Feb. 21, 1967

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SEWING MACHINE HAVING THREAD TRIMMING DEVICE MOUNTED THEREON

3,304,897

Filed Dec. 3, 1964

3 Sheets-Sheet 1

Fig. 1

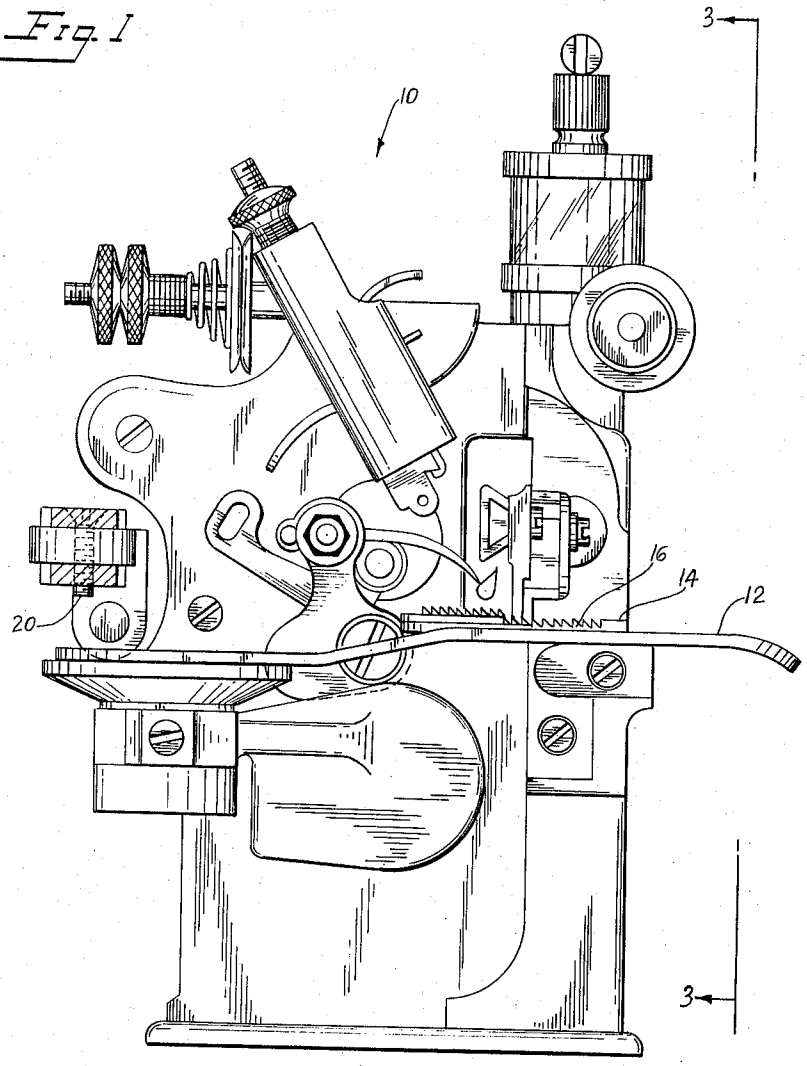
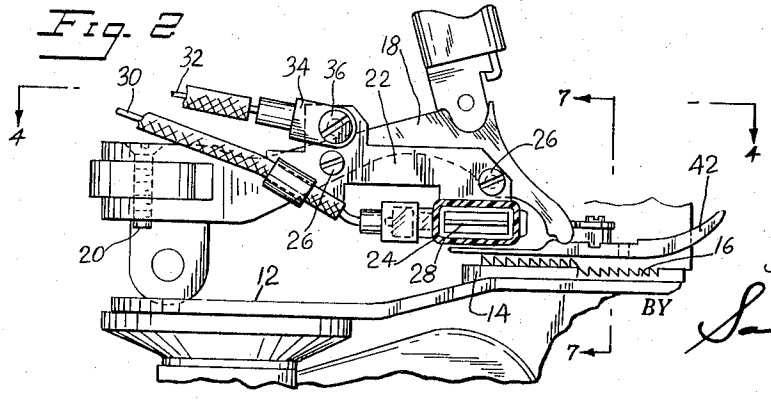


Fig. 2



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Fig. 3

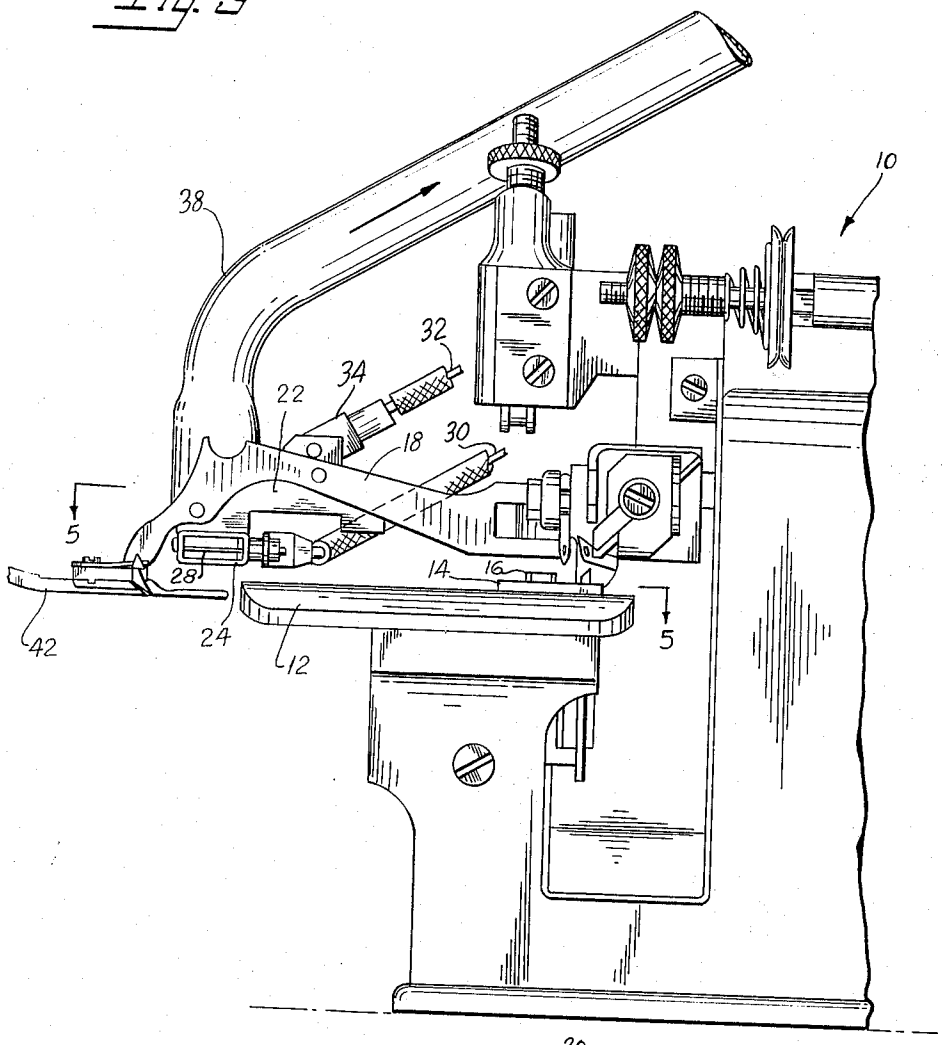
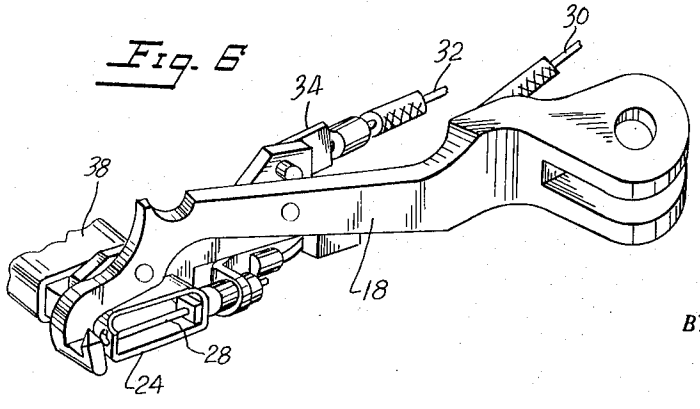


Fig. 6



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Fig. 4

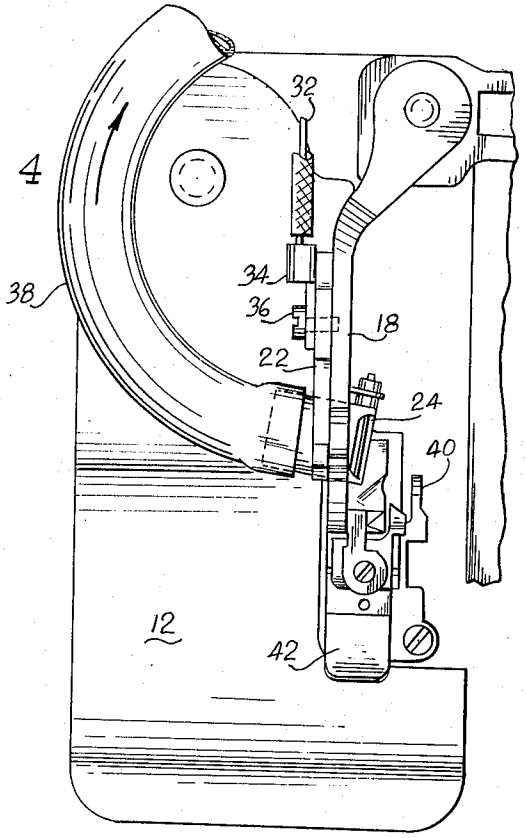
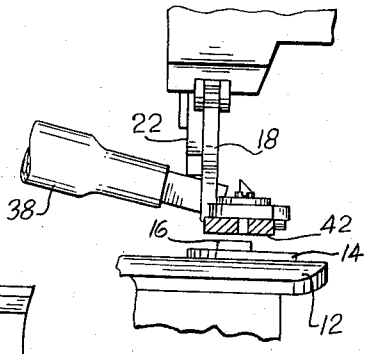


Fig. 7



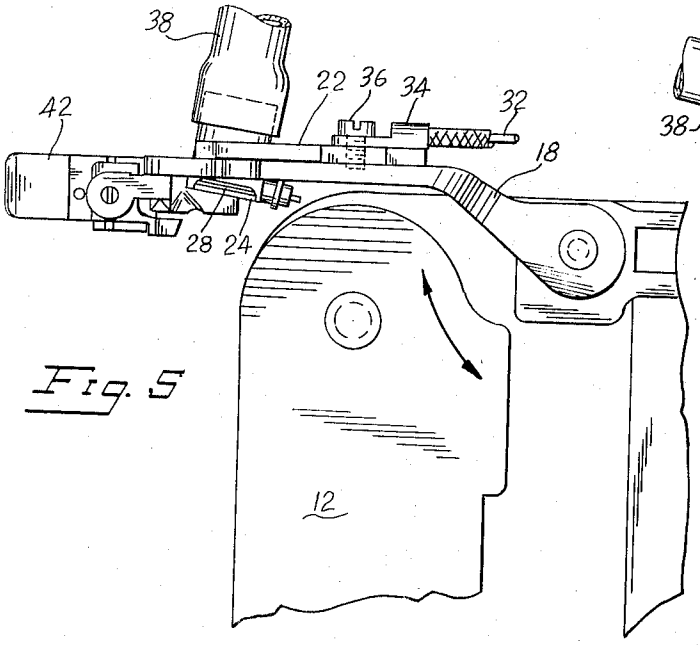


Fig. 5

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United States Patent Office 3,304,897 Patented Feb. 21, 1967

3,304,897

SEWING MACHINE HAVING THREAD TRIMMING DEVICE MOUNTED THEREON

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Filed Dec. 3, 1964, Ser. No. 415,655
4 Claims. (Cl. 112—252)

The present invention pertains to a sewing machine having a thread-trimming device mounted thereon, and more particularly to an overseam sewing machine or the like having a thread-trimming device, including a suction tube, mounted on the presser arm thereof.

An overseam sewing machine having a thread-trimming device mounted thereon is utilized in connection with the sewing of a long series of individual pieces of work which are connected together by a thread chain in the sewing operation and which chain is severed by said thread-trimming device. However, almost all of said sewing machines which have thread-trimming devices mounted thereon have the device positioned behind the needle plate and feed dog of the machine; said thread-trimming devices usually comprising a cutting means, either electrical or mechanical, and a suction tube.

The articles which are to be sewn pass over the cutting means and suction tube and the thread chain is pulled straight ahead. Since the sewn article stops its motion at the last tooth of the feed dog, the thread chain is still attached to said article, and in order to cut said chain it must be passed over the cutting means. This can be accomplished in one of two ways. Firstly, the operator of the sewing machine may push the article forward, a short but important distance, whereby the thread chain is brought into cutting engagement with said cutting means, but this results in a loss of time and motion. Secondly, the operator may pause momentarily to allow the suction means to pull the thread forward, to cause said thread to come into severing engagement with the cutting means. This also results in a loss of time.

Another disadvantage of present day machines is that if too much suction is applied, the thread chain is readily pulled off the chaining finger, thereby breaking the sewing threads and necessitating the rethreading of said machine, which is rather time consuming.

Also, in view of the fact that most overseam machines were not designed with the thought of having a thread-trimming device incorporated therein, the modifications are in some cases quite extensive, since there is only a limited amount of space available for the addition of the thread-trimming device. And in many cases it is difficult to mount suction tubes on said machines which are large enough to pull thread chains composed of heavy threads.

It is therefore an object of the present invention to provide a sewing machine of the overseam type having a thread-trimming device mounted thereon, which severs the thread chains interconnecting a long series of individual pieces of work, and removes the severed threads, without necessitating any pause or hesitation in the sewing operation.

It is another object of the present invention to provide a sewing machine having a thread-trimming device which is oriented substantially perpendicular to the stitching finger of said machine, to prevent the suction applied to said device from breaking the sewing threads by pulling the chain stitch off said stitching finger.

It is a further object of the present invention to provide a sewing machine having a thread-trimming device secured to the presser arm thereof.

It is yet another object of the present invention to provide a sewing machine having a thread-trimming device connected to the presser foot thereof.

These and other objects, features and advantages of the present invention will become more apparent when considered in conjunction with the accompanying drawings, wherein:

FIGURE 1 is a side view of a sewing machine having the presser arm and presser foot removed therefrom.

FIGURE 2 is a partial side view of the sewing machine of the present invention with the presser arm and presser foot thereof in their operative position.

FIGURE 3 is a front view of the sewing machine taken on the line 3—3 of FIGURE 1 with the presser arm and presser foot thereof rearwardly pivoted away from their operative position.

FIGURE 4 is a partial top view of the sewing machine taken on the line 4—4 of FIGURE 2.

FIGURE 5 is a top view taken on the line 5—5 of FIGURE 3.

FIGURE 6 is a perspective view of the presser arm having a thread-trimming device secured thereto, in accordance with the present invention.

FIGURE 7 is a partial front view of the sewing machine taken on the line 7—7 of FIGURE 2.

Referring now to the drawings, there is shown a conventional sewing machine such as an over-seam machine **10**. The machine includes a work plate **12**, a needle plate **14**, a pair of feed dogs **16** and a presser arm **18**. The presser arm is pivotally secured to said machine by a screw **20**, in a conventional manner.

A bracket **22** having a suction tube **24** formed as an integral part thereof is secured to the presser arm by a pair of screws **26**. The tube **24** has a resistance wire **28** disposed at the inlet end thereof (as clearly shown in FIGURE 6). The suction tube **24** and resistance wire **28** comprise the thread-trimming device which is of the type described in my U.S. Patent No. 3,159,124 issued December 1, 1964, and entitled Electrical Thread-Trimming Device.

An insulated wire **30** has one of its ends connected to one end of the resistance wire **28** in insulated relationship with respect to the tube **24**; the other end of said wire being connected to one terminal of a suitable A.C. source (not shown). Another insulated wire **32** has one of its ends connected to the bracket **22** by means of a terminal lug **34** and a screw **36**; the other end thereof being connected to the other terminal of said A.C. source. The wire **32** serves to ground said bracket and the other end of the resistance wire **28**, said wire being electrically connected to the tube **24** by being soldered thereto and thereby completes the electrical circuit from the A.C. source to the wire **28**.

The suction tube **24** is preferably made of brass, but may be made of any other suitable material, and (as seen in FIGURES 4 and 7) is disposed upwardly and rearwardly with respect to the bracket **22**. The tube is relatively short and has a rectangular cross-section (as shown in FIGURE 2). The outlet end of said tube has a plastic sleeve or tube **38** connected thereto by having one end of said sleeve fitted on said outlet end; the other end of said sleeve being connected to a suitable source of suction (not shown). The sleeve projects upwardly and rearwardly with respect to the presser arm, thereby preventing said sleeve from interfering with the feeding of the work articles into the machine and the sewing operation performed on said articles.

As most clearly shown in FIGURE 4, the needle plate **14** includes a stitching finger **40** upon which the chain stitches are formed. When the presser arm **18** is secured in its operating position the suction tube is positioned above both the needle plate and the feed dogs and the inlet end of the suction tube is positioned adjacent the rear feed dog while being disposed at a substantially

right angle with respect to said stitching finger; the end of the stitching finger being in transverse alignment with the front portion of the inlet end of said suction tube.

In the operation of the machine when the articles to be sewn are fed into the machine by an operator, the presser foot 42 holds the work upon the needle plate 14 and the feed dogs 16 move the work from the front to the rear of the machine. After the article has been sewn the loose threads of the thread chain, which are composed of the chaining stitches formed on the stitching finger 40, and which are attached to the article, are drawn into the inlet end of the suction tube 24 and severed by the heated resistance wire 28.

In this connection it should be noted that the top portion of the tube 24 at the inlet end is slightly recessed with respect to the lower portion thereof, this being necessary to prevent the nut 44 of the needle assembly from hitting the tube. However, in some machines this problem is not encountered and there is no recess needed in the top portion of the tube.

It will be apparent that since the articles are held upon the needle plate by the presser foot until they have almost moved beyond the suction tube, they cannot be drawn into said suction tube and are thereby prevented from being burned or marred by the resistance wire. Also, since the thread chain is being drawn into the section tube at substantially a right angle with respect to the stitching finger, there is little or no possibility of pulling the chain stitches off said stitching finger and breaking the sewing thread. Furthermore, since the thread chain is pulled upwardly towards the fully exposed inlet end of the suction tube, and there being no obstructions in its path, severance of the thread chain by the resistance wire is assured and the operator need not pause or hesitate in the sewing operaton to sever said thread chain.

Although the present invention has been described with reference to an electrical thread-trimming device, it will be readily apparent that a mechanical thread-trimming device may be employed with equal efficacy, and the use of mechanical thread-cutting means is within the contemplating of the present invention.

It will be appreciated that should the suction tube become clogged with lint or oil, the presser arm can easily be swung aside, exposing the inlet end of said tube and permitting the same to be cleaned by the use of a small brush.

Although the present invention has been described with reference to the thread-trimming device mounted on the presser arm of said machine, it will also be appreciated that it is possible to secure the thread-trimming device to the presser foot of the machine, such as by soldering the same to said presser foot.

Also, it is possible to mount the thread-trimming device on other parts of the machine, by means of brackets and the like, whereby the inlet end of the suction tube of said device is disposed above and at substantially a right angle with respect to the chaining finger.

It is thus seen that I have provided a new and novel

sewing machine having a thread-trimming device as a part thereof, whereby a long series of work pieces can be continuously sewn without necessitating any pause or hesitation in the sewing operation to sever the thread chain connecting said work pieces.

While I have shown and described the preferred embodiment of my invention, there are many modifications which may be made therein by persons skilled in the art without departing from the spirit and scope of the invention as defined by the appended claims.

What is claimed is:

1. A sewing machine having a needle plate including a chaining finger having its longitudinal axis extending parallel to the path of travel of material through said sewing machine, a feed dog, a presser arm, and a thread-trimming device, means connecting said thread trimming device to said presser arm, said thread trimming device being positioned above the needle plate of said machine and said thread-trimming device including a suction tube which has the inlet end thereof disposed at substantially a right angle with respect to the longitudinal axis of said chaining finger and in closely spaced relationship with said chaining finger.

2. A sewing machine having a needle plate including a chaining finger having its longitudinal axis extending parallel to the path of travel of material through said sewing machine, a feed dog, a presser arm, and a presser foot; a thread-trimming device comprising a cutting means and a suction tube, means connecting said thread-trimming device to said presser arm, the inlet end of said suction tube being positioned above said needle plate and said presser foot and disposed at substantially a right angle with respect to the longitudinal axis of said chaining finger and in closely spaced relationship with said chaining finger.

3. A sewing machine in accordance with claim 2, wherein the end of the chaining finger is in transverse alignment with the front portion of the inlet end of said suction tube.

4. A sewing machine in accordance with claim 3, including means for forming a plurality of chain stitches on said chaining finger, means for producing a suction at the outlet end of said suction tube whereby the chain stitches are pulled upwardly and angularly toward the inlet end of said suction tube with respect to said chaining finger, whereby they engage said cutting means and are severed thereby.

References Cited by the Examiner

UNITED STATES PATENTS

2,747,533	5/1956	Enos	112—252
2,989,935	6/1961	Butler	112—252
3,058,438	10/1962	Russell et al.	112—252
3,142,279	7/1964	Rubin	112—252
3,182,620	5/1965	Hornberger	112—252

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