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CHAIN CUTTER FOR SEWING MACHINES

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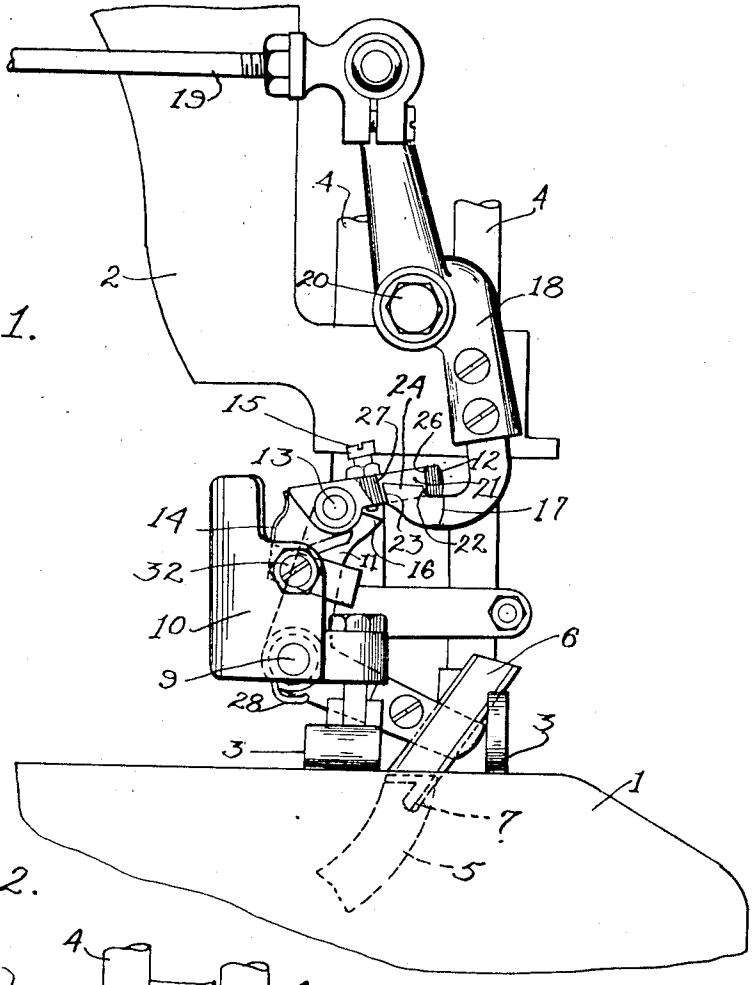


Fig. 1.

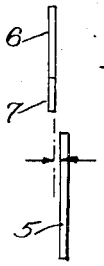


Fig. 4

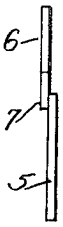


Fig. 5.



Fig. 6.

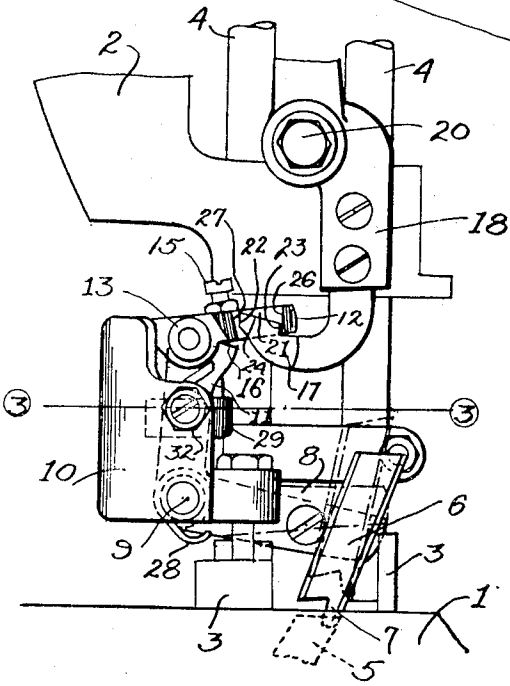


Fig. 2.

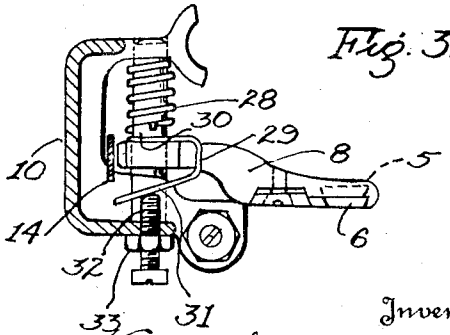


Fig. 3.

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UNITED STATES PATENT OFFICE

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CHAIN CUTTER FOR SEWING MACHINES

Application filed January 23, 1929, Serial No. 334,427, and in Germany September 27, 1928.

The invention relates to new and useful improvements in chain cutters for sewing machines and more particularly to the mechanism for imparting a relative movement to the cutting blades.

An object of the invention is to provide a chain severing mechanism having blades movable relative to each other for severing the enchained thread loops, and one of which is provided with a projecting guide finger, with means for shifting the blades laterally relative to each other to bring the finger into contact with the cooperating blade during its cutting stroke and prior to the action of the blades which sever the enchained thread loops.

A further object of the invention is to provide a chain cutter wherein the blades are automatically and positively moved relative to each other for severing the enchained thread loops with means whereby said blades may be disconnected from the actuating means and automatically separated so as to permit the articles being stitched to freely pass beneath the blades.

These and other objects will in part be obvious and will in part be hereinafter more fully disclosed.

In the drawings which show by way of illustration one embodiment of the invention:—

Fig. 1 is a view from the rear of the machine showing the improved chain cutting mechanism with the blades in position for severing the enchained thread loops.

Fig. 2 is a view in part similar to the view shown in Fig. 1 but with the movable blade in broken lines at the extreme upper part of its reciprocation and in full lines in the position wherein the projecting guide finger makes contact with the stationary blade.

Fig. 3 is a sectional view on the line 3—3 of Fig. 2.

Fig. 4 is a diagrammatic view showing the movable blade at the upper end of its stroke or the broken line position of Fig. 2.

Fig. 5 is a view showing the projecting guide finger in contact with the stationary blade or the full line position of Fig. 2.

Fig. 6 is a similar view, but showing the blades as having completed their severing action or the full line position of Fig. 1.

In my prior application, Serial No. 316,434, filed November 1, 1928, I have shown and described a chain cutting mechanism wherein the movable blade is automatically connected to an actuating mechanism therefor for severing the enchained thread loops. The connection of the movable blade to the actuating means therefor is controlled by the position of the presser foot and the passing of the article underneath the foot for stitching and from beneath the foot after the stitching of the article is completed.

The present invention is directed to an improvement on the mechanism shown in my prior application and consists in providing a connection between the movable blade and the actuating mechanism therefor whereby the movable blade is positively reciprocated, that is raised and lowered, after it is connected to the actuating means therefor, and wherein said movable blade is automatically raised to an inoperative position to permit the free passing of the article being stitched when said movable blade is disconnected from the actuating means therefor.

The invention further consists in providing means whereby when the movable blade is connected to its actuating mechanism and raised the blade is shifted laterally during the upper portion of its stroke so as to move the projecting guide finger away from the stationary cutting blade and when said blade is lowered for its cutting action the blade is shifted laterally to bring the guide finger into contact with the stationary blade prior to the movement of the blade for severing the enchained thread loops.

Referring more in detail to the drawings, my improved chain cutter is shown as applied to a sewing machine which includes a work support 1, an overhanging arm 2, a presser foot 3 which is shown in the drawings as formed in two sections and these sections are respectively carried by presser bars 4. 4. Mounted on the work support 1 is a stationary ledger blade 5. Cooperating with this stationary ledger blade is a movable blade 6. The movable blade 6 is provided

with the usual projecting guide finger 7. The movable blade 6 is clamped to the arm 8 of a rock lever which is fixed to a shaft 9. This shaft 9 is journaled in a bracket 10 which is secured to the presser bars 4, 4. The other arm 11 of the rock lever carries a coupling member 12 at its upper end. Said coupling member is pivoted at 13 to the arm 11. A leaf spring 14 secured to the arm 11 bears on the coupling member and normally turns said coupling member in a clockwise direction, as viewed in Fig. 1.

A stop screw 15 carried by the coupling member engages a shoulder 16 carried by the arm 11 and limits the movement of the coupling member on its pivotal support. Cooperating with this coupling member 12 is a second coupling member 17 which is adjustably secured to the lower end of an actuating lever 18. The actuating lever 18 is connected by a link 19 to some moving part of the sewing machine. This actuating lever 18 is pivoted at 20 to the overhanging arm. The actuating lever is continuously moving. The coupling member 17 is provided with a coupling head 24 which is provided with spaced shoulders 22 and 23. The coupling member 12 is formed with a recess 21 which provides spaced shoulders 26 and 27. The distance between the shoulders 26 and 27 is slightly greater than the distance between the shoulders 22 and 23 of the coupling head 24.

Mounted on the shaft 9 is a coil spring 28. One end of this coil spring is attached to the bracket 10 and the other end bears on the under face of the arm 8. The coil spring performs the double function of rotating the rock lever for raising the movable blade 6 and of urging the shaft endwise to separate the movable blade from the stationary blade. Also mounted on the arm 11 of the rock lever is a leaf spring member 29. Said leaf spring member is secured to the arm by a clamping bolt 30. This member is provided with an inclined portion 31 which is adapted to engage an adjustable abutment screw 32 which is shiftable and held in adjusted positions by a lock nut 33.

The bracket 10 supporting the rock lever and the movable blade is connected to the presser bars and, therefore, the position of this bracket is determined by the position of the presser foot, which in turn, is determined by the article being stitched. When the article is fed underneath the foot it is raised and the bracket will be raised therewith. When the article being stitched passes from beneath the foot, then the presser foot will drop onto the work support or cloth plate through the action of the usual spring bearing on the presser bars, and at this time the bracket will be lowered. When the bracket is raised to its uppermost position, the rock lever carrying the movable blade is bodily raised. The shoulder 23 limits the movement of the coupling member 12 and this raising movement of the coupling member with the rock lever disengages the coupling recess 21 from the coupling head 24. As a result the actuating lever 18 will continue its oscillations but no movement will be imparted to the rock lever. The rock lever will be turned by the spring 28 in a counterclockwise direction when released from the actuating lever until it engages a limiting stop.

When in this position the coupling recess 21 is directly over the coupling head in some point of its movement so that when the presser foot is lowered the coupling member 12 will be automatically brought into engagement with the coupling head 24.

It will thus be seen that I have provided means whereby the movable blade when connected up to its actuating means is positively reciprocated, the shoulder at one side of the recess in the coupling member 12 engaging the shoulder on the coupling head 24 associated therewith and the shoulder at the other side of the recess on the other reciprocation engaging the shoulder at the other side of the coupling head. Notwithstanding this positive reciprocation of the movable blade, when it is disconnected it is automatically and yieldingly lifted to its full lifted position, thus separating the movable blade from the stationary blade to the maximum extent and permitting a free movement of the article being stitched between the blades.

The spring member 31, as noted above, is inclined and moves bodily with the rock lever. The inclination of this member is such that the shaft 9 will be moved in an endwise direction so as to shift the movable blade toward the stationary blade on its down stroke. This spring member is of greater tension than the coil spring 28 so that it overcomes the yielding urge of said coil spring and yieldingly but firmly presses the movable blade into engagement with the stationary blade at certain parts only of the reciprocation of said movable blade.

The parts are so constructed and timed that when the movable blade starts from the extreme upper position of its stroke after it is connected to the actuating member therefor said movable blade will be shifted laterally to bring the projecting guide finger into contact with the stationary blade. This is accomplished before the shearing edge of the movable blade makes cutting contact with the shearing edge of the stationary cutting blade. After the guide finger is firmly pressed against this stationary blade, then the movable blade continues its downward movement and severs the enchained thread loops. On the upward movement of the blade the reverse action takes place.

It will be apparent from the above that the cutting blades will be moved into proper cooperative action relative to each other without any danger of the guide finger striking the upper edge of the stationary cutting blade and at the same time a very firm but yielding contact is secured between the cutting blades for severing the enchained thread loops.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In a sewing machine a presser foot, a chain cutter for cutting enchained thread loops between stitched articles, comprising cutting blades, means for imparting a relative movement to said blades for cutting the enchained thread loops, and means for shifting said blades laterally relative to each other for bringing said blades into shearing relation prior to the severing of the enchained thread loops.

2. In a sewing machine a presser foot, a chain cutter for cutting enchained thread loops between stitched articles, comprising cutting blades one of which is stationary and the other of which is movable and provided with a projecting guide finger, means for reciprocating said movable blade for cutting the enchained thread loops, and means for shifting said blade laterally to the stationary blade for bringing said blades into shearing relation prior to the severing of the enchained thread loops.

3. In a sewing machine a presser foot, a chain cutter for cutting enchained thread loops between stitched articles, comprising cutting blades, means for imparting a relative movement to said blades for cutting the enchained thread loops, means for shifting said blades laterally relative to each other for bringing said blades into shearing relation prior to the severing of the enchained thread loops, and means controlled by the article being stitched for connecting said cutting blades to and for disconnecting said blades from the actuating means therefor.

4. In a sewing machine a presser foot, a chain cutter for cutting enchained thread loops between stitched articles, comprising cutting blades one of which is stationary and the other of which is movable and provided with a projecting guide finger, means for reciprocating said movable blade for cutting the enchained thread loops, means for shifting said blade laterally to the stationary blade for bringing said blades into shearing relation prior to the severing of the enchained thread loops, and means controlled by the article being stitched for connecting said movable blade to and for disconnecting said movable blade from the actuating means therefor.

5. In a sewing machine a presser foot, a chain cutter for cutting enchained thread loops between stitched articles, comprising a stationary cutting blade and a movable cutting blade having a projecting guide finger, a continuously operating actuating lever for said movable cutting blade, means controlled by the article being stitched for connecting said movable blade to and for disconnecting said movable blade from said actuating lever, whereby said movable blade is positively reciprocated when connected to the actuating lever, and means for shifting said movable blade laterally relative to the stationary blade for bringing said blades into shearing relation prior to the severing of the enchained thread loops.

6. In a sewing machine a presser foot, a chain cutter for cutting enchained thread loops between stitched articles, comprising a stationary cutting blade and a movable cutting blade having a projecting guide finger, a continuously operating actuating lever for said movable cutting blade, means controlled by the article being stitched for connecting said movable blade to and for disconnecting said movable blade from said actuating lever, whereby said movable blade is positively reciprocated when connected to the actuating lever, and means whereby said movable blade when reciprocated by said actuating lever is shifted laterally into shearing relation with the stationary blade prior to the severing of the enchained thread loops.

7. In a sewing machine a presser foot, a chain cutter for cutting enchained thread loops between stitched articles, comprising a stationary cutting blade, a movable cutting blade having a projecting guide finger, a rock lever on which said movable blade is mounted, a bracket movable up and down with the presser foot on which said rock lever is pivotally supported, a continuously operating actuating lever having a coupling head, a coupling member carried by the rock lever, and means whereby said coupling member is connected to the coupling head when the presser foot is lowered for causing said movable blade to be reciprocated by said actuating lever, said coupling member and coupling head being provided with means for positively reciprocating said movable blade and yielding means for holding said blade raised when disconnected from the actuating lever.

8. In a sewing machine a presser foot, a chain cutter for cutting enchained thread loops between stitched articles, comprising a stationary cutting blade, a movable cutting blade having a projecting guide finger, a rock lever on which said movable blade is mounted, a bracket movable up and down with the presser foot on which said rock lever is pivotally supported, a continuously operating actuating lever having a coupling head, a coupling member carried by the rock lever, means whereby said coupling member is con-

nected to the coupling head when the presser foot is lowered for causing said movable blade to be reciprocated by said actuating lever, said coupling member and coupling head being provided with means for positively reciprocating said movable blade and yielding means for holding said blade raised when disconnected from the actuating lever, and means for shifting said movable blade laterally relative to the stationary blade for bringing said blades into shearing relation prior to the severing of the enchained thread loops.

9. In a sewing machine a presser foot, a chain cutter for cutting enchained thread loops between stitched articles, comprising a stationary cutting blade, a movable cutting blade having a projecting guide finger, a rock lever on which said movable blade is mounted, a bracket movable up and down with the presser foot on which said rock lever is pivotally supported, a continuously operating actuating lever having a coupling head, a coupling member carried by the rock lever, means whereby said coupling member is connected to the coupling head when the presser foot is lowered for causing said movable blade to be reciprocated by said actuating lever, said coupling member and coupling head being provided with means for positively reciprocating said movable blade and yielding means for holding said blade raised when disconnected from the actuating lever, and means operated by the oscillations of said rock lever for shifting said movable blade to bring said guide finger into yielding contact with the stationary blade prior to the severing of the enchained thread loops.

10. In a sewing machine a presser foot, a chain cutter for cutting enchained thread loops between stitched articles, comprising a stationary cutting blade, a movable cutting blade having a projecting guide finger, a rock lever on which said movable blade is mounted, a bracket movable up and down with the presser foot on which said rock lever is pivotally supported, a continuously operating actuating lever having a coupling head, a coupling member carried by the rock lever, means whereby said coupling member is connected to the coupling head when the presser foot is lowered for causing said movable blade to be reciprocated by said actuating lever, said coupling member and coupling head being provided with means for positively reciprocating said movable blade and yielding means for holding said blade raised when disconnected from the actuating lever, said yielding means normally pressing said movable blade laterally out of contact with the stationary blade, and means operated by the oscillations of the rock lever for shifting said movable blade laterally against the action of said yielding means for bringing said guide finger into contact with the stationary blade prior to the severing of the enchained thread loops.

In testimony whereof, I affix my signature.

FRIEDRICH LUTZ.