This invention relates to a selvage trimming device for filling replenishing looms, and more particularly to a trimming device which will be placed in operation only when there is present a filling end to be cut.

Filling ends extending from the selvage are formed periodically during the loom operation, in conjunction with the replenishing of a filling carrier. The use of a thread cutter on the temple mechanism to sever such filling ends close to the selvage is well known in the art.

The functioning of the thread cutter is necessary only when a filling end to be cut is present. However, the temple thread cutters in common use are made to operate continuously during the weaving process. There results much unnecessary motion of the parts with the accompanying excessive wear and other deleterious effects relating thereto.

Prior devices have been proposed in which the temple thread cutter would operate intermittently, but such devices employed mechanism that was too complicated to be commercially acceptable or they were not satisfactory in operation.

It is an object of the instant invention to provide a self-contained selvage trimming device having a positively actuated cutting blade which will be operative to perform a cutting operation only when there is present a filling end to cut and in which there will be no wearing action on the cutting edge at other times.

It is another object of my invention to provide a temple thread cutter which will be set in motion by the filling end to be cut and which will be locked in an inoperative position with the cutting blade stationary when no such filling end is present.

It is a further object of my invention to provide a compact, self-contained intermittently operative temple thread cutter which is simple and durable in construction and positive in operation, and in which all wear will be eliminated from the cutting surfaces when a cutting operation is not actually being performed.

These and other objects may be accomplished by the construction illustrated in the accompanying drawings, which are presented to show a preferred embodiment of my invention, although it will be understood that I do not wish to be limited to the specific structural details disclosed therein, but wish to be free to use all mechanical equivalents thereof within the scope of the appended claims, and in which:

Fig. 1 represents a plan view of a portion of the filling replenishing side of a loom showing a temple having a thread cutter made according to my invention, and illustrating the position of the filling ends to be cut.

Fig. 2 represents a perspective view of the temple thread cutter illustrated in Fig. 1, and shows the relative positions of the parts when engaged by a filling end.

Fig. 3 represents a similar perspective view to that illustrated in Fig. 2, but shows the positions of the parts when not engaged by a filling end.

Fig. 4 represents an elevational view, partly in section, of the temple thread cutter, taken approximately along the line 4—4 of Fig. 1.

Fig. 5 represents an elevational view, partly in section, taken approximately along the line 5—5 of Fig. 1.

The drawings represent a portion of a loom of conventional form to which my improved selvage trimming device has been applied. I have shown the selvage trimming device as being incorporated with a temple in the usual position of a temple thread cutter, although it will be understood that the device may be used separately.

The loom may comprise a lay 4 constructed to reciprocate toward and away from a breast beam 2. On the breast beam is mounted a magazine 3 for reserve filling carriers which are transferred to the shuttle 4 in the shuttle box 5, as needed.

Immediately preceding transfer a thread patter 6 is placed in operation to approach the shuttle in the shuttle box, clamp and part the outgoing filling end F—1 attached to the exhausted filling carrier therein, and draw it forwardly of the loom. After the transfer has been accomplished and the first pick made, a second filling end F—2 is formed, extending from the usual thread holder on the magazine, not shown herein, to the selvage 5. The running filling thread F—3 occupies a position in the shed of warps W, where it is laid by the shuttle in a position to be beaten into the fell.

The filling ends F—1 and F—2 extending from the selvage S are disposed across the front face of the front box plate 5'.

A thread holder 7 is secured to a stationary part of the loom and extends rearwardly in a position to clear the top of the lay and the inner end of the front box plate 5' when the lay reciprocates forwardly. On the forwardmost of the lay the filling ends F—1 and F—2 are caught by the front box plate and forced over a hook T', on the thread holder 7, which retains them in a forward position. The filling ends will remain in this posi-
tion until they are parted at the selvage and cleared from the loom.

In order to cut the filling end at the selvage, it is usual practice to place a thread cutter adjacent the temple. The temple and thread cut- ters may be assembled on a common supporting member 8, which may be the temple bar, and which can be secured to the breast beam of the loom. The supporting member has a depending part 6' which is engaged by the lay on a forward and outwardly projecting projection, against a compression spring connected to the temple bar. The spring returns the temple assembly to a rearward position when the lay beats back. This construction is well known to the art.

The temple assembly comprises the usual temple roll 9 placed between the pod 10 and the temple top 11 in a position to engage the woven cloth to hold it in an extended position.

The temple assembly comprises a temple head, the portion 12 of which forms a support for the cutting mechanism. Within the portion 12 is formed a longitudinal passage 13 in which the cutter blade 14 reciprocates during a cutting operation.

One end of the cutter blade has a nose of L-shaped formation on which a cutting edge 15 is formed facing in a forward direction. The other end has a depending heel portion 16 which extends across the path of the lay. When the lay reciprocates to beat a filling thread into the fell it contacts the heel portion and causes the blade to be moved forward of the loom. The blade is returned to a rearward position by a spring actuated lever, as will be described subsequently.

Along the wall of the passage 13, on the side adjacent the temple, is fastened a ledger blade 17 on which is formed a cutting edge 18, complementary to the edge on the cutting blade. The two cutting edges cooperate to sever a filling end caught between them when the cutter blade is reciprocated.

In the following description the cutter blade will be said to be in operative position when the cutting edge extends beyond the rearmost face of the temple thread cutter, and in inoperative position when the cutting edge is retracted within the body of the support 12.

On the side of the passage 13 opposite to that containing the member 17 is placed a bearing plate 19 contacting a face of the cutter blade. By manipulating the screw 20 the pressure of the bearing plate on the cutter blade can be varied to govern the pressure between the cutting edges.

The member 17 and the bearing plate 19 are secured to the support 12 by having end portions placed in the grooves 21 and 22, respectively, and held in place by the retaining screw 23.

To actuate the cutter blade in a direction rearwardly of the loom, that is, to place it in an operative position, there is provided the spring operated bell crank lever 24.

The lever is pivoted to the supporting member 8 by a bolt 25 which passes through an opening 26, Fig. 4, in the lever and is fastened to the member 8 by a nut 27' screwed to the end of the bolt, in an obvious manner.

One leg 27 of the bell crank lever extends downwardly, approximately parallel to the heel 16 on the cutter blade. The heel has a projecting portion 16' which extends horizontally thereafter into a shallow recess 27' formed in the leg 27. The leg 27 contacts the heel 16 on the forwardly side of the latter through the cooperation of the aforesaid projection and recess.

Another leg 28 of the lever extends rearwardly, in an approximately horizontal direction. Near its terminus the leg 28 has a depression 29' commended to provide a seat for the end of a helical spring 30. The other end of the spring is positioned in a hole 31 formed in the supporting member 12.

The dimensions of the spring are such that when it is fully extended it will displace the leg 28 of the lever upwardly and causes the leg 27 to rotate rearwardly about the pivot 25 into the position shown in Fig. 2.

Since the leg 27 contacts the heel of the cutter blade on the forwardly side, when the leg is moved rearwardly the cutter blade also will be moved rearwardly causing the cutting edge 15 to be projected outwardly from the passage 13 and into a position where it can engage a filling end.

When the lay beats up, the front face of it will contact the end of the leg 27 and the heel of the cutter blade 16 will be moved forward of the loom. The cutting edge will then be retracted into the passage 13, and the bell crank lever will be rotated about the pivot 25 against the action of the spring 30. Through this operation the spring will be placed under compression.

While it is being retracted, the edge 15 of the cutter blade will bear against the cutting edge 18 of the member 17, and a filling end caught between the cutting edges will be severed.

It will be obvious that the cutting operation is necessary only when there is present a filling end to be cut. Therefore, the inside of the shell plate is for holding the bell crank lever and the cutter blade inoperative when there is no filling end present.

The locking means comprises a pin 32 which is slidably mounted in the hole 33 formed in the support 12. The hole is set at a slight angle to the horizontal, and slopes downwardly toward the leg 28 of the bell crank lever. The end of the pin 34 has a portion cut therefrom to provide a flat face 35 to engage the end of the leg 28 when the parts assume interlocking positions.

Approximately midway of its length, the pin 32 has an element 36 affixed to it which projects outwardly of the support 12 through an opening 37 formed in the side thereof. The opening 37 is large enough to permit the pin 32 to slide forwardly and rearwardly to engage with and disengage from the leg 28 of the bell crank lever.

The projecting element 36 is received in an opening 38' formed in one end 39 of a lever 39 which is attached to the side of the support 12. The lever 39 is pivotally supported at approximately its mid point on a collar 40 which is formed on a nut 41 which, in turn, is screw threadedly connected to the adjusting screw 29.

The nut 41 and collar 40 perform the dual functions of providing a bearing for the lever 39 and locking the screw 20 in position after it has been manipulated to adjust the pressure of the bearing plate 19 on the cutter blade 14.

Another end 42 of the lever 39 extends beyond the pivot point and is beveled to lie approximately parallel with the rearmost vertical face of the support 12 when the pin 32 is in locking position, and is also given an inverted L-shaped formation to cause it to extend outwardly from the side face of the support. The corner of the support between these two faces is relieved throughout a vertical length approximately co-
extensive with the length of the leg 42, as shown at 43.

The balance of the lever 38 is such that, by itself, it will not influence the position of the pin 32. However, when a filling end passes across the most face of the temple thread cutter, it will contact the leg 42 of the lever 39 and cause the latter to be pivoted about its midpoint. The leg 38 of the lever will then be rotated and, through the projecting element 39, cause the pin 32 to slide rearwardly, out of locking engagement with the leg 42 of the bell crank lever 24.

When the leg 42 is released from contact with the filling end the force of gravity acting on the inclined pin 32, plus shock of impact of the lay on the parts, will cause the pin to slide into locking engagement with the bell crank lever, when the latter has been displaced to a locking position.

In order to hold the cutter blade in an inoperative position when a cutting operation is not required, there is provided a detent 44. The detent is placed on the bolt 25 between the bell crank lever 24 and the supporting member 8, and is mounted for rotary movement. The rearward end of the detent has a tooth 45 formed on it to engage a notch 46 in the top edge of the cutter blade.

Extending from the side of the detent adjacent the bell crank lever is a tongue 47 which is accommodated in a recess 48 formed in the leg 28 of the lever, as shown in Fig. 4.

The recess 48 is substantially larger in cross section than the tongue 47. Between the top surface of the tongue and the top portion of the recess there is inserted a resilient element 49, as a rubber block, which is of sufficient thickness to cause the tongue to press on the bottom surface of the recess. The detent is thus resiliently connected to the bell crank lever so that when the lever moves the detent will follow it.

The relationship of the tooth 45 of the detent to the notch 46 is such that when the cutter blade is placed in the forward position by contact with the lay, the tooth will engage the forward side 50 of the notch at its upper portion, as at 51. At the same time, the lay will have contacted the leg 27 of the bell crank lever and displaced it rearwardly to cause the leg 29 to be rotated downwardly.

The proportions of the parts are such that, under these conditions, the resilient element 49 will be placed under compression. The resilient element 49 is now pressing downwardly on the tongue 47, causing the tooth 45 to press against the portion 51 of the forwardly surface 50 of the notch 46. The pressure of the tooth acting on the inclined surfaces is sufficient to cause the cutting blade to slide rearwardly until the tooth is completely seated in the notch.

The additional forward movement of the cutter blade caused by the action of the detent placed it in a position where it can no longer be contacted by the lay. Thus, while the detent engages the notch, the cutter blade will remain stationary and wear on the cutting edge will be eliminated.

The leg 27 of the bell crank lever has a large headed adjustable bolt 52 placed in it to form a contacting means between the lever and the lay. The bolt can be locked in adjusted position by means of the nut 53. By manipulating the bolt, the final position of the bell crank lever 24, when displaced by the lay, can be controlled. This affords ready means for adjusting the position of the terminus of the leg 28 relative to the locking pin 32.

When the parts are adjusted properly the head of the bolt 52 will be displaced slightly rearwardly of the depending part 8' of the supporting member, when the bell crank lever is in locked position, so that the lay will impart sufficient motion to the bell crank lever on every forward shot to relieve the pressure of the spring 50 from the locking pin. This will permit the pin more easily to be moved by the lever 39 when a filling end engages the latter, and also will provide enough clearance for the pin easily to slide into interlocking engagement with the lever.

The amount of motion given to the bell crank lever by the lay will be limited by the position of the part 8' of the supporting member, since when the lay contacts this part the temple and temple thread cutter will move forward as a unit, and there will be no relative motion among the elements.

The operation of the device is as follows:

Assume a starting condition as shown in Fig. 3, with the parts in inoperative position.

Upon a call for transfer of a new filling carrier to the shuttle, the thread part 6 will approach the shuttle 4 to clamp and part the outgoing filling end F and withdraw it forwardly of the loom. On the first pick after transfer an incoming filling end will be formed extending from the thread holder on the magazine to the selvage. Both filling ends will pass in front of the front box plate B'.

When the lay makes its next forward reciprocation, the filling ends will be brought by the front box plate and brought into engagement with the thread holder 7. Both filling ends will now extend from the selvage 8, across the rearward face of the temple assembly, to the thread holder 7. The thread holder 7 is positioned in relation to the temple thread cutter so that the filling ends are in contact with the rearmost face of the latter and are biased forwardly therefrom.

When the filling ends are pulled forwardly in the manner described, both will press against the leg 42 of the lever 39 and cause the lever to rotate about its pivot point. The leg 33 of the lever will be rotated in a clockwise direction and cause the locking pin 32 to disengage the leg 28 of the bell crank lever 24. The spring 31, which has been under compression, will be released to push the leg 28 upwardly and rotate the lever 24 in a counterclockwise direction.

It is apparent that during normal operation both filling ends F'—1 and F'—2 will engage the lever 42 but under some conditions either one of the filling ends may become broken. In such a case, the remaining filling end will engage the lever 42 and condition the parts for operating by the forwardly moving lay. Thus, it is to be understood that either one or both of the filling ends will operate the lever 42.

Upon rotation, the leg 27 of the bell crank lever will contact the forward surface of the heel portion 16 of the cutter blade, and cause the blade to be projected rearwardly until the cutting edge 15 extends beyond the rearmost face of the temple thread cutter. The area of contact of the leg 27 with the heel portion of the cutter blade is below the bearing surface of the latter in the passage 13. Therefore the cutter blade will not only be projected rearwardly but will also be given a slight rotation in a counter-clockwise...
direction, limited by the top surface of the passage 13.

These two motions will combine to cause the cutting edge to pass over both of the filling ends, which now will rest against the rearmost face of the temple thread cutter, and between it and the cutting edge 15.

It will be understood that the transfer of a new filling carrier to the shuttle takes place when the lay has reciprocated toward the front of the loom to place the shuttle box directly beneath the magazine. This is also the time at which the outgoing filling end F—1 is clamped and parted and drawn forwardly of the loom. The lay then reciprocates toward the rear of the loom and the shuttle is picked through the shed to form the incoming filling end F—2.

During the next forward beat of the lay the leg 27 of the bell crank lever, and the heel 16 of the cutting blade, will assume a rearward position interecting the path of motion followed by the lay on the following forward beat.

On the next forward beat, the front face of the lay will contact the parts 16 and 27 and carry them forward with it. This will cause the cutting blade to be rotated in a clockwise direction, until it is stopped by the bottom of the passage 13, and, at the same time, be drawn forwardly into the passage 13. As a result of these motions the filling ends F—1 and F—2 will be caught between the cutting edges 15 and 18 and severed.

The bell crank lever 24 will be rotated in a clockwise direction by the action of the lay, compressing the spring 30, and placing the terminus of the leg 23 in a position to receive the locking pin 32.

The cutting of the filling ends takes place very rapidly, and is completed before the lay reaches its most forward position.

After the filling ends are cut they will fall away from the temple thread cutter and no longer contacts the lever 38. The pin 32 is now free to slide out of the hole 33. When the lay approaches the forward end of its travel it engages the part 38 on the temple support to force the temple, as a whole, forwardly, with a resultant impact on the parts. The shock of the impact, plus the effect of gravity, causes the locking pin to be projected forwardly until it partially extends out of the hole 33 and into locking engagement with the bell crank lever.

The detent 44, which is resiliently connected to the bell crank lever, will be rotated in a counterclockwise direction when the lever 24 is moved by the lay. When the lever reaches locking position, the tooth 45 of the detent will contact the face 50 of the notch 46 at the point 51, as previously described. The resilient connecting element, which is now under compression, will force the tooth to seat itself fully in the notch, resulting in the cutter blade being drawn still further forwardly to a position where it will not be contacted by the lay. While the cutter blade is retained in this position there can be no relative motion between the cutting edges 15 and 18, and wear arising from this source will be eliminated. It will be noted that the slight rocking action of the bell crank lever when in the locked position, produced by the lay, will be in a forward direction and away from contact with the heel of the cutter blade. The parts are constructed so that the return motion of the lever will be halted by the locking pin 32 before it can influence the cutter blade to produce motion thereof.

The elements of the temple thread cutter will now be locked in inoperative position and will remain so until another filling end releases the cutting mechanism.

Having thus described a preferred embodiment of my invention, I claim:

1. In a selvage trimming device for a loom having a reciprocating lay, a supporting member having a cutter blade mounted therein for movement from an inoperative to an operative position, a spring actuated lever engaging said cutter blade for imparting motion thereof to said blade and said lever being moved to an inoperative position by engagement of the lay with said lever and said blade in an inoperative position, said locking means having a portion constructed and arranged to be actuated by an incoming filling end and an outgoing filling end to release said lever and said blade so that said blade may become operative to cut said filling ends, said locking means functioning to lock said lever and said blade in an inoperative position when said filling ends are cut.

2. In a temple thread cutter for a loom having a lay reciprocating between a forward and a rearward position, a supporting member having a cutter blade slidably mounted therein for movement forwardly and rearwardly thereof, a spring actuated lever engaging said cutter blade or imparting motion thereto in a rearward direction, said cutter blade and said lever being moved in a forward direction by engagement of the lay with parts thereof, and a locking means for holding said lever and said blade in a forward position, said locking means having a portion constructed and arranged to be actuated by an incoming filling end and an outgoing filling end to release said lever and said blade so that said blade may be moved in a rearward direction to become operative to cut said filling ends, said locking means functioning to lock said lever and said blade in a forward position when said filling ends are cut.

3. In a selvage trimming device for a loom having a reciprocating lay, a support for the device, a cutter blade slidably mounted therein for movement forwardly and rearwardly of the loom, a lever actuated by a spring to engage said cutter blade for imparting motion thereto in a rearward direction, said cutter blade and said lever being moved in a forward direction by engagement of the lay with parts thereof, and a locking means for holding said lever and said blade in a forward position, said locking means comprising a pin slidably mounted in the support in a position to engage said lever and hold it inactive against the spring, a detent connected to said lever and engaging a notch in said cutter blade to hold the cutter blade in a forward position, and a member pivotally secured to the support and connected to said pin and positioned to be engaged by an incoming filling end and an outgoing filling end, said member being actuated by the filling end to slide said pin from engagement with said lever, whereupon said lever will cause the detent to be released from contact with the cutter blade and allow the spring to place the blade rearwardly in a position where it will be operative to cut said filling ends while being returned to a forward position, said pin being constructed and arranged to slide into contact with said lever to hold it inactive when said member is no longer in contact with the filling ends.

4. In an intermittently operated temple thread cutter for a loom having a reciprocating lay, a
supporting member, a cutter blade slidably mounted therein for movement from an inoperative to an operative position, said cutter blade having a depending heel portion extending across the path of the lay, a bell crank lever pivot ed to said supporting member for rotation from an inoperative to an operative position, and having one arm extending across the path of the lay and engaging the heel portion of the cutter blade and the other arm engaged by a spring, said spring being positioned to rotate said bell crank lever about said pivot to cause the lever arm engaging the cutter blade to move said blade to an operative position, a detent connected to said bell crank lever and engaging a notch in said cutter blade when the latter is in an inoperative position, a pin slidably mounted in said supporting member and constructed and arranged to engage an arm of said bell crank lever to lock said blade in the inoperative position, a member connected to said pin and positioned to be actuated by an incoming filling end and an outgoing filling end to cause said pin to release said bell crank lever to thereby place said cutter blade in an operative position, said bell crank lever and said cutter blade being returned to an inoperative position by the action of the lay on the parts thereof extending across the path of the lay, said locking member retaining the parts in an inoperative position when the said filling ends are cut.

5. An intermittently operated temple thread cutter for a loom having a reciprocating lay, a supporting member, a cutter blade slidably mounted in said supporting member for movement from an inoperative to an operative position, said cutter blade having a depending projection thereon, a bell crank lever pivotally mounted on said supporting member for rotation from an inoperative to an operative position and having one arm thereof abutting said depending projection on said cutter blade, said arm and said projection being positioned to extend across the path of the lay, the other arm of said bell crank lever being engaged by a spring positioned to rotate the bell crank lever to force the first said arm against the abutting projection on the cutter blade to move the said blade to an operative position, said blade and said lever being returned to the inoperative position by contact with the lay, a detent flexibly connected to said bell crank lever and positioned to engage a notch in the cutter blade when the parts are moved to the inoperative position to hold the blade in said inoperative position, a pin slidably mounted in the supporting member and positioned normally to engage an arm of the bell crank lever to restrain said lever from being rotated by the action of said spring, a second lever pivotally mounted on said supporting member and having one end connected to said pin and the other end positioned to engage an incoming filling end and an outgoing filling end, said second lever being constructed and arranged to be actuated by said filling ends to cause said pin to be disengaged from said bell crank lever, whereupon said bell crank lever through the action of said spring will place the cutter blade in an operative position to cut said filling ends while the parts are being returned to an inoperative position.

6. In a selvage trimming device for a filling replenishing loom having a lay reciprocating between a forward and a rearward position, a supporting member for the device, a cutter blade slidably mounted in said supporting member for movement forwardly and rearwardly of the loom, said cutter blade having a heel portion extending across the path of the lay, a bell crank lever pivot ed to said supporting member for rotation between a forward and a rearward position and having one arm extending across the path of the lay and contacting the heel portion of the cutter blade on the forward side thereof and the other arm engaged by a spring, said spring being positioned to rotate said bell crank lever about its pivot to cause said lever arm contacting the cutter blade to move said blade rearwardly, a detent flexibly connected to said bell crank lever and engaging a notch in said slidable cutter blade to hold the cutter blade in a forward position when the bell crank lever is in a forward position, said detent releasing said blade when the bell crank lever is rotated to a rearward position, a pin slidably mounted in the supporting member and constructed and arranged to engage the second mentioned arm of said bell crank lever to lock the same in a forward position against the spring action, a second lever pivotally mounted on said supporting member and having one end connected to said pin in a manner to effect sliding movement of the pin and the other end positioned to contact an incoming filling end and an outgoing filling end extending from the selvage, said second lever being operated by contact with the filling ends to cause said pin to release the bell crank lever to move the cutter blade rearwardly into an operative position to cut said filling ends, said cutter blade and said bell crank lever being returned to a forward position by the action of the lay on the parts thereof extending into the path of the lay, said pin sliding into engagement with the second mentioned arm of said bell crank lever to hold the bell crank lever and the cutter blade in a forward position when the second mentioned lever is relieved of contact with the filling ends.

7. A means for retracting a slidable cutter blade of a temple thread cutter, comprising a notch formed in a longitudinal edge of the cutter blade, a detent pivotally mounted on the temple thread cutter and positioned to engage the notch on one side and in non-alignment with the center thereof, and means for resiliently pressing the detent against the side of the notch to cause said cutter blade to slide into a position wherein the notch will be in alignment with said detent.

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