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[54] WEFT THREAD END CATCHING AND HOLDING MECHANISM

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[52] **U.S. Cl.** **139/194,** 139/302

[51] **Int. Cl.** **D03d 49/70**

[58] **Field of Search** 139/12, 194, 302, 303

[56] **References Cited**

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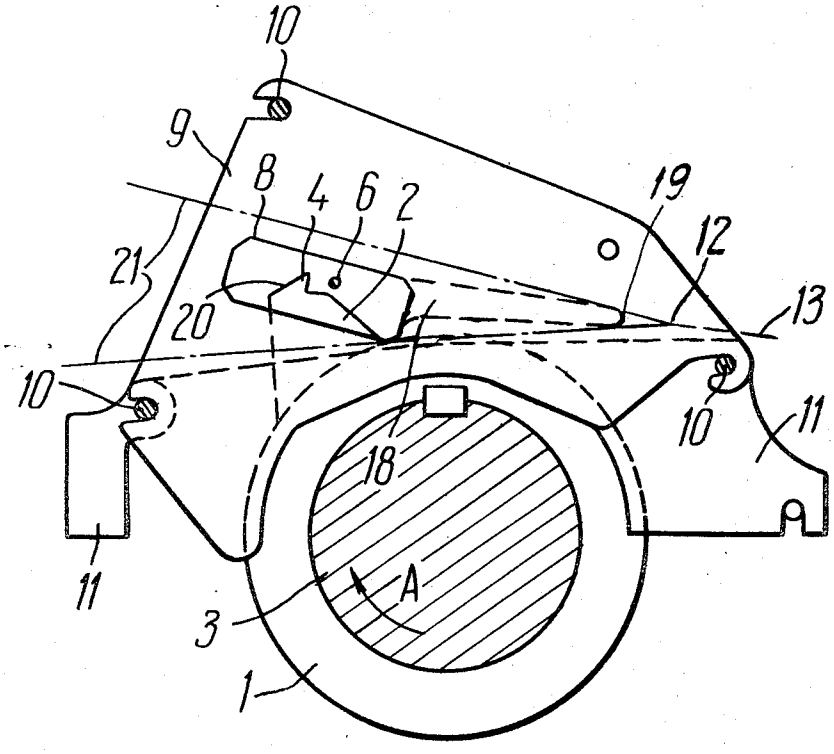
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[57] **ABSTRACT**

A weft thread end catching and holding mechanism which includes a stationary plate with an elongated slot therein for the passage of the carrier of the weft thread and a rotary plate in the form of a ring with a projecting tooth mounted on a drive shaft. The tooth is adapted to catch the end of the weft thread emerging from the carrier and is biased into engagement with the stationary plate, for holding the weft thread end caught thereby and for forwarding the same toward the fell of the cloth. The mechanism includes a second stationary plate adjacent the first plate for biasing the tooth into engagement with the first stationary plate.

3 Claims, 5 Drawing Figures



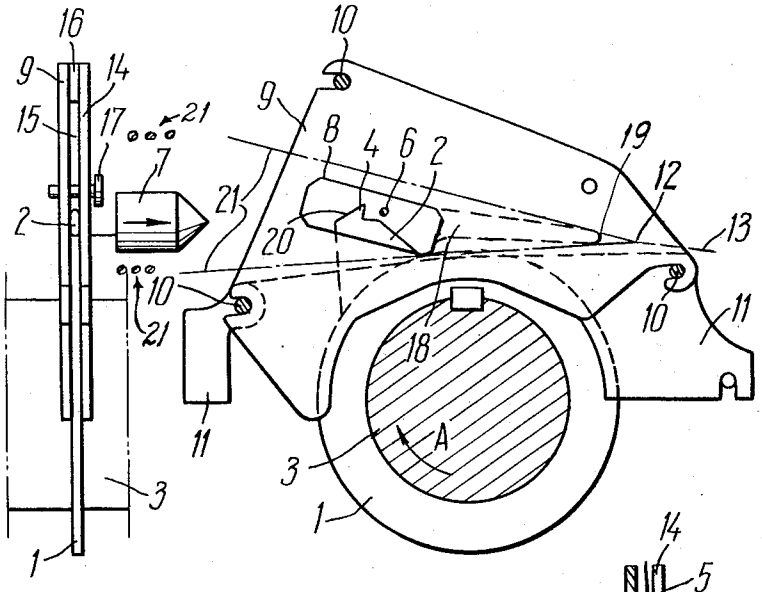


FIG. 2

FIG. 1

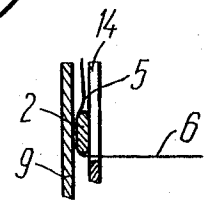


FIG. 4

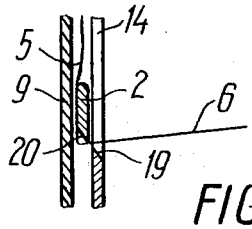


FIG. 3

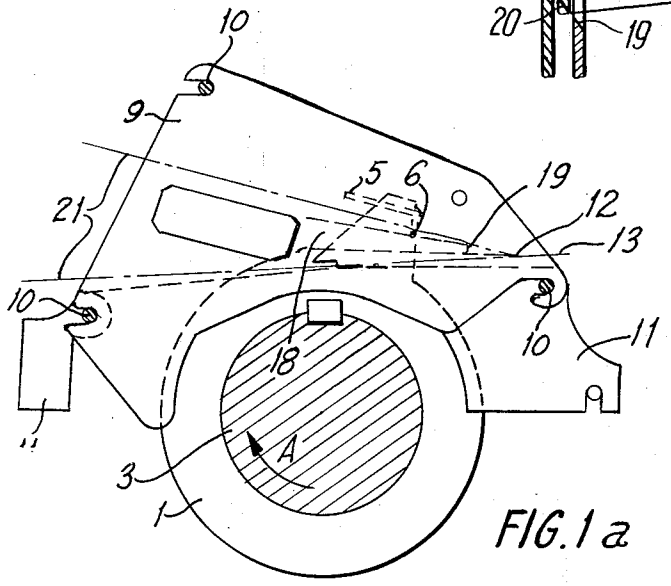


FIG. 1a

WEFT THREAD END CATCHING AND HOLDING MECHANISM

The invention relates to looms, and, more particularly, it relates to mechanisms for catching and holding the end of the weft thread, emerging from the carrier of this thread, incorporated in looms.

The present invention can be used to utmost advantage in cloth-forming arrangements incorporated in multi-shed looms and including a plurality of toothed rotary discs, the discs being angularly staggered in relation to one another, so that the teeth thereof make a helical surface adapted to support and guide the carrier of the weft thread thereon, said surface imitating the outline of the shedding wave.

There are known mechanisms for catching and holding the end of the weft thread, comprising a plurality of rotating rollers having an endless driving belt tensioned thereabout. In these known mechanisms the end of the weft thread is caught between the rollers and the belt, is held therebetween and is forwarded from the picking zone toward the fell of the cloth (see, for example, Swiss Patent No. 402,761, Class 86 c, 17).

However, in these mechanisms the operation of guiding the end of the weft thread into the space between the rollers and the belt presents certain difficulties. Moreover, for the thread end to be hold reliably, it should be of a substantial length, otherwise it would tend to escape the grip of the belt. On the other hand, increasing the length of the end of the weft thread leads to increased waste of this thread. Furthermore, in the known mechanisms the rollers are associated with a drive of their own, which makes the structure of the mechanism more complicated. Additionally, the mechanisms have no means for cutting off the end of the weft thread.

It is an object of the present invention to provide a mechanism which eliminates these disadvantages.

It is also an object of the present invention to provide a mechanism for catching and holding the end of a weft thread, which includes catching member providing reliable gripping of the end of the weft thread, without the necessity of increasing the length of this end.

It is another object of the present invention to provide a mechanism which is simple in structure and easy to operate and maintain.

With these and other objects in view, the present invention resides in a mechanism for catching and holding the end of a weft thread, comprising, in accordance with the present invention, a stationary plate mounted at each side of the cloth, said plate having a slot therein for the passage of the carrier of the weft thread; and a rotary plate mounted on a drive shaft and in the form of a ring with a projecting tooth adapted to catch said end of said weft thread, said tooth being biased into engagement with said stationary plate, so as to hold said end of the weft thread, caught thereby, and to forward it toward the fell of said cloth, as said ring is rotated. In this way there is ensured reliable catching of the end of a weft thread having a relatively short length, as well as easy servicing of the mechanism, since the tooth of the ring positively grips the weft thread end and permanently presses it against the stationary plate, whereby the end is dependably gripped both at the initial moment of the weft thread picking operation and during the period when the thread is woven into the cloth.

To provide for more reliable gripping of the end of the weft thread, it is preferable that said tooth of said ring be pressed into engagement with said stationary plate with the help of a second stationary plate spaced from the first by an adjustable gap and having an elongated slot therein for the passage of the weft thread carrier and for free travel of the weft thread toward the fell of the cloth.

To effect severing of the end of the weft thread, after the latter has been woven into the fell of the cloth, it is advisable that the front edge of the elongated slot of the second plate be extended to the fell of the cloth and said latter edge and the edge of said tooth of said ring be sharply pointed in the direction of rotation of the ring, so as to act as shears, as said tooth approaches said slot.

The present invention will be better understood from the following detailed description of an embodiment thereof, with reference to the accompanying drawings, wherein:

FIG. 1 is a schematic the front view of the mechanism according to the invention;

FIG. 1*a* is a view similar to FIG. 1 but with the mechanism in advanced position;

FIG. 2 is a side view of a portion of the mechanism shown in FIG. 1, other parts being omitted for purposes of simplification;

FIG. 3 shows in section the pointed front edges of the elongated slot and of the tooth of the ring member, respectively; and

FIG. 4 shows in section the relative position of the plates of the mechanism during a period, when the end of the weft thread is gripped thereby.

The herein disclosed mechanism is mounted on a loom at both sides of a cloth being woven i.e., adjacent the warp threads but outside the edge warp threads. Described hereinbelow is but one of the two mechanisms, e.g., the one mounted to the left of the cloth, several warp threads being illustrated diagrammatically at 21 in FIG. 2.

The mechanism includes a rotary plate in the form of a ring 1 (FIG. 1) having a projecting tooth 2, the ring being mounted on a drive shaft 3, which is also the driving shaft of the rotating discs of the reed of the cloth-forming mechanism. Consequently, the herein disclosed weft end catching and holding mechanism employs an available drive for the thread-gripping members thereof, which simplifies the structure of the mechanism, as a whole. The apex of the tooth 2 is provided with a hook 4 adapted to catch the end 5 of the weft thread 6 emerging from the weft thread carrier 7.

The carrier 7 can pass in a slot 8 in a stationary plate 9 which is mounted on the framework 11 by means of mounting rods 10. The tooth 2 of the ring 1 is biased toward the plate 9, whereby the weft thread end 5 is gripped by the hook 4 of the tooth 2 is to cause the weft thread to be transferred to the fell 12 of the cloth 13 and be woven into the cloth 13.

The tooth 2 is biased into engagement with the plate 9 under the action of another stationary plate 14 (FIG. 2) spaced from the plate 9, the gap 15 therebetween being adjustable, so as to pre-set a desired contact pressure of the tooth 2 against the plate 9. The initial spacing between the plates, i.e., the initial gap 15 therebetween is pre-set initially with the help of spacers 16 and is precisely adjustable with an adjustment screw 17. The structure of the plate 14 is similar to that of the

plate 9; the plate 14 also has an elongated slot 18 (FIG. 1) shown in dotted line, the slot serving as a means for the displacement of the weft thread 6 toward the fell 12 of the cloth 13. The slot 18 is a continuation of the slot 8.

For smooth paying out of the weft thread, the corners of the elongated slot 18 and the side edges of the tooth 2 are rounded and finely polished. Alternatively, to effect severing of the end 5 of the weft thread 6, the front edges 19 and 20 (FIG. 3) of the elongated slot 18 and of the tooth 2 of the ring 1 are sharply pointed, whereby, when the tooth 2 approaches the slot 18, the pointed edges thereof act as a shears.

For reliable operation of the herein disclosed mechanism, it is essential that prior to catching of the end 5 of the weft thread 6 by the hook 4 of the tooth 2, the thread should be pressed against the lower confine of the slot 8 by the warp threads 21.

The operation of the mechanism is as follows.

When the loom is started, the shaft 3 rotates, and the ring 1 with the tooth 2, mounted thereon, also starts rotating uniformly in the direction indicated in FIG. 1 by arrow "A." As the ring 1 is thus rotating, the carrier 7 passes through the slot 8, and the hook 4 of the tooth 2 catches the end 5 of the weft thread 3 and presses it against the plate 9, as shown in FIGS. 2 and 4. While passing through the gap 15 between the plates 14 and 9, the hook 4 draws the end 5 along the plate 9 and thus draws the weft thread 6 along the elongated slot 18 toward the fell 12 of the cloth 13.

If the edge 19 of the elongated slot 18 of the plate 14 and the edge 20 of the tooth 2 of the ring 1 are smoothly rounded as shown in FIG. 4, the end 5 of the weft thread 6 will descend with the tooth 2 and eventually be released from the tooth.

Alternatively, if these edges are sharply pointed, as is shown in FIG. 3, the end 5 of the weft thread 6 will be severed.

In either case, as the tooth 2 passes the region of the fell 12, the weft thread will be released from the tooth and the ring 1 will continue its rotation so the tooth 2 can engage the next weft thread.

What we claim is:

1. A mechanism for catching and holding the end of a weft thread emerging from a carrier of said thread, in the process of forming a cloth, said mechanism comprising: a stationary plate mounted at each side of said cloth, said plate having an elongated slot therein for the passage of said carrier of said weft thread; a driving shaft; a plate mounted on said shaft for rotation therewith, said plate being in the form of a ring with a projecting tooth; said tooth being positioned on said plate to pass the slot to catch the end of said weft thread, said tooth being biased into engagement with said stationary plate to hold said end and to advance the same toward the fell of said cloth, as said ring is rotating; and means for biasing said tooth toward said stationary plate.

2. A mechanism as set forth in claim 1, wherein said means for biasing said tooth into engagement with said stationary plate includes a second stationary plate spaced by an adjustable gap from said first-mentioned plate; said second plate having an elongated slot therein for the passage of said carrier of said weft thread and for free travel of said thread toward said fell of said cloth.

3. A mechanism as set forth in claim 2, wherein the front edges, of said elongated slot of said second stationary plate and of said tooth of said ring in the direction of the rotation thereof are sharply pointed, whereby, as said tooth approaches said slot, said edges thereof act as shears to cut off said end of said weft thread.

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