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(54) **Gripper strap for weaving looms**  
Greiferband für Webmaschinen  
Ruban à griffes pour métiers à tisser

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(73) Proprietor: **NUOVA VAMATEX S.p.A.**  
**24020 Villa di Serio (Bergamo) (IT)**

(72) Inventors:  
• **Casarotto, Guiseppe**  
**I-24100 Bergamo (IT)**

• **Terzi, Palmiro**  
**I-24027 Nembro Bergamo (IT)**

(74) Representative: **Vatti, Paolo, Dr. Ing. et al**  
**Fumero-Studio Consulenza Brevetti**  
**Franz-Joseph-Strasse 38**  
**80801 München (DE)**

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## Description

**[0001]** The present invention concerne a gripper strap, of the type used to move the weft feeding grippers along the shed of shuttleless looms.

**[0002]** It is known to the skilled in the art that the drawback present in gripper straps of looms is that the end part of said straps, carrying the gripper, is subject to considerable wear. In fact, the transverse inertial forces due to the misaligned position of the gripper barycenter give rise to a high-friction contact between the end part of the strap, where the gripper is mounted, and the elements which guide the strap along the shed on the loom sley. On the other hand, such elements form a discontinuous guide and develop an abrasive action on said strap end. The main problem is to thus limit the wear of the strap end, so as to avoid the sure consequence of an irregular working, after a short period of use - due to excessive slack between the strap and the guide elements - and, therefore, the frequent replacement of the whole strap.

**[0003]** An attempt has already been made to solve this problem by interposing a wearproof element between the end of the strap and the guide elements, that is, by applying a stiffening and/or guiding plate or head at the end of the strap carrying the gripper, as in BE-A-681542 or in DE-A-2400166 wherein said head or plate are firmly fixed to the strap end. When adopting this principle, the strap is formed in a single piece, with a very stiff end allowing to limit deformation and distribute the load.

**[0004]** A substantially similar attempt is reported in FR-A-2270356 where a plate is fixed to the tapered end of the strap, considerably projecting with respect to the same.

**[0005]** However this solution is, on one hand, not suitable for every type of loom and, on the other hand, it is not apt to guarantee satisfactory results when the strap guiding elements are not perfectly aligned, since a misaligned element produces impacts and bounces of the strap end.

**[0006]** It should also be noted that the construction-adopted so far - of gripper straps formed in one piece with their end part (possibly stiffened) carrying the gripper, has the drawback of not allowing a rational choice of the materials used to produce either said end part, or the remaining part of the strap: thus, for example, the technology based on the use of a flexible composite material, quite suitable for producing most of the gripper strap, often does not give satisfactory results for what concerns its end portion carrying the gripper, which portion is subject - as seen - to severe wear in contact with the guide elements.

**[0007]** In order to solve the aforementioned problem, the present invention supplies a gripper strap according to the claim.

**[0008]** Said end element of the strap according to the invention is engaged with the rest of the strap by a free

fit and is removably fixed thereto by way of the gripper and together therewith.

**[0009]** The invention is now described in further detail, by more way of example. With reference to a preferred embodiment thereof, illustrated on the accompanying drawings, in which:

Fig. 1 is a view of the strap in two parts, according to the invention, with the strap end - corresponding to the part carrying the gripper - shown separate from the rest of the strap;

Fig. 2 is a view of the strap of fig. 1, but with said end part engaged with the rest of the strap.

Figs. 3 to 5 are three cross-section views of the strap, along the lines III-III, IV-IV and V-V of Fig. 2; Fig. 6 shows the strap of the invention, illustrated in figs. 1 to 5, with a weft gripper mounted thereon; and Fig. 7 is a cross-section view of the strap, on a very enlarged scale, along the line VII-VII of fig. 6.

**[0010]** As can be seen from Fig. 1, the end 1 of the strap according to the invention - shaped so as to allow mounting thereon the front part of a weft feeding gripper - is separate from the rest of the strap 2.

**[0011]** Said strap end 1 is provided with a seat 3, into which is meant to fit the profiled end section 4 of the rest of the strap 2. As clearly shown in figs. 1 and 2, said section 4 has a shape mating with that of the seat 3, with corresponding semicircular ends 4A and 3A respectively.

**[0012]** The strap end 1 is made of stiff and highly wearproof material and is thus apt to move efficiently and for a long time, without creating any problems, into the elements guiding it along the shed. Viceversa, the remaining part of the strap 2 is made of highly flexible material, allowing it to be deformed to the extent required for its winding around the guide wheels provided for its reciprocating motion.

**[0013]** A plurality of screws 7 (figs. 6 and 7) are provided to fix the strap end 1 to the rest of the strap 2, when these two parts are reciprocally engaged by a free fit as shown in fig. 2, said screws crossing holes and/or corresponding notches, 5 and 6 respectively, formed in the two strap parts (fig. 1). The illustrated embodiment provides for through holes and notches 5 and 6, and the screws 7 screw simultaneously into threaded seats of the gripper 8, whereby the fixing between the two freely engaged strap parts 1 and 2 is obtained by way of the gripper itself. As clearly shown in fig. 3, the holes 5 of the strap end 1 are also provided with countersinks 9 to house the heads of the screws 7.

**[0014]** It is evident that the strap end 1 can be easily replaced when starting to get worn: in this case, it is sufficient to loosen the screws 7, to remove the gripper 8 from the strap parts 1, 2, and to then connect again the gripper to the strap formed by a new end part 1 and by the rest of the strap 2 already in use. The operation is simple and very quick, and it allows to dispose, at a re-

duced cost, of a practically new strap.

**[0015]** The life of a gripper strap according to the invention is in any case longer than that of the conventional straps, even without replacing the strap end 1, due to the advantages - as far as flexibility and wear - guaranteed by the rational choice of the materials used for the two parts 1 and 2 forming the strap.

**[0016]** In the first case, by fixing of the gripper, a fixed joint is established between the two parts 1 and 2, and the strap practically behaves as if it were formed in one piece, with the stiff end - carrying the gripper - as long as possible (up to the flexible portion winding around the nearwheel for its motion).

**[0017]** The possibility, offered by the invention, to die-join and easily replace the strap end - corresponding to the part carrying the gripper - from the rest of the strap itself, as specified heretofore, allows:

- to limit the number of replacements of the whole strap by interchanging once, or more frequently, only the end part thereof,
- to operate an optimal choice of the material and constructive technology adopted for the two distinct parts of the strap;
- to distinguish the guiding function of the gripper carrying end, from the thrusting and drawing function of the rest of the strap (when an articulated joint is provided to connect the end part to the rest of the strap).

**[0018]** It should be noted furthermore that the engagement between the two strap parts 1 and 2 takes place in correspondence of an area protected by the gripper, whereby the yarns of the warp chain are not apt to interfere therewith.

## Claims

1. Gripper strap to move the weft feeding grippers (8) along the shed of shuttleless looms, formed in two distinct parts (1, 2), the end part (1) of said strap where the gripper (8) is mounted consisting of an interchangeable element, separate and made of a different material from the rest (2) of the strap and removably connected thereto, said end part (1) of the strap being provided with a profiled seat (3), into which fits a profiled end section (4) of the rest of the strap (2), said end section (4) of the strap and the seat (3) of the strap mating one another, and said end part (1) of the strap and the rest (2) of the strap being removably fixed to each other by means of the gripper (8) and to the gripper itself, wherein said end/part (1) of the strap is engaged with the rest of the strap by a free fit, characterised in that said profiled seat (3) and said profiled end section (4) have semicircular ends (3A and 4A, respectively), that said end part (1) is fixed to the rest of the strap (2)

by a plurality of screws (7) each crossing holes and/or corresponding notches (5, 6) formed in the two strap parts and simultaneously being screwed into threaded seats of the gripper (8) whereby the fixing between the two freely engaged strap parts (1, 2) is obtained by way of the gripper itself; and that the two strap parts (1, 2) are engaged with each other in an area protected by the gripper.

## Patentansprüche

1. Greiferband zum Bewegen von Schußfadenzuführgreifern (8) entlang des Fachs von schützenlosen Webmaschinen, das durch zwei gesonderte Teile (1, 2) gebildet ist, wobei das Endteil (1) des Bandes dort, wo der Greifer (8) montiert ist, aus einem austauschbaren Element besteht, das von dem übrigen Teil (2) des Bandes gesondert ist, aus einem anderen Material besteht und lösbar mit diesem verbunden ist, wobei das Endteil (1) des Bandes mit einem profilierten Sitz (3) versehen ist, in den ein profilierter Endabschnitt (4) des übrigen Teils des Bandes (2) passt, der Endabschnitt (4) des Bandes und der Sitz (3) des Bandes einander entsprechen und das Endteil (1) des Bandes und der übrige Teil (2) des Bandes lösbar miteinander mittels des Greifers (8) und mit dem Greifer selbst verbunden sind, wobei das Endteil (1) des Bandes mit dem übrigen Teil mittels einer freien Passung in Eingriff ist, dadurch gekennzeichnet, daß der profilierte Sitz (3) und der profilierte Endabschnitt (4) halbkreisförmige Enden (3A bzw. 4A) haben, daß das Endteil (1) mit dem übrigen Teil des Bandes (2) mittels einer Mehrzahl von Schrauben (7) befestigt ist, die Bohrungen und/oder entsprechende Kerben (5, 6), die in den beiden Bandteilen gebildet sind und gleichzeitig in mit einem Gewinde versehene Sitze des Greifers des Greifers (8) eingeschraubt sind, quer, wobei die Befestigung zwischen den beiden in freiem Eingriff stehenden Bandteilen (1, 2) mittels des Greifers selbst bewirkt wird, und daß die beiden Bandteile (1, 2) miteinander in einem Bereich in Eingriff sind, der von dem Greifer geschützt wird.

## Revendications

1. Ruban à griffes pour déplacer les griffes (8) d'avance de trame le long de la foule de métiers sans navette, formé de deux parties distinctes (1, 2), la partie extrême (1) dudit ruban où la griffe (8) est montée consistant en un élément interchangeable, séparé et formé d'une matière différente de la partie restante (2) du ruban et relié à celle-ci de façon amovible, ladite partie extrême (1) du ruban étant pourvue d'un siège profilé (3) dans lequel s'ajuste une section extrême profilée (4) de la partie restan-

te du ruban (2), ladite section extrême (4) du ruban et le siège (3) du ruban s'accouplant l'un à l'autre, et ladite partie extrême (1) du ruban et la partie restante (2) du ruban étant fixées de façon amovible l'une à l'autre au moyen de la griffe (8) et à la griffe elle-même, ladite partie extrême (1) du ruban étant en prise avec la partie restante du ruban par un ajustement libre, caractérisé en ce que ledit siège profilé (3) et ladite section extrême profilée (4) ont des extrémités semi-circulaires (3A et 4A, respectivement), ladite partie extrême (1) est fixée à la partie restante du ruban (2) par plusieurs vis (7) croisant des trous et/ou des encoches correspondantes (5, 6) formées dans les deux parties du ruban et vissées simultanément dans des sièges filetés de la griffe (8), grâce à quoi la fixation entre les deux parties du ruban (1, 2) en prise libre est obtenue au moyen de la griffe elle-même, et en ce que les deux parties (1, 2) du ruban sont en prise l'une avec l'autre dans une zone protégée par la griffe.

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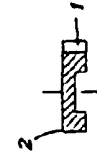
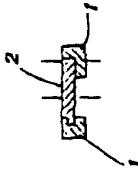
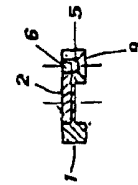
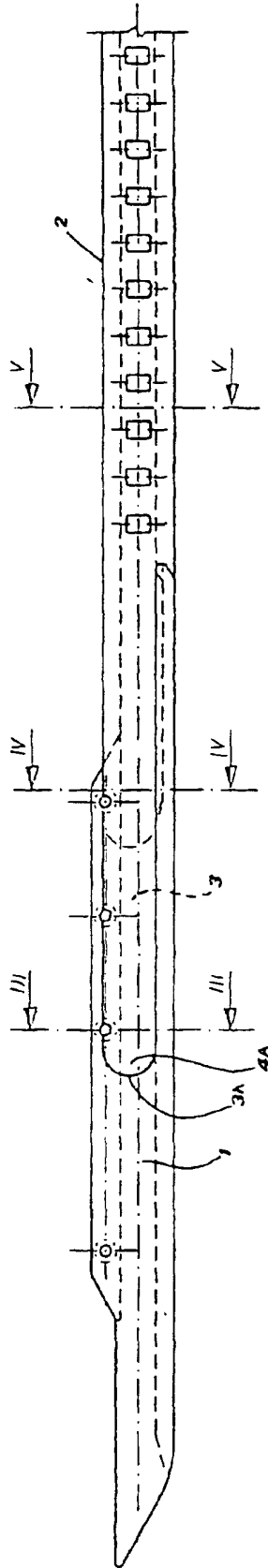
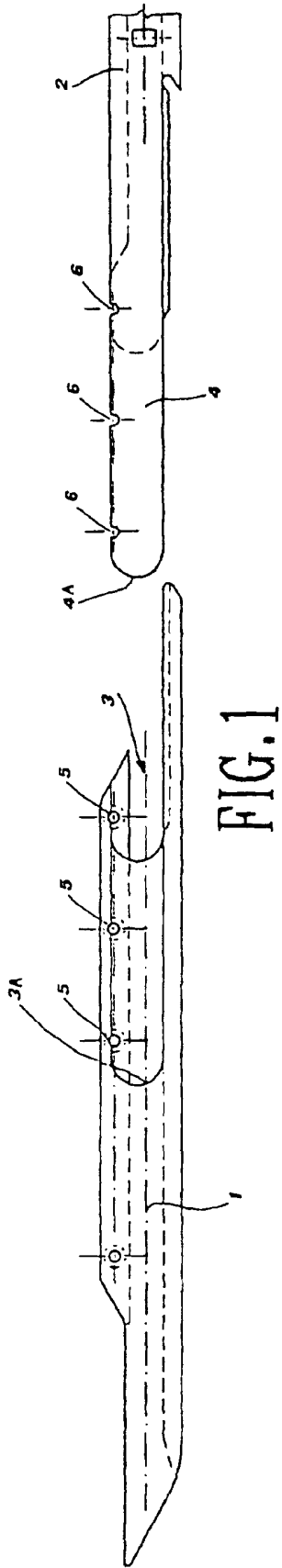
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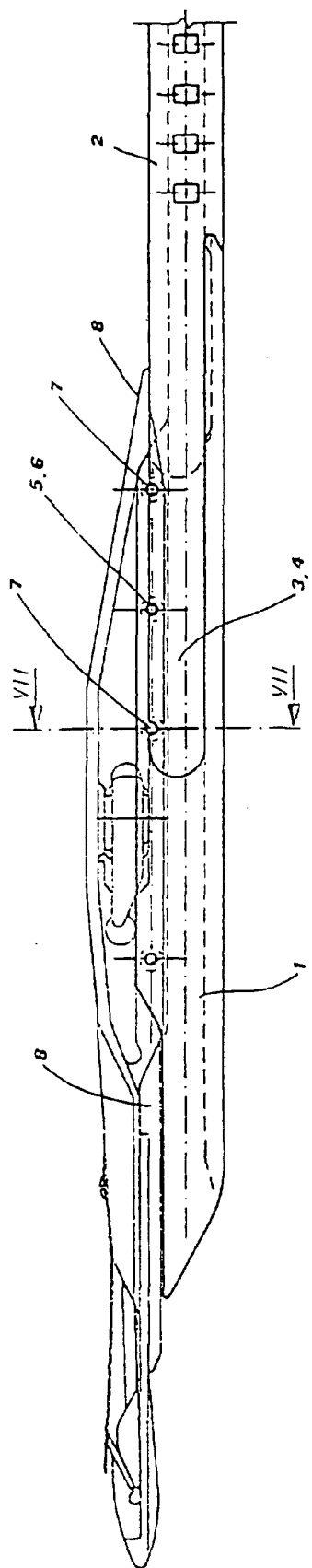


FIG. 6

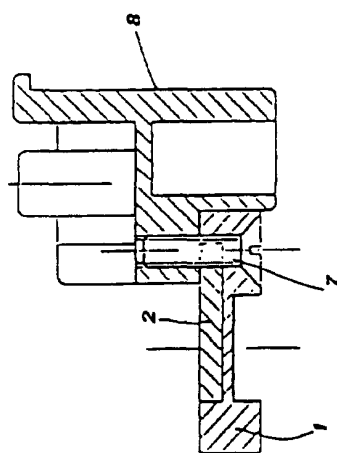


FIG. 7