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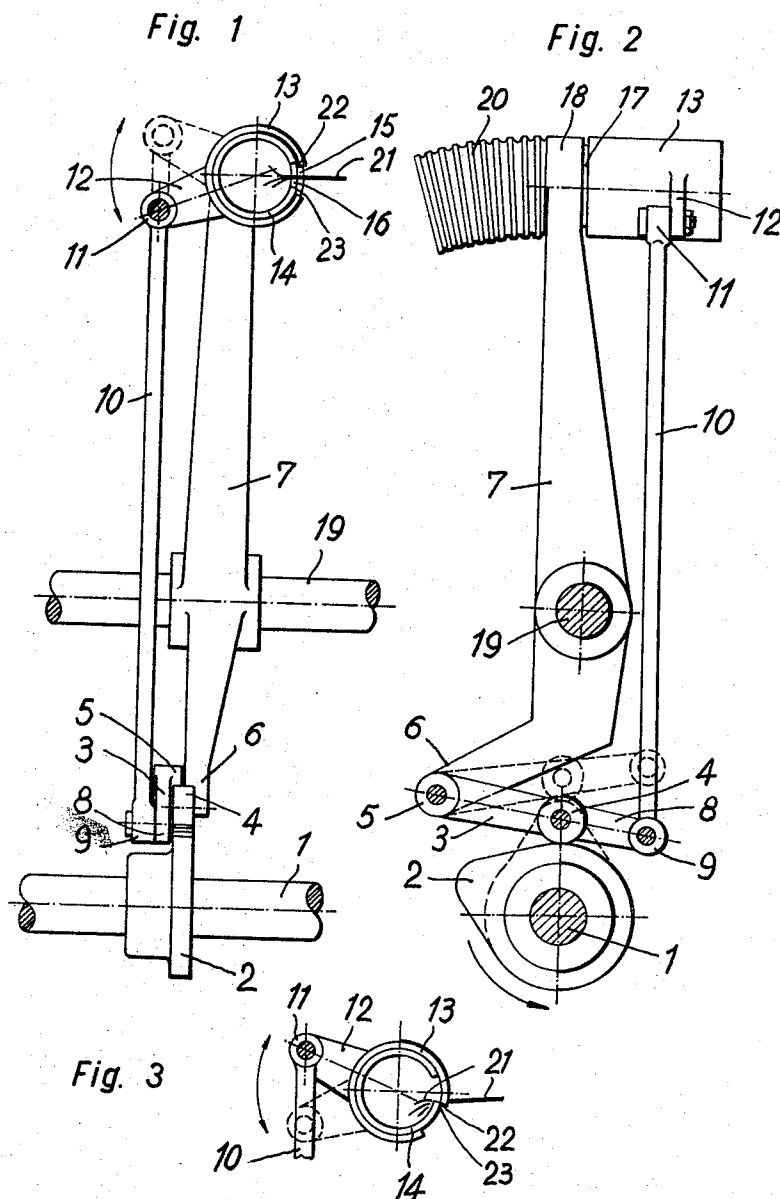
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3,376,903

WEFT THREAD ASPIRATING AND CUTTING DEVICE FOR SHUTTLELESS LOOMS

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2 Sheets-Sheet 1

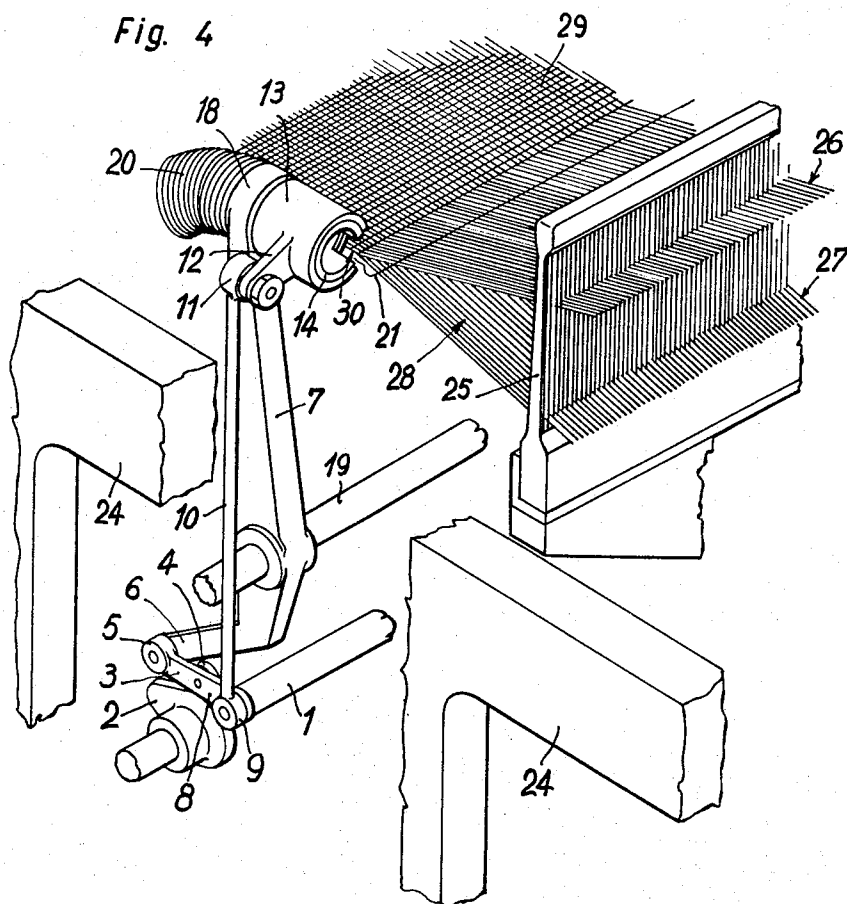


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WEFT THREAD ASPIRATING AND CUTTING DEVICE FOR SHUTTLELESS LOOMS

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2 Claims. (Cl. 139—302)

ABSTRACT OF THE DISCLOSURE

In a shuttleless loom, the cutter for the wefts along the selvage edge comprises two closely fitted concentric tubes connected to a suction line. At the ends remote from said suction line, the tubes have two registering knife-edged cut-outs which, on oscillating movement of one of the tubes, cut the weft sucked into the mouth of the tubes.

This invention relates to a weft thread cutting and suction device for shuttleless looms, and more particularly for such looms where the wefts are seized from a stationary weft thread supply by a clamping device which pulls the wefts across the shed. In such looms, the weft ends must be cut along the selvage edge of the fabric to ensure that the clamping device, when returning to its starting point, can again seize a weft and insert it into the shed.

Various systems for cutting the weft end are known, which use shears, clippers, circular cutters, blades, or simple knives, and which solve the problem with more or less success. However, in most of the systems the cutting edges are subject to rapid wear, which results in reduced output and requires replacement of or re-sharpening.

The severed weft ends constitute waste which has to be removed. In most cases, suction elements are used for this purpose close to the cutting element but such elements require generally funnels or tubes which often interfere with the positioning of the other mechanisms required for the weaving process.

It is a principal object of the present invention to provide a severing device which avoids the recited drawbacks and can produce an unlimited number of cuts without requiring replacement or re-sharpening.

It is another object of the invention to combine the severing means with the suction means to a unit requiring very little space so as to give sufficient clearance for the placement of other loom attachments.

Other objects and advantages will be apparent from a consideration of the specification and claims.

The device according to the invention comprises a suction mouth composed of two concentric tubes or sleeves of steel or any other hard material. The inner tube is closely fitted into the outer tube; one of said tubes is stationary and the other, preferably the outer one, is rotatable. Both tubes have at their front ends registering cut-outs in U-form with sharp edges which on oscillating movement of the rotatable tube constitute a tubular cutter suitable to sever the weft ends sucked into the mouth of the tubes.

At a suitable location of the loom, the end opposite the cutting end of the inner stationary tube is secured to a stationary support. A lever linked to the other end of said support is rocked upwardly and downwardly by means of a cam mounted on a rotating shaft of the loom. The other end of said lever actuates a rod whose other end is connected to a lug attached to the outer movable sleeve. The inner stationary sleeve extends into a suction tube, also inserted in said support, which forms a unit with the severing device.

When the weft pick has passed through the shed and has been beaten up into the fabric, its end is sucked by an air current into the inner sleeve and is placed into the cut-outs. On actuating the operating lever, the outer sleeve of the cutter turns, and the end of the weft is gripped between the sharp edges of the cut-outs and severed by the tubular cutter formed by the sharp outer edge of the cut-out of the inner sleeve with the opposite sharp inner edge of the cut-out of the outer sleeve (FIG. 3). Whenever mention is made herein of the severing of a single weft, it is to be understood that this applies also to the simultaneous severing of a plurality of projecting weft ends.

The continuous suction through the mouth of the device draws in not only the projecting weft ends but also the powder and waste which may be produced by the cutting action; in addition, the air current prevents heat development due to friction or rubbing of one sleeve upon the other one. In addition, any suitable solid lubricant can be employed without inconvenience. The sleeves or tubular cutters may also be made mutually rotatable with respect to each other, and several cut-outs may be provided along the periphery to increase the output.

In another embodiment of the invention, the outer sleeve which carries out the cutting action, may also be laterally displaceable in a helicoidal motion, in which case the connecting rod will be guided by an angular guide for its displacement.

One form of the device according to the invention will now be described in greater detail with reference to the accompanying drawing, in which

FIG. 1 is a diagrammatic front view of the severing and suction device according to the present invention;

FIG. 2 is a corresponding side view;

FIG. 3 shows a detail of FIG. 1 in the position after severing the weft, and

FIG. 4 is a perspective view of the device embodying the invention, shown assembled to a shuttleless loom, only fragmentary parts of the loom being illustrated.

Referring to the figures, reference numeral 1 designates a rotating shaft of the loom to which a cam 2 is fastened, which, when rotated, raises a lever 3 by means of a roller 4. Said lever 3 has its supporting and oscillating point at its end 5 which is coincident with the end 6 of the support 7. At the opposite end 8 of the lever 3, there is linked the end 9 of a rod 10, whose other end 11 is linked to an ear 12 integral with the sleeve 13, which oscillates on the stationary sleeve 14. Said movable sleeve 13 and stationary sleeve 14 have registering front cut-outs 15 and 16 receiving the free end of the last inserted weft. Part 17 of the stationary sleeve 14, which is opposite the cut-out 16, is inserted and secured in the upper end 18 of the support 7 which, in turn, is supported on a stationary shaft 19 of the loom (not shown). In said part 17, and joined thereto, there is inserted a suction tube 20 (FIG. 2) which draws in the wefts 21 (FIG. 1). Said wefts when sucked in are situated in said cut-outs in their open position; on turning the outer sleeve 13, there are severed by the rocking friction movement between the sharp edges 22 and 23 of the cut-outs 15 and 16 of the sleeves 13 and 14 (FIG. 3). The cut ends of the threads are sucked in by the suction tube 20 and carried off, together with powder and waste which may have been produced.

With reference to FIG. 4, the different elements of the device are designated with the same reference numerals as in FIGS. 1 to 3. At 24 and 25 there are illustrated fragmentary parts of the loom frame and of the loom reed, respectively. 26 and 27 show the two groups of warp threads forming the shed 28; 29 is a fragmentary part of the fabric being woven, and 30 the selvage edge of the fabric. The two sleeves 13 and 14 are positioned

near the selvage edge 30 to receive the weft ends 21 protruding from the fabric, whereby said weft ends when caught on rocking rotational movement of the outer sleeve 13 between the sharp edges 22 and 23 of the cut-out of the outer sleeve 13 and the cut-out of the inner sleeve 14 are severed and removed by suction through the suction tube 20.

I claim:

1. A weft severing and suction nozzle for shuttleless looms comprising two concentric sleeves of very hard material inserted one into the other, the inner sleeve of said sleeves being stationarily mounted and connected to a source of suction, the outer sleeve being mounted for rotational movement with respect to said inner sleeve, means imparting a rocking rotational movement to said outer sleeve, said sleeves being provided at a common one of their ends with sharp-edged U-shaped cut-outs positioned to receive weft ends protruding from a fabric being woven, whereby said weft ends when caught on rocking rotational movement of the outer sleeve between the

sharp edges of the cut-out of the outer sleeve and the cut-out of the inner sleeve are severed and removed by suction.

2. A nozzle as claimed in claim 1 wherein said rocking means comprise an ear provided at said outer sleeve, a lever, means imparting to said lever a rocking movement, and a rod connecting said ear with said lever.

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