Aug. 5, 1941. H. GUNTHER 2,251,676

THREAD WIPER FOR SEWING MACHINES

Filed Feb. 23, 1940 2 Sheets-Sheet 1

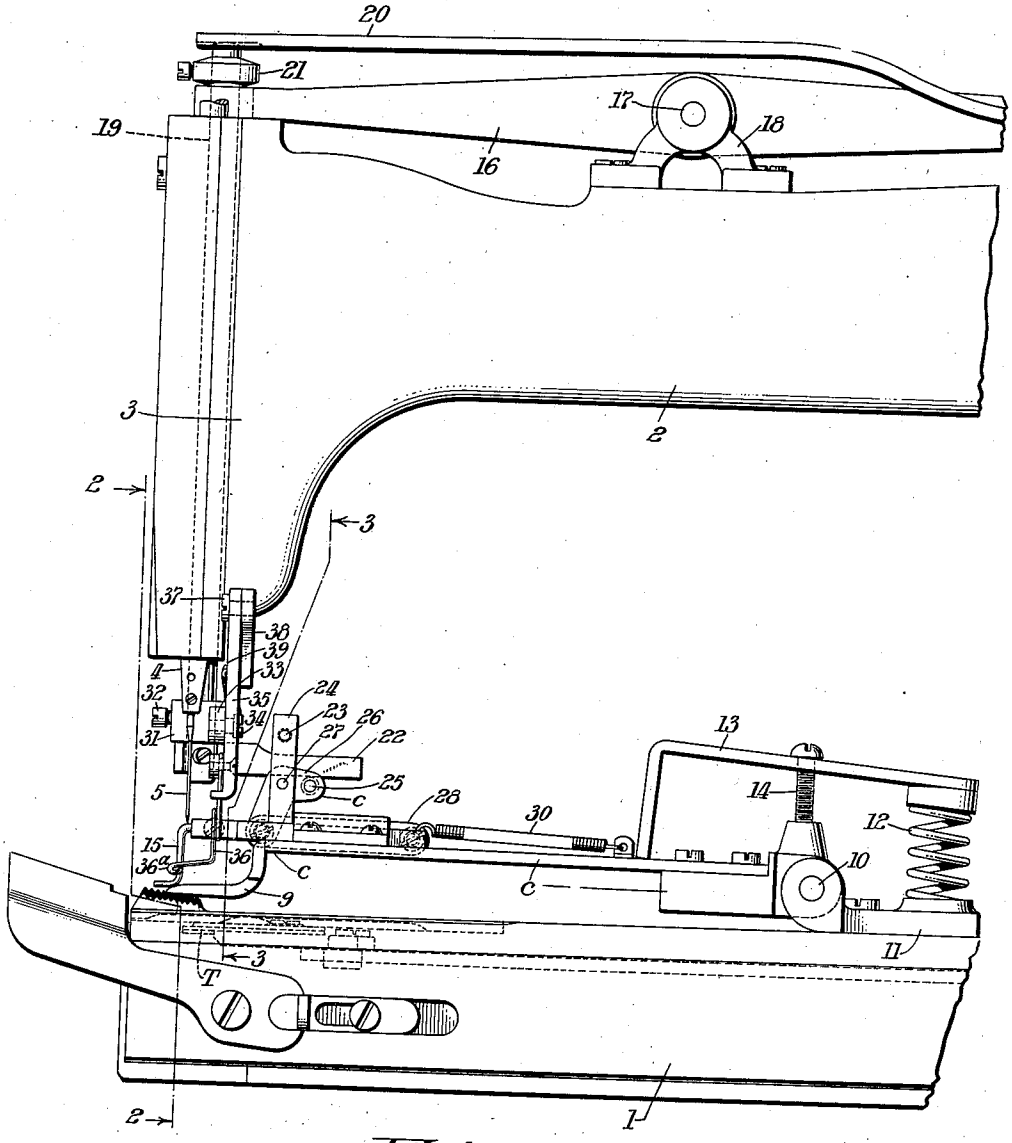


Fig. 1.

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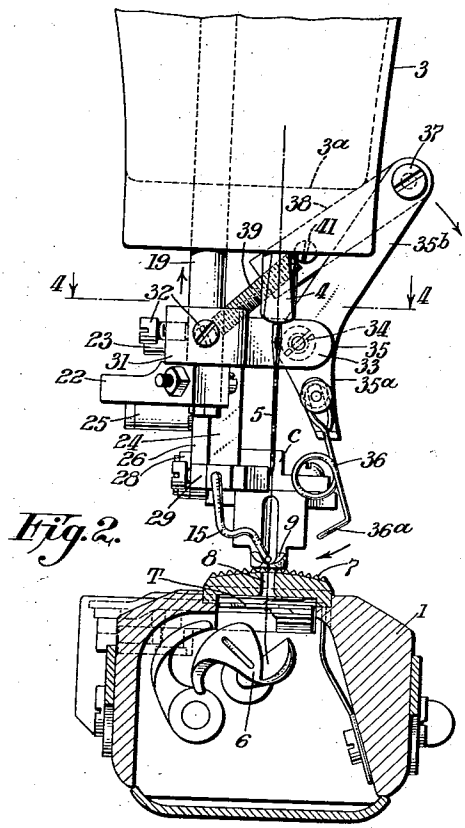


Fig. 2.

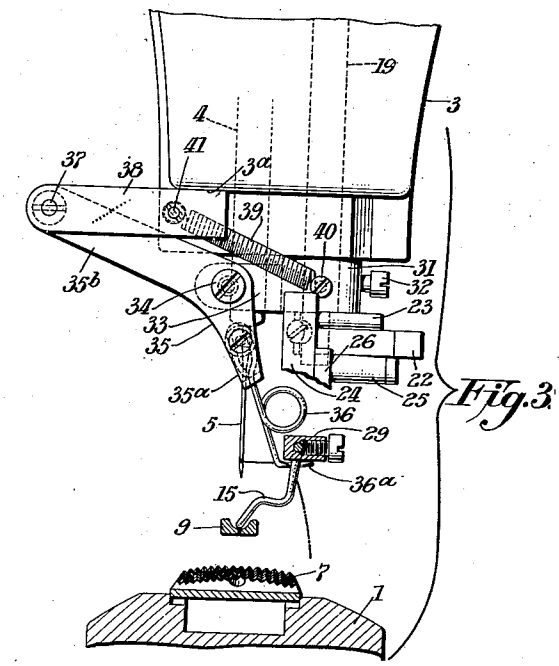


Fig. 3.

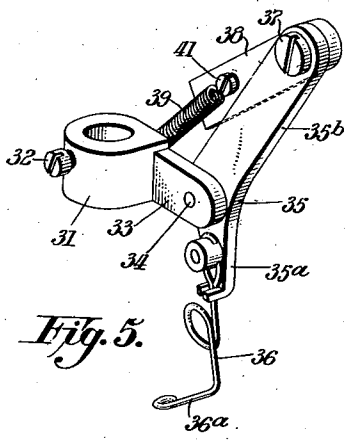


Fig. 5.

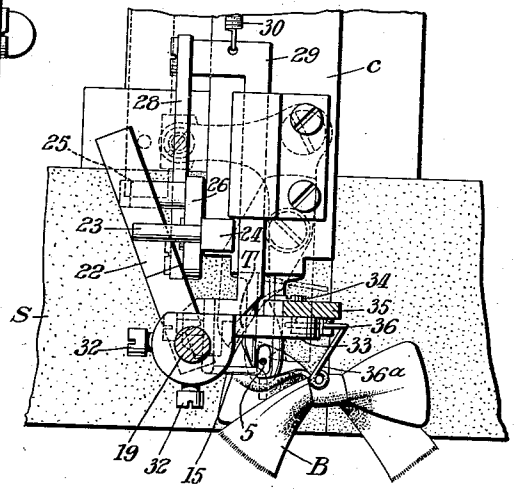


Fig. 4.

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UNITED STATES PATENT OFFICE

2,251,676

THREAD WIPER FOR SEWING MACHINES

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Application February 23, 1940, Serial No. 320,272

5 Claims. (Cl. 112—104)

This invention relates to sewing machines and more particularly to means, operative at the completion of a predetermined stitching cycle and after the needle-thread has been severed, to withdraw the free end of the needle-thread from the work and move it to one side of the path of reciprocation of the needle.

An article attaching machine is a good example of machines which operate in a predetermined cycle and which require the needle-thread to be withdrawn from the work and positioned to one side of the needle at the completion of one cycle and before the beginning of a succeeding cycle. This invention will, therefore, be shown and described as embodied in a sewing machine adapted to attach silk bows to the sweat bands of men's hats. It is to be understood, however, that the invention is not limited to this type of sewing machine and that its embodiment in various other types of sewing machines is contemplated.

One of the objects of the present invention is to provide means, commonly known in the trade as a "thread-wiper," in the form of an attachment which may be applied, as a unit, to sewing machines now in use, without any machining operation and which may be actuated without requiring the operator to perform any additional movements or operations.

With the above and other objects in view, as will hereinafter appear, the invention comprises the devices, combinations and arrangements of parts hereinafter set forth and illustrated in the accompanying drawings of a preferred embodiment of the invention, from which the several features of the invention and the advantages attained thereby will be readily understood by those skilled in the art.

Fig. 1 is a side view of a portion of a sewing machine embodying the present invention.

Fig. 2 is a vertical section substantially on the line 2—2 of Fig. 1.

Fig. 3 is a vertical section substantially on the line 3—3 of Fig. 1.

Fig. 4 is a horizontal section, substantially on the line 4—4 of Fig. 2, but showing therein a portion of a hat sweat-band and its attached bow.

Fig. 5 is a perspective view of the improved thread-wiper attachment removed from the machine.

Referring more specifically to the drawings, the invention is disclosed as embodied in a "Singer Class 114" article attaching machine comprising a work-supporting arm 1, an overlying bracket-arm 2, which terminates in a head 3, carrying a reciprocating needle-bar 4, having fixed in its lower end an eye-pointed needle 5. Cooperating with the needle, in the formation of stitches is a rotary chain-stitch looper 6, which is rotated by mechanism common to this type of sewing machine. Secured upon the forward end of the arm 1 is a serrated work-supporting plate 7, provided with a needle-hole 8 adapted to permit passage of the needle. The work is held upon the plate 7 by a spring-pressed foot 9 forming a part of a work-clamp designated generally as c pivotally mounted, at 10, on a bracket 11 secured upon the arm 1. The foot 9 is normally depressed by a spring 12 interposed between the bracket 11 and one end of a lever 13 fulcrumed on a screw 14 threaded into the work-clamp adjacent its pivot and having its other end turned downwardly and bearing on the work-clamp forwardly of its pivot. This work-clamp may be constructed substantially as shown in United States patent to O. Regen, No. 2,130,509, September 20, 1938, and includes a horizontally movable finger 15 adapted to engage the upper ply of a hat bow B and deflect it to one side, as shown in Fig. 4, to permit the needle to stitch through the lower ply of the bow and through the sweatband S without stitching through the upper ply of the bow, thereby attaching the bow by stitches which are concealed in the finished product.

To permit insertion and removal of the work it is necessary that the work-clamp be lifted at certain times. This is effected by manipulation of a manually actuable lever 16 fulcrumed at 17 in a bracket 18 secured upon the upper surface of the bracket-arm 2. The rear end of the lever has connected thereto a treadle actuated pull-chain, not shown, and the forward end thereof surrounds a vertically disposed clamp-lifting bar 19, slidingly mounted in the head 3 and normally held depressed by a spring 20 acting on the upper end thereof. A collar 21, secured upon the upper end of the bar 19 contacts the upper surface of the forward end of the clamp-lifting lever 16 and thereby enables the lever to lift the rod. At its lower end the rod 19 has secured thereto a rearwardly extending arm 22 which underlies a pin 23 projecting horizontally from a vertically disposed bar 24 secured to and forming a part of the clamp c. From the foregoing it will be understood that clockwise tilting of the lever 16, as seen in Fig. 1, will cause upward movement of the clamp-lifting bar 19, which through the arm 22, pin 23, and bar 24 will tip the clamp c upwardly about its pivot 10. Down-

ward movement of the bar 19, under the influence of the spring 20, will cause the arm 22 to engage a pin 25, carried by one arm of a bell-crank lever 26 fulcrumed at 27 on the bar 24, and turn the bell-crank lever 26 clockwise. The other arm of the lever 26 is connected, by a link 28, to a bar 29 slidingly mounted on the clamp c and normally held in its retracted position by a coil-spring 30. At its forward end the slide-bar 29 carries the bow-deflecting finger 15 above mentioned. Thus as the bar 19 moves downwardly it projects the finger 15 forwardly to the position shown in Fig. 4.

At the completion of a stitching cycle the thread, then held by the looper, is severed beneath the work-supporting plate 7 by a conventional shear-type thread-cutter designated generally as T. This leaves a length of needle-thread extending from the eye of the needle through the work and work-support to the level of the thread-cutter. This length of thread must be withdrawn from the work before the beginning of a succeeding stitching cycle. Heretofore, in this type of machine, no means was provided for withdrawing the thread end from the work and the operator therefore was required to do it manually as by passing some instrument horizontally between the needle and the work.

As hereinbefore stated, this invention has provided a thread-wiper, in the form of an attachment, which may be applied as a unit to machines now in use and which will automatically pull the thread end from the work and hold it to one side of the path of reciprocation of the needle when the work-clamp is lifted at the completion of a stitching cycle. This thread-wiper unit is shown attached to the machine in Figs. 1, 2, 3 and 4 of the drawings and detached from the machine in Fig. 5. It comprises a supporting bracket consisting of a collar 31 adapted to be secured upon the clamp-lifting bar 19, above the arm 22, by clamp-screws 32 and a laterally projecting arm 33 on which is fulcrumed, by screw 34, an angle lever 35. The lower arm 35^a of the lever carries a bent wire thread-wiper arm 36 having a laterally projecting thread-engaging finger 36^a adapted, upon swinging of the lever, to pass between the needle and the work. The upper arm 35^b of the lever 35 has rigidly, but adjustably, secured to it by a clamp-screw 37, an actuating arm 38, adapted, when the clamp-lifting bar 19 is moved upwardly, to engage a stationary portion 3^a of the bracket-arm head 3, and thereby swing the lever 35, and the thread-wiper arm 36 carried thereby, about the fulcrum 34. This movement causes the thread-engaging finger 36^a to pass between the needle and the work and wipe the free end of the needle-thread to one side, as indicated in Fig. 3. This swinging movement of the lever 35 is clockwise as viewed in Fig. 2 and counterclockwise as viewed in Fig. 3 and is effected in opposition to a coil-spring 39 connected, at one end, to a screw 40 threaded into the collar 31 and at its opposite end to a screw 41 carried by the arm 38. As the clamp-lifting bar 19 is moved downwardly to position the work-clamp on the work for a succeeding operation, the collar 31 and the parts carried thereby also are lowered and the spring 40 acting on the arm 38 swings the lever 35, and the thread-wiper carried thereby, to the position shown in Fig. 2 preparatory to a subsequent thread-wiping action. The amount of swinging movement of the lever 35 and the thread-wiper arm 36 may be varied by loosening the clamp-screw 37, changing the angle of the arm 38 relative to the arm 35^b of the lever, to produce more or less lost motion between the arm 38 and the portion 3^a of the head 3, and retightening the screw 37.

From the foregoing it will be perceived that the present thread-wiper attachment may be readily applied, as a unit, to sewing machines now in use and after having been so applied will automatically pull the thread end from the work and move it to one side of the path of reciprocation of the needle each time the work-clamp is lifted without requiring the operator to perform any additional movements or operations.

Having thus set forth the nature of the invention what I claim herein is:

1. A self-contained thread-wiper attachment for a sewing machine having a main frame and a clamp-lifting element, comprising a member adapted to be secured upon said element; a lever fulcrumed on said member; a thread-engaging finger carried by said lever; a spring, connected at one end to said member and at its opposite end with said lever, normally holding said lever and finger in retracted position; and an arm connected to said lever and adapted, during upward movement of said clamp-lifting element, to engage said main frame and swing said lever about its fulcrum, in opposition to said spring, thereby to move said finger to an advanced position in which it engages and holds the sewing thread.

2. A unitary self-contained thread-wiper attachment for sewing machines comprising a collar adapted to be secured upon a reciprocatory element of the machine; a lever oscillatably mounted on said collar; a thread-engaging finger carried by one end of said lever; a spring having one end connected to said collar and its opposite end acting on said lever normally to hold the lever and said finger in one extreme position of oscillation; and a member carried by the other end of said lever and adapted upon upward movement of said element to be brought into contact with a stationary part of the sewing machine frame thereby to swing said lever and said thread-engaging finger to another extreme position of oscillation.

3. A unitary self-contained thread-wiper attachment for an article attaching machine comprising a support adapted to be removably secured upon a reciprocatory element of the machine; a member pivotally mounted on said support; a thread-engaging finger carried by one end of said member; a spring connected between said member and said support normally to hold the member and said finger in one extreme position of oscillation; and an arm adjustably secured to the other end of said member and adapted upon upward movement of said element to engage a stationary part of the sewing machine frame thereby to swing said member and said thread-engaging finger to cause the finger to effect a thread-wiping action.

4. A unitary self-contained thread-wiper attachment for sewing machines comprising an arm adapted to be removably secured upon a reciprocatory element of the machine; a lever pivotally mounted on said arm; a thread-engaging finger carried by one end of said lever; a spring acting on said lever normally to hold the lever and said finger in one extreme position of oscillation; a member adjustably carried by the other end of said lever and adapted upon upward movement of said element to engage a stationary part of the sewing machine frame thereby to

swing said lever and said thread-engaging finger to another extreme position of oscillation; and means for adjusting the position of said member relative to said lever to vary the extent of movement of said lever and thread-engaging member.

5. In a sewing machine having a frame, a reciprocating needle, a work-clamp and a vertically movable clamp-lifting bar; the combination with said clamp-lifting bar of a thread-wiper comprising a member secured to said bar; a spring-biased lever pivotally mounted on said member; a thread-engaging finger carried by said lever and arranged to be swung between said needle and a work-piece held by said work-clamp; an arm adjustably carried by said lever and adapted to be brought into contact with a stationary part of said frame upon upward movement of said bar and member to cause said lever to be swung about its pivot and thereby to move said finger between the needle and said work-piece; and means to adjust the position of said arm relative to said lever thereby to vary the extent of swinging movement of said lever.

HERMANN GUNTHER.