United States Patent

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[31] **P 17 85 467.0**

[54] **HOOK-SHAPED GRIPPER POINT**
3 Claims, 3 Drawing Figs.

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[51] Int. Cl. **D03d 47/20**
[50] Field of Search 139/122-
—127

[56] **References Cited**
UNITED STATES PATENTS

2,928,427	3/1960	Flamand	139/122
2,960,118	11/1960	Ancet et al.	139/122
3,299,910	1/1967	Flamand	139/122

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ABSTRACT: A hook-shaped yarn takeup gripper point having a protuberance formed on a first side of the free leg of the hook, the end of the protuberance away from the tip of the gripper point forming a trailing edge which extends substantially perpendicular to a central plane passing through both the main leg and the free leg of the gripper point. A spring operated flap in the main leg holds a yarn against the free leg, and hence against the said edge.

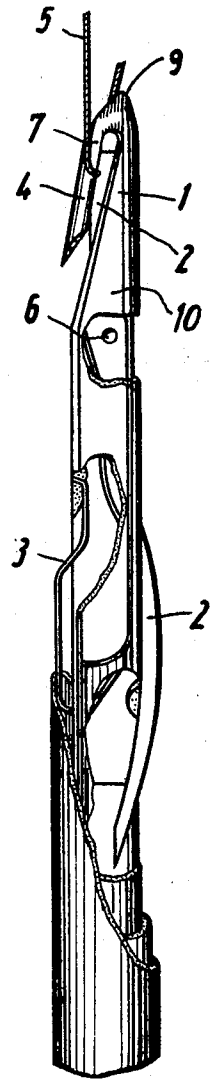


Fig. 1

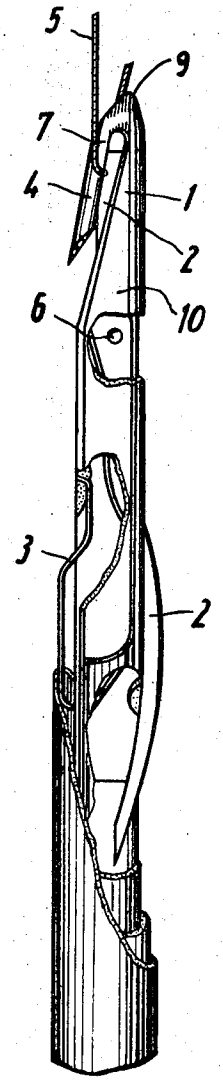
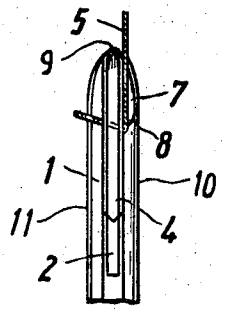


Fig. 2



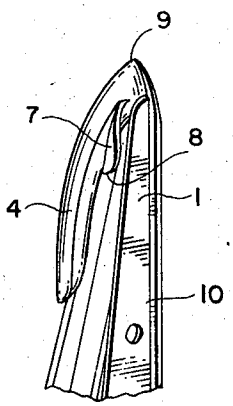


Fig. 3

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HOOK-SHAPED GRIPPER POINT

BACKGROUND OF THE INVENTION

This invention relates to hook-shaped yarn takeup gripper points for tucking in weft yarn ends in gripper looms. In particular, it relates to a new and improved arrangement for providing a more secure engagement of the yarn by the gripper point.

It is known to provide hook-shaped gripper points with means such as clamps for holding the yarn against the free leg of the hook. However, with known arrangements it often happens in practice that due to excessive unforeseen yarn tension, the yarn slips out of engagement with the gripper point and is lost. The problem cannot be solved by simply making sure that a completely uniform yarn tension is applied to the yarn at all times. Irregularities in tension occur from faulty bobbin windings and the uneven friction, especially in the case of fancy yarns, between weft yarn and bobbin and on the yarn guide elements. MOreover, there are normal changes in tension during normal operation, for example during pulloff, and tension is different for a full spool as compared with an empty spool. Another problem to be considered is that the clamp holding the weft yarn in the jaw of the hook slips through more easily, the deeper the hook has been pulled into the hook jaw as the clamping force of the clamp diminishes in proportion to the distance of the yarn from the pivot point of the clamp on the body of the hook.

Thus, there exists a need for a gripper point of the type described which will hold the yarn securely even as the tension applied to the yarn varies.

SUMMARY OF THE INVENTION

Thus, it is a purpose of this invention to provide a new and improved hook-shaped yarn takeup gripper point, of the type described, which overcomes disadvantages of such gripper points known heretofore. In particular, it is a purpose of this invention to provide a gripper point of the type described which securely holds the yarn, regardless of variations in tension applied to the yarn.

This purpose of the present invention is achieved by providing, in a hook-shaped yarn takeup gripper point of the type described, a protuberance formed on and extending sideways from a fist side of the free leg of the hook, said protuberance having a trailing edge on the side thereof facing away from the tip of the gripper point, which edge extends outwardly substantially perpendicular relative to a central plane passing through both the main leg and the free leg. With this arrangement, the yarn is held securely against the jaw of the hook adjacent said edge. A spring-operated flap yarn holder located in the main leg of the gripper point engages the free leg to hold the said yarn against the free leg and, in particular, against said edge. This arrangement prevents slipping of the yarn in two ways. On the one hand, the yarn is drawn more deeply into the jaw of the hook as it lies about the rear edge of the protuberance, whereby the friction between the yarn and the hook is increased. Secondly, the protuberance with its said rear edge projecting substantially at right angles from the said central plane controls the location of the yarn relative to the spring-operated means so that the flap means always operates on the yarn at the same distance from the pivot axis of the flap means.

Thus, it is an object of this invention to provide a new and improved hook-shaped yarn takeup gripper point of the type described.

It is another object of this invention to provide a gripper point of the type described having a protuberance formed on the free leg thereof, said protuberance having a rear edge which is substantially perpendicular to a central plane through the legs of the gripper point and which engages the yarn for improving the securement of the yarn, notwithstanding variations in tension.

It is another object of this invention to provide a gripper point of the type described having a protuberance located on one side of the free leg for controlling the point at which the spring-operated flap means engages and holds the yarn.

Other objects and the intended advantages of the present invention will become apparent from the detailed description to follow together with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

There follows a detailed description of a preferred embodiment of the invention to be read together with the accompanying drawings. However, the drawings and the description are provided only to illustrate a preferred embodiment of the invention.

FIG. 1 is a side elevational view of a hook-shaped yarn takeup gripper point constructed in accordance with the present invention, with parts shown in cross section.

FIG. 2 is a partial elevational view viewed from the left side of FIG. 1.

FIG. 3 is an enlarged partial perspective view illustrating the end of the hook-shaped yarn takeup gripper point.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawings, like numerals represent like elements throughout the several views.

The yarn takeup gripper point of the present invention includes a main body portion which at the upper end thereof (as viewed in the FIGS.) includes a hook-shaped portion with a main leg **1**, a tip **9** and a free leg **4**. Formed within this main leg **1** is a flap **2** which is mounted for pivotal movement about a pivot pin **6** and which is urged about said pivot pin by a spring **3** such that the upper part of the flap **2** is urged against the free leg **4** for holding yarn therebetween. For convenience, the sides of the gripper point are referred to as the first side **10** and the second side **11**.

In accordance with a main feature of the present invention, the free leg **4** has formed thereon a protuberance **7** on the first side **10** thereof. This first side is defined as that side against which the yarn **5** lies. This protuberance **7** includes a rear edge (that is, on the side of the protuberance away from the tip **9**) which is formed with a rear edge **8**, which edge is substantially perpendicular to a central plane of the gripper point passing through both legs **1** and **2**.

This protuberance **7** with its said rear edge **8** catches the yarn and pulls the same into the jaw of the hook. The yarn now lies about this relatively sharp rear edge **8**, whereby friction between the hook and the yarn is considerably increased. Moreover, the protuberance **7** prevents the yarn **5** from being pulled farther up into the jaw of the hook where the force applied by the flap **2** would be smaller. Thus, slippage of the yarn from the hook is avoided, notwithstanding variation, especially increases in tension.

Although the invention has been described in considerable detail with respect to a preferred embodiment thereof, it will be apparent that the invention is capable of numerous modifications and variations apparent to those skilled in the art, without departing from the spirit and scope of the invention.

I claim:

1. In a hook-shaped yarn takeup gripper point for tucking in weft yarn ends in gripper looms, the hook including a main leg and a free leg, and said gripper point including means for clamping the yarn end against the inside of the free leg of the hook, the improvement comprising a protuberance on a first side of the said free leg, said protuberance having an edge on the side thereof away from the tip of the gripper point, said edge extending outwardly from the first side of the gripper point, whereby yarn drawn through the hook passes along said first side, around said edge and across the inside of the free leg to a second side of the free leg.

2. The invention of claim **1**, wherein said edge is substantially perpendicular to a central plane of the hook passing through both of said legs.

3. The invention of claim **2**, wherein said clamping means comprises a flap located in the main leg and urged by resilient means against the free leg to hold the yarn against said free leg and hence against said edge.