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LOOMS

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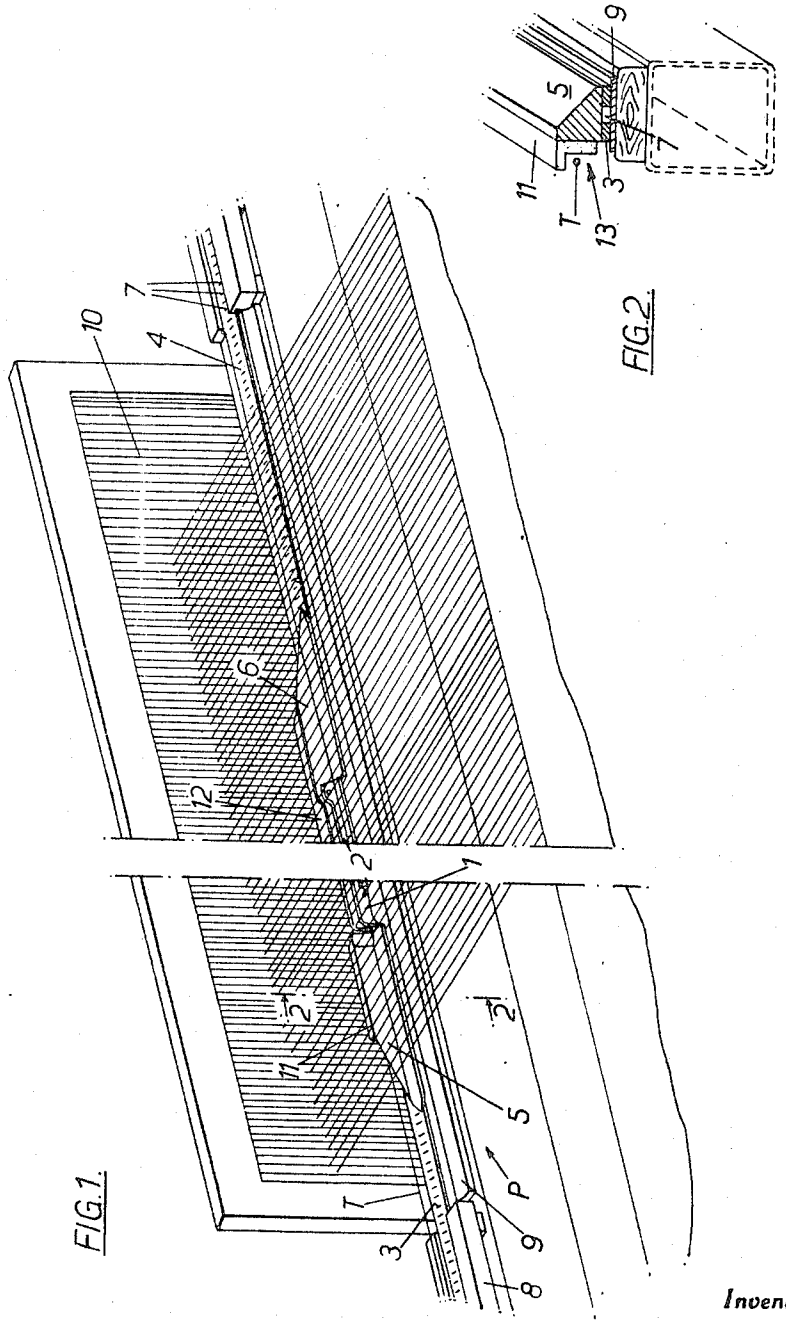


FIG. 2

FIG. 1

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LOOMS

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ABSTRACT OF THE DISCLOSURE

Guiding and advancing system for carrier grippers in looms, comprising bodies bearing and guiding the grippers on the reed of the loom and a flat track running along said reed perpendicularly to same so that the grippers and their advancing straps move freely into the warp shed.

Background of the invention

This invention is related to a guiding and advancing system for carrier grippers provided for weft yarn movement and positioning in continuous weft supply looms.

As it is known in the art, there are looms where the weft yarns are continuously fed by a pair of grippers or similar devices. Said grippers or devices reciprocate approaching each other and moving away one from the other, and starting from opposite ends of the loom warp shed they meet at the shed intermediate portion so to change over the weft yarn.

Said looms grippers are positively guided along their complete run by guiding means fixed to the loom sley, and generally including two opposed pluralities of hook elements positioned at short intervals one from the other. The yarns of the warp chain get engaged on these elements and are compelled to part each other and overlap on said elements during the loom operation. This leads to serious drawbacks because this facilitates breakage of warp yarns next to the hook elements.

Summary of the invention

The most important object of this invention is to eliminate said shortcomings. This is actually obtained by improved gripper advancing and guiding means that allows to avert the need of any guiding means inside the warp shed completely. This improved means represents the object of the invention, which is characterized in that on the sides facing the reed of the grippers there are provided bodies bearing and guiding said grippers on said reed, said grippers bearing freely on a flat track of resilient and/or sliding material, said track running along and being perpendicular to the reed, the grippers being each secured to the end of a notched flexible strap driver in alternative movement by a proper gear wheel and positively guided by C shaped guides up to a point next to the loom shed.

As per another important characteristic of this invention the bearing and guiding body of the feeding gripper—that is the gripper grasping the weft yarn outside the shed and taking it to the other gripper into the intermediate portion of the shed—is provided with a longitudinal housing for the pulled weft yarn.

Brief description of the drawing

The invention will now be better described by way of example with reference to the enclosed drawing in which:

FIG. 1 is a perspective view of the central portion of the improved loom with broken away parts, and

FIG. 2 is a section according to line 2—2 of FIG. 1.

Description of the preferred embodiment

As shown in the drawing, the yarn advancing grippers

1, 2 called feeding gripper and grasping gripper respectively are continuously and mutually advanced one toward the other and alternately one away from the other by means of straps 3, 4. The ends of the straps 3, 4 are fixed to supports 5, 6 of grippers 1, 2 respectively. Said straps are provided lengthwise with notches 7 engaging the corresponding teeth of a driving gear wheel which therefore moves said grippers connected to said straps. Straps 3, 4 are each guided, from an operating device including said gear wheel, by a double C guide 8 up to a point next to the shed and externally of it. Guide 8 rigidly forces a fixed trajectory to the strap sliding in it. As per the invention no positive guide has been provided for straps 3, 4 between the end of the guide 8 and the warp shed P, and inside said shed. That is the grippers and straps movement takes place with grippers and straps sliding freely in the loom portion where said grippers are working. This is possible because provision is made for a track 9 perpendicular, running along and adjacent to the loom reed 10, and because bodies bearing and guiding the grippers on the reed indicated by reference numerals 11, 12 respectively are positioned on the gripper support side facing said reed 10.

Track 9 is made of sliding material that can possibly be of soft type such as proper fabric of the velvet kind, or of stiff type such as polished laminated plastic. Track 9 extends across shed P from which it emerges for a short distance at the ends.

The bearing and guiding body 11 of gripper 1 is shaped like an elongated prismatic element and in its lower portion is provided with a longitudinal housing 13 for the weft yarn T grasped and pulled by the gripper. This way the yarn can flow freely parallel to the reed during the gripper movement without rubbing against it. Housing 13 can be of any shape and will generally be as shown in FIG. 2 of the drawing.

Since there is no need for housing the yarn, the bearing and guiding body 12 of gripper 2 may have a simpler shape. Generally this body will have a simple elongated prismatic shape and if desired will be included in the gripper support 6.

As a rule bodies 11, 12 wear out with a certain rapidity therefore they have to be embodied and mounted so to be easily replaceable for the loom servicing. Because of their function which will be described below, it is convenient for bodies 11, 12 to have low sliding friction. Therefore it is convenient to manufacture them using a self-lubricating plastic material (i.e. the product known with the trademark "Nylon").

On operation the grippers' bottom portion bears freely on track 9 while the side portion bears through bodies 11, 12 against reed 10, said grippers sliding easily on the track 9 surface. This ensures an efficient and dependable guide for the grippers that will travel and meet each other to change over the weft yarns with absolute precision whatever the speed at which they are moving. Straps 3, 4 slide on track 9 pushing or pulling the grippers with no need for a positive guiding device.

The advantages obtained by the invention operating and guiding system are manifold in comparison with the prior art systems.

The removal of the guides inside the shed is the most important advantage of this invention. Said removal practically reduces the stresses and the warp yarns breakage to 20% of the prior art value. This way the loom according to the invention has all the advantages of the normal shuttle loom without the disadvantages.

Furthermore, once these guides have been removed according to the invention, a very important reduction in the friction normally developed in prior art looms be-

cause of straps **3**, **4** movement into the long guides inside the warp shed is ensured.

It is understood that we still have a certain friction between the straps and guide **9** as well as between the grippers, same guide **9** and reed **10** but it can be disregarded if compare to friction developed in prior art looms, because of the particular materials used for manufacturing track **9** and bodies **11**, **12**.

This allows to increase the loom speed greatly and surprisingly (up to 15 to 20% with respect to normal looms), to reduce the maintenance substantially, to increase the straps life even more reducing the wear substantially to zero during their movement along their trajectory outside fixed guide **8**, to avert the loom jammings and stoppings that often occur in looms having positive guiding of the grippers inside the shed. This improves the production continuity.

It is understood that since the invention has been described by way of example, modifications can be made to the various shown embodiments without departing from the scope of this invention, said modifications relating particularly to the shape of the bearing and guiding body of the feeding gripper and to the shape of its weft yarns housing.

I claim:

1. A loom having a lay; a loom reed carried by the lay and extending through a warp in which sheds are formed; a pair of carriers, one of which engages a weft yarn outside the sheds at one end and carries it into an intermediate portion of the sheds and the other of which carriers

receives the weft yarn from said one carrier in said intermediate portion of the sheds and carries it outside the sheds at the other end; flexible straps secured to said carriers for moving said carriers alternately toward and away from each other; C-shaped guide means mounted on the lay for opposite sides of said straps located beyond said one and other end of the sheds outside the sheds; said carriers freely sliding on the lower portions of the warp sheds while bearing laterally on the reed, said carriers having antifriction material on their sides adjacent the loom reed by which they bear and slide with low friction on the loom reed, said low friction material of said one carrier defining a recess extending full length of the portion thereof that bears against the loom reed in the direction of the weft yarn with the weft yarn disposed in said recess between the carrier and the loom reed, thereby to shield the weft yarn against frictional engagements.

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