Jan. 6, 1959 H. J. KLAPPER 2,867,184

THREAD CUTTER

Filed March 17, 1958

Fig. 1.

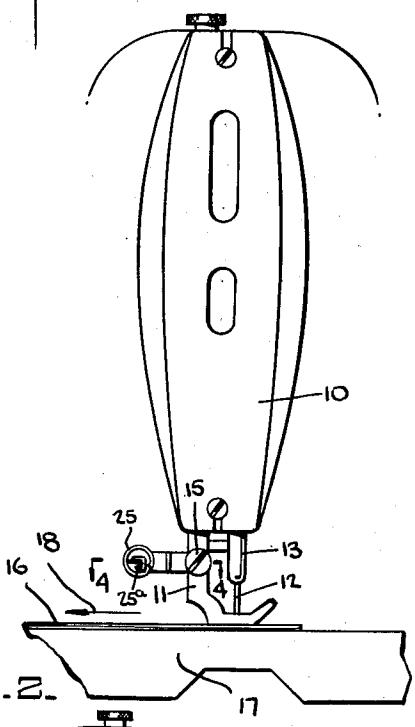


Fig. 2.

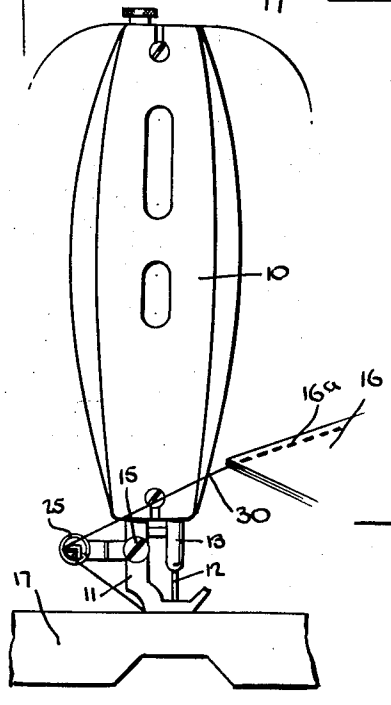
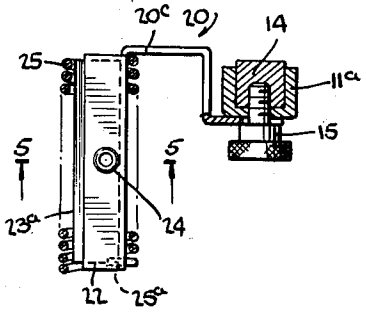


Fig. 4.



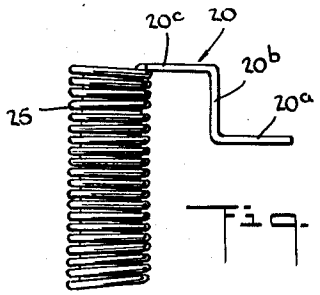
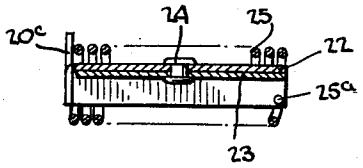


Fig. 3.

Fig. 6.



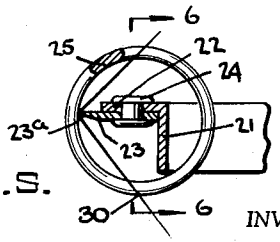


Fig. 5.

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THREAD CUTTER

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Application March 17, 1958, Serial No. 721,808

1 Claim. (Cl. 112—252)

This invention relates to an improved thread cutting attachment for a sewing machine.

After a garment or other textile article has been fed rearwardly under the presser foot and needle of a sewing machine, it is necessary to cut the thread trailing from the garment before the next garment can be fed through the machine. It is then customary to lift the garment and move it back to the front of the machine for further sewing operations or for stacking purposes. An important object of this invention is to provide an attachment for a sewing machine, whereby after the garment has been fed past the needle to the rear of the machine, the thread may be automatically cut merely by moving the garment upwardly and then forwardly to the front of the machine. As a result, the improved attachment eliminates the need for any extra operation on the part of the operator in order to cut the thread.

Another important object of this invention is to provide a thread cutting attachment for sewing machines which has a cutting edge instantly ready for use at the conclusion of the sewing of the garment, but which is always protected so as to prevent the possibility of accidental injury to the operator.

Another important object of this invention is to provide a thread cutting attachment for sewing machines which also grips or holds the thread after it has been cut, thereby preventing the needles from becoming unthreaded and preventing the thread from becoming slack. This permits the next garment to be sewed with a minimum of delay.

In accordance with a preferred embodiment of the invention, the attachment consists simply of a bracket adapted to be mounted upon the presser foot of the sewing machine and having an arm located rearwardly of the presser foot and above the cloth being fed from front-to-rear under the presser foot. The arm extends cross-wise of the direction of travel of the cloth, and a knife is mounted on the arm with the cutting edge of the nife located behind the rear edge of the arm. Also in accordance with said preferred embodiment, a spirally wound coil spring is mounted upon said arm with said arm and said knife extending through the bore of the coil spring. Said spring is mounted on the bracket so as to be maintained under compression, so as to hold its turns quite close to each other, but with sufficient spacing therebetween to permit the entry of thread between the successive turns.

In use, the garment is fed past the presser foot and under the knife, and is then lifted by the operator upwardly and over the knife and withdrawn to the front of the machine. Since the trailing thread is being pulled from the machine, the thread is thus automatically drawn through successive turns of the spring and against the cutting edge of the knife, so that the thread is automatically severed.

As an important feature of the invention, the spacing and tension of the spring is maintained, so that after the thread is severed, the end of the thread which leads back

to the machine is automatically held between turns of the spring. This eliminates any need for the operator to manipulate the thread prior to the sewing of the next garment.

Other objects and advantages of this invention will become apparent from the following description in conjunction with the annexed drawing, in which a preferred embodiment of the invention is disclosed.

In the drawing, Fig. 1 is an end view of a conventional sewing machine, showing the improved attachment mounted thereon, and showing by means of an arrow, the front-to-rear direction of feeding of the cloth under the presser foot.

Fig. 2 is a view similar to Fig. 1, but showing the manner in which the cloth is moved, after completion of the sewing operation, so as to withdraw the cloth and at the same time cut the thread.

Fig. 3 is a top plan view of my improved attachment.

Fig. 4 is a section on line 4—4 of Fig. 1.

Fig. 5 is a section on line 5—5 of Fig. 4.

Fig. 6 is a section on line 6—6 of Fig. 5.

Upon reference to the drawing in detail, it will be noted that it shows a conventional sewing machine having a casing **10**, a depending presser foot **11**, and a depending needle **12** and needle holder **13**. These parts are all conventional and are accordingly not shown or described in detail.

Fig. 4 shows post **14** depending from casing **10**, and the U-shaped presser fot shank **11***a* fixed to post **14** by means of screw **15** in the usual manner. As is well known, said post **14** may be raised and lowered within casing **10** so as to raise and lower presser foot **11**.

Fig. 1 also shows cloth **16** being fed under the presser foot and needle and above the usual anvil **17**, in a front-to-rear direction, as indicated by arrow **18**.

The attachment **20** may be made of any suitable material, such as iron in scrap form, which is bent to the desired shape. Said attachment includes a bracket which is of angular shape and which also extends vertically. Said bracket has a horizontally and vertically extending front arm **20***a* having any suitable opening so that it may be secured to the end face of presser foot shank **11***a* by means of the same screw **15** which is used to secure said presser foot shank **11***a* to the post **14**. Rearwardly of presser foot shank **11***a* said bracket **20** has an offset arm **20***b* which extends vertically and laterally inwardly from bracket arm **20***a*. The inner end of offset **20***b* connects with a further bracket arm **20***c* which extends vertically rearwardly from offset **20***b*. The rear end of bracket arm **20***c* connects with a further bracket arm **21**. This bracket arm **21** extends vertically and also extends laterally outwardly from bracket arm **20***c*. Accordingly, said bracket arm **21** extends cross-wise of the direction of travel of cloth **16** and is located above the cloth. A knife holding flange **22** is integral with arm **21** at the upper edge thereof and extends rearwardly therefrom. Said flange **22** extends horizontally and is of a width approximately equal to the height of arm **21**. Accordingly, it will be apparent that the bracket **20** may be readily formed by appropriately binding a metal strap.

A knife blade **23** is fixed to the lower face of flange **22**, by means of a central rivet **24**, or by any other suitable means. Said blade **23** is of slightly less length than the length of arm **22**, but is of greater width, so that said blade **23** projects rearwardly of the rear edge of arm **22**. The rear edge **23***a* of blade **23** is sharpened so that it may serve as a cutting edge for the thread.

Said blade **23** may be made of any suitable material and is optionally made similarly to a single edged razor blade.

A spirally wound coil spring **25** is mounted upon arms **21** and **22** with said arms **21** and **22** extending through

the central bore of spring **25**. The inner turn of spring **25** abuts arm **20***c* which serves as a stop. An aperture is formed in the outer end of arm **21**, adjacent the outer side edge thereof, and the outer end **25***a* of spring **25** is extended through said aperture. Said spring **25** is held under compression with its successive turns fairly close to each other.

By reason of the location of the end **25***a* of spring **25** within the aperture at the lower outer corner of arm **21**, spring **25** may be maintained with the lower edge of arm **21** adjacent the spring and with the knife edge **23***a* adjacent the spring. This reduces the necessary movement of the thread within the turns of the spring, in order that the thread may be cut.

Fig. 2 shows the manner in which the attachment may be used to cut thread. Fig. 2 shows the cloth **16** having a line of stitching **16***a* formed by thread **30**. As shown in Fig. 2, after the cloth **16** has completed its rearward travel past needle **12**, the thread **30** which is being fed from the machine in the usual manner (not shown) trails the cloth **16** and will continue to be pulled from the machine as the cloth is being withdrawn, unless the thread **30** is cut.

As shown in Fig. 2, the cloth **16** is moved upwardly behind the attachment and then forwardly over and past the attachment to a position such as that shown in Fig. 2. In this movement, the thread **30** is automatically drawn behind and over the attachment as shown in Fig. 2 and as shown in the detailed view of Fig. 5. In this way, the thread **30** passes between successive turns of spring **25** and against knife edge **23**, whereby the thread is severed at that point.

Preferably, the spacing between successive turns of spring **25** is just sufficient for easy entry of the thread therebetween. However, at all times the spring serves as a guide for the knife and prevents accidental injury to the operator. Furthermore, in view of the spiral winding of the spring, the wire thereof serves cammingly to guide the thread between successive turns, so that even if the thread is drawn rearwardly at an angle to the longitudinal direction, it will still spring readily between the successive turns into engagement with the knife edge.

Fig. 5 shows the thread **30** having a portion **30***a* below the knife cutting edge **23***a* and a portion **30***b* above knife edge **23***a*. The thread portion **30***a* leads back to the needle **12** and ultimately to the bobbin, and the portion **30***b* connects with the garment. The thread **30** extends frictionally slidably between successive turns of spring **25**. When the thread is severed by knife edge **23***a*, the thread portion **30***b* is drawn upwardly with garment **16**. However, the thread portion **30***a* is held frictionally between the turns of spring **25** and cannot fall free unless it is pulled clear by the operator. This eliminates any possibility of needle **12** becoming unthreaded, and also maintains the thread under the proper tension. As a result, the operator can begin immediately to sew the next garment without any manipulation of the thread.

It is important in the design of this attachment that the tension of the spring be such as to permit relatively easy entry of the thread between turns of the spring, for the cutting operation, while at the same time holding the thread portion **30***a* frictionally between the turns after the thread has been cut.

It will be apparent that with the use of this attachment, no extra movements or operations on the part of the operator are necessary to cut the thread after the garment has been sewn, since the thread is cut automatically when the operator moves the garment upwardly and forwardly in the usual manner, after completion of the sewing operation, for withdrawal of the garment from the machine.

It will also be apparent that with the use of this attachment, no extra movements or operations on the part of the operator are necessary to manipulate the thread after it has been cut and prior to sewing of the next garment, because the thread is held automatically under tension between the turns of the spring after the thread has been cut.

While I have disclosed a preferred embodiment of my invention and have indicated various changes, omissions and additions which may be made therein, it will be apparent that various changes, omissions or additions may be made therein without departing from the scope and spirit thereof.

In particular, while the attachment is shown as used with a single needle sewing machine, it will be apparent that the attachment may be used in conjunction with other types of sewing machines. In particular, the attachment is particularly suitable for use in conjunction with a double needle sewing machine which produces a lock stitch.

What is claimed is:

A thread cutting and holding attachment for a sewing machine comprising a bracket having an arm adapted to be mounted upon the presser foot of said sewing machine so as to extend rearwardly therefrom, an elongated blade having a major blade axis and mounted upon said arm so as to extend transversely of said arm and so as to overlie the path of movement of clothing fed rearwardly under said presser foot during the operation of said sewing machine, said blade having a rear cutting edge extending parallel to said axis, an elongated compression coil spring having a spring axis, and means mounting said compression spring upon said arm with said blade extending through said spring and with the respective axes of said blade and of said spring parallel to each other, said cutting edge being located rearwardly of and above the bottom portion of said compression spring, the spacing and tensioning of the turns of said compression spring being such as to permit thread to be readily drawn frictionally between successive turns of said spring and against said cutting edge for cutting of the thread, and also being such as to normally hold the loose cut thread frictionally between said turns.

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