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(54) Support and guide element for guide tracks of gripper straps in a gripper loom

(57) Support and guide element to form guide tracks for gripper straps in a gripper loom, of the type comprising at least a horizontal sliding surface for the strap, projecting like a bracket from the body of the support and guide element (G), said sliding surface for the strap comprising a central depression (1).

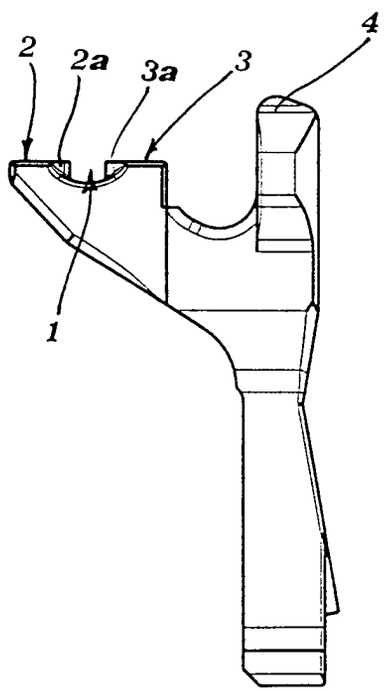

FIG.3

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Description

[0001] The present invention concerns a support and guide element to form guide tracks for gripper straps in a gripper loom.

[0002] Strap guide tracks of this type are known, in the sector, as "floating" tracks, as opposed to the conventional tracks wherein the strap bears with its bottom surface onto a suitable sliding surface formed on the sley, rubbing onto the lower warp yarns. In the floating tracks the strap is instead supported, along its path, by a plurality of support and guide elements positioned at intervals along the track and fixed to the sley, so that the strap moves in an intermediate position of the loom shed, without thereby interfering either with the lower warp yarns or with the upper warp yarns. A strap guide track of this type is known, for example, from EP-A-275.479.

[0003] More recently, the Applicant has proposed - in the EP-A-709.505, the contents of which are incorporated herein by way of reference - a new type of floating track, wherein the support and guide elements of the strap, instead of clamping the gripper strap on both sides - as in prior art - are shaped as simple brackets and are of two different types, namely an upturned bracket (Gi) and a downturned bracket (Gs), alternately positioned along the track, as illustrated in fig. 1 of the drawings. This new type of track has provided a high number of advantages in respect of the previous tracks, thanks to the "open" configuration of the bracket type support and guide elements which, on one hand, leads to a considerably reduced number of warp yarn breakages determined by the yarn getting caught into the support and guide elements and, on the other hand, allows to make the surfaces of the support and guide elements, onto which slides the strap, with characteristics of perfect flatness and smoothness, thereby considerably reducing the phenomena of vibration and wear of the strap. Furthermore, the lack of a guiding support on the lateral surface of the strap prevents any possible roughening of its edges and, consequently, any possible negative effects due to pulling of the warp yarns sideways during motion of the strap.

[0004] In spite of all the aforecited advantages, the EP-A-709.505 has still not fully solved the problems determined by the presence in the shed of deeply angled warp yarns, such as can be found either at the ends of the shed - where the fabric gets laterally deformed due to the tensioning action of the templates - or even inside the shed, due to some irregularity which may have occurred during weft yarn insertion. In fact, in the presence of deeply angled warp yarns, it may happen that, during opening of the shed, such warp yarns fail to be evenly parted from the tip of the support and guide elements whereby, instead of being tidily arranged along the sides thereof, they position themselves across the bracket surface of said support and guide elements, that is, onto the sliding surface of the strap. In this case, the sliding of the strap onto the support and guide elements may thus determine the breakage of the warp yarn, especially when this latter is positioned upstream of the tip of said elements in respect of the strap moving forward direction; in fact, in this case, the tip of the support and guide element imparts a pulling action on the warp yarn, preventing it from freely moving under the action of the advancing strap.

[0005] The object of the present invention is to thus supply a support and guide element to form guide tracks for gripper straps in looms which, while providing all the advantages of the aforedescribed support and guide elements of prior art, also allows to eliminate or anyhow considerably reduce the drawback of the frequent warp yarn breakages in the presence of deeply angled warp yarns.

[0006] According to the present invention, said object is reached by means of a support and guide element t'o form guide tracks for gripper straps in a gripper loom, of the type comprising at least a horizontal sliding surface for the strap, projecting like a bracket from the body of the support and guide element, characterized in that said horizontal sliding surface for the strap comprises a central depression.

[0007] The invention will now be described in further detail, with reference to the accompanying drawings, in which:

[0008] Fig. 1 is an axonometric view, with an enlarged detail, showing a part of a loom weaving zone incorporating a known-type floating guide for the gripper straps;

[0009] Fig. 2 is an axonometric view of a lower support and guide element, shaped as an upturned bracket, according to a first embodiment of the present invention;

[0010] Fig. 3 is a side elevation of the support and guide element shown in fig. 2; Fig. 4 is a plan view of the support and guide element of fig. 2;

[0011] Fig. 5 shows three views - an axonometric view, a side elevation and a plan view, respectively - similar to those of figs. 2, 3 and 4, of a different embodiment of the lower support and guide element according to the present invention; and Fig. 6 shows three views, similar to those of fig. 5, of an upper support and guide element according to the embodiment of the invention illustrated in fig. 5.

[0012] The assembly view of fig. 1 represents a part of the loom weaving zone incorporating a known-type floating guide, so as to clearly illustrate the arrangement of the single components and, in particular, of the support and guide elements according to the present invention.

[0013] Fig. 1 shows the following loom components: the sley A comprising a rail R to which can be fixed the support and guide elements G; the reed P; the warp yarns O and the shed F formed by such yarns; a gripper S and the respective strap N; and, finally, the fabric T being woven. As said above, the support and guide elements G are of two types and, precisely, the lower support and guide elements Gi shaped as upturned brack-

ets and the upper support and guide elements Gs shaped as downturned brackets, alternately positioned along the rail R.

[0014] Figs. 2 to 4 show a lower support and guide element Gi, formed according to a first embodiment of the invention. As opposed to the known-type support and guide elements, which comprise a continuous bracket horizontal surface to support the strap, the bracket horizontal surface of the support and guide elements according to the present invention comprises a central depression 1, so that the bracket surface, onto which slides the strap N, is reduced to two separate surfaces 2 and 3 between which is interposed said depression 1.

[0015] In this first embodiment of the invention, the depression 1 has a characteristic saddle shape, which is radiused to said horizontal strap sliding surfaces 2 and 3 only sideways in respect of a plane of symmetry of the support and guide element G, whose trace is indicated in fig. 4 by the dashed line a. In fact, in correspondence of a wide central zone of the depression 1, the two sliding surfaces 2 and 3 extend into said depression with arched buttresses 2a and 3a having substantially vertical walls, radiused only at their base to the saddle-shaped surface of the depression 1, as shown in fig, 3.

[0016] This particular configuration of the depression 1 allows, on one hand, to obtain an overall area of the sliding surface of the strap N (sum of the areas of the surfaces 2 and 3) which is sufficiently wide as not to impart any excessive stresses to said strap and, on the other hand, to highly facilitate the shifting of any possible angled warp yarns O into one of the two positions illustrated in figs. 2 and 4, namely inside the depression 1 and away from the surfaces 2 and 3.

[0017] Fig. 5 illustrates a second embodiment of the invention, of simpler construction, wherein the depression 1 has a V-shaped configuration and its radiusing edges to the surfaces 2 and 3 consist of segments perpendicular to the plane of symmetry of the support and guide element G (indicated in fig. 4 by the dashed line a) and do not have the arched buttresses with vertical walls described with reference to the first embodiment of said support and guide element G.

[0018] When, on opening of the shed F, an angled warp yarn O bears onto the bracket surface of the support and guide element G, the bearing contact almost exclusively takes place (considering any possible angles involved) onto the surface 2, namely the surface further from the tip 4 which parts said yarns 0. As the opening of the shed F continues or, at the latest, when the gripper approaches, the special configuration of the aforedescribed support and guide element G causes the warp yarns still bearing onto the surface 2 to be easily and promptly shifted into the depression 1 - as illustrated in figs. 2 and 4 for two warp yarns O having different inclinations - where they are no longer subjected to the rubbing action of the strap.

[0019] The first embodiment of the support and guide elements according to the present invention is particularly meant for yarns which are more likely to get entangled as, for example, in the case of natural yarns. In fact, the presence of the buttress 2a on the surface 2 facilitates the fast shifting of the warp yarn O, while the presence of the buttress 3a on the surface 3 prevents the warp yarns O - in the event they should be pulled by the gripper - from bearing onto said surface 3.

[0020] It is evident that the warp yarns O behave as described heretofore both in correspondence of the lower support and guide elements Gi - shown in figs. 2 to 5 - and in correspondence of the upper support and guide elements Gs. The configurations of the horizontal bracket surface of the upper support and guide elements Gs, and thus of the depression 1 provided therein, are in fact perfectly symmetrical to those described for the two embodiments of the lower bracket elements Gi and, for the sake of simplicity, are illustrated in fig. 6 merely with reference to the second embodiment of the invention.

[0021] The present invention has been described with reference to the two specific embodiments illustrated heretofore, but it is evident that its protection scope is not limited to such embodiments, but should instead comprise any possible variants - for instance in the shape of the depression 1 - within reach of a technician skilled in the art, falling within the definitions contained in the following claims.

Claims

1. Support and guide element to form guide tracks for gripper straps in a gripper loom, of the type comprising at least a horizontal sliding surface for the strap (N), projecting like a bracket from the body of the support and guide element (G), characterized in that said sliding surface for the strap (N) comprises a central depression (1).

2. Support and guide element as in claim 1), wherein said depression (1) forms two separate sliding surfaces (2, 3) for the strap (N) onto said horizontal bracket of the support and guide element (G).

3. Support and guide element as in claim 2), wherein said depression (1) is saddle-shaped.

4. Support and guide element as in claim 3), wherein said saddle-shaped depression (1) is radiused to said strap sliding surfaces (2, 3) only sideways in respect of a plane of symmetry of the support and guide element (G), while, in correspondence of a wide central zone of the depression (1), the two sliding surfaces (2, 3) extend into said depression (1) with arched buttresses (2a, 3a) having substantially vertical walls.

5. Support and guide element as in claim 2), wherein

said depression (1) is V-shaped.

6. Support and guide element as in claim 5), wherein said V-shaped depression (1) is radiused to said strap sliding surfaces (2, 3) along segments perpendicular to a plane of symmetry of the support and guide element (G).

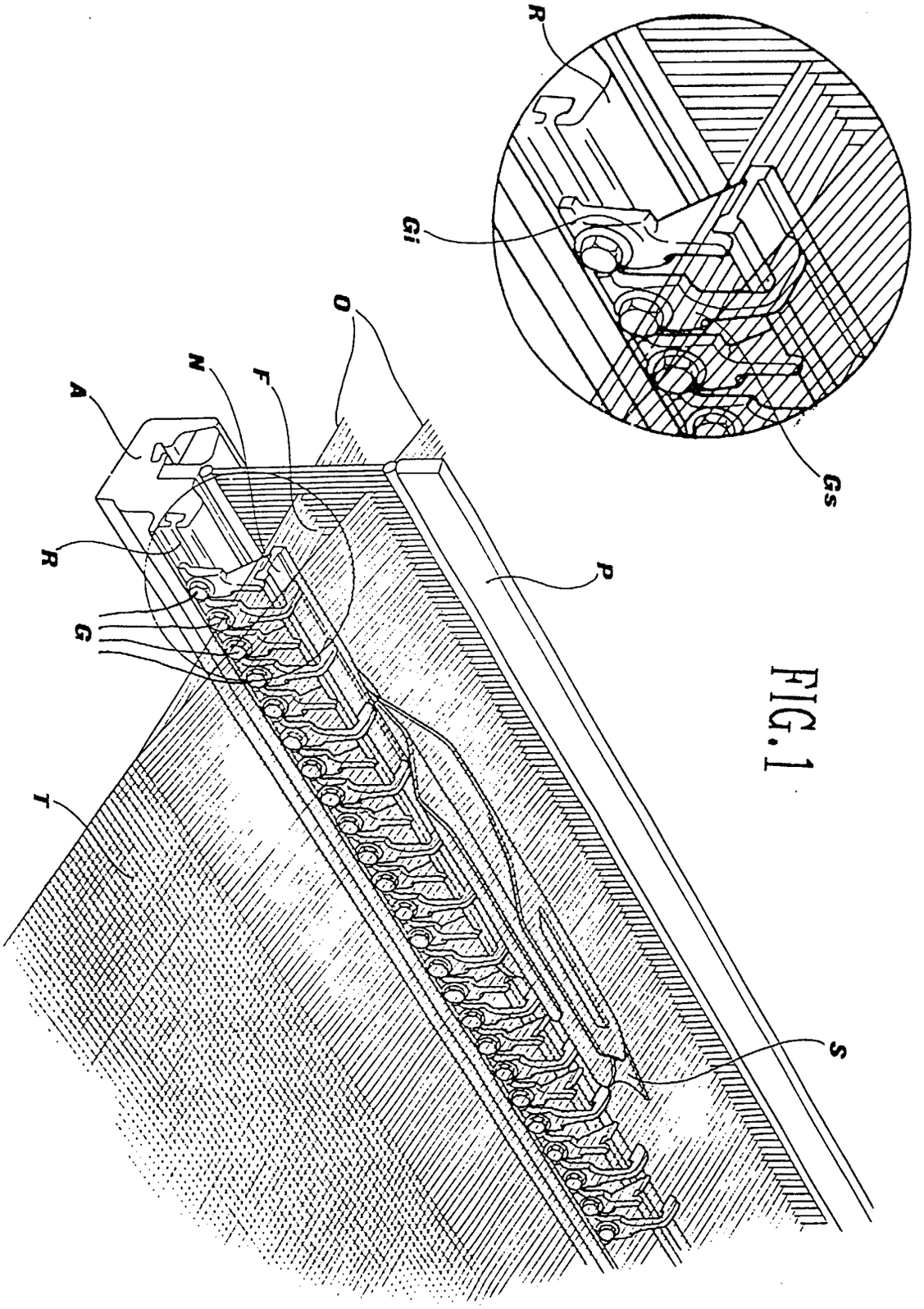


FIG. 1

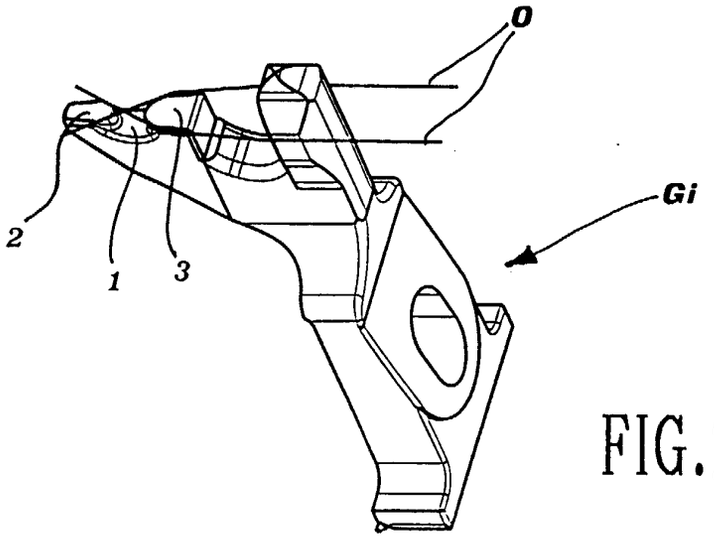


FIG.2

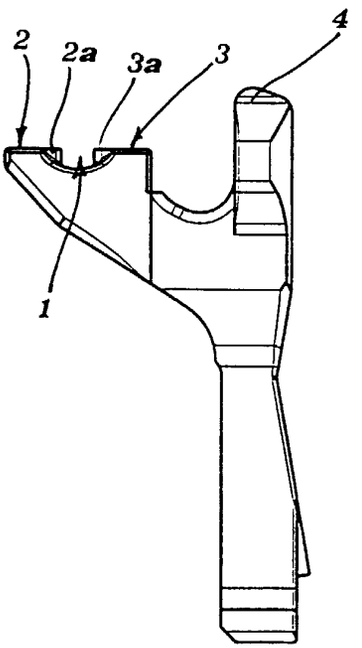


FIG.3

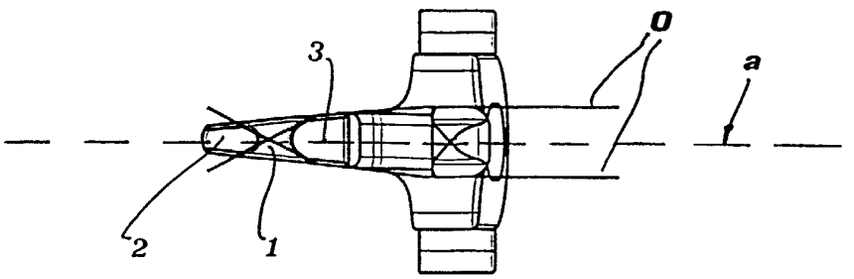
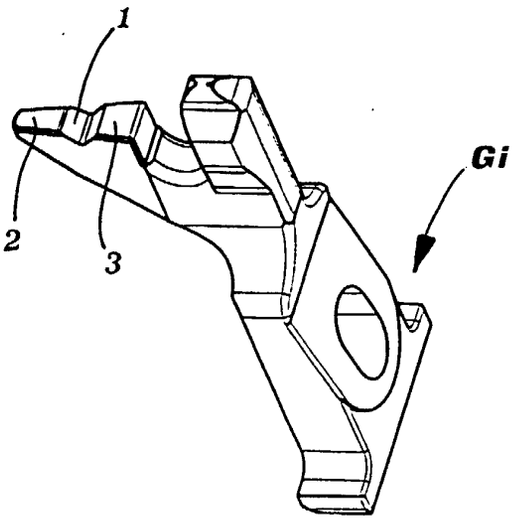
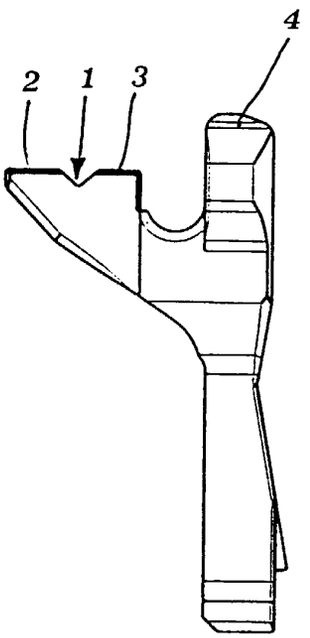


FIG.4





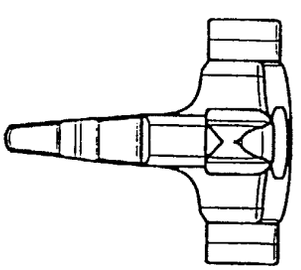


FIG.5

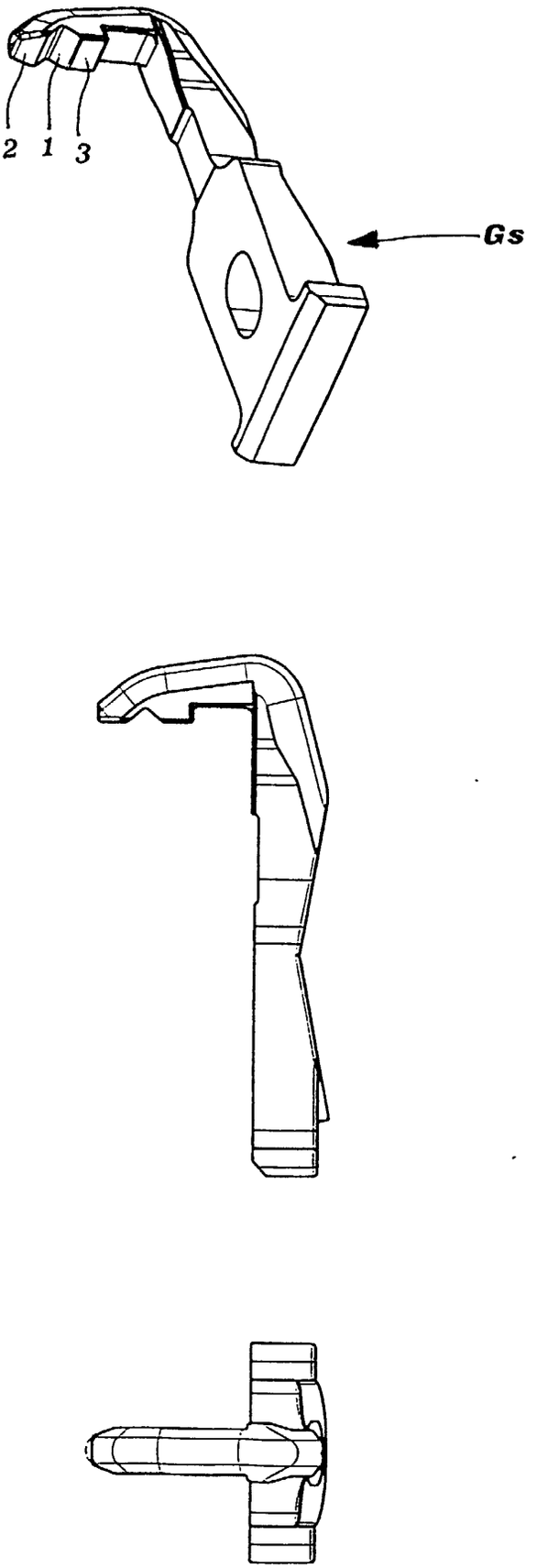


FIG.6

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EUROPEAN SEARCH REPORT

Application Number
EP 99 12 5835

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	24 February 2000	Boutelegier, C

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