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2,515,045

THREAD CUTTING AND CLAMPING MECHANISM

Filed March 6, 1948

2 Sheets-Sheet 1

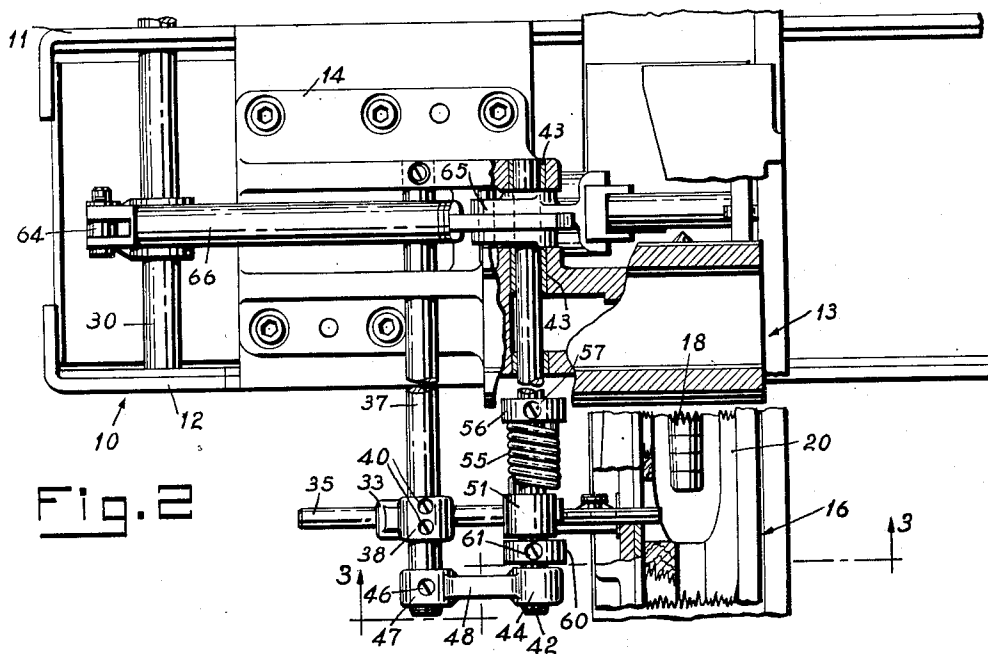
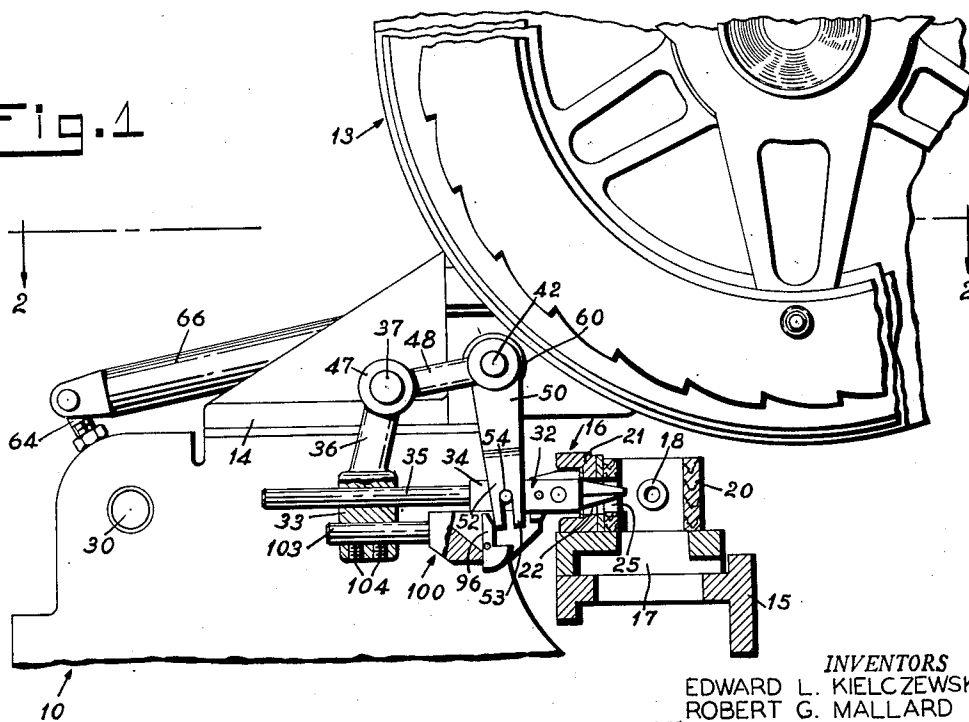


Fig. 2

Fig. 4



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2 Sheets-Sheet 2

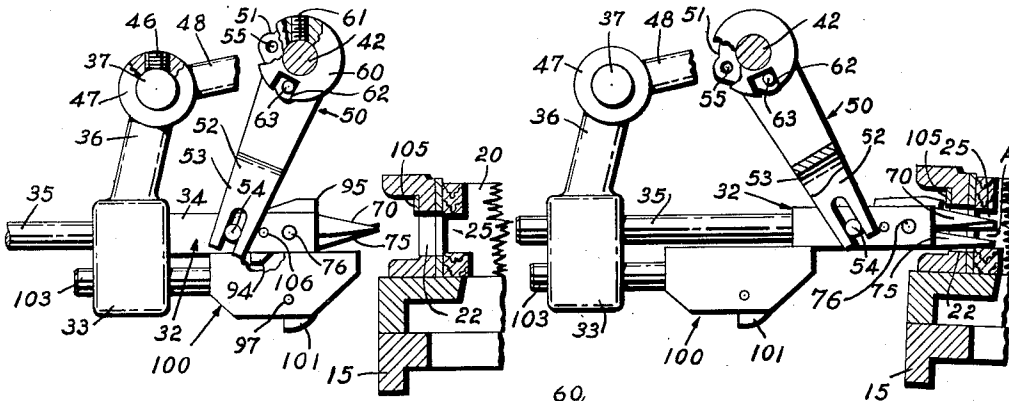


Fig. 3

Fig. 4

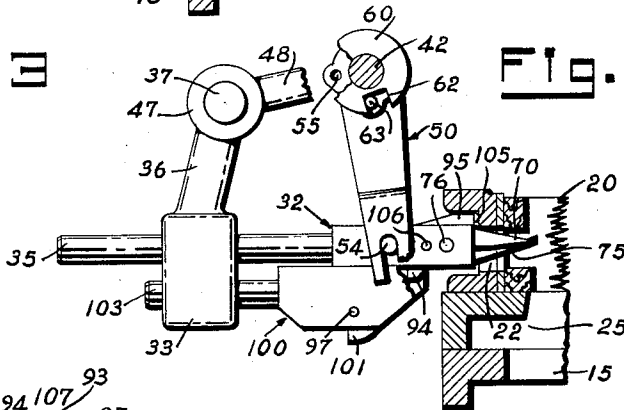


Fig. 5

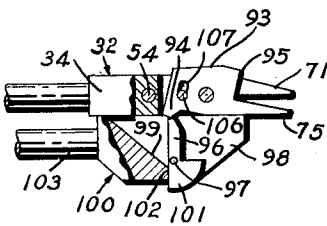


Fig. 6

Fig. 7

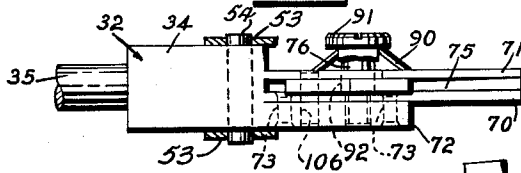


Fig. 9

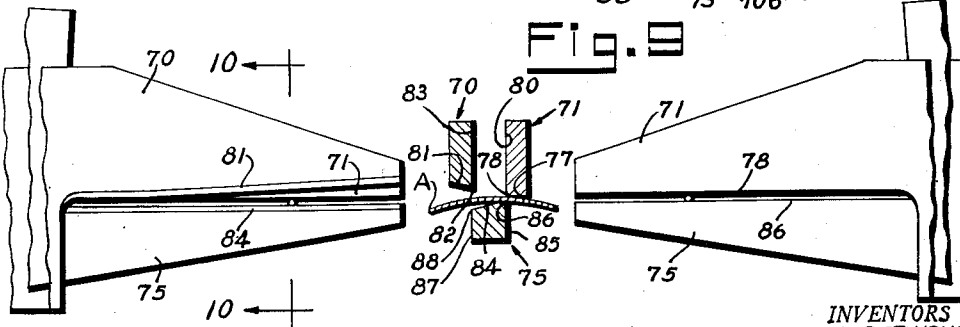


Fig. 8

Fig. 10

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THREAD-CUTTING AND CLAMPING
MECHANISM

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Application March 6, 1948, Serial No. 13,454

16 Claims. (Cl. 139—263)

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The present invention relates to a thread cutting and clamping mechanism employed in a loom in connection with a filling replenishing motion for cutting the filling end on an exhausted bobbin prior to a transfer operation and for clamping the severed filling end extending to the cloth.

Generally, in looms of the fly shuttle type, when replenishing of filling, or yarn, is effected, the filling end extends from the cloth selvage through the eye of the shuttle to the spent bobbin. When the fresh bobbin is inserted in the shuttle, not only must the spent bobbin be removed but the shuttle eye must be cleared to allow the yarn from the new bobbin to be threaded properly in the eye. To accomplish this, the yarn extending from the selvage of the cloth must be cut as closely as possible to the shuttle eye, so that the spent bobbin, in being ejected, will draw the short length of yarn left extending from the shuttle through the shuttle eye, leaving the latter entirely clear and free. The outgoing filling end is not only severed near the shuttle but is clamped near the severed end, so that it may be withdrawn out of the range of the weaving instrumentalities simultaneously with the transfer operation and held in this withdrawn position until the temple thread cutter cuts the yarn close to the selvage. There is accordingly provided in such looms a movable blade carrier having severing and clamping blades mounted in front of the shuttle box at the replenishing side of the loom. These blades are moved by the carrier to filling receiving position, i. e., rearwardly toward the shuttle box, prior to each transfer operation and are withdrawn forwardly from such position simultaneously with the transfer operation.

Hitherto the clamping of the yarn has been effected by the crossing action of the opposed edges of a pair of relatively movable blades, one of which was of metal while the other of fiber or similar comparatively soft material to prevent shearing of the yarn. As a result of this construction, the fiber blade wore out quickly and required to be continually replaced.

Also, in prior known constructions, the blade carrier was operated from the transfer arm through a series of links or other similar devices which were not only comparatively complicated but in their operation were attended with slackness, adversely affecting the efficient operation of the cutting and clamping blades.

One object of the present invention is to provide a new and improved thread cutting and clamping mechanism in which the opposed clamp-

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ing blades, although of hard rigid material, do not cut the severed end of the thread therebetween as they cross, but effectively hold the thread until the next thread cutting operation.

Another object is to provide a new and improved comparatively simple thread cutting and clamping mechanism operated from the starting rod, through a comparatively simple device free from the usual slack connections, when transfer is indicated.

Various other objects of the invention will be apparent from the following particular description and from an inspection of the accompanying drawings, in which:

Figure 1 is a longitudinal section of the loom near the replenishing side of the loom showing a thread cutting and clamping mechanism embodying the present invention and indicated in thread cutting and clamping position;

Figure 2 is a horizontal section of the loom taken approximately along the lines 2—2 of Figure 1;

Figure 3 is a section of the thread cutting and clamping mechanism taken approximately along the lines 3—3 of Figure 2, but showing this mechanism prior to initiation of transfer;

Figure 4 is a section similar to that of Figure 3 but showing the mechanism after transfer has been indicated and after the cutting and clamping blades have been moved rearwardly into operative position in the shuttle box;

Figure 5 is a section similar to that of Figure 4 but showing the shuttle box in forward position to close the cutting and clamping blades;

Figure 6 is a detail side view partly in section and partly in side elevation of part of the thread cutting and clamping mechanism;

Figure 7 is a detail plan view showing the mounting for the cutting and clamping blades;

Figure 8 is a side elevation, on an enlarged scale, of the thread cutting side of the blades;

Figure 9 is a side elevation of an enlarged scale of the thread clamping side of the blades; and

Figure 10 is a section of the cutting and clamping blades taken on lines 10—10 of Figure 8.

Referring to the drawings, and especially to Figures 1 and 2, the loom to which the present invention is applicable is shown for the purpose of illustration as comprising a loom frame having a right loomside 10 with parallel upright frame webs 11 and 12 interconnected and braced in any suitable manner, as described in copending application Serial No. 691,237, filed August 17, 1946. On the right loomside 10 and also on the breast beam (not shown) is the rotatable hopper

or magazine 13 of the transfer, or replenishing, mechanism supported on a stand 14. The hopper 13 carries reserve bobbins (not shown) in an annular series and may be of any suitable well-known construction.

The loom is provided with the usual lay 15 reciprocable therealong and carrying on its right side and underneath the hopper 13 the usual filling replenishing shuttle box 16 provided with a bottom opening 17 for the ejection therethrough of the spent filling bobbin 18 from a shuttle 20. The front box plate 21 has an opening 22 adjacent to the position of the shuttle eye when the shuttle 20 is properly boxed in the shuttle box 16. The opening 22 extends along the front box plate 21, slopes upwardly towards the left side of the loom and is open at its left hand end to permit the severed clamped filling thread to be cleared from the shuttle box 16, as said box moves rearwardly with the lay 15 after thread severing and clamping operations, as will be more fully described.

The shuttle 20 has the usual cut-away portion or slot 25 in the front wall thereof adapted for partial registry with the opening 22 of the front shuttle box wall 21, so that when the thread cutter is in its operative rearward position and the cutting blades extend through said opening and said slot, and are open, the outgoing filling end will rest between said blades ready to be cut.

The operation of the replenishing or transfer mechanism is controlled by a starting rod 30 suitably supported in journals on the loomsides, as shown, or on the forward side of the breast beam. Whenever the substantial exhaustion of the filling is indicated by a feeler mechanism, a partial revolution is given to the starting rod 30; this sets the transfer mechanism for transfer. The transfer mechanism with its starting rod 30 may be of the usual type.

The thread cutting and clamping mechanism comprises a blade carrier 32 located in front of the shuttle box 16 and directed for forward and rearward movement by a guide 33. The blade carrier 32 comprises a blade mounting block 34 and a tail rod 35 passing through the guide 33 with a snug slide fit.

The guide 33 is integral or otherwise rigid with the lower end of an arm 36 depending from a fixed rod 37 and formed at its upper end with a sleeve 38. This sleeve embraces the rod 37 and is affixed thereto in adjusted position as, for example, by set screws 40.

As a feature of the present invention, the blade carrier 32, instead of being reciprocated as usual through a comparatively complicated device from the shaft of the transfer arm, is operated more simply and more directly from the starting rod 30 through a rock shaft 42. The rock shaft 42 extends in front of the lay 15 substantially parallel to the longitudinal axis thereof and is supported near its inner end in spaced bearings 43 in the hopper stand 14 and at its outer end in a bearing 44 sustained from the rod 37. The rod 37 is parallel to the rock shaft 42 and is affixed near its inner end in the hopper stand 14. The outer end of the rod 37 has secured thereto, as for example, by a set screw 46, one end 47 of an arm 48, the other end constituting the bearing 44 for the outer end of the rock shaft 42.

The blade carrier 32 is urged rearwardly towards the shuttle box 16 by the rock shaft 42. To that end, there is supported on the rock shaft 42 a depending arm 50 having at its upper end a

sleeve 51 embracing said rock shaft with a rotative fit to permit rotation of said sleeve with respect to said shaft and having at its lower end a fork whose tines 52 straddle the blade mounting block 34 of the blade carrier 32, as best shown in Figs. 4 and 7. The lower end of each tine 52 is cloven to provide prongs 53 between which is a slot which receives a pin 54 passing through the blade mounting block 34.

The sleeve 51 is rotatively urged on the shaft 42 by a coil spring 55, one end of which is secured to said sleeve, while the other end is secured to a collar 56 affixed to said shaft as, for example, by a set screw 57. The coil spring 55 is torsionally stressed to urge the sleeve 51 counterclockwise relative to the shaft 42 and thereby to urge the blade carrier 32 rearwardly (to the right) towards the shuttle box 16.

The sleeve 51, although spring-pressed for counterclockwise rotation, is held normally against such rotation by a stop in the form of a collar 60 held fast to the shaft 42 as, for example, by a set screw 61, and having a slot 62, into which extends a pin 63 secured to the rotative sleeve 51. The slot 62 is larger in width than the diameter of the pin 63 to form, for the purpose to be more fully described, a lost-motion connection between the sleeve 51 and the shaft 42.

The shaft 42 is normally held against rotation by the starting rod 30 through crank arms 64 and 65 secured to the starting rod 30 and the shaft 42 respectively and pivotally interconnected at their outer ends by a link 66.

During normal operations of the loom, and while no transfer is indicated, the starting rod 30 is in position to hold the collar 60 in the position shown in Figure 3. In this position, the pin 63 bears against the right hand side of the slot 62 in the stop collar 60, so that the blade carrier 32 is held in forward inoperative position.

When transfer is indicated, the starting rod 30 is partially rotated counterclockwise into the position shown in Figure 1, thereby rotating the shaft 42 counterclockwise and causing thereby the collar 60 affixed to said shaft to rotate from the position shown in Figure 3 to the position shown in Figure 4. This results in the release of the sleeve 51 for counterclockwise rotation under the action of the spring 55 thereby rotates the arm 50 with said sleeve counterclockwise from the position shown in Figure 3 to the position shown in Figure 4. This operation moves the blade carrier 32 rearwardly towards the shuttle box 16 into operative position.

The lost motion connection between the collar 60 and the sleeve 51 through the slot 62 and the pin 63, permits the shipper arm 50 to move clockwise from the position shown in Figure 4 to the position shown in Figure 5, without affecting the rotative position of the shaft 42, when the blade carrier 32 is pushed forwardly by the forward movement of the lay 15, as will be more fully described.

The blade carrier 32 comprising the block 34 mounts a pair of spaced blades 70 and 71 of rigid material, such as metal. The blade 70 is a thread cutting blade, while the blade 71 is a thread clamping blade. For blade mounting purposes, the block 34 has integral or otherwise rigid therewith a rearward plate extension 72. The thread cutting blade 70 is affixed to the plate extension 72 by rivets 73, or other similar fastening members (Fig. 7). The clamping blade 71 is yieldably supported in fixed position against

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edgewise movement on the plate extension 72 in a manner to be described.

As a feature of the present invention, instead of providing a movable blade of rigid material such as metal for thread cutting cooperation with the fixed cutting blade 70 and a separate fiber blade for thread clamping cooperation with the fixed clamping blade 71, as in prior known constructions, there is provided a single movable blade 75 of rigid material such as metal, disposed between said blades 70 and 71 and cooperating therewith to cut the thread and clamp the cut thread end. The movable blade 75 is pivotally supported on a pin 76 in the manner to be described, and is substantially thicker than the thickness of either of the two blades 70 and 71, as shown in Figure 10. The clamping blade 71 has a square lower side 77 defining a clamping edge 78 on the inner face 80 of said blade. The cutting blade 70 has a lower bevelled side 81 slanting downwardly towards the movable blade 75 and defining a cutting edge 82 on the inner face 83 of said blade. The movable blade 75 has a bevelled side 84 slanting upwardly towards the clamping blade 71 and defining on one face 85 a clamping edge 86 for cooperation with the clamping edge 78 on the fixed blade 71, and on its other face 87 a cutting edge 88 for cooperation with the cutting edge 82 on the fixed cutting blade 70. The different cutting and clamping edges are so arranged that as the movable blade 75 is moved pivotally for cutting and clamping operations, the clamping edges 78 and 86 located on the side of the device nearest to the cloth first come together across the outgoing filling end A, as shown in Figure 10, while the cutting edges 82 and 88 are still spaced apart. As the blade 75 continues to move into overlapping relationship with respect to the fixed clamping blade 71, the filling A becomes clamped between the confronting faces 80 and 85 of said blades. Upon continued pivotal movement of the blade 75, the cutting edges 82 and 88 will cross and shear the filling therebetween. By that time, the end of the severed filling A will have been firmly clamped between the blades 71 and 75.

It has been found that two relatively crossable rigid blades with edges extending almost parallel at the instant they cross each other will not cut a thread therebetween but will instead clamp the thread between their confronting faces. Applying this discovery to the structure of the present invention, the clamping edges 78 and 86 are made to extend substantially parallel as they cross, as shown in Figure 9, and diverge only slightly towards their outer ends to prevent these outer ends from coming together before the inner parts of said edges have started to cross. If these edges at their outer ends should come together before the inner parts of the clamping edges 78 and 86 start to cross, and if these outer ends should overlap transversely of the planes of the blades, these outer ends might catch and prevent operation of the device.

The cutting edges 82 and 88 diverge at a substantial angle towards their outer ends, as in the case of an ordinary pair of scissors, to cause said edges to cross progressively from their inner ends outwardly.

The blades 71 and 75 are mounted on a pivot pin 76 having a reduced end threaded into the plate extension 72. The shank 92 of pin 76 is smooth and is of such a size relative to the holes in blades 71 and 75 that these can slide along the length of said shank while blade 75 can pivot

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relative thereto. The blades 71 and 75 are yieldably pressed together and towards blade 70 by a spring 90 in the form of fingers bearing at their free ends against blade 71 and bearing at the center against the slotted head 91 on the pivot pin 76.

For operating the movable blade 75 at the proper time, said blade has an extension 93 defining on its under side a blade opening pawl 94 and on its upper side a blade closing pawl 95. The pawl 94 is operated by a trip 96 pivoted at 97 in a recess 98 formed in a trip support 100. The trip 96 has integral or otherwise rigid therewith a counterweight 101 tending to maintain said trip in upstanding position as shown in Figure 6. A stop conformation 102 in the trip support 100 serves to limit clockwise rotation of the trip 96 in the position shown in Figure 6, while permitting said trip to swing idly counterclockwise from said position. To permit this counterclockwise rotation of the trip 96 from the position shown in Fig. 6, the end wall 99 of the groove 98 is inclined upwardly and away from the shuttle box 20.

The member 100 serves not only as a support for the trip 96 but also as a slide support for the blade carrier 32 as said carrier moves horizontally, and is carried by the guide 33 through a rod extension 103 on said member extending through a hole in said guide and adjustably retained therein by set screws 104.

For tripping the pawl 95 for blade closing operations, the front box plate 21 has on its outer side, over the opening 22, a bunter 105.

For limiting the angular movement of the blade 75 about its pivot support 76, there is provided a stop pin 106 passing through an elongated arcuate slot 107 in the movable blade extension 93 and retained at one end, as, for example, by a press-fit in the carrier plate extension 72. At its other end, the pin 106 passes with a slide fit through the clamping blade 71. The pin 106 serves thereby not only as a means for limiting the pivotal movement of the blade 75 but also serves in conjunction with the pin 76 to mount the clamping blade 71 against edgewise movement.

In the operation of the thread cutting and clamping mechanism, during the normal operation of the loom and while no transfer is indicated, the shaft 42 is held in the rotative position shown in Fig. 3 by its connection to the starting rod 30. The arm 50 is thereby held in the angular position shown in Fig. 3 and the blades 70, 71 and 75 are held in forward inoperative position, out of the way of the reciprocating lay 15. As soon as transfer is indicated, the starting rod 30 is rotated counterclockwise, thereby rotating the arm 50 into the position shown in Fig. 4 by the torsional action of the spring 55, and shifting the blade carrier 32 rearwardly towards the lay 15. As the blade carrier 32 is so moved rearwardly, the pawl 94 is cammed by the trip 96 while said trip is held in upright position by the stop 102, as shown in Fig. 6. This tripping of the pawl 94 causes the blade 75 to be rotated clockwise in open position about its pivot support 76, as shown in Fig. 6.

The movable blade 75 is frictionally held between the blades 70 and 71 by the spring 90, so that said movable blade will retain its angular position determined by the tripping of one of the pawls 94 and 95 until angularly shifted by the tripping of the other of said pawls.

While the blades 70, 71 and 75 are in rearward position and the blade 75 is in open position shown in Figure 4, the lay 15 on its next forward beat-up movement, will cause said blades to pass through the openings 22 and 25 in the front box plate 21 and shuttle 20, respectively, and to locate the filling end A between the movable blade 75 on one side and the blades 70 and 71 on the other side. As the lay 15 continues its forward movement, the bunter 105 engages the pawl 95 and rotates the blade 75 into closed position, as shown in Figure 5. This operation clamps the filling end between the blades 71 and 75 and cuts the filling end between the blades 70 and 75. Immediately after the closing of the blade 75, the transfer of a reserve bobbin from the hopper 13 to the shuttle box 16 and the simultaneous ejection of the exhausted bobbin through the box opening 17 takes place.

As the lay 15 continues its forward movement, it pushes the blade carrier 32 forwardly without affecting the rotative position of the shaft 42. This forward movement of the blade carrier 32 is permitted because of the lost-motion connection 60, 62 and 63 between the sleeve 51 and the shaft 42, as already described.

After the lay 15 reaches its forward position, it begins its rearward movement, thereby causing the severed clamped end of the filling A to be pulled out through the opening 22 in the front box plate 21 and to be withdrawn out of range of the weaving instrumentalities. During this rearward movement of the lay 15, the starting rod 30 is returned to its original rotative position. This operation causes the shaft 42 to rotate clockwise from the position shown in Figure 5 and causes the arm 50 thereby to continue to rotate clockwise by the pressing engagement of the right hand end of the slot 52 on the shaft collar 60 against the pin 63 on the arm carrying sleeve 51. The continued clockwise rotation of the arm 50 continues to move the blade carrier 32 forwardly with the blades 70, 71 and 75 closed and the severed filling clamped between the blades 71 and 75. As the pawl 94 rides past the trip 96, said trip is swung counterclockwise about its pivot support 97 without disturbing the closed angular position of the blade 75. As the pawl 94 moves forwardly beyond the trip 96, the released trip is returned into the upright position shown in Figure 6 by the action of the counterweight 101. The blade carrier 32 is moved forwardly by the shaft 42 into the inoperative position shown in Figure 3, until the next transfer operation. While in this inoperative forward position and while the severed filling end is held between the closed blades 71 and 75, the filling is severed near the cloth selvage by the usual temple thread cutter (not shown) and will be released from said blades, when these blades are again opened during the next thread cutting and clamping operation upon the next indication of transfer.

While the invention has been described with particular reference to a specific embodiment, it is to be understood that it is not to be limited thereto but is to be construed broadly and restricted solely by the scope of the appended claims.

What is claimed is:

1. In a thread cutting and clamping mechanism for a loom having a starting rod which is partially rotated when transfer is indicated, and a lay supported shuttle box with an opening in a wall plate thereof, the combination comprising a shaft, a connection between said rod and said

shaft, causing said shaft to rotate partially upon partial rotation of said rod resulting from a transfer indication, a thread cutting and clamping device opposite said opening, an arm supported on said shaft and operable to move said thread cutting and clamping device towards and away from said shuttle box, a connection between said shaft and said arm causing said arm to move into angular position to shift said thread cutting and clamping device in one direction towards said shuttle box upon partial rotation of said starting rod resulting from a transfer indication, whereby said device is made to enter said shuttle box through said opening for thread cutting and clamping action as said shuttle box is moved towards said thread cutting device by the reciprocation of the lay, means for operating said thread cutting and clamping device for thread cutting and clamping operations while said device extends through said opening, and means for moving said thread cutting and clamping device in an opposite direction after the thread has been cut and clamped, to withdraw the cut and clamped filling thread from said shuttle box through said opening.

2. In a thread cutting and clamping mechanism for a loom, the combination as described in claim 1, in which said starting rod extends across the loom, and said shaft extends substantially parallel to said rod in front of the lay, said thread cutting and clamping device extending in front of said opening and comprising a slidable blade carrier, said arm depending from said shaft and having at its lower end a connection to said blade carrier.

3. In a thread cutting and clamping mechanism of the character described in claim 1, in which the connection between said arm and said shaft is of the lost-motion type, causing said arm to move angularly in a direction to move the thread cutting and clamping device towards said shuttle box into operative position, when said shaft is partially rotated from an inoperative position in one direction by a transfer indication, and permitting said arm to be moved angularly in an opposite direction to a limited extent without affecting rotation of said shaft in an opposite direction, whereby the return of said shaft to its original inoperative position is controlled by the return of said starting rod to its original inoperative position.

4. In a thread cutting mechanism for a loom having a lay supported shuttle box with an opening in a wall plate thereof, the combination comprising a shaft, means responsive to a transfer impulse for rotating said shaft in one direction including means normally holding said shaft against rotation in said direction, a blade carrier, and a connection between said carrier and said shaft including spring means urging said carrier in said direction relative to said shaft and means normally effective to prevent movement of said carrier relative to said shaft in said direction under the influence of said spring means and effective upon rotation of said shaft due to a transfer impulse to permit said carrier to move in said direction towards said opening into operative position under the influence of said spring means.

5. In a thread cutting mechanism for a loom as described in claim 4, in which said carrier is moved by the lay in an opposite direction for part of its return trip, and said connection is of the lost-motion type permitting said carrier to be moved by the lay in said latter direction for

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part of the return trip of said carrier, without disturbing the rotative position of said shaft.

6. In a thread cutting mechanism for a loom as described in claim 4, said spring means comprising a coil spring embracing said shaft, said connection comprising a sleeve member on said shaft rotatable thereon, an arm rigid with said sleeve member and connected to said blade carrier, and a collar member affixed to said shaft, one of said members having a pin and the other member having a slot in which said pin extends with clearance to form a lost-motion drive connection between said members, one end of said spring being rigid with said shaft, the other end being secured to said sleeve, said spring being torsionally stressed to urge said sleeve rotatively, said carrier being movable by the lay in an opposite direction for part of its return trip, and said lost-motion connection being operatable to permit said carrier to be moved by the lay in said latter direction for part of the return trip of said carrier without disturbing the rotative position of said shaft.

7. In a thread cutting mechanism for a loom as described in claim 4, said holding means comprising a starting rod journaled across the loom and partially rotated by feeler means indicating substantial exhaustion of filling, said shaft being parallel to said rod, and said holding means comprising a crank arm and link connection between said rod and said shaft.

8. In a thread cutting and clamping mechanism for a loom having a lay supported shuttle box with an opening in a wall plate thereof, the combination comprising a fixed rod extending crosswise of the loom, a blade carrier opposite said opening having a tail extension, thread cutting and clamping blades on said carrier including at least one blade movable with respect to the other blades and said carrier, a guide for the slide movement of said tail extension supported from said rod, a shaft parallel to said rod, a bearing for said shaft supported from said rod, means for rotating said shaft partially in response to a transfer impulse, an arm carried by said shaft and connected to said carrier to move said carrier towards said opening into operative position upon said partial rotation of said shaft, whereby said blades are moved into position to pass through said opening during the lay movement of said shuttle box towards said blade carrier, while said shuttle box is moving in one direction towards said carrier, means for moving said movable blade into open position, as said carrier is moved towards said shuttle box, means for moving said movable blade into closed thread cutting and clamping position after passing through said opening, and means for moving said blade carrier towards inoperative position after cutting and clamping operations.

9. In a thread cutting mechanism for a loom having a starting rod which extends crosswise of the loom and which is partially rotated when transfer is indicated, and a lay supported shuttle box, the combination comprising a shaft parallel to said rod, a fixed rod parallel to said shaft, a bearing for said shaft supported from said fixed rod, a slidable blade carrier, a guide for said carrier supported from said fixed rod for guiding said carrier in its slide movement towards and away from said shuttle box, a connection between said starting rod and said shaft for rotating said shaft partially upon partial rotation of said starting rod resulting from a transfer indication, and a connection between said shaft and

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said blade carrier for moving said carrier towards said shuttle box into operative position and for withdrawing said carrier towards inoperative position after completion of cutting operations.

10. In a thread cutting mechanism for a loom having a lay supported shuttle box, a blade carrier, a pair of thread cutting blades on said carrier, one of said blades being mounted for movement in and out of cutting position with respect to the other blade, means for guiding said carrier for movement towards and away from said shuttle box into and out of operative position, said movable blade having a pair of pawls, a trip in the path of movement of one of said pawls for moving said movable blade into open position with respect to the other blade, as said carrier moves towards said shuttle box, a bunter on said shuttle box for the other pawl to move said movable blade into thread cutting position, while said blade carrier is in operative position, means responsive to a transfer indication for moving said blade carrier towards operative position, and means for moving said blade carrier towards inoperative position after cutting operations have been completed.

11. In a thread cutting mechanism for a loom, as described in claim 10, said shuttle box having a front wall plate with an opening therein, said blade carrier being mounted for movement towards and away from said shuttle box into and out of operative position, said blades being adapted to extend through said opening in operative position, and said bunter being on the outside of said plate on one side of said opening.

12. In a thread cutting mechanism for a loom, as described in claim 10, said shuttle box having a front wall plate with an opening therein, said blade carrier being adapted for substantially horizontal movement in front of said shuttle box into and out of operative position, said blade opening pawl being disposed in the upper side of said movable blade while the other pawl is on the lower side, said trip being disposed below said movable blade in the path of movement of said latter pawl, said bunter being disposed on the outside of said plate above said opening, said blades being adapted to extend through said opening in operative position.

13. In a thread cutting mechanism for a loom having a lay supported shuttle box, a blade carrier, a pair of thread cutting blades on said carrier, one of said blades being mounted for closing and opening movement into and out of cutting position with respect to the other blade, means for guiding said blade carrier for movement towards and away from said shuttle box into and out of operative position, said movable blade having a pawl, a pivotally mounted trip in the path of movement of said pawl for moving said movable blade into open position with respect to the other blade as said blade carrier moves towards said shuttle box, a stop for limiting the angular movement of said trip about its pivotal mounting as said pawl engages said trip during the movement of said blade carrier towards said shuttle box into operative position, means tending to maintain said trip in operative position towards said stop, said trip being adapted to swing idly about its pivotal mounting by the engaging action of said pawl during the return movement of said blade carrier from operative position, means for closing said movable blade into thread cutting position while said blade carrier is in operative position, means responsive to a transfer indication for moving said blade carrier towards op-

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erative position, and means for moving said blade carrier towards inoperative position after cutting operations have been completed.

14. In a thread cutting mechanism for a loom having a lay supported shuttle box, a blade carrier adapted to slide towards and away from said shuttle box, a pair of cutting blades, at least one of which is pivotally mounted and has a pawl extension, a blade carrier support along which said blade carrier is adapted to slide in its movement towards and away from said shuttle box, a trip pivotally mounted on said support and normally extending into the path of movement of said pawl extension to move said pivoted blade into open position as said blade carrier moves towards said shuttle box into operative position, a stop on said support limiting pivotal movement of said trip and determining the operative position of said trip, and means normally urging said trip towards said stop and into operative position in the path of movement of said pawl extension, said urging means being yieldable to permit said trip to swing idly against the action of said trip urging means as said pawl extension engages said trip during the return movement of said blade carrier towards inoperative position.

15. In a thread cutting mechanism for a loom, the combination as described in claim 14, in which said yieldable urging means is a counterweight rigid with said trip and tending to maintain said trip in operative position towards said stop.

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16. In a thread cutting mechanism for a loom, the combination as described in claim 14, in which said support is located below said blade carrier and has a groove in which said trip is pivotally mounted, one end of said groove having a wall on the side of said trip opposite said shuttle box inclined upwardly and away from said shuttle box with respect to the vertical, said yieldable urging means comprising a counterweight at one end normally tending to maintain said trip in operative upright position, the section of said wall nearest said trip defining said stop.

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