Nov. 4, 1958 D. LAWBER 2,858,783

TENSIONING DEVICE FOR OVERSEAM SEWING MACHINES

Filed July 16, 1954 2 Sheets-Sheet 1

Fig. 1.

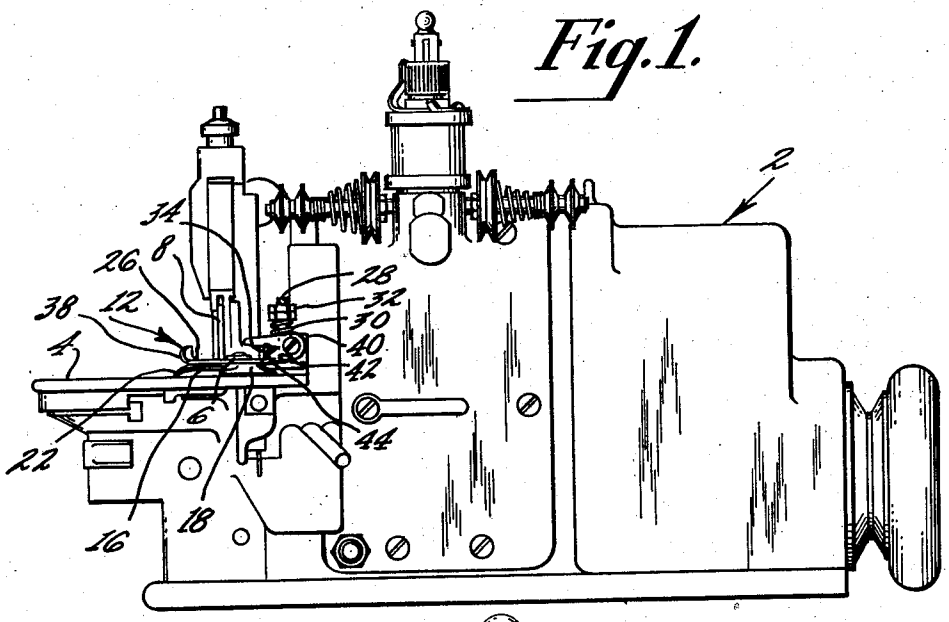
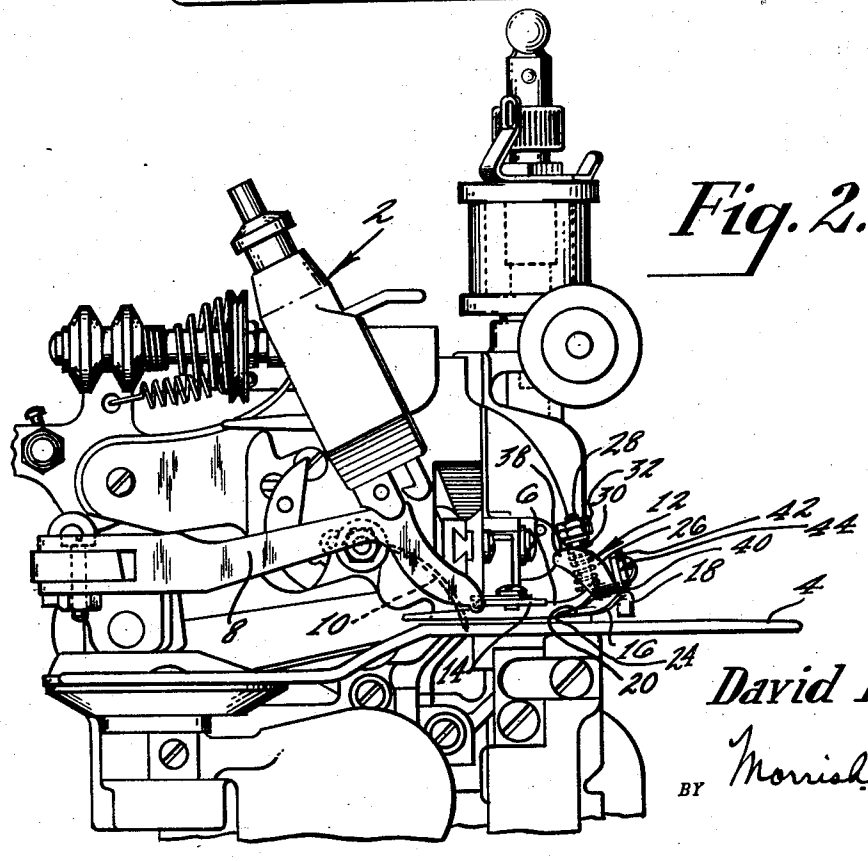


Fig. 2.



INVENTOR.
David Lawber
BY Morris A. Rabin
ATTORNEY

Nov. 4, 1958 D. LAWBER 2,858,783

TENSIONING DEVICE FOR OVERSEAM SEWING MACHINES

Filed July 16, 1954 2 Sheets-Sheet 2

Fig. 3.

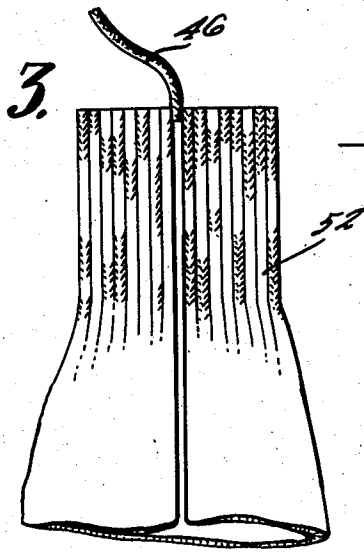


Fig. 4.

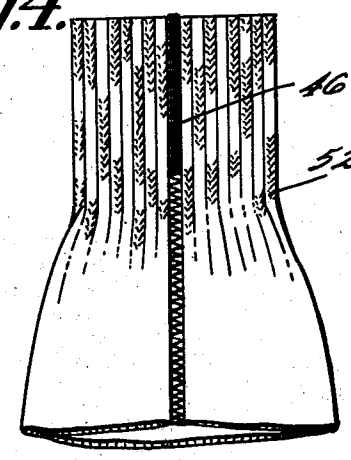
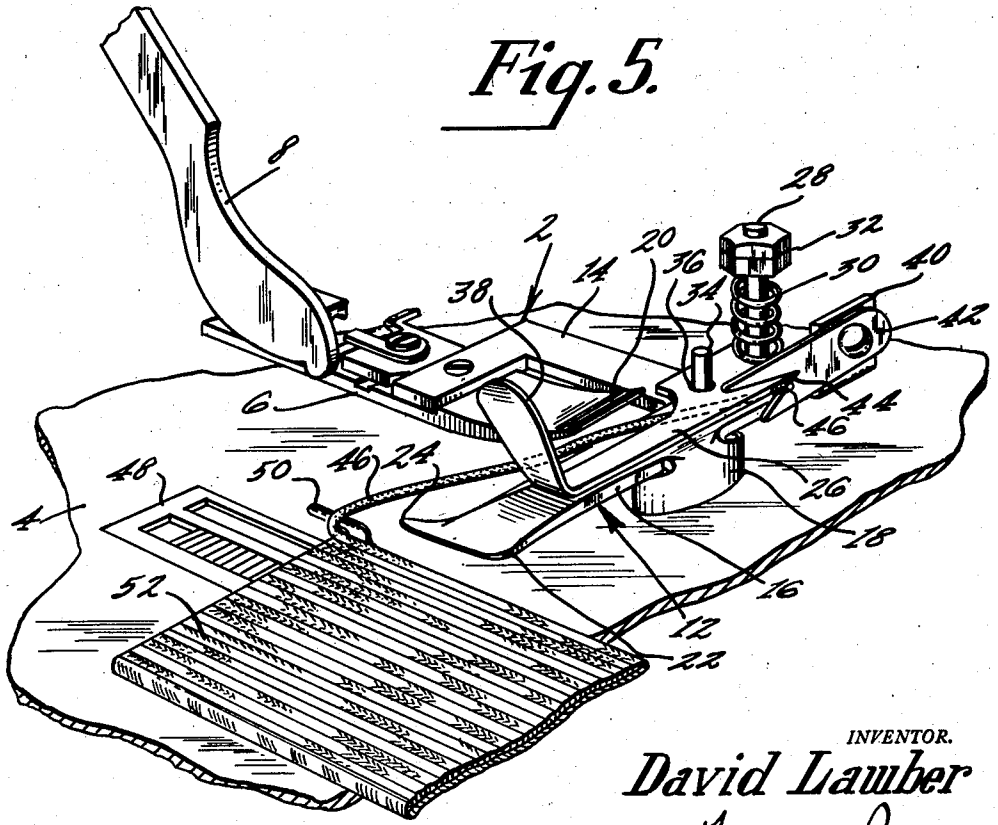


Fig. 5.



INVENTOR.
David Lawber
BY Morris B. Sabin
ATTORNEY

United States Patent Office 2,858,783 Patented Nov. 4, 1958

2,858,783

TENSIONING DEVICE FOR OVERSEAM SEWING MACHINES

David Lawber, Burlington, N. J.; A. Marian Lawber, executrix of said David Lawber, deceased

Application July 16, 1954, Serial No. 443,751

7 Claims. (Cl. 112—162)

This invention relates to sewing apparatus, and more particularly to chain tensioning means for use with overseaming machines, the present invention being an improvement over that disclosed and claimed in my copending application Ser. No. 302,116, filed August 1, 1952, now Patent No. 2,756,704.

As is well known in the art, certain articles of clothing or the like, particularly knit-goods, have the seams thereof formed on an overseaming machine of the type shown, for example, in U. S. Patents 1,548,909, issued to D. S. Seymour, and 2,549,232, issued to B. N. Pierce. These machines form a chain of stitches which encompass the edges of the fabric pieces operated on by the machines. However, when no fabric is placed in such a machine, operation of the machine will produce a loose chain of stitching which is self-maintaining.

It is usual, in the production of knit-goods, to make a chain of several inches in length before the fabric is placed in the sewing position. This leaves a loose end or "tail" of stitches extending from the end of the sewn fabric. Frequently, these tails are merely cut off even with the end of the fabric. This arrangement is relatively economical so far as production costs are concerned. However, it presents a drawback in that the stitching inevitably starts to ravel, whereby the seam becomes free to open. In the manufacture of better types of merchandise, it has been customary to use a special needle which is handled manually and is forced in between the threads of the seam to catch the tail or loosely extending chain of stitches so that the tail can be pulled back through the seam. This provides a better finishing process. However, it may readily be seen that expensive hand labor is required for this operation, thereby increasing the production costs.

Heretofore, it has been proposed to provide a tensioning means for holding the end of the preformed chain of stitches in a position which will be adjacent the edge of the fabric to be seamed. In this way, the loosely extending chain can be enclosed in the stitches which form the seam. In my above-identified copending application, there is disclosed such a tensioning means. The present invention constitutes an improvement over that of my said copending application. Although the concept of tensioning the chain in a position to be sewn into the seam is clearly shown in my aforesaid copending application and the specific means disclosed therein afford a considerable saving in costs without sacrificing the quality of the product, several devious hand motions of the machine operator are required in the illustrated embodiment shown in that application to position the chain in the tensioning or holding device.

Accordingly, it is the primary object of my present invention to provide, for use with overseaming apparatus, an improved chain tensioning means which will not be subject to the aforementioned disadvantage.

More particularly, it is an object of my present invention to provide an improved tensioning device as set forth in connection with the use of which the devious hand motions of the operator are obviated.

Another object of my present invention is to provide an improved tensioning device as set forth by means of which the chain is positioned in the tensioning device and the excess chain, or previous work piece, is cut off in a single unidirectional hand motion of the operator.

Still another object of my present invention is to provide an improved tensioning device which will eliminate the need for bar tacking, pulling in the loose chain end, and trimming, as practiced heretofore in conventional overseam machines.

It is also an object of my present invention to provide an improved tensioning means as set forth which is simple in construction, economical in operation, and highly efficient in use.

In accomplishing these and other objects, I have provided, in accordance with the present invention, a chain tensioning device which projects forwardly of the presser foot of an overseaming machine. The tensioning device includes upper and lower mandibles which are coupled together at one end and which are adjustably spring loaded. This produces a horizontal slot which is open to the same side as the free end of the seaming machine, this being, in most cases, to the left of an operator facing the machine. The chain is moved into the slot with a single, sweeping motion of the operator's hand. When the chain is fully seated in the slot, a follow-through motion of the hand severs the excess chain by means of a cut-off knife positioned adjacent the slot.

A better understanding of this invention may be had from the following, detailed description, when read in connection with the accompanying drawings in which

Fig. 1 is a front view of an overseaming machine provided with a chain tensioning device according to my present invention,

Fig. 2 is an end view of the machine shown in Fig. 1,

Fig. 3 is a fragmentary view showing a typical garment which may be sewn on an overseaming machine provided with my improved tensioning device, the garment being shown with a chain of stitching positioned adjacent the open seam prior to sewing,

Fig. 4 is a view similar to Fig. 3 but showing the garment seamed with the initial chain sewn into the seam, and

Fig. 5 is a perspective view, on an enlarged scale, showing, in detail, my improved chain tensioning device as seen from the left, front corner of Figure 1, but with the presser foot and the tensioning device in raised position.

Referring, now, in more detail to the drawings, there is shown in Figs. 1 and 2, by way of illustration, an overseaming machine 2 of the general type disclosed in the aforesaid Pierce Patent No. 2,549,232. This machine includes a work plate 4 on which a fabric member being sewn in the machine may be supported. A presser foot 6 is supported above the work plate 4 by a presser foot arm 8. Machines of this type produce a chain of stitches from two or three thread supplies, depending on the particular type of machine being used. One of the threads is fed to a curved needle 10. The other thread or threads are fed to loopers (not illustrated). Details of the mechanism for actuating these devices are not shown or described herein since they form no part of the present invention. However, these details are amply set forth in the patented art as represented by the patents to which reference has been made above.

Secured to the presser foot 6, and extending forwardly thereof, is an improved chain tensioning member 12 constructed in accordance with my present invention. This tensioning device, details of which may be more

clearly seen in Fig. 5, includes a mounting bracket **14** which is connected to and may be integral with a lower mandible **16**. Depending from the front edge of the lower mandible **16** is a curved fabric uncurling member **18**. The edges of most fabrics, particularly of knitted fabrics, have a tendency to curl. The uncurling member **18** is positioned forwardly of and in alignment with the forward end **20** of the presser foot **6**, being shaped to engage the edge of the fabric and flatten it before the fabric is fed under the presser foot **6**.

The lower mandible **16** comprises a relatively flat bar which extends across but is spaced from the forward end or toe **20** of the presser foot **6** and in a direction transverse of the direction of feed of a fabric to be seamed. The open or free end **22** of the lower mandible **16**, which is the left end in the illustrated embodiment, is curved slightly downwardly and has a rearwardly extending guide finger **24**.

Supported above the lower mandible **16** is an upper mandible **26**. This upper mandible is similarly a relatively flat bar member which is supported by and carried in parallel contact with the lower mandible **16**. A threaded stud **28** extends upwardly from the lower mandible **16** through a suitable hole in the upper mandible **26**. A tensioning spring **30** is mounted on the stud **28** between the upper mandible **26** and a tension adjusting nut **32**. As the nut **32** is tightened or loosened, the spring **30** is compressed or relaxed to increase or lessen the pressure, as the case may be, with which the upper mandible **26** bears on the lower mandible **16**. A guide pin **34** similarly extends upwardly from the surface of the lower mandible **16** and through a suitable hole **36** in the upper mandible **26**. The open or free end **38** of the upper mandible **26** is curved rather sharply upwardly. This upwardly curved end **38** of the upper mandible **26** cooperates with the slightly downwardly curved end **22** of the lower mandible **16** to provide a throat or guide for feeding an initial chain between the two mandibles as hereinafter more fully described.

An upstanding bracket **40** is carried by, and may be integral with, the lower mandible **16**. This bracket is positioned to carry a cut-off knife **42**. The knife **42** comprises a blade member having a V-shaped notch **44** therein. The notch **44** opens in the same general direction as the free ends of the two mandibles, that is to the left, as illustrated in Fig. 5.

In operation, the machine **2** is operated in known manner to produce a length of chain **46**. In a plane substantially coincident with the work-plate **4**, there is positioned a needle plate **48** having a rearwardly extending finger **50**. This finger **50** is so positioned that the needle **10**, in cooperation with the loopers, forms the chain of stitches about the finger **50**. When a fabric **52** is fed into the machine, the overlapping edges to be seamed substantially coincide with the finger **50**. In this manner, the chain of stitches which is formed around the finger **50** includes the edges of the fabric **52**. However, when no fabric is in the machine, a continuous chain of stitches **46** will be formed. With the presser foot **6** raised, the advance end of the chain may be gripped by the fingers of an operator and, with a single sweeping motion to the right, the chain can be guided under the presser-foot **6** and between the two mandibles **16** and **26** to the sharp edges **44** of the knife **42** where the excess chain is cut off. The pressure exerted by the spring **30** on the upper mandible **26** produces sufficient interfacial pressure between the two mandibles to hold the severed end of the chain **46** therebetween.

It will be noted that the guide pin **34** serves double duty. Not only does it help hold the upper mandible **26** in parallel relationship with the lower mandible **16**, but it also serves as a limiting stop for limiting the extent to which the chain may be pulled into the tensioning device. Thus limited, the chain **46**, when tensioned by the tensioning device, coincides with the edges of the fabric **52** when the fabric is placed in the machine for seaming. The fabric **52** may be, for example and as illustrated in Figs. 3 and 4, the sleeve of a sweater. Whether a tensioning device, such as that constituting the present invention, is used or not, the seaming usually starts at the cuff end of the sleeve and always starts with a length of chain **46**, as shown in Fig. 3. On the better products, that length of chain is, in one way or another involving considerable hand labor, made to be enclosed within the seam. With my present invention, this feature is achieved automatically without loss of operator time by eliminating needless motions, and/or the added expense of special help to pull the chain in by hand.

As already set forth, the end of the chain **46** is held between the mandibles of the tensioning device **12**. The tension nut **32** is adjusted so that the chain will be held under light tension but will be permitted to be pulled out by the advancing work without distorting the end of the fabric. While the chain is thus held, the fabric **52** is placed in position and the presser foot **6** is lowered. The lowering of the presser foot **6** lays the chain **46** immediately adjacent and parallel to the edges of the fabric to be seamed. Therefore, when the machine **2** is operated to seam the edges of the fabric **52**, the chain **46** is encased by the stitches forming the seam. The end product will appear substantially as the sleeve illustrated in Fig. 4.

When a sleeve has been seamed in the manner heretofore described, the operator continues the operation of the machine to form a chain extending beyond the terminal end of the piece (this much is conventional). The operator then moves the finished sleeve in a single sweeping arc across the front of the machine **2**. This motion feeds the chain into the tensioning device **12** and severs the chain on the knife **42**. This frees the finished sleeve and sets up the machine for the next piece, all in a single, simple motion. Throughout the simple motion, the chain is guided first between the edge of the presser foot **6** and the guide finger **24** on the lower mandible **16**, then between the curved ends **22** and **38** of the two mandibles, and finally into position against the guide pin **34**.

There has thus been provided a novel chain tensioning device which is simple in structure and operation, yet affords considerable saving of effort, time and costs over prior art methods and devices.

Although I have shown and described but a single embodiment of my present invention, it will undoubtedly be apparent to those skilled in the art that various modifications thereof are possible. Hence, I desire the foregoing description to be regarded merely as illustrative and not as limiting.

I claim as my invention:

1. A chain tensioning device for overseaming machines having a presser foot, said tensioning device being adapted for mounting in front of said presser foot in the direction of feed of work and comprising a lower mandible, an upper mandible supported on said lower mandible above said lower mandible, tension means maintaining said upper mandible in parallel and yieldably pressing contact with said lower mandible, means for mounting said device on said presser foot with said mandibles in spaced relation to the front end of the presser foot and in a substantially horizontal plane to be carried by said presser foot, and means for guiding a chain between said mandibles to be yieldably held thereby under tension.

2. A chain tensioning device for overseaming machines having a presser foot, said device comprising a lower mandible having means for connecting said lower mandible to said presser foot and for locating said device in front of said presser foot in the direction of feed of work, an upper mandible having a hole therein, a stud extending from one face of said lower mandible through said hole, spring means surrounding said stud and engaging said upper mandible, means for adjustably

compressing said spring means whereby to exert an adjustable pressure on said upper mandible for pressing said upper mandible into resilient contact with said lower mandible, and means for guiding a chain between said mandibles to be yieldably held thereby under tension.

3. A chain tensioning device for overseaming machines having a presser foot, said device comprising a lower mandible having means for connecting said lower mandible to said presser foot and for locating said device in front of said presser foot in the direction of feed of work, an upper mandible having first and second holes therein, a stud extending from one face of said lower mandible through one of said holes in said upper mandible, spring means cooperatively associated with said stud and with said upper mandible, means for adjustably compressing said spring means to exert an adjustable pressure on said upper mandible for pressing said upper mandible into resilient contact with said lower mandible, a guide pin extending from the same face of said lower mandible as said stud does and through the other of said holes in said upper mandible, said pin serving to hold said mandibles in substantially parallel relation, and means for guiding a chain between said mandibles to be yieldably held thereby under tension.

4. A chain tensioning device as set forth in claim 3 characterized by the addition of a bracket carried by

said lower mandible, and a knife secured to said bracket in a position to cut off excess chain guided between said mandibles.

5. The invention as set forth in claim 3 wherein the ends of said mandibles are curved away from each other to define a throat constituting said means for guiding said chain between said mandibles.

6. The invention as set forth in claim 3 characterized by the addition of a curved member depending from an edge of said lower mandible in a position to be forwardly of and in alignment with said presser foot when said device is connected to said presser foot, said curved member then being useful for uncurling fabric fed therepast.

7. The invention as set forth in claim 3 characterized in that said guide pin is positioned on said lower mandible to be engaged by a chain admitted between said mandibles for limiting the extent to which the chain may thus be admitted.

References Cited in the file of this patent

UNITED STATES PATENTS

2,492,147	Hay	Dec. 27, 1949
2,748,444	Rice	June 5, 1956

FOREIGN PATENTS

413,113	Germany	May 1, 1925