

United States Patent

Kokkinis

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[54] **GRIPPER HEAD FOR USE IN A SHUTTLELESS LOOM**

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[51] Int. Cl.D03d 47/20

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[56]

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Primary Examiner—Henry S. Jaudon

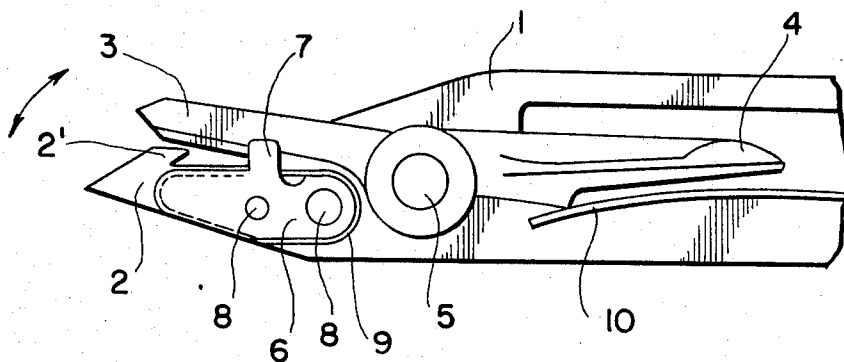
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[57]

ABSTRACT

This invention relates to an improved gripper head for use in a shuttleless loom, the gripper head having a pair of clamping jaws for weft thread and the improvement comprising resilient ring-shaped covering means on one of said jaws.

1 Claims, 6 Drawing Figures



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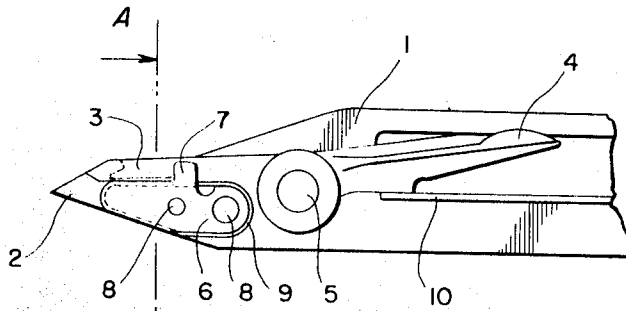


FIG. 1

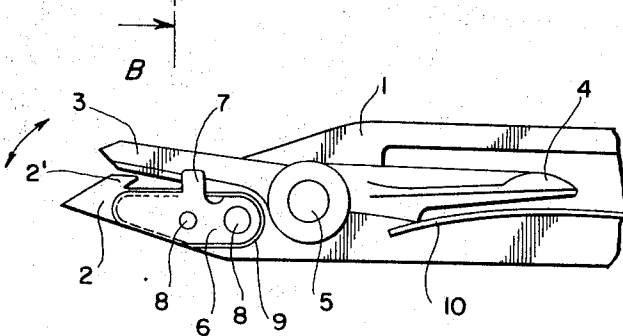


FIG. 2

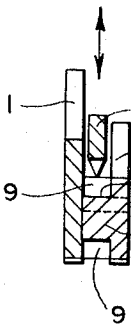


FIG. 3

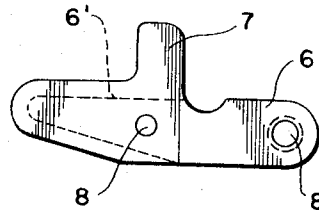


FIG. 4

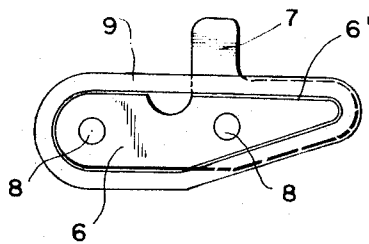


FIG. 5

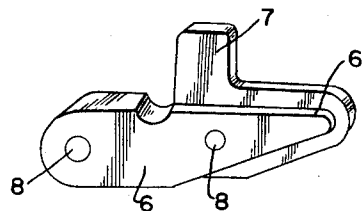


FIG. 6

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GRIPPER HEAD FOR USE IN A SHUTTLELESS LOOM

This invention relates to a weft thread-inserting device for use in shuttleless looms having a pair of gripper rods which are moved in a reciprocating manner and which extend into the shed approximately the same distance.

In this type of weft thread-inserting device, one gripper rod is mounted on each side of the loom, advanced into the shed from the side, and again retracted. Mounted at the front ends of the gripper rods are gripper heads which grip the weft thread to be introduced into the shed and guide the same during the inserting operation. At that time, the weft thread is drawn off of a large supply spool mounted outside of the shed.

Copending application Ser. No. 3,902, filed Jan. 19, 1970, discloses a weft thread-inserting device which permits an improved thread transfer. For this purpose, it is proposed in the copending application to equip the gripper heads mounted at the tips of the gripper rods with clamping levers or jaws for the weft thread, these clamping jaws serving for gripping and releasing the weft thread by means of control levers which are coupled to the main drive of the loom, and which are positively actuated from the outside. The clamping levers are constructed as two-armed levers upon one arm of which the control levers will come to be positioned. The control levers engage, for this purpose, from the outside through the warp threads of the loom. During actuation thereof, the clamping levers move parallel to the wall of the gripper rod head. The clamping portion itself is prismatic in configuration, thereby forming a kind of edge which, in the position of rest thereof, comes to be placed against a counter-element in the form of a prism bed. This prismatic bed is positioned in a lateral plate at the gripper head wall. Whereas a good clamping effect is obtained by this prismatic configuration, the thread is bent at that point, which possibly can be disadvantageous in the case of delicate weft threads. Instead of the prismatic bed, it is also known to dispose a resilient surface under the prismatic edge of the clamping part, for example a plastic portion. This affords an improvement but this solution is not fully satisfactory for other reasons. Since the weft thread is securely clamped practically at the same point at all times by means of the clamping lever, the plastic layer is damaged relatively quickly at the stressed point. Grooves are produced, whereupon the clamping effect is impaired so that an exact gripping or releasing of the weft thread is no longer assured. For this reason, it is necessary to replace the resilient plastic layer after relatively brief period and the entire side plate of the gripper head must be removed in order that this can be effected.

The present invention constitutes a great simplification in construction while utilizing the advantages of a resilient counter-element for the clamping portion, and furthermore provides a solution which does not entail the disadvantages described above.

In accordance with the present invention, the plate secured to the gripper head is graduated at the edge thereof, at least partially, and a ring of resilient material is placed into the gap produced between the gripper head wall and the plate, the ring of resilient material acting as a counter-element for the clamping lever moved within the gap.

The advantage of this arrangement is apparent. When wear occurs at the clamping point after prolonged operation, as described above, it is sufficient to merely displace the ring a slight distance on the graduation on the plate, since the ring is relatively loosely mounted on the graduation. It is necessary only to move the ring further by means of a pointed object, for example, a needle. A movement of a very short distance is sufficient to again obtain a usable counter-element for the clamping portion. There is no need to disassemble the plate from the gripper head. The service life of the resilient counter-element is increased many fold from the heretofore known solution since it is no longer necessary to replace the entire plastic element in the case of a single worn spot or damaged area but, instead, a large number of worn areas may exist on the ring before the latter becomes unusable.

One embodiment of the present invention is shown in further detail in the accompanying drawings in which

FIG. 1 illustrates a gripper head with a clamping device according to the present invention in the closed position,

FIG. 2 illustrates the clamping device of FIG. 1 in the open position,

FIG. 3 is a view in cross-section through the clamping device taken along line A-B of FIG. 1,

FIG. 4 and FIG. 5 are two different side views of the clamping plate, and

FIG. 6 is a perspective view of the clamping plate

FIGS. 1 and 2 show the mounting of the clamping device at the gripper head 1. The gripper head 1 includes, at the foremost end thereof, a tip 2 which is shaped toward the rear thereof in a hook-like fashion. This point has been identified with reference numeral 2'. The clamping lever itself is constructed two-armed and is pivotally mounted about an axis of rotation 5. The arm or jaw 3 of the clamping lever pointing toward the gripper tip constitutes the clamping part proper, whereas the rearwardly pointing arm 4 serves as a seat for the control levers (not shown). A leaf-type spring 10 is shown positioned below the lever arm 4, which spring returns the clamping lever into the clamping position thereof when the control levers have lifted off of the arm 4. Secured to the side wall of the gripper head 1 is a clamping plate 6 in proximity to the tip 2. The clamping plate 6 is secured to the side of the gripper head 1 by means of the screws 8, for example. The shape or configuration of the clamping plate may be in principle selected as desired. In this case, it is matched to the shape of the gripper tip 2 and is therefore tapered in front at the underside thereof in accordance with the extension of the gripper tip.

The clamping plate 6 is slightly thicker than the resilient ring 9 is wide and it is therefore possible to provide, in addition to the resilient ring, also graduations and projections 7 at the clamping plate 6. The projecting rim at the clamping plate extends essentially in the portion pointing toward the gripper tip 2. Next to this projection, the clamping plate also includes a flat, graduated and linear portion 6' upon which the ring 9 is mounted. The rim and the projection 7 on the one hand and the wall of the gripper head 1 on the other hand form a gap within which the movable clamping portion 3 is adapted to move. Furthermore, the resilient ring 9 is positioned in this gap and secured against sliding off by means of the projection 7.

The rim of the clamping part, with the exception of the projection 7, is lower than the periphery of the ring 9. For this reason the weft thread, when clamped in, will contact only the resilient ring 9 and the movable clamping portion 3. Thus, it does not undergo any damage by contacting any of the remaining parts of the clamping plate.

In FIG. 4, the clamping plate 6 is shown at an enlarged scale as compared to FIGS. 1 and 2. FIG. 5 is a side view of a clamping plate from the opposite side. In addition to the projection 7, FIG. 4 shows, in phantom, the graduation on the clamping plate along the edge thereof pointing towards the left. This graduation is equally apparent from FIG. 5 in which it is drawn in solid lines. The graduation is so constructed that the upwardly positioned portion 6' extends in a rectilinear manner, thus forming a straight counter-element for the clamping portion or jaw 3. FIG. 5 also shows, in dash-dotted lines, how a ring 9 from a resilient material, for example a plastic, may be placed around the graduation of the clamping plate 6. The ring 9 is mounted relatively loosely on the graduation so that it is easily displaceable. At the clamping plate 6, the marginal projection opposite the graduation, for example at 6', is approximately as wide as the ring 9. The ring 9 is thereby retained in position and cannot slide off the clamping plate, whereas this construction does permit a slippage of the ring on the graduated surface of the plate.

FIG. 3 is a view in cross-section of the gap between the gripper head 1 and the projection 7 of the clamping plate 6. The clamping plate is mounted laterally parallel to the wall of the gripper head 1. This crosssectional view clearly shows the graduation 6' around which the ring 9 is placed. Within the

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gap between the wall of the gripper head 1 and the projection 7 of the clamping plate 6, the clamping portion or jaw 3 of the clamping device or mechanism is adapted to be moved up and down, as shown by the arrows.

As is apparent from the drawings, the ring 9 serves as a counter-element for the clamping portion or jaw 3 and it can be applied or placed in position very easily. More importantly, it can be adjusted very easily without major difficulties if any damage should occur at any point. For this purpose, removal of the clamping plate is not necessary, as has been set forth above.

It will be obvious to those skilled in the art that many modifications may be made within the scope of the present in-

vention without departing from the spirit thereof, and the invention includes all such modifications.

What is claimed is:

1. In a gripper head for a shuttleless loom, said gripper head having a fixed jaw and a movable jaw for weft thread and hook means on said fixed jaw, the improvement comprising a displaceable ring of resilient material supported on a ledge on a plate detachably secured to said fixed jaw and extending opposite the movable jaw in a rectilinear manner, and the side of the plate adjacent a part of the ring having the same height as the ring.

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