

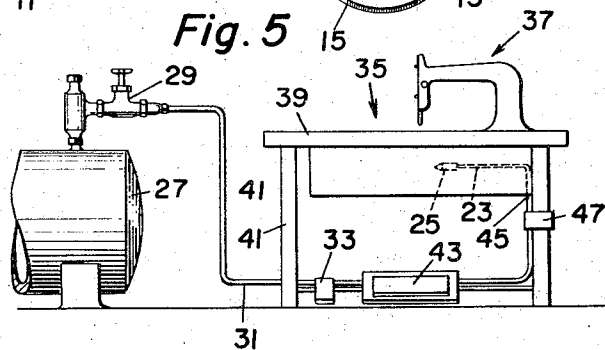
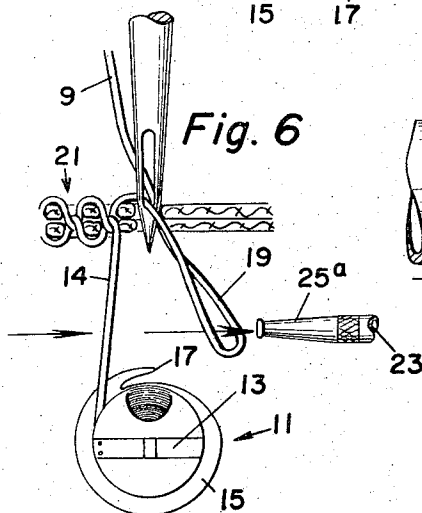
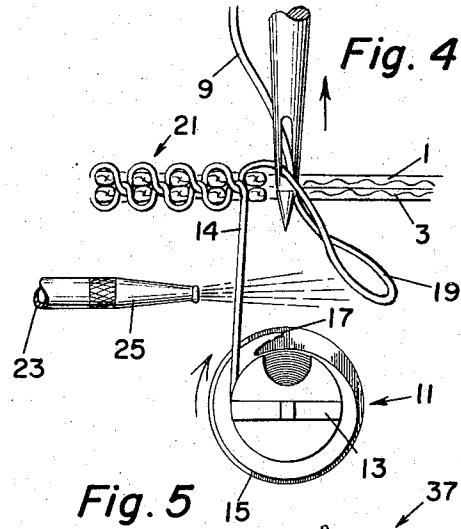
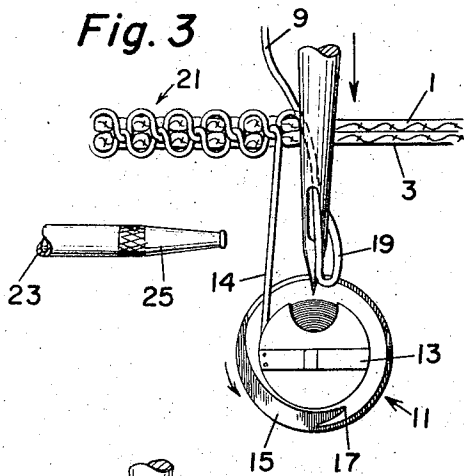
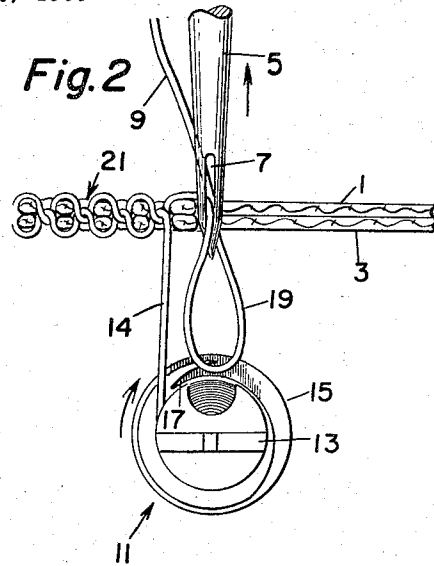
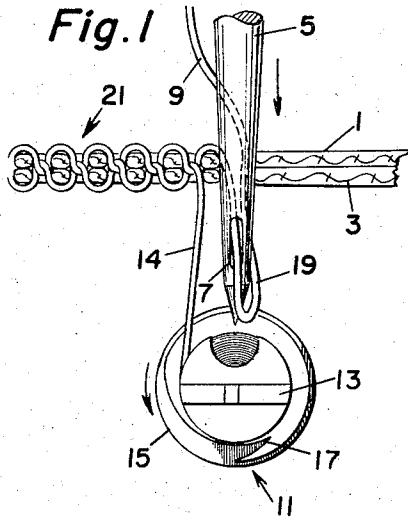
Sept. 12, 1967

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3,340,838

STITCH PREVENTING METHOD AND ATTACHMENT FOR A SEWING MACHINE

Filed Sept. 10, 1965



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3,340,838

STITCH PREVENTING METHOD AND ATTACHMENT FOR A SEWING MACHINE

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Filed Sept. 10, 1965, Ser. No. 486,353
9 Claims. (Cl. 112-262)

ABSTRACT OF THE DISCLOSURE

Attachment for sewing machines to prevent, at the will of the operator, stitches from being formed while the sewing machine continues to operate. Pneumatic means operable by the operator of the sewing machine to create a displacing air condition on the loop of the needle carried thread to displace the entire loop from the path of the reciprocating shuttle, horizontal or vertical hook, oscillating hook, or the like element, so that the bobbin carried or underthread will not pass through the loop in the needle carried thread.

This invention relates broadly to the art of sewing, and in its more specific aspects, it relates to an attachment for a sewing machine whereby the operator of the sewing machine, by means of a simple operation, may cause the sewing machine not to sew at certain times during the sewing operation; and the nature and objects of the invention will be readily recognized and understood by those skilled in the art to which it relates in the light of the following explanation and detailed description of the accompanying drawings illustrating what I at present believe to be preferred embodiments or mechanical expressions of my invention from among various other forms, arrangements, combinations and constructions, of which the invention is capable within the spirit and scope thereof.

In many sewing operations in the garment industry, it is desirable during the use of the sewing machine that it not actually form a stitch during a part or parts of the sewing operation. It has, therefore, been one of my prime purposes in the development of this invention to provide means whereby the sewing machine operator may continue with the operation of the sewing machine while not actually providing or forming stitches in the material, and in this manner, a substantial amount of time is saved, for the machine operator does not have to remove the cloth or make any changes in position during this non-stitching period in the overall sewing operation. It is now necessary, when it is desired not to form stitches, to remove the cloth and make changes in the position thereof, and it will be obvious that such manipulations during the non-stitching operation are time consuming and, therefore, substantially reduce the output of a machine operator. It will be appreciated that in operations where a number of sewing machines are in use, this time saving characteristic of my invention will be of substantial value.

As one example, from among many, in the garment industry where it is desirable for the sewing machine not to form a stitch, is in the making of belts for women's and children's dresses. In this particular sewing operation, it is necessary not to form stitches in the material at certain times and positions of the material relative to the thread carrying needle, and when such times and positions have been reached in the sewing operation, it is now conventional practice for the operator to stop the machine and reposition the cloth. It will be obvious that this necessity of stopping the machine and repositioning the cloth constitutes an additional operation in the overall sewing operation, and it will also be evident that this step requires time to accomplish. In a large, or even a

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relatively small establishment, it will be recognized that this stoppage of the sewing machine while repositioning the cloth by a plurality of operators will, over a period of time, amount to a substantial number of hours.

5 My invention has overcome this disadvantage, and will produce substantial savings in time and money to the garment industry.

I have devised an apparatus under the control of the machine operator whereby, by a simple manipulatory control operation, the machine operator may cause the 10 needle carried thread to be displaced relative to the path of a reciprocating shuttle, a horizontal rotary hook, a vertical rotary hook, an oscillating hook, or any other type of means which may be used in conjunction with a 15 bobbin to draw the underthread through the loop in the needle carried thread which has been formed by the passage of the threaded needle through the material being sewed.

It will thus be recognized that during any period when 20 the sewing machine operator desires the machine to operate but does not desire stitches to be formed through the material, the control means is actuated by the operator, so that the threaded needle will continue its reciprocatory motions through the material, but no stitches will 25 be formed since the loop of the needle carried thread will be displaced relative to the path of the reciprocating shuttle, horizontal or vertical hook, oscillating hook, or the like element, so that the bobbin carried or underthread will not pass through the loop in the needle carried 30 thread.

One of the significant characteristics of my invention resides in the important fact that it may be attached to all of the usual types of sewing machines without necessitating any changes in structure, parts, design or 35 the like of the sewing machine to which it is applied. The sewing machine having the attachment operatively associated therewith is operated in the same manner as it would be without the attachment, and none of the parts of the sewing machine are changed in any manner whatsoever. The advantages of such an attachment will be 40 readily recognized by all who are knowledgeable in the garment sewing art.

The means which I have devised for accomplishing this highly desirable function is under the complete and full 45 control of the operator of the sewing machine, and requires no particular skill, knowledge or training for its operation.

The sewing machine attachment, as mentioned above, is simple to operate and control, is inexpensive to produce, operate and attach to sewing machines of all types which are currently in common use, and requires practically no maintenance under normal use conditions, and as a time saving feature, its economic value is substantial.

The attachment which I have devised has been designed for use on lockstitch, chainstitch, and all types of 55 sewing machines, and, as this description proceeds, it will be appreciated that it is adaptable to all of the many types of sewing machines.

With the foregoing general objects, features and results in view, as well as certain others which will be apparent from the following explanation, the invention consists in certain novel features in design, construction, mounting and combination of elements, as will be more 60 fully and particularly referred to and specified herein after.

Referring to the accompanying drawings:

FIG. 1 is a view in section, with parts thereof broken away, illustrating a stage in the stitching operation using a horizontal rotary hook as a component of the sewing 70 machine mechanism, the needle being disclosed as having been slightly raised from its lowermost cloth penetrating stroke to form a loop in the needle carried thread.

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FIG. 2 is a view similar to FIG. 1, but with the needle retracted and the hook engaged with the loop in the needle carried thread.

FIG. 3 is a view generally similar to FIG. 2 but with the addition thereto of the attachment which I have devised, and just prior to operation thereof to cause the loop in the needle carried thread to be displaced relative to the horizontal rotary hook.

FIG. 4 is a view generally similar to FIG. 3 but showing the means in operation and the thread being displaced by the jet of air being exhausted from said means.

FIG. 5 is a view in side elevation showing my attachment in operative position connected to a sewing machine.

FIG. 6 is a view in section illustrating a modified form of my invention.

In the accompanying drawings I have used the numerals 1 and 3 to designate two pieces of cloth which are to be stitched together by a sewing machine using any of the usual and conventional types of stitching. The conventional reciprocating sewing machine needle is shown at 5, having adjacent to but removed from its pointed penetrating end the usual eye 7 through which is threaded the needle carried thread 9. It will be clearly understood by one skilled in the art that the needle is caused to reciprocate by any of the usual methods found in sewing machine mechanisms and that the thread 9 is fed in the usual and conventional manner, so that it will serve no useful purpose to here describe and disclose such conventional sewing machine mechanisms.

In this particular example of one, from among many, of the types of sewing machines to which my invention may be attached, I have disclosed a horizontal rotary hook, designated in its entirety by the numeral 11. This horizontal rotary hook is, of course, positioned below the cloth and in general alignment with the needle of the sewing machine and is caused to operate and function in the usual manner. I have used the generic term "horizontal rotary hook" to include the hook per se, and the stationary bobbin case about which the hook rotates. The horizontal rotary hook may also be termed the "loop snaring means." The bobbin case component 13 of the horizontal rotary hook carries the underthread 14, which as will become apparent, is threaded through the loop of the needle carried thread which is formed below the two sections of cloth to form one of a series of stitches to hold the cloth sections together. The hook 15 rotates about the periphery of the bobbin case in the direction of the arrow and is provided with a point 17 which snares the loop 19 which is formed in the needle carried thread as the needle moves slightly in its retracting stroke after having punched the thread through the sections of cloth in its cloth penetrating stroke.

In FIG. 1 of the drawings, I have illustrated the needle 5 of the sewing machine in slightly raised or retracted position so that the loop 19 is formed in the needle carried thread. As will be apparent from consideration of the drawings, the loop 19 is in the path of rotary movement of the point 17 of the rotating hook 15, and in FIG. 2 of the drawings, I have illustrated the point 17 of the hook snaring the loop 19 of the needle carried thread to draw the bobbin carried underthread therethrough to form a series of stitches as disclosed generally at 21.

As I have mentioned above, in many garment sewing operations, it is desirable at certain times in such operations to have the sewing machine continue operating while not continuing to form stitches in and connecting together the two sections of cloth at certain points or lengths therealong. In FIGS. 3, 4 and 5, I have disclosed the ingeneous apparatus which I have developed, and shall describe the method of operation thereof to displace the loop 19 in the needle carried thread so that it will be removed from the path of rotary travel of the rotating hook 15.

Referring particularly to FIG. 3 of the drawings, wherein I have shown the loop 19 which is formed in the needle carried thread, which loop is in the path of rotary move-

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ment of the point 17 of the rotating hook so that, unless the loop is removed from the hook's path, it will be snared by the point thereof and in the normal operation of the machine a stitch will be formed. In order to achieve my purpose of displacing the loop 19 as described, I provide an air hose 23 adapted to receive compressed air from a compressor, as will be explained. Fixed to the end of the compressed air hose is a nozzle 25 which is adapted to direct therefrom a pneumatic jet, which may be a jet of air of sufficient force and velocity to displace the loop 19 as desired when the jet of air is turned on and is directed thereon. As will be apparent from study of FIGS. 3 and 4 the nozzle is directed at the formed loop 19 in the needle carried thread, and is mounted and maintained in this properly directed position by any suitable and desirable bracket or mounting means.

In FIG. 4 of the drawings, the jet of air has been turned on by the operator of the sewing machine in a manner and by means which will be explained hereinafter, and the loop 19 is displaced by the jet of air directed thereon into a position remote from the path of movement of the rotating hook 15 as shown in this figure. Thus, the sewing machine continues to operate while not forming stitches to thereby conserve the operator's time for the reasons which have been clearly presented above.

In FIG. 5 of the drawings, I have schematically illustrated the connection of my attachment to a sewing machine and have also illustrated the supply means for the compressed air which supplies the air hose 23 and the nozzle 25. I have shown a conventional compressor 27 which is of any suitable capacity necessary to supply one or a plurality of sewing machines to which my attachment has been applied. The discharge of compressed air from the compressor to a supply line 31 may be controlled by the usual manually operated control valve 29, it will, of course, be appreciated that during the operation of the sewing machine or machines, the valve 29 will normally be open to supply the line 31 with air pressurized to the desired degree. I provide a valve 33 in the line 31 which may be a foot operated valve, or any other suitable type of valve. However, it is placed in easily accessible position for operation by the operator of the sewing machine. I have illustrated schematically a usual sewing machine and have designated it in its entirety by the numeral 35. The sewing machine comprises the conventional components thereof which are designated generally by the numeral 37, and includes the platform 39, which is mounted on supporting legs 41. The usual foot operated control treadle 43 is provided for the control of the machine by the operator thereof, and it is preferable, though not necessary that the control valve 33 be placed adjacent the sewing machine control treadle 43. The air supply line 31 extends upwardly as at 45 adjacent a leg 41 to which it may be fastened as by a bracket 47. The end portion 23 of the supply line extends across and under the platform where the nozzle 25 is positioned to direct the jet of air against the loop 19 of the needle carried thread.

When it is desired to continue the operation of the sewing machine without forming stitches, the operator merely steps on the air pressure control valve 33 which opens the line to the pressurized air so that it will exhaust from the nozzle in a jet stream against the loop 19 of the needle carried thread to thereby displace it from the path of the rotating hook or other type of snaring element, so that the underthread will not be drawn through the loop and no stitches will be formed.

While I have shown the valve 33 as being positioned adjacent the treadle 43, and being foot operated, it is to be distinctly understood that this valve may be hand operated, all that is necessary is that it be disposed in position accessible to the sewing machine operator.

It is also to be understood that the compressor may be provided with a manifold so that an air pressure line will extend to each sewing machine of a plurality of sewing

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machines, and, obviously, each sewing machine will be provided with the air control valve 33.

It is to be clearly understood that it is within my contemplation to use my attachment with all types of sewing machines producing a variety of different types of stitches, so that the attachment of the device to any type of sewing machine will fall within the spirit and scope of my invention.

In FIG. 6 of the drawings, I have disclosed a modification of the invention, outlined and described above. In this form of my invention, instead of using a blast or jet of air which is directed against the loop 19 of the needle carried thread, I use a nozzle 25a which is directed toward the loop 19 and creates a suction to displace the thread as disclosed in FIG. 6 of the drawings. I accomplish this loop displacing suction by using a vacuum pump or the like in place of the compressor 27, and connect the nozzle 25a with the lines 31, 45 and 23 in the same manner as described in connection with FIG. 5 of the drawings, the difference being that these lines are vacuum lines rather than pressure lines.

It will be recognized that the suction created at the nozzle 25a on each sewing machine is controlled by the sewing machine operator by a valve 33 in the same manner as with the pressurized air nozzle 25.

I claim:

1. Apparatus for displacing the entire loop of needle carried thread from the path of movement of a movable loop snaring means adapted to snare the loop and cause the underthread to thread through the loop to form a stitch, including in combination, a sewing machine having a needle adapted to penetrate the sections of cloth being sewed together and carrying a thread, said thread being formed into a loop beneath the sections of cloth as the needle is being retracted therefrom, movable means for snaring said loop and threading the underthread there-through, and further means under the control of the sewing machine operator for displacing said entire loop from the path of movement of said first named means.

2. Apparatus for displacing the entire loop of needle carried thread in accordance with claim 1, wherein said further means comprises means for directing a pneumatic jet against said loop.

3. Apparatus for displacing the entire loop of needle carried thread in accordance with claim 2, wherein control means is provided for turning on and off said pneumatic jet, and said control means is placed in position accessible to the sewing machine operator.

4. Apparatus for displacing the entire loop of needle carried thread in accordance with claim 1, wherein said further means includes means for directing a jet of air against said loop and a nozzle is provided for exhausting said jet of air, and said nozzle being directed toward said loop, and means for pressurizing the air to produce the jet, and communicating means connecting said last named means with said nozzle, and control means being provided in said communicating means for turning on and off the jet of air exhausting from said nozzle.

5. Apparatus for displacing the entire loop of needle carried thread in accordance with claim 1, wherein said further means comprises pneumatic means directed toward said loop.

6. Apparatus for displacing the entire loop of needle

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carried thread from the path of movement of a movable loop snaring means adapted to snare the loop and cause the underthread to thread through the loop to form a stitch, including in combination, a sewing machine having a needle adapted to penetrate the sections of cloth being sewed together and carrying a thread, said thread being formed into a loop beneath the sections of cloth as the needle is being retracted therefrom, movable means for snaring said loop and threading the underthread there-through, and further stationary means spaced from and directed toward said loop for directing a displacing jet of air against said loop to displace the entire loop, and said further means being under the control of the sewing machine operator for turning on and off the jet of air.

7. Apparatus for displacing the entire loop of needle carried thread from the path of movement of a movable loop snaring means adapted to snare the loop and cause the underthread to thread through the loop to form a stitch, including in combination, a sewing machine having a needle adapted to penetrate the sections of cloth being sewed together and carrying a thread, said thread being formed into a loop beneath the sections of cloth as the needle is being retracted therefrom, movable means for snaring said loop and threading the underthread there-through, and further stationary means spaced from and directed toward said loop and operable to form an entire loop displacing air condition at the loop, and said further means being under the control of the sewing machine operator.

8. A method for use with a sewing machine for displacing the entire loop of needle carried thread from the path of movement of a movable loop snaring means adapted to snare the loop and cause the underthread to thread through the loop to form a stitch, comprising the steps of, providing a body of pressurized air, conveying said pressurized air to a nozzle directed toward the loop, controlling the exhaust of said pressurized air from said nozzle, exhausting said pressured air from said nozzle against said loop to displace said entire loop from the path of said loop snaring means at the period when it is desired that the sewing machine operate while not forming a stitch.

9. A method for use with a sewing machine for displacing the entire loop of needle carried thread from the path of movement of a movable loop snaring means adapted to snare the loop and cause the underthread to thread through the loop to form a stitch, comprising the steps of operating a vacuum pump to create a suction, connecting said vacuum to a nozzle directed toward the loop to create a displacing suction in the area of the loop, causing the creation of the suction at the nozzle to displace said entire loop from the path of said loop snaring means at the period when it is desired that the sewing machine operate without forming a stitch.

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R. J. SCANLAN, Jr., *Examiner.*