Aug. 8, 1939. A. L. HOLLAND 2,169,124

NEEDLE THREADER

Filed March 23, 1938

Fig. 11.

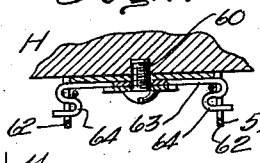


Fig. 1.

Fig. 12.

Fig. 2.

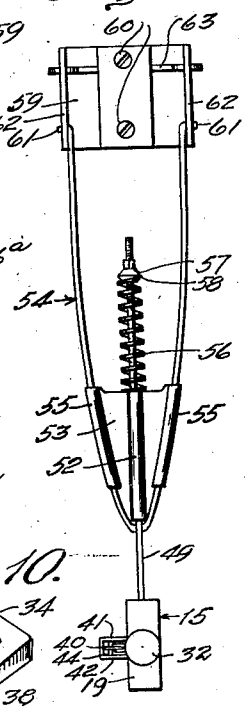


Fig. 7.

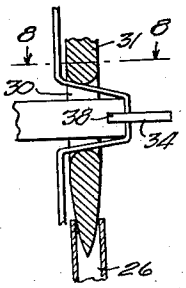


Fig. 8.



Fig. 9.

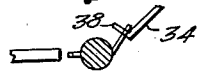


Fig. 10.

Fig. 3.

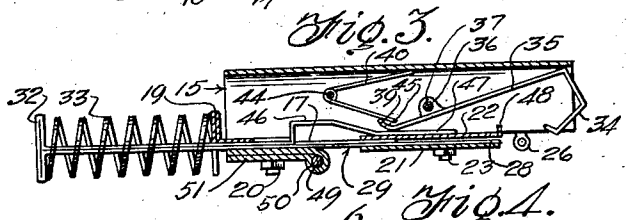


Fig. 6.

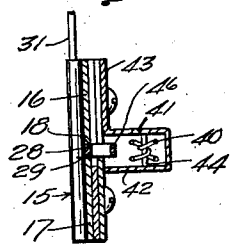


Fig. 4.

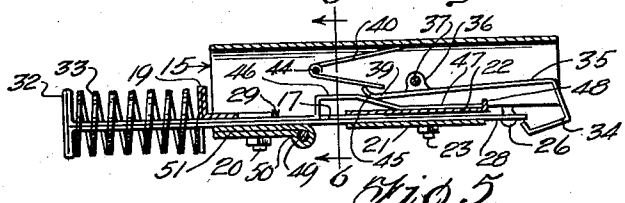
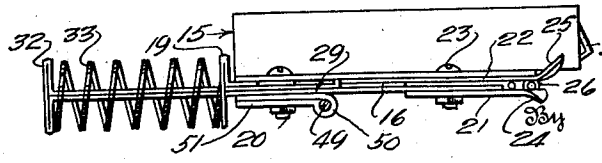


Fig. 5.



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NEEDLE THREADER

Asburl L. Holland, Washington, D. C.

Application March 23, 1938, Serial No. 197,715

4 Claims. (Cl. 112—225)

This invention relates to needle threaders, and more particularly to a needle threading device for threading the needle of a sewing machine.

An object of this invention is to provide a needle threader which may be secured to the head of the sewing machine and normally maintained in an inoperative position, but may be swung downwardly to an operating position for engagement with the needle carried by the reciprocating needle carrier of the machine.

Another object of this invention is to provide a needle threader of this kind which includes a needle positioning means, so as to properly position the needle with respect to the threader in order that the thread may be drawn through the eye of the needle.

A further object of this invention is to provide a threader of this kind which is adapted to push the thread through the eye of the needle in the form of a loop, and to thereafter engage the loop of thread so that when the threader is released from the needle the loop of thread is pulled through the eye with the movement of the threader away from the needle.

A still further object of this invention is to provide a needle threader of this kind which may be attached to the head of the sewing machine, and which is of relatively simple construction, so that it will not readily get out of order and may be manufactured at a relatively small cost.

A further object of this invention is to provide a supporting means for the threader which may be attached to the head of the sewing machine, and which is so constructed that the threader is yieldably held by the attaching means, so that the threader may have the desired swinging movement for swinging or moving the threader into engagement with the needle carried by the sewing machine.

To the above ends essentially and to others which may hereinafter appear, the invention consists of the novel construction, combination and arrangement of parts as will be more specifically referred to and illustrated in the accompanying drawing wherein is shown an embodiment of the invention, but it is to be understood that changes, variations and modifications may be resorted to which fall within the scope of the invention as claimed.

In the drawing—

Figure 1 is a detail side elevation of a needle threader constructed according to an embodiment of this invention, showing the threader in applied and operative position on the head of a sewing machine which is shown in fragmentary form,

Figure 2 is a detail front elevation of the threader,

Figure 3 is a sectional view taken on the line 3—3 of Figure 1,

Figure 4 is a view similar to Figure 3 but showing the threader engaged through the eye of the needle,

Figure 5 is a sectional view partly in detail taken on the line 5—5 of Figure 1,

Figure 6 is a sectional view taken on the line 6—6 of Figure 4,

Figure 7 is an enlarged fragmentary sectional view through the lower end of the needle, and showing the threader projected through the eye of the needle with the thread looped over the operating end of the threader,

Figure 8 is a sectional view taken on the line 8—8 of Figure 7,

Figure 9 is a view similar to Figure 8 but showing the thread projecting member retracted with the loop of thread engaged with the loop holding hook,

Figure 10 is a fragmentary perspective view of the loop engaging hook,

Figure 11 is a sectional view taken on the line 11—11 of Figure 1, and

Figure 12 is a fragmentary front elevation of a modified form of supporting means for the threader.

Referring to the drawing, the numeral 15 designates generally the frame of a threader which comprises a pair of spaced apart plate members 16 and 17 providing a longitudinally extending guide channel 18 therebetween.

A T-shaped member 19 is secured to the outer end of the frame 15 by means of bolts or screws 20, and the flanged end of the member 19 extends transversely across the outer end of the frame 15 and constitutes a guide means as will be hereinafter described.

A pair of needle guiding and positioning members 21 and 22 are secured to the frame 15 by means of bolts 23. The needle guiding member 21 is provided with a wing or outwardly flared member 24 and the member 22 is provided with a wing or oppositely flared member 25. A needle socket 26 is carried by an arm 27 which is secured to the frame 15 at the forward end thereof in a position slightly below the forward end of the guide channel 18.

A needle threading member 28 is carried by the forward end of a slide 29 which slidably engages in the guide channel 18 and this member 28 is

adapted to engage through the eye 30 of a needle 31 which is carried by a needle carrier 32 forming part of the sewing machine.

The slide member 29 projects outwardly through an end of the frame 15 and is provided with a knob or button 32. A spring 33 is interposed between the head 32 and the flange of the T-shaped member 19 and constantly urges the threading member 28 to a retracted or inoperative position within the guide 18. The threading member 28 is provided with a relatively blunt forward end and is of such a size so that it may readily pass through the eye 30 of the needle with the thread T looped or engaged over the outer blunt end thereof.

A thread engaging hook 34 is carried by a rock lever 35 provided with ears 36 through which a shaft 37 engages. The hook 35 as shown in Figure 10 is provided with a pointed bill 38, and this bill 38 when the threader 28 is projected through the eye of the needle, is adapted to engage against one side of the threader 28 as shown in Figure 7. The rock lever 35 is provided with an extension 39 which is engaged by a spring 40 so that the lever 35 with the hook 34 is normally biased to an inoperative position. The shaft or pin 37 extends through the upper and lower sides 41 and 42 respectively, of a shield or cover which is provided with a flange or plate 43 engaging against the rear side of the frame 15. The cover or U-shaped hood is secured to the frame 15 by the bolts 20 and 23. The spring 40 is preferably of V-shaped configuration, as shown in Figures 3 and 4, with the looped or coiled portion thereof engaging about pin 44 extending vertically through the walls 41 and 42 of the shield. The extension 39 of the lever 35 is provided with a curved foot 45 which is adapted to ride on a cam member 46. The cam member 46 is secured to and forms part of the slide member 29 being projected laterally of the main part of the slide 29 on the rear side of the frame 15. The cam member 46 is provided with a slide or extension 47 engaging against the rear side of the needle guiding member 22 and this member 22 is provided with a right angularly disposed stop member 48. The extension 47 of the cam 46 is adapted at the projected position of the threader 28 to engage against the stop 48 so that the threader 28 cannot be projected too far through the eye 30 of the needle.

The threader hereinbefore described, is supported from the head H of the sewing machine by means of a vertically extending shaft or rod 49 which is secured at its lower end in a clamping member 50 provided with a lug or plate 51 which is engaged by the bolts or screws 20. The shaft or rod 49 slidably engages through a guide loop 52 which is carried by a plate 53. The plate 53 is secured to a substantially U-shaped frame or supporting member 54 by means of reverted edge portions 55 at each side of the plate 53. A spring 56 engages about the rod or shaft 49 and is tensioned by means of a nut 57 threaded onto the upper end of the rod 49 and engaging against a washer 58. The spring 56 provides a means whereby when the threader hereinbefore described is swung downwardly to an operative position with the needle positioning eye 26 thereof, engaged with the needle 31 the socket 26 will be yieldably held in contact with the pointed end of the needle.

A U-shaped bracket 59 is secured as by bolts or screws 60 to the front side of the head H of the sewing machine, and the upper ends of the two legs of the frame member 54 are out-turned as at 61 to provide trunnions engaging in the parallel legs 62 of the bracket member 59. A U-shaped spring or holding member 63 which has the outstanding legs thereof provided with reverted or cam portions 64 is carried by the U-shaped member 59 and the cam portions 64 are adapted to be sprung apart when the frame member 54 is swung upwardly so that this frame member 54 will be held in an upper or inoperative position shown in dotted lines in Figure 1.

In Figure 12 there is disclosed a modified form of supporting means for the threader wherein the supporting rod 49a is slidably engaged in a pair of spaced apart eyes 65 which are formed integral with the frame member or supporting arms 54a. The two eyes 65 are held in spaced apart relation by means of parallel bars 66 which are integral with the frame or supporting member 54a. The upper end of the slide member 49 is provided with a head 67, and a spring 56a is interposed between the head 67 and the uppermost eye 65 and constantly urges the rod 49a upwardly.

In the use and operation of this threader when it is desired to thread the needle 31 the threader is swung downwardly from the dotted line position shown in Figure 1 to the full line position shown in this figure. The needle 31 is engaged between the positioning members 21 and 22 with the point of the needle engaging in the socket 26. Prior to the positioning of the needle in the socket 26 and between the positioning members 21 and 22 the thread T is passed between these two members 21 and 22 in a position confronting the forward end of the threader 28. The operating handle 32 is then pushed to the right, as viewed in Figure 1, so that the blunt forward end of the threader 28 will engage the thread T and push the thread in the form of a loop through the eye 30 of the needle 31, as shown in Figure 7. At the same time that the threader 28 is being moved through the eye 30 of the needle, the hook member 34 is swung forwardly across the path of the threader 28 until the bill 38 thereof engages on the forward side of the threader 28 when the threader 28 is in fully projected position. The cam member 46 during the forward movement of the slide 29 will swing the lever 35 with the bill 34 forwardly to an operative position against the tension of the spring 40.

The operating handle 32 may at this time be released so that the spring 33 may retract the threader 28 and at this time the bill 38 will engage in the loop L of the thread which is projected through the eye 30 of the needle.

The spring 40 will pull this loop L of thread rearwardly or laterally and then the entire threader may be moved downwardly against the tension of the spring 56 and swung away from the needle 31. The thread T will at the same time be pulled in two strands through the eye 30 of the needle during the swinging of the threader so that the free end of the thread may pass through the eye of the needle. The relative positions of the threader 28 and the hook 34 after the threader 28 has been retracted are clearly shown in Figure 9.

What I claim is:

1. A needle threader comprising a frame, a socket carried by said frame engageable with the pointed end of a needle for positioning said needle relative to said frame, a slide carried by said frame, guide means for said slide, a spring pressed operator engageable with said slide, a relatively blunt eye engaging member carried by the

forward end of said slide for engagement through the eye of a needle to thereby push a loop of thread through the eye of a needle, a rock lever carried by said frame, a cam carried by said slide, a cam engaging member carried by said lever whereby to swing said lever to an operative position upon movement of said slide in a projected position, a spring constantly urging said lever to an inoperative position, and a loop engaging hook carried by said lever and engageable against the forward end of said eye engaging member when said latter member is in projected position whereby to engage within a loop formed by said eye engaging member to hold said loop of thread against withdrawal through the needle eye.

2. A needle threader comprising a frame, a needle positioning means carried by said frame and including means to engage the needle point to position the threader longitudinally of the needle, means for projecting a loop of thread through the eye of the needle engaged with said positioning means, means operable upon retraction of said second means for engagement with the loop of thread to hold the thread against withdrawal through the needle eye, a vertically disposed rod secured to said frame, a guide means engaging said rod, a spring engaging about said rod and against an end of said guide means to constantly urge said rod upwardly, and means swingably securing said guide means to the forward end of the head of the sewing machine.

3. A needle threader comprising a frame, a needle positioning means carried by said frame including means engageable with the needle point to position the frame longitudinally of the needle means for projecting a loop of thread through the eye of the needle engaged with said positioning means, means operable upon retraction of said second means for engagement with the loop of thread to hold the thread against withdrawal through the needle eye, means swingably supporting said frame from the head of the sewing machine, and yieldable means for holding said supporting means in an uppermost inoperative position.

4. A needle threader comprising a frame, a needle positioning socket carried by said frame, a slide carried by said frame, means carried by said slide for projecting a loop of thread through the eye of a needle engaged with said socket, a lever pivotally carried intermediate its ends by said frame, a hook carried by one end of said lever and engageable with a loop of thread formed by said means to hold the loop against withdrawal through the needle eye, a cam carried by and movable with said slide, said cam being engageable with the opposite end of said lever to thereby swing said hook to an operative position coacting with the projection of the thread through the needle eye, a spring constantly urging said lever to inoperative position, means supporting said frame from the head of a sewing machine, and a spring-pressed operating member for said slide.

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