franz-Joseph-Strasse 38
W-8000 München 40(DE)

(54) Drawing gripper for shuttleless looms, particularly for weaving synthetic yarn.

(57) A drawing gripper for shuttleless looms, particularly designed to safely retain synthetic yarns and particularly parallel-filament o flat-section yarns, having a poor delamination resistance along the axis of the yarn.

The clamping means of the gripper comprises, on one hand, a fixed gripping hook (2), having a first metallic clamping surface (3) and, on the other hand, a wedge fixedly connected to a movable slider (4) and having a second metallic clamping surface (8), consisting of a flexible metallic lamina (5), whose flat clamping zone (8) bears onto an elastic pad (6).

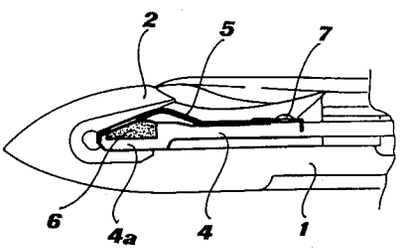

FIG.1

EP 0 504 899 A1

The present invention concerns a weft yarn drawing gripper for shuttleless looms. As known, the "grippers" are members of shuttleless looms by means of which the weft yarns are picked up at one side of the loom and carried through the warp shed to the opposite side of the loom. The carrying gripper picks up the weft yarn from a weft feeding device at one end of the shed and carries it up to the middle of the shed, while the drawing gripper receives the weft yarn from the carrying gripper, at the middle of the shed, and draws it to the opposite end of the shed.

There are known to be many types of grippers performing this function, all of which have undergone successive improvements differing one from the other as far as even slight constructive details and yet all aiming to improve, on one hand, the working life of the gripper, and on the other hand, yarn gripping and releasing. In fact, the transfer of weft yarn from the carrying gripper to the drawing gripper is one of the most delicate steps in the operation of the looms of this kind: at this stage either the impairing (or complete breakage) of the yarn or the unsuccessfull transfer of the weft yarn, which is not picked up from the carrying gripper by the drawing gripper, may take place.

In an attempt to overcome the above mentioned drawbacks, grippers have been proposed in the art, whose clamping member consists of, rather than a stiff member, a flexible elastic member.

EP-137 377 discloses, e.g., grippers for shuttleless looms wherein the clamping member consists of a flexible metallic lamina fixed at one end thereof to the gripper and freely oscillating at the other end. The same clamping member is also illustrated in EP-164 628.

EP-207 533 discloses grippers for shuttleless looms wherein the clamping member consists of a wire spring fixed at both ends to the gripper, devices being also provided for controlling the tension thereof.

In the various solutions proposed in the prior art for the grippers with clamping member consisting of a flexible elastic member - such as those above specifically described - said member alone exerts the gripping action on the yarn, cooperating with an opposed rigid wall of the gripper.

In order to ensure a sufficiently strong gripping action, said flexible element must therefore be "stiff" enough so as to exert a stress, due to its deformation, sufficient for safely retaining the weft yarn. Moreover, it should not undergo an excessive deformation during the closing of the gripper, so as to avoid bearing on the rigid body of the gripper from which it projects, because it would of course loose, in that event, any kind of flexibility, to produce again the same operation mode of the previously known rigid grippers.

The above shown grippers have overcome the mentioned drawbacks for several kinds of yarns. However, they give not yet satisfactory results in the case of parallel-filament or flat-section synthetic yarns, having a poor delamination resistance along the axis of the yarn, such as those often used in the manufacturing of mattress fabrics, propylene bottoms for moquettes, as well as for hante couture articles.

With this kind of yarns, the action of the flexible elastic gripping elements of the known type is in fact still too "stiff" for safely retaining the whole yarn section. Thus, it still occurs with a certain frequency that the gripper carries to the opposite side of the fabric being woven only a few filaments of parallel-filament yarns, or a longitudinal portion of the flat-section yarn, which breaks along its axis.

The object of the present invention is hence to provide a drawing gripper which eliminates the last aforesaid drawbacks, so as to ensure a perfect retaining of the weft yarn over the whole clamping surface, even in the case of a synthetic yarn of the aforementioned kind. This object is achieved by means of a drawing gripper for shuttleless looms - of the type comprising, on one hand, a fixed gripping hook, having a first metallic clamping surface and, on the other hand, a wedge fixedly connected to a movable slider and having a second metallic clamping surface, this latter being apt to cooperate with said first surface in order to clamp and retain the weft yarn - characterized in that, one of said clamping surfaces consists of a flexible metallic lamina whose clamping zone bears onto an elastic pad.

Further characteristics and advantages of the drawing gripper according to the present invention will anyhow be more evident from the following detailed description of a preferred embodiment thereof, given by way of example and illustrated on the accompanying drawings, in which:

fig. 1 is a side view of the gripper according to the invention;

fig. 2 is a top view of the same; and

figs. 3 and 4 show, in enlarged-scale views similar to fig. 1, the gripping end of the gripper, in yarn retaining and releasing position, respectively.

The drawing gripper consists, in a known way, of an elongated body 1 (not wholly shown in the drawings), which terminates with a sharpened end, shaped as a gripping hook 2, having a first metallic clamping surface. A slider 4 is mounted on the body 1, sliding along the longitudinal axis of the gripper and bearing on its end 4a a wedge provided with a second clamping surface. This latter being apt to cooperate with the first one clamping surface in order to clamp the weft yarn (not shown), to allow its drawing.

According to the invention, the wedge forming said second clamping surface consists of a metallic lamina 5 and a pad 6 onto which said lamina bears. The lamina 5 - one end 5a thereof is fixed, to the slider 4, e.g. through a screw 7 or the like - has a undulated configuration, comprising however a flat part 8, which is apt to contact the clamping surface 3, fitting therewith. To this purpose, the lamina 5 is provided with high elasticity and flexibility, to the extent that it is not able to clamp the weft yarn by itself, i.e. without the bearing action provided by the elastic pad 6.

The pad 6 is made of a gum-like material, such as "Vulcollan" or the like, and has a configuration comprising, as above mantioned, a flat part apt to support the flat part 8 of the lamina 5. The material forming the pad 6 is sufficiently yielding to follow the movement of the lamina 5, without however allowing an excessive shape variation thereof. In the bearing zone, the lamina 5 may be provided with a window or slit 9, apt to further increase the flexibility of the lamina.

The other end 5b of the lamina 5, opposed to the fixed end 5a, is bent at right angle and is guided, freely sliding, within a guide hole provided at the end 4a of the slider 4. In such a way, said end 5b, together with the flat part 8, are elastically yielding in a direction perpendicular to the clamping surfaces 3 and 8.

Morevore, the undulated shape of the lamina 5 is such as to form, in correspondence of the tip 2a of the hook 2, a lead-in zone 10 apt to allow an easy insertion of the weft yarn between the clamping surfaces.

The wedge of the slider 4 according to the present invention, comprising the pad 6 and the lamina 5 has therefore a large clamping surface - flexible and yielding longitudinally as well as perpendicularly to the axis of the gripper - apt to ensure a perfect retaining action of the yarn against the clamping surface 3 of the hook. The gripper of the present invention is then apt to ensure, on one hand, an easier and surer gripping of the weft yarn through the lead-in zone 10 and, on the other hand, a perfect retaining action of said weft yarn between the clamping surfaces 3 and 8. These successfull results are reached even when the above mentioned parallel-filament yarn or flat-section synthetic yarn having a poor delamination resistance are used, so as to fully achieve the object of the invention.

The invention has been disclosed with reference to a preferred embodiment thereof, but it should be understood that it is not in any way limited thereto. The scope of the invention comprises therefore possible variations and improvements, all within reach of a technician skilled in the art and all thus falling within the scope of the invention, as it is defined by the accompanying claims.

Claims

1. Drawing gripper for shuttleless looms - of the type comprising, on one hand, a fixed gripper hook (2) having a first metallic clamping surface (3) and, on the other hand, a wedge fixedly connected to a movable slider and having a second metallic clamping surface (8), this latter being apt to cooperate with said first surface in order to clamp and retain the weft yarn - characterized in that, one of said clamping surfaces consists of a flexible metallic lamina (5) whose clamping zone (8) bears onto an elastic pad (6).

2. Drawing gripper as in claim 1), wherein said metallic lamina (5) is mounted springing in a direction substantially perpendicular to the clamping surfaces (3, 8).

3. Drawing gripper as in claim 1) or 2), wherein said metallic iamina (5) has lightening window or slit (9) in correspondence of its clamping zone (8).

4. Drawing gripper as in claim 1), wherein said elastic pad (6) is a rubber pad.

5. Drawing gripper as in anyone of the previous claims, wherein said metallic lamina (5) forms said second clamping surface (8).

6. Drawing gripper as in claim 5), wherein said metallic lamina (5) has a general undulated configuration comprising at least one flat part (8), which forms said second clamping surface (8), radiused to at least one curved part which delimits, with said fixed hook (2), a lead-in zone (10) for yarn gripping.

7. Drawing gripper as in claim 6), wherein said metallic lamina (5) is fixed by one end (5a) to the slider (4) carrying the clamping wedge.

8. Drawing gripper as in claim 7), wherein the other end (5b) of said melllic lamina (5) freely oscillates and is guided into a hole (4a) at the end of the slider carrying the clamping wedge.

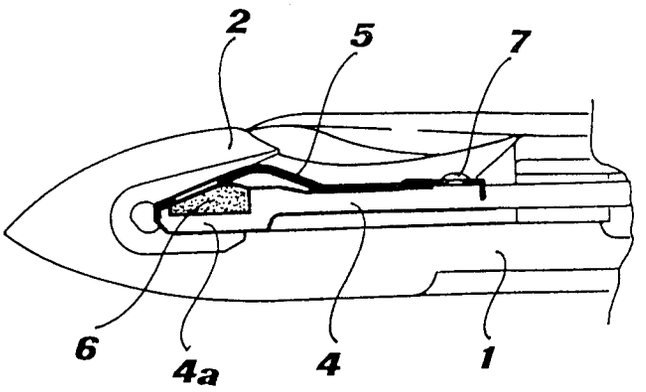

FIG. 1

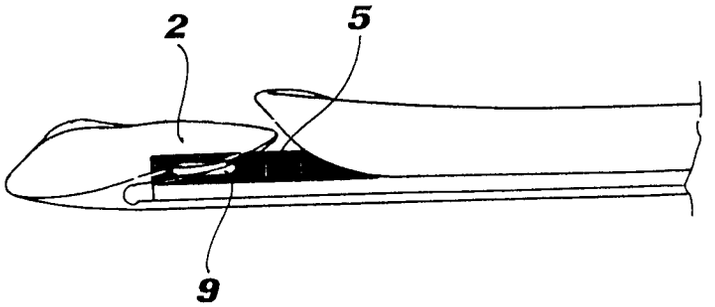

FIG. 2

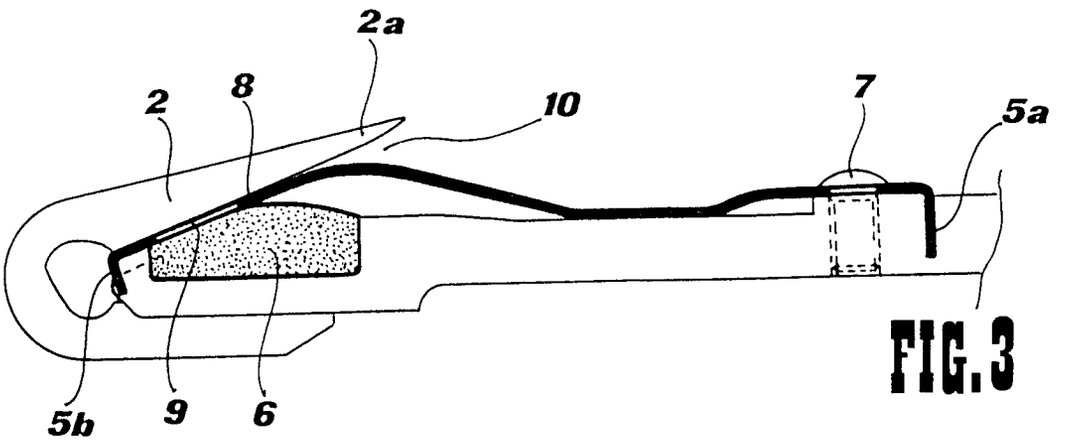

FIG. 3

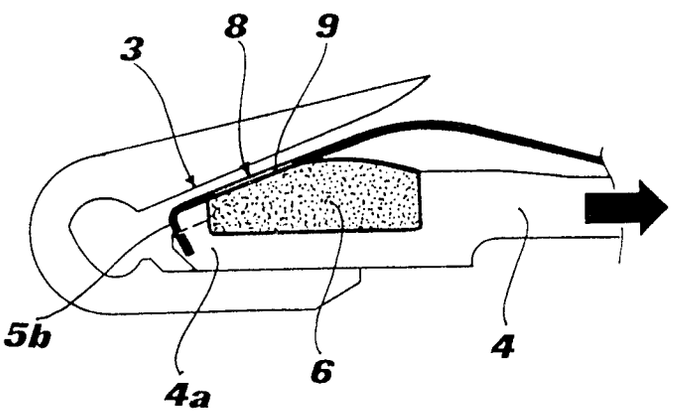

FIG. 4

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 92 10 4815

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X,D	EP-A-0 137 377 (VAMATEX) * page 3, line 12 - line 24; figures 5-9 *	1,5,7	D03D47/23
A		2,6,8	
X,D	EP-A-0 164 628 (VAMATEX) * figures 3,4,8 *	1,5,7	
A		2,6,8	
A	GB-A-2 034 769 (SAURER) * page 1, line 97 - line 114; figure 1 *	4	
A,D	EP-A-0 207 533 (PICANOL)		

TECHNICAL FIELDS SEARCHED (Int. Cl.5)
D03D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	30 JUNE 1992	BOUTELEGIER C.H.H.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P0401)