

Feb. 6, 1951

B. L. RHODES

2,540,912

THREAD CUTTER AND CLAMP FOR LOOMS

Filed Dec. 28, 1949

FIG. 1.

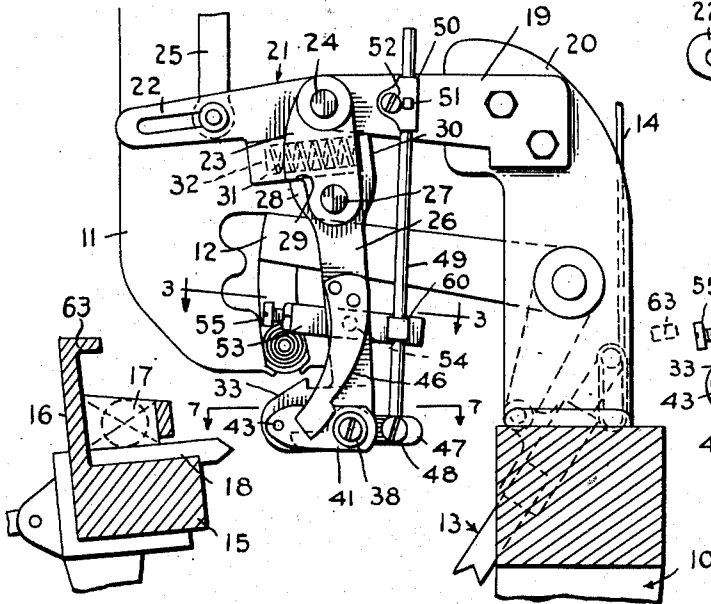


FIG. 2.

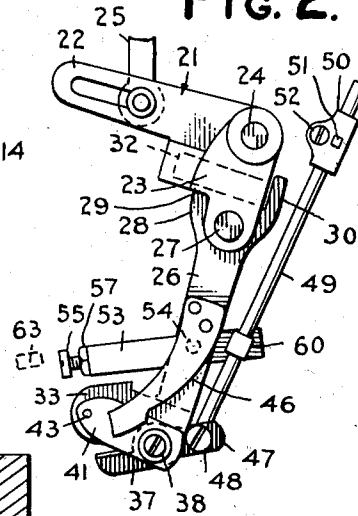


FIG. 3.

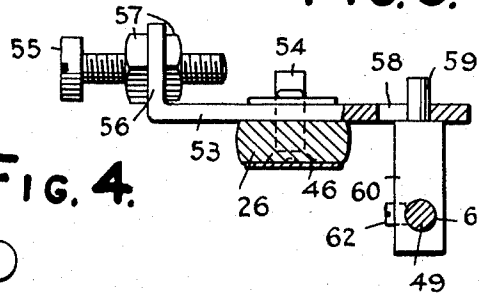


FIG. 5.

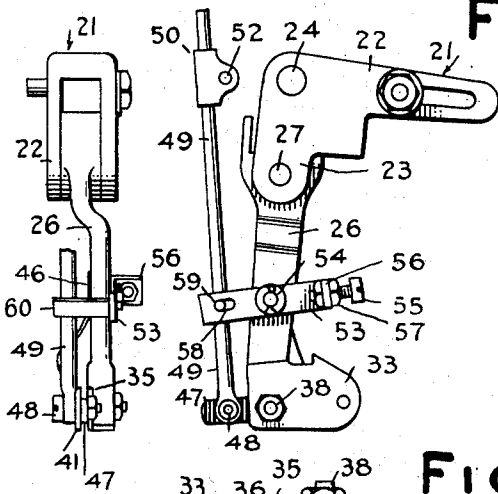


FIG. 4.

FIG. 6.

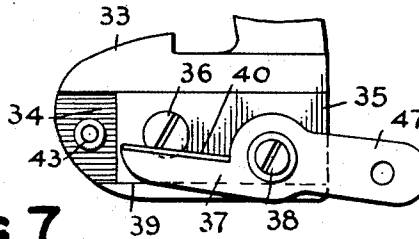
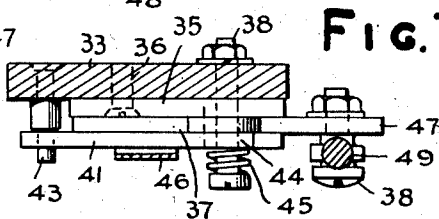


FIG. 7.



INVENTOR.  
BLUFFIE L. RHODES

BY *B. L. Rhodes*

ATTORNEY

## UNITED STATES PATENT OFFICE

2,540,912

## THREAD CUTTER AND CLAMP FOR LOOMS

Bluffe L. Rhodes, Clearwater, S. C.

Application December 28, 1949, Serial No. 135,361

5 Claims. (Cl. 139—264)

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My invention relates to thread cutters and clamps for looms.

An important object of the invention is to provide a thread cutter which is moved forwardly by the lay, to close the movable blade and to automatically effect a disengagement between the lay and thread cutter, before the lay has completed its forward movement to effect an early cutting of the weft and to limit the closing movement of the movable blade so that it will not improperly break the clamping engagement between the weft and the clamp plate, prior to the severing of the weft at the selvage.

A further object of the invention is to provide simplified means for operating the movable blade of the cutter and which properly regulates the extent of the closing movement of the movable blade, dispensing with the necessity of a stop block for the blade.

A further object of the invention is to provide adjustable means for regulating the time of closing of the movable blade.

A further object of the invention is to improve the thread cutter and clamp shown in Patent 2,326,862, simplifying the same and rendering its operation more accurate.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawings, forming a part of this application, and in which like numerals are employed to designate like parts throughout the same,

Figure 1 is a side elevation of the lower portion of the weft replenishing mechanism and thread cutter, viewed from the center of the loom, the thread cutter being shown in the closed or normal starting position,

Figure 2 is a side elevation of the thread cutter, showing the same shifted rearwardly to open the movable blade of the cutter,

Figure 3 is a horizontal section taken on line 3—3 of Figure 1,

Figure 4 is a side elevation of the opposite side of the thread cutter, with respect to Figure 2,

Figure 5 is an edge elevation of the same,

Figure 6 is a fragmentary side elevation of the cutter, similar to Figure 2, with the clamp plate removed, and,

Figure 7 is a horizontal section taken on line 7—7 of Figure 1.

In the drawings, the numeral 10 designates a loom frame carrying a magazine 11, preferably of the multiple color type and having the usual

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transfer arm 12 and latch 13, positioned for transfer by the downward motion of a rod 14.

The numeral 15 designates a lay which swings rearwardly and forwardly for each pick of the loom, and is provided with a shuttle box 16 to receive a shuttle 17. A bunter 18 is mounted on the lay for co-action with the latch 13, when the latch is raised on a forward beat of the lay on transferring picks, to cause downward movement of the transfer arm 12 so that a reserve bobbin in the mechanism can replace the bobbin in the shuttle. During transfer, a weft or thread extends from the selvage of the fabric into the shuttle box 16 and is attached to the bobbin in the shuttle box. Unless this thread is cut, there is danger that it will be drawn into the warp shed, and my thread cutter is constructed to cut the thread adjacent to the shuttle box.

Rigidly secured to the magazine 11 is a horizontal support or bar 19 also rigidly secured to a stationary stand 20 mounted upon the loom frame. Mounted upon one side of the support 19 is a bell crank lever 21, including a long generally horizontal arm 22 and a short generally vertical arm 23. This bell crank lever is pivoted upon the support by pin 24. The long arm 22 extends rearwardly and has pivotal connection with a link 25. The generally vertical arm 23 is forked to receive a carrier arm 26 normally extending parallel with the longitudinal axis of the arm 23. The carrier arm is pivoted to the arm 23 by a pin 27 and has a shoulder 28 which engages a stop part 29 of the arm 23. The carrier arm has an extension 30 at its upper end engaging a compressible coil spring 31 held within a socket 32 formed upon the arm 23. A stiff yielding connection is therefore provided between the carrier arm 26 and the arm 23, to permit of a yielding action of the carrier arm in the event that it is engaged by a misplaced shuttle.

Formed integral with the lower end of the carrier arm 26 is a generally horizontal head 33 having an inner flat face provided with a recess 34, receiving a stationary blade 35 held in place by a screw 36 or the like, which has its head slightly countersunk in the blade 35. Pivotaly mounted upon the free face of the stationary blade is a movable blade 37 by means of a bolt 38 so that the cutting edges 39 and 40 co-act. Arranged upon the outer face of the blade 37 is a weft clamp plate 41 having an aperture 42 for slidably receiving a pin 43, fixed upon the head 33. This clamp plate also has an aperture 44 for slidably receiving the bolt

38 and a spring 45 is arranged between the head of the bolt and the clamp plate, to yieldingly press the clamp plate against the outer face of the pivoted blade. The clamp plate is further pressed toward the pivoted blade by a leaf spring 46 screwed to the carrier arm 26. When the weft is being severed by the blade 37, a part of the weft is carried between the blade 37 and the clamp plate and is held between the clamp plate and blade, and this held portion of the weft extends to the selvage of the fabric. The stop block for the blade in Patent 2,326,862 is omitted.

The pivoted blade 37 is provided with a longitudinally extending arm 47, to which is pivoted at 48 an upstanding rod or link 49. This rod 49 is longitudinally adjustably mounted in a sleeve 50 and is clamped therein in the selected adjusted position by a set screw 51. The sleeve is pivotally mounted upon the stationary support 19 by a pin or pivot 52 to swing vertically, and the pin or pivot is disposed in the same horizontal plane with the pivot 24 but is spaced forwardly from it. It is thus seen that the rod 49 is eccentrically pivoted with respect to the carrier arm 26. The numeral 53 designates a bunter lever, extending transversely of the carrier arm and pivotally mounted thereon upon the side thereof remote from the leaf spring by a pin or pivot 54. This bunter lever 53 is provided at its rear end with a longitudinal adjustable head 55, in the form of a bolt screw threaded within an opening formed in a lateral extension 56 of the bunter lever 53 and carrying nuts 57 whereby the bolt may be locked in the selected adjusted position. At its forward end the bunter lever 53 has a longitudinal slot 58 receiving a pin 59 rigidly secured to a block 60 and this block has an opening 61 for slidably receiving the rod 49 so that the block 60 may be longitudinally adjustable upon the rod 49 and clamped thereto in the selected adjustable position by a set screw 62. When the carrier arm 26 is shifted to the rear position, the bunter lever 53 is swung upon its pivot 54 so that its head 55 will be lowered to the elevation of a lateral extension 63 formed upon the shuttle box 16.

The construction hereinbefore described is substantially identical with that shown in Patent 2,326,862, with certain exceptions. In applicant's invention, the stop block for the blade in Patent 2,326,862 is omitted, and the rod 49 in applicant's device has the sleeve 50 clamped thereon and this sleeve swings about the fixed pivot 52. Applicant omits the sliding action of the rod 49, the spring arrangement, and the stop collars, shown in said patent. Applicant omits the fixed buffer 75 carried by the lay in said patent or by the carrier in said patent, and substitutes therefor the pivoted bunter lever 53, mounted upon the carrier arm and connected with the rod 49 and having its rear end shiftable to a lowered position in the path of travel of the extension 63 of the lay and to a raised position above the path of travel of the extension 63. The operating means for the link 14 may be the same as for the operating means for the link 13 in said patent, and the operating means for the link 25 may be the same as the operating means for the line 23 of said patent. The loom frame is provided with a Temple cutter as shown in said patent, to sever the weft adjacent to the selvage. The operation of this Temple cutter is the same as disclosed in said patent. Applicant's weft cutter is disposed near the shuttle

box and the Temple cutter near the selvage as disclosed in said patent. All other parts of the apparatus are conventional and may be identical with those shown in Patent 2,326,862.

Under normal conditions the carrier arm 26 is in the generally vertical forward position, Figure 1. When the replenishing operation of the loom is called for by mechanism (not shown but well known), the link 25 is raised, by the means shown in said patent, and the carrier arm 26 is shifted to its rearmost position, shown in Figure 2, while the lay 16 is in a sufficiently rear position to prevent contact between the head 55 and extension 63. When the carrier arm 26 thus moves rearwardly, the rod 49 swings the pivoted blade 37 to the open position as the distance between the pivots 38 and 52 is increased, due to the eccentric mounting of the carrier arm 26 and rod 49. As the lay moves forwardly, the thread or weft passes into the space between the pivoted blade 37 and stationary blade 35. After this, the lay extension 63 engages the head 55 of the bunter lever 53 and swings the carrier arm 26 forwardly, and this swinging movement causes the rod 49 to swing the pivoted blade to the closed position, to sever the weft and to clamp the end of the weft which extends from the selvage to the bobbin between the blade 37 and clamp plate 41, and release that portion of the weft which extends to the bobbin. When the carrier arm 26 has been moved rearwardly sufficiently so that it assumes a substantially vertical position, and the pivoted blade 37 has been properly closed, the head 55 of the bunter lever has been elevated sufficiently so that it moves out of the path of travel of the shuttle extension 63 and will be positioned at an elevation above this extension so that the further forward movement of the lay will not move the carrier arm 26 further rearwardly. This is important, as it stops the swinging movement of the pivoted blade 37 while this blade is still clamping the weft from the selvage against the clamp plate 41. This enables me to dispense with the stop block for the blade in the patent which necessitates the sliding arrangement of the rod and sleeve and spring of said patent. The severing of the weft by the pivoted blade 37 occurs early and there is little chance for the weft to unduly slacken due to the advance of the lay, before such severing. When the carrier arm 26 is in the extreme forward position, the weft will extend rearwardly at a proper angle with respect to the selvage to enter the Temple cutter which will cut the weft near the cloth before the second replenishing operation, as explained in said patent. As stated, the construction hereinbefore presented is identical with that shown in said patent, with the exceptions stated. The applicant reserves the right to incorporate into the application the remainder of the disclosure in said patent, which has been omitted as it is thought to be unnecessary since its disclosure is available in said patent.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred example of the same, and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

Having thus described my invention, I claim:

1. A weft thread cutting and clamping device for use upon a weft replenishing loom having a lay, said device comprising a carrier mounted upon the loom forwardly of the lay and movable

rearwardly toward the lay when the lay is in the rear position and movable forwardly with the lay when the lay moves forwardly, weft cutting means mounted upon the carrier to receive the weft extending from the selvage of the fabric to the shuttle in the shuttle box and automatically operated to sever the weft when the carrier moves forwardly, a weft clamp mounted upon the carrier for co-action with the cutting means, a bunter element mounted upon the carrier and movable with relation thereto into the path of travel of a portion of the lay so that the lay contacts with the bunter element and shifts the carrier forwardly during a portion of the forward stroke of the lay, and means to move the bunter element out of the path of travel of such portion of the lay after the lay has moved forwardly for a selected distance and before it completes its forward stroke.

2. A weft thread cutting and clamping device for use upon a weft replenishing loom having a lay, said device comprising a carrier disposed forwardly of the lay, a fixed support, means to pivotally mount the carrier upon the fixed support so that the carrier is movable in the direction of movement of the lay, weft cutting means mounted upon the carrier to receive the weft extending from the selvage of the fabric to the shuttle in the shuttle box and including a pivoted blade, a weft clamp mounted upon the carrier for co-action with the pivoted blade, a rod pivotally connected with the pivoted blade, means to pivotally connect the rod with the fixed support, the pivot means of the carrier and the pivot means of the rod being eccentric, a bunter lever pivotally mounted upon the carrier and extending transversely thereof, and means pivotally connecting the bunter lever and the rod, the arrangement being such that the bunter lever is arranged in the path of travel of a part of the lay when the carrier arm is in the rearmost position and moved out of such path of travel when the lay has moved the carrier forwardly for a selected distance.

3. A weft thread cutting and clamping device for use upon a weft replenishing loom having a lay, said device comprising a carrier arm arranged forwardly of the lay, a fixed support, means to pivotally mount the carrier arm upon the fixed support so that the carrier arm swings in a substantially vertical plane in the direction of movement of the lay, weft cutting means mounted upon the carrier arm including a pivoted blade, a weft clamp mounted upon the carrier arm for co-action with the pivoted blade, a rod pivotally connected with the pivoted blade and extending longitudinally of the carrier arm, a pivot element secured to the rod so that the rod cannot move longitudinally with relation to the pivot element, said pivot element engaging the fixed support, a bunter lever arranged generally

horizontally and pivoted between its ends upon the carrier arm, and a pivot element engaging the forward end portion of the bunter lever and longitudinally adjustably mounted upon the rod, the arrangement being such that the bunter lever is disposed in the path of travel of a part of the lay when the carrier arm is in the rearmost position and moved out of such path of travel when the lay moves the carrier arm forwardly for a selected distance.

4. A weft thread cutting and clamping device for use upon a weft replenishing loom having a lay, said device comprising a carrier mounted upon the loom forwardly of the lay and movable rearwardly and forwardly in the direction of travel of the lay, weft cutting means mounted upon the carrier to receive the weft extending from the selvage of the fabric to the shuttle in the shuttle box, means to automatically operate the weft cutting means to sever the weft when the carrier moves forwardly, a weft clamp mounted upon the carrier for coaction with the cutting means, a bunter element mounted upon the carrier and movable with relation to the carrier into and out of the path of travel of a portion of the lay, and means to move the bunter element into the path of travel of the lay portion when the carrier is moved rearwardly and out of such path of travel when the carrier is moved forwardly.

5. A weft thread cutting and clamping device for use upon a weft replenishing loom having a lay, said device comprising a carrier mounted upon the loom forwardly of the lay and movable rearwardly and forwardly in the direction of travel of the lay, weft cutting means mounted upon the carrier to receive the weft, means to automatically operate the weft cutting means to sever the weft when the carrier moves forwardly, means to move the carrier rearwardly, a bunter element mounted upon the carrier and movable with relation to the carrier into and out of the path of travel of a portion of the lay, means connecting the bunter element and the automatic means so that the bunter element is shifted by such automatic means, the carrier being moved rearwardly by the lay portion bearing against the bunter element.

BLUFFIE L. RHODES.

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The following references are of record in the file of this patent:

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