April 30, 1968 V. SCHERILLO 3,380,482

DEVICE FOR POSITIVELY CUTTING THE WEFT IN A SHUTTLELESS LOOM HAVING A CONTINUOUS WEFT-SUPPLY MECHANISM

Filed May 10, 1966

Fig.1

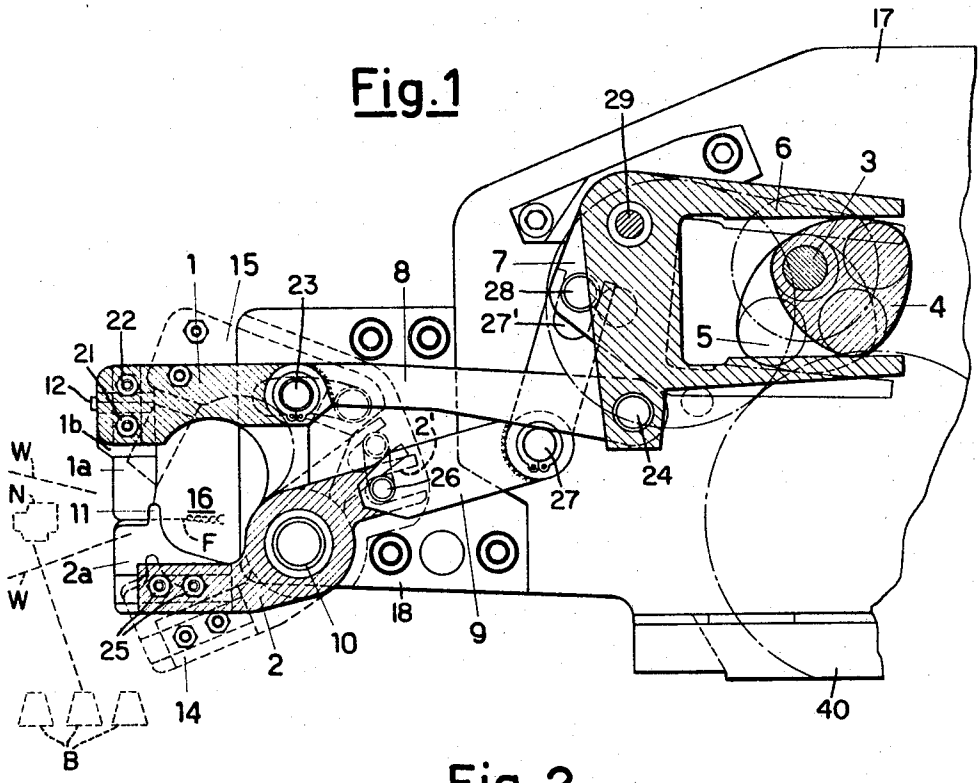
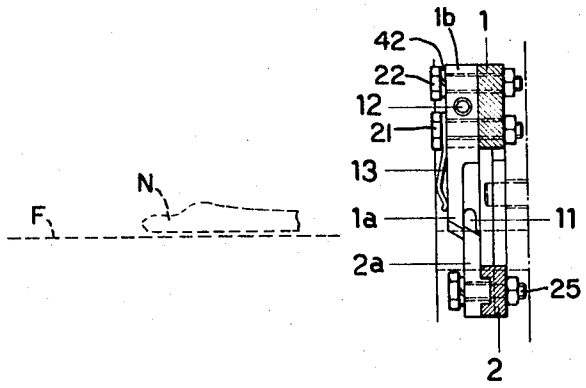


Fig.2



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United States Patent Office 3,380,482
Patented Apr. 30, 1968

3,380,482

DEVICE FOR POSITIVELY CUTTING THE WEFT IN A SHUTTLELESS LOOM HAVING A CONTINUOUS WEFT-SUPPLY MECHANISM

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Filed May 10, 1966, Ser. No. 548,978
Claims priority, application Italy, May 15, 1965, 10,934/65
5 Claims. (Cl. 139—122)

ABSTRACT OF THE DISCLOSURE

A weft cutting device for a shuttleless loom of the type having a rotatable crankshaft, and a weft selector mechanism for selecting one of a plurality of wefts to be drawn into the shed by an insertion needle each time the crankshaft rotates, the device has a pair of triangularly shaped cams secured to a drive shaft that rotates once per revolution of the crankshaft, a pair of cutters connected to the cams to be pivoted positively thereby about a common axis, and a finger projecting from one of the cutters to guide the selected weft between the shearing edges of the cutters as the needle moves the weft into the warp shed.

This invention relates to a positive weft cutting device for a shuttleless loom having a continuous weft-supply mechanism in which the weft thread, coming from a fixed bobbin mounted outside the fabric, is brought into the shed by an inserting needle and, more particularly, to a loom having both inserting and traction needles.

Specifically this invention is adapted for use with looms of the type having a plurality of bobbins from which different weft threads preselected by a specifically provided mechanism which, unthreading them from the bobbins, arranges them selectively in front of the retracted weft inserting needle, the latter, in turn gripping and drawing them into the warp shed, wherein they are beaten.

The picked weft is drawn to the center of the shed, where it is transferred to the retraction needle that draws it the rest of the way through the shed. After being beaten into the fabric, this weft remains attached to the associated bobbin and thus, whenever, a different weft is to be inserted, the inserting mechanism should cut the selected weft, which remained attached to the fabric, so as to be able to insert the selected weft once again into the fabric.

An object of the present invention is to provide a device for positively cutting the weft of a shuttleless loom, having a continuous weft-supply mechanism, which is coordinated with the movements of the sley, the weft selector mechanism, and the conveying needles.

The inventive device, which is installed in a fixed position on the loom's breast beam, and which is mounted so that its two cutters may sweep the first or end tooth of the reed when the latter is in the beat position, is detailedly illustrated in the accompanying drawings which are illustrative of an exemplary embodiment only.

Mechanical equivalents, adapted to produce the movement and gears which are characteristic of said device, lie within the scope of the present invention.

FIGURE 1 is a fragmentary cross-sectional view of a cutting device made according to one embodiment of this invention.

FIGURE 2 is a fragmentary front elevational view of the two cutters shown in FIG. 1.

The device comprises two movable cutters, **1** and **2**, to which the drive is transferred by a mainshaft **3**, which is mounted to rotate between the sidewalls **17** (one of which is shown in FIG. 1) of a housing, which is mounted on a loom breast beam **40** adjacent one end thereof to be rotated at the same speed as the loom's crankshaft, thus assuring that the movement of the cutters will be coordinated with the movements of the weft-supply mechanism, with the sley, and the weft selector.

On the shaft **3** are secured the triangular cams **4** and **5** which move the forks **6** and **7**, respectively, which are mounted to pivot adjacent one another about a stationary shaft **29** that extends between the housing walls **17** parallel to shaft **3**. The fork **6** is pivotally connected by pin **24** to a link or rod **8** which, in turn, is pivotally connected by a pin **23** to the cutter **1**. The fork **7** carries a pin **28** which engages in a slot **27'** formed in one end of a bell-crank lever **9**, which is pivoted intermediate its ends on a stationary shaft **27**, which projects from one of the housing sidewalls **17**. The opposite end of lever **9** carries a pin **26**, which engages in a slot **2'** formed in one end of the cutter **2**. Thus the cams **4** and **5**, through the connecting rod **8** and the bell-crank lever **9**, control the upper knife **1** and the lower knife **2**, respectively.

The two cutters are fulcrumed on the same hollow, stationary pin **10** which extends between a pair of spaced brackets **18** that are secured to and project forwardly from the housing sidewalls **17**, and through which the templet-carrying pin is inserted. These cutters **1** and **2** are shaped so that an empty space is formed between the cutters, and thorugh which pass the wefts which were previously beaten into the fell of the fabric, and which remain attached to the fabric and to the selection mechanism.

To the lower cutter **2** is solidly affixed by two screws **25** the blade **2***a* which carries at the inner end of its cutting edge adjacent the space **16** (FIG. 1) an ear **11**.

The upper cutter **1** includes the fastening block **1***b* which is mounted by screws **21** and **22** in a recess in the forward end of the blade carrier **1** to pivot about a pin **12** which is the fulcrum thereof, and which terminates at its lower edge in a blade **1***a*. The cutting edge of said blade has a slope of 15 degrees with respect to a horizontal plane.

Secured at its upper end to block **1***b* by the bolt **21**, and extending downwardly into engagement with the blade **1***a* is a spring **13** which holds the blade **1***a* slightly inclined inwardly, that is to say towards the lower cutter **2**. A slight clearance **42** between the head of the bolt **22** and the block **1***b* permits the latter to be pivoted by spring **13** slightly about the pin **12**, when the cutters **1** and **2** are in their open positions, as indicated by broken lines at **14** and **15** in FIG. 1. When the blades **1***a* and **2***a* are moved to their cutting positions (FIG. 2) the ear **11** on blade **2***a* guides the blade **1***a* into the position shown in FIG. 2 against resistance of spring **13**.

When a weft has been picked, and exactly in the instant of time in which the reed beats the weft through the open cutters **1** and **2** into the fell F of the fabric, the lower cutter **2** starts its lifting movement from the position **14**, shown in dotted line in FIG. 1, and is displaced towards its cutting position. At this time the beaten weft extends from the fabric through the opening **16** between the cutters, and through the selector mechanism (not illustrated) to its respective bobbin B at the side of the loom. The cutter **2** finally reaches its uppermost position so that the ear **11** is positioned adjacent the weft threads coming from the selector. As soon as one of the weft selectors starts its active stroke by displacing the selected weft forward so as to position it in front of the conveying or inserting needle N to be grasped thereby, when the needle next advances into the shed defined by the warps W, the selected weft thread is guided around and held, in this position nearby the fabric, by the ear **11**.

Thus the conveyor needle, during its displacement towards the inside of the warp shed, will draw the selected weft about the ear **11** and cause it to be positioned above the cutting blade **2***a* of the lower cutter **2**.

Concurrently with the advance of needle N into the shed, the downward movement of the upper cutter 1 is started, from the position 15, outlined in dotted lines in FIG. 1, to its solid line or cutting position abutting the cutter 2. This causes the selected weft to be severed by the blades 1*a* and 2*a* at a point between the fabric and the needle N, thus allowing the needle to draw the weft into the shed. In its downward movement, the lower portion of the edge of the movable blade 1*a* meets the tip of the ear 11, which is shaped so as to compel the blade to be displaced outwardly.

The spring 13 then urges the blade 1*a* resiliently against the blade of the blade of the lower cutter 2, thus ensuring a continuous adherence between the two blades during cutting.

Furthermore, the coaction of the forks 6 and 7 with the triangular cam 4 and 5, by ensuring at any time two points of contact between a respective cam and its associated fork, permits an entirely positive control of the movement of the cutters and allows the timing of the movement in any position whatsoever.

Having thus described my invention, what I claim is:

1. A weft-cutting device for a shuttleless loom of the type having a crankshaft which rotates once each time a weft is picked, and a weft selector mechanism adjacent one side of the loom for moving a selected one of a plurality of wefts into picking position to be engaged and drawn by an inserting needle into a warp shed, comprising

a drive shaft connected to said crankshaft to be rotated thereby at the same speed as said crankshaft,

a pair of cutters mounted adjacent said one side of said loom to pivot about a common axis, each of said cutters having thereon a blade,

means connecting said drive shaft to said cutters positively to oscillate said cutters about said axis into and out of operative positions in which the blade on one of said cutters is moved into resilient engagement with the blade on the other of said cutters, and

means on one of said cutters for guiding the selected weft into a severing position between said cutters, when said selected weft is drawn into the warp shed by said inserting needle.

2. A weft-cutting device as defined in claim 1, wherein

said connecting means comprises a pair of cams secured to said drive shaft, said cams being generally triangular in configuration,

said controlling means includes a pair of pivotal forks connected to said cutters positively to transmit their pivotal movements to said cutters, said

each of said cams rotates between the furcations of one of said forks and is constantly engaged at opposite sides thereof by the furcations of the associated fork.

3. A weft-cutting device as defined in claim 1, wherein

said cutters are shaped to form confronting recesses which define an opening between said cutters, when said cutters are in their operative positions, and

means mounting said cutters on said loom so that said opening will register with the fell of the fabric woven thereon.

4. A weft-cutting device as defined in claim 1, wherein said guiding means comprises a finger integral with one of said blades, and projecting beyond said one blade to extend into the path of said selected weft during the movement thereof into said shed.

5. A weft-cutting device as defined in claim 4, including

means mounting the other of said blades on its cutter for limited pivotal movement about an axis transverse to said common axis, and

spring means urging said other blade into resilient contact with said one blade, when said cutters are in their operative positions,

said finger being engageable with said other blade during the movement of said cutters to said operative positions, thereby to guide said other blade into shearing engagement with said one blade.

References Cited

UNITED STATES PATENTS

1,006,222	10/1911	Jensen	83—600
1,349,915	8/1920	Quast	139—263
3,157,208	11/1964	Juillard	139—127

FOREIGN PATENTS

590,960	4/1959	Italy.

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