Jan. 12, 1960 R. F. BALL 2,920,592

AUTOMATIC THREAD CUTTING ATTACHMENT FOR MULTI-NEEDLE SEWING MACHINES

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Fig 1

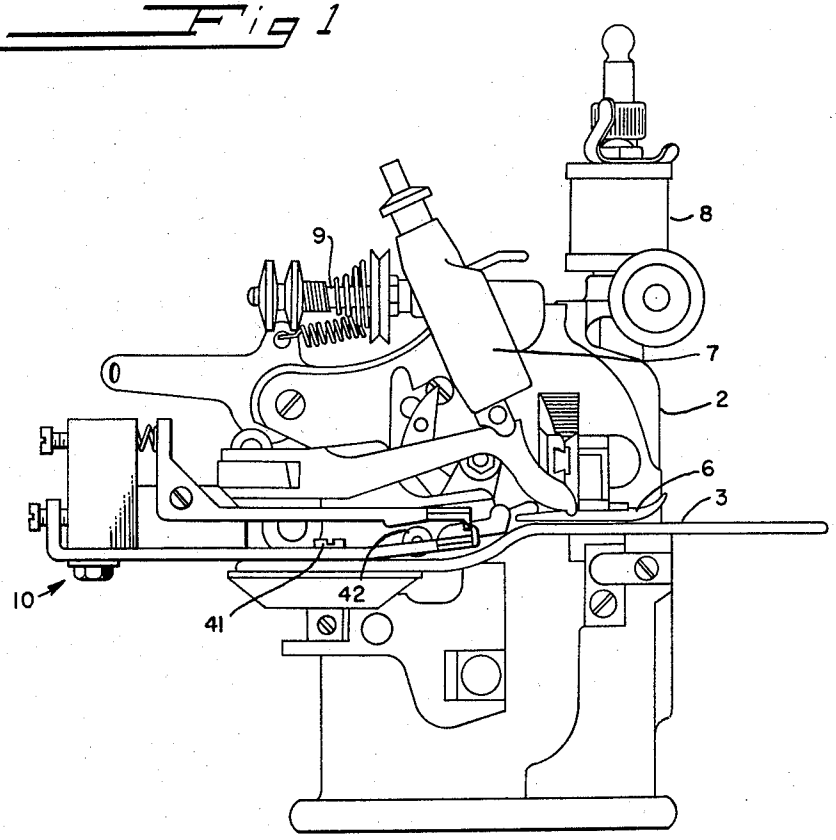
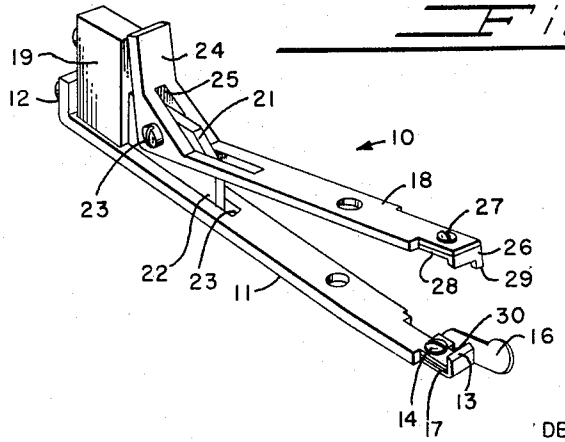



Fig 2




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Fig 3

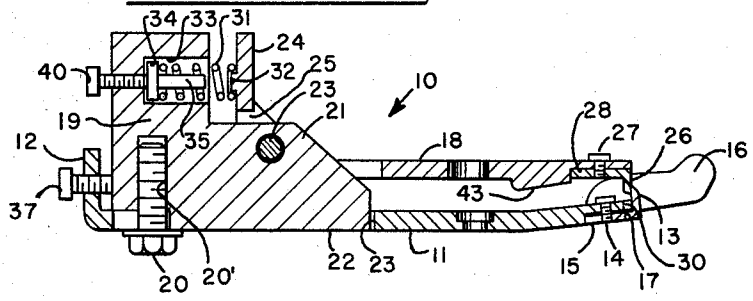



Fig 4

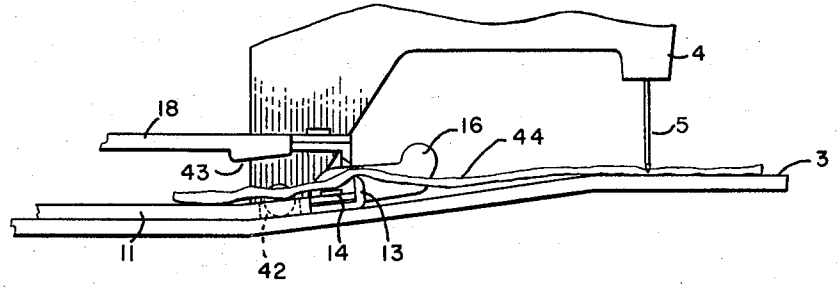



Fig 5

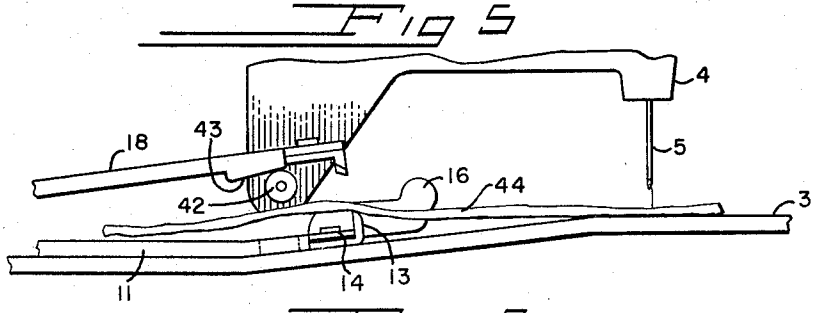
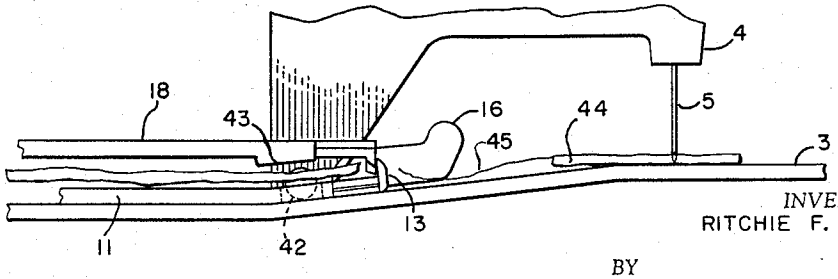



Fig 6




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United States Patent Office 2,920,592 Patented Jan. 12, 1960



2,920,592

# AUTOMATIC THREAD CUTTING ATTACHMENT FOR MULTI-NEEDLE SEWING MACHINES

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Application August 26, 1957, Serial No. 680,065

16 Claims. (Cl. 112—252)

This invention relates to an automatic thread cutting attachment for multi-needle sewing machines, such as hemmers, seamers and overedgers, whereby the threads are closely and neatly cut from the fabric without injury to said fabric when the sewing operation is completed.

Heretofore, the thread has been cut, following the sewing operation, by the operator with a hand cutter or a stationary cutter fixed to some part of the machine. In the latter situation, a long length of thread needs to be pulled from the machine supply in order to reach the stationary cutter for severing it, and in neither instance is the cutting done automatically upon completion of the sewing operation on the fabric.

Accordingly, one of the principal objects of the present invention is a multi-needle sewing machine equipped with an automatic thread cutter.

Another object of the invention is an automatic thread cutting attachment which cuts the thread immediately upon completion of the sewing operation.

Another object of the invention is an automatic thread cutting attachment which cuts the thread without waste.

A still further object of the invention is an automatic thread cutter which can be added as an accessory to any conventional needle sewing machine without reconstruction thereof.

A still further object of the invention is an automatic thread cutter which is simple in construction and efficient in operation.

Further objects, and objects relating to details of construction and economies of operation, will readily appear from the detailed description to follow. In one instance, the objects of the invention have been accomplished by the device and means set forth in the following specification. The invention is clearly defined and pointed out in the appended claims. A structure constituting a preferred embodiment of the invention is illustrated in the accompanying drawings, forming a part of this specification, in which:

Fig. 1 is a sewing machine equipped with an automatic thread cutting attachment embodying this invention.

Fig. 2 is a perspective view of the automatic thread cutter.

Fig. 3 is a longitudinal cross-sectional view of the automatic thread cutter.

Figs. 4 and 5 are detailed views showing extreme movements of the movable cutter bar during the sewing operation.

Fig. 6 is a detailed view showing the cutting operation of the thread at the completion of the sewing operation on the fabric.

Referring specifically to the drawings in which like numerals designate like parts, numeral 2 is a conventional multi-needle sewing machine, manufactured and sold by The Merrow Machine Company, provided with a work plate 3, a needle carrier 4, and a needle 5 mounted on



the carrier. There is also a presser bar 6, a head 7, and a sight feed oiler 8 for the looper thread tensioning rod 9. All of the above elements are conventional parts of the sewing machine, and this sewing machine typifies one of any conventional multi-needle sewing machines to which the automatic thread cutting accessory 10 embodying the invention, is attached.

This thread cutting accessory 10 comprises a lower bar 11 having a heel end formed by an angular upwardly extending flange 12 opposite its other end to which is fitted a cutter blade 13 detachably mounted thereon by means of the clamp screw 14 extending through said bar 11 into a screw-threaded socket formed in the angular arm portion 15 of the blade. Also attached to this end of the bar 11 is a fabric guard 16 disposed adjacent one end of the blade 13, said guard 16 having a bent angular portion 17 interposed between the arm portion 15 of the blade and the end of the bar so that the fabric guard can be clamped by the common clamp screw 14 which clamps the cutter blade 13 in position on the end of the bar.

An upper bar 18 is pivotally connected to the bar 11 by means of a block 19 adjustably mounted to said bar 11 adjacent the heel flange 12 and secured in adjusted position by a clamp screw 20 projecting through said bar 11 to fit a screw-threaded socket 20' in the bottom of said block 19. This block 19 is provided with a fin 21 having a bottom edge 22 fitting into an elongated slot 23 in the bar 11 so that said block 19 will be aligned lengthwise of the bar 11. The bar 18 is pivoted to this fin 21 by a pivot bolt 23, and it also has a heel portion formed by the upwardly extending flange 24 which preferably extends at about the same elevation as the block 19 on the lower bar 11. The heel portion of the bar is advantageously slotted at 25 to receive the fin 21. The opposite end of the bar 18 is provided with a cutter blade 26 which is detachably connected by means of a clamp screw 27 extending through the angular base portion 28. The cutting blades 13 and 26 are so disposed that they overlap when in closed cutting position, and the adjustable block 19 provides for proper adjustment of one blade in respect to the other. At one end of the cutter 26, there is a downwardly extending blunt non-cutting knob 29, and a cut-away portion 30 is provided in the side edge of the bar 11 and the arm portion 15 of the blade into which this knob 29 fits so as to prevent the blades from overlapping when the fabric is passing between the cutters in being sewed.

A coiled compression spring 31 is interposed between flange 24 and the adjacent side of block 19, one end thereof fitting around a bead 32 on the flange 24 and its opposite end projecting into a socket 33, formed in the block, against a washer 34 having a stem 35 projecting into the core of the spring. This spring 31 biases the cutters to closed position, and the force or power of the spring can be regulated to be sufficient to cut the thread after the sewing operation is completed as hereinafter described.

A screw 37 may be also advantageously provided in flange 12 for facilitating proper adjustment of the movable cutter. Clamp screw 20 is loosened for permitting adjustment of the block 19 by the adjusting screw 37 after which the clamp screw 20 is tightened for securing the block.

The compression of the spring 31 may be regulated by the adjusting screw 40 fitted to the block 19 and adapted to abut against the washer 34 on which one end of the spring seats. Accordingly, the compression of the spring may be conveniently and easily adjusted for exerting any desired force for biasing the movable cutter to cutting position.

This accessory device 10 is secured to the work plate 3 by clamp screw 41, this being the same screw that holds the conventional fabric guard. The conventional fabric guard is removed from the machine and replaced by the cutting attachment 10, using the same clamp screw and screwing it into the same hole that it would be screwed in attaching the fabric guard.

A roller 42 is fitted to the needle carrier 4 and disposed adjacent the part 43 of the movable bar 18 of the cutting attachment for said bar to ride thereon. The cutters are open and closed by this roller 42. As the roller ascends, the cutter opens, and it closes as the roller descends.

The force of the spring is not sufficient to cause the cutters to cut through the fabric or cloth 44 which is being fed through the machine. The roller is out of contact with the portion 43 of the bar when in extreme lower position to permit the cutter to function. Also, the blunt knob 29 on the movable cutter is in position to contact with the fabric 44 and prevent the cutters from cutting it. However, when the fabric 44 has been sewed and passed the fabric guard upon completion of the sewing operation, the force of the spring is sufficient to cause the cutters to cut the thread 45, as shown in Fig. 6, between the pieces of fabric 44. As also shown in Fig. 4, the roller 42 at this time is lowered so as to permit the top arm of the cutter to drop and be biased into cutting position for cutting off the thread.

From the foregoing description, the operation and use of the cutting accessory is apparent. The cutters are held out of cutting position when the fabric is passing therebetween, but as soon as the fabric passes beyond the fabric guard, there is nothing to prevent the movable cutter being moved into cutting position with the stationary cutter, and the force of the coiled compression spring is sufficient for it to cut the thread.

I am aware that there may be various changes in details of construction without departing from the spirit of my invention, and, therefore, I claim my invention broadly as indicated by the appended claims.

Having thus described my invention, what I claim as new and useful and desire to secure by United States Letters Patent is:

1. An automatic thread cutting attachment for a sewing machine comprising a pair of arms pivotally connected at one end, a longitudinally movable means for mounting the pivotal connection for adjusting one arm relatively to the other, complementary cutting blades mounted on the free ends of said arms, a fabric guard disposed at one end of the cutters, and means for biasing the cutting blades into cutting position.

2. The automatic thread cutting attachment of claim 1 provided with means for regulating the biasing means.

3. The automatic thread cutting attachment of claim 2 in which the biasing means is a compression spring disposed between the ends of the arms opposite to the ends on which the cutting blades are mounted.

4. An automatic thread cutting attachment for a sewing machine comprising an arm having a cutter blade mounted on one end and an upwardly extending flange on the opposite end forming a heel, a block adjustably mounted on the heel end of the arm, a second arm having a cutter blade on one end and an upwardly extending flange on the opposite end forming a heel, means for pivoting the heel end of the second arm to the block, and means between the heel end of the second arm and the block for biasing the cutting blade on said arm into cutting position with the blade on the first arm.

5. The automatic thread cutting attachment of claim 4 in which the biasing means is a compression spring, and means for adjusting the compression of said spring.

6. The automatic thread cutting attachment of claim 5 in which means is provided on the heel end of the first arm for adjusting the block.



7. The automatic thread cutting attachment of claim 6 in which the block and the first arm are interengaged by a tongue on one member slidably fitted into a slot in the other member.

8. An automatic thread cutting attachment of claim 7 in which the pivotal connection between the heel portions of the first arm and the block is formed by a pin on one member projecting into a slot in the other member.

9. The automatic thread cutting attachment of claim 8 in which the fin is on the block and the slot is in the heel of the second arm.

10. An automatic thread cutting attachment for a sewing machine comprising an arm having an angular end and a cutting blade mounted on the opposite end, a second arm having an angular end and a complementary cutting blade mounted on its opposite end, means for pivotally connecting said arms together, support means movably mounted upon one of said arms for the pivotally connecting means, and means between the angular ends of the arms for biasing the cutting blades into cutting position.

11. The automatic thread cutting attachment of claim 10 in which the biasing means is a compression spring.

12. The automatic thread cutting attachment of claim 11 in which the compression of the spring is adjusted by adjustable means carried by one of the angular ends of the arms.

13. The automatic thread cutting attachment of claim 10 in which the arms are pivoted together by a block movably mounted upon one of the arms.

14. An automatic thread cutting attachment for a sewing machine comprising a pair of arms pivotally connected at one end, longitudinally movable means on one of said arms for pivotally connecting the other arm thereto, complementary cutting blades mounted on the free ends of said arms, and a non-cutting blunted portion disposed at the end of one of said blades adapted to be engaged by fabric passing between said cutting blades to prevent them cutting said fabric.

15. The automatic thread cutting attachment of claim 14 including a fabric guard adjacent one end of the cutting blades and said non-cutting blunted portion at the end of one of the blades being next adjacent to said fabric guard.

16. An automatic thread cutting attachment for a sewing machine comprising a pair of arms pivotally connected at one end, a longitudinally movable means for mounting the pivotal connection for adjusting one arm relatively to the other, complementary cutting blades mounted on the free ends of said arms, a fabric guard disposed at one end of the cutters, means for biasing the cutting blades into cutting position, and means provided adjacent the cutters adapted to contact with a fabric passing through the cutting blades for holding them out of cutting position.

**References Cited** in the file of this patent

UNITED STATES PATENTS

| | | |
|---|---|---|
| 434,118 | Roberts | Aug. 12, 1890 |
| 613,322 | Schuermann | Nov. 1, 1898 |
| 913,352 | Brady | Feb. 23, 1909 |
| 1,227,843 | Seymour | May 29, 1917 |
| 1,441,359 | Langston | Jan. 9, 1923 |
| 1,847,537 | Redcay | Mar. 1, 1932 |
| 2,163,994 | Fischer | June 27, 1939 |
| 2,288,827 | Moll et al. | July 7, 1942 |
| 2,293,096 | Anderson | Aug. 18, 1942 |
| 2,423,001 | Blowers | June 24, 1947 |
| 2,426,026 | Kehrer | Aug. 19, 1947 |
| 2,569,396 | Bates | Sept. 25, 1951 |
| 2,593,144 | Hercik | Apr. 15, 1952 |
| 2,605,729 | Enos | Aug. 5, 1952 |