

[54] SEWING MACHINE SLOTTED THREAD
TAKE-UP LEVER

383,133 12/1964 Switzerland..... 112/254

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[57] ABSTRACT

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112/244, 245, 254

A sewing machine thread take-up lever having a threading slot tangent to the thread retaining eye, the threading slot opening to the exterior of the upper surface of the take-up lever so that the sewing thread may be readily drawn into the thread retaining eye. The thread take-up lever is characterized by a prominently raised thread sloughing apex formed on the upper surface between the entrance to the threading slot and the free end of the take-up lever the upper surface tapering downwardly from the apex towards the free end of the take-up lever to a thread sloughing edge closely encircling the thread retaining eye. Thread sloughing is aided by fashioning the thread sloughing edges with generous radii.

[56] References Cited

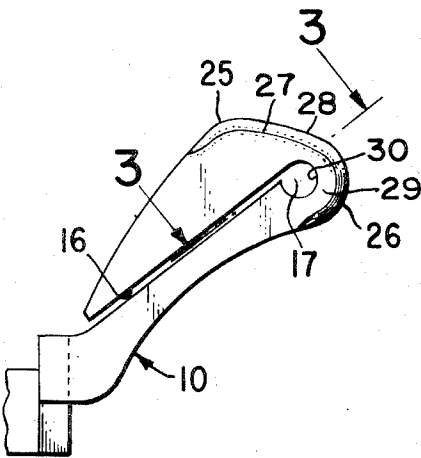
UNITED STATES PATENTS

2,748,731	6/1956	Bell.....	112/241
842,161	1/1907	Ammerman	112/241
1,118,417	11/1914	Heberling	112/241
3,310,015	3/1967	Gegauf.....	112/245
254,788	3/1882	Baker.....	112/241

FOREIGN PATENTS OR APPLICATIONS

575,637	4/1933	Germany	112/241
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1 Claim, 3 Drawing Figures



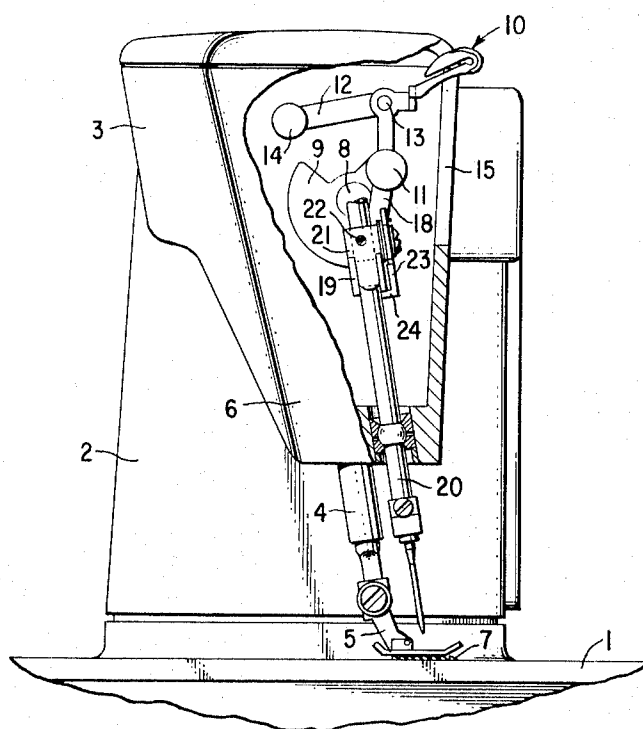
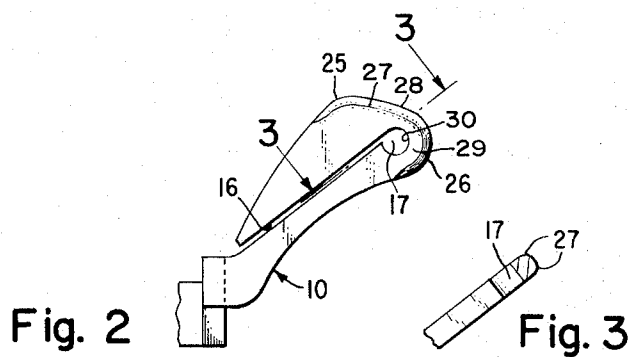


Fig. 1



SEWING MACHINE SLOTTED THREAD TAKE-UP LEVER

BACKGROUND OF THE INVENTION

It frequently occurs in sewing machines having a thread take-up lever with a slot progressing from the exterior of the lever to the thread retaining eye for the purpose of easy threading, the thread will be removed from the thread retaining eye during the sewing machine operation. This effect has been observed to occur when a loop of thread is thrown over the take-up while on its upstroke causing the take-up lever to unthread itself when the loop enters the threading slot and is drawn forward. In the same fashion the thread eye can be double threaded causing increased tension and thread breakage. The conditions are particularly acute when using difficult thread material, such as silk and some synthetic materials; and, when used with a basting stitch device of the type where the needle bar remains stationary while the take-up lever continues its up and down movement. In these cases the usual means for retaining thread in the eye of the take up such as wires blocking thread exit have proven ineffective inasmuch as thread removal is accomplished in the same manner as thread entry is achieved, viz, by the entrance of the loop through the threading slot.

It is, therefore, an object of this invention to provide an improved slotted thread take-up lever for sewing machines which obviate the above shortcomings.

It is a further object of this invention to provide such a slotted thread take-up lever which will be simple in design and economical of manufacture.

DESCRIPTION OF THE DRAWINGS

With the above objects in view, this invention is hereinafter described and illustrated in the drawings in which:

FIG. 1 is a diagrammatic illustration of a sewing machine from the front cover side showing the take-up lever in the uppermost position, a portion of the needle bar, presser foot and bed;

FIG. 2 is an enlarged partial view of the take-up lever shown in FIG. 1 constructed in accordance with the invention;

FIG. 3 is a cross-sectional view of the take up shown in FIG. 2 showing the generous transverse radii, typical for all thread sloughing edges.

In FIG. 1 is shown a portion of a sewing machine bed 1 with a standard 2 rising therefrom, the standard having an arm portion 3 terminating in a head portion 6 overhanging the bed. A presser bar 4 and attached presser foot 5 mounted in the head portion 6 of the arm 3 cooperate with a feed dog 7 having its actuating mechanism in the bed 1 to provide for feed of the cloth through the machine. An arm shaft 8 rotatably mounted in the arm 3 and having a counterbalancing crank 9 mounted thereon drives a take-up lever 10 rotatably mounted to the crank at pivot 11, and to an oscillating link 12 at pivot 13, the oscillating link being pivoted to the arm at 14. The take-up lever is thereby made to move in a path substantially parallel to the outer surface of the head portion 6 through the slot 15 in the head portion. The take-up lever 10 as seen in FIG. 2 is formed with a threading slot 16 progressing from the upper surface of the take-up lever to the thread retaining eye 17 to which it is tangent. Also pivoted to the crank 9 at pivot 11 is a needle bar drive link

18, the opposite end of which is pivotally attached to a stud (not shown) on a needle bar driving block 19, freely slideable on the needle bar 20. Above the needle bar driving block is a collar 21 affixed to the needle bar by a screw 22, the collar having a latch lever 23 pivoted thereto. An ear 24 formed on lower extremity of the latch lever 23 engages the needle bar drive block 19 at its lower extremity pressing the drive block and the collar 21 in intimate contact and causing the reciprocating motion of the drive block to be transmitted to the collar and the needle bar 20 when thus engaged. The latch lever 23 may be caused by suitable camming means to disengage the lower ear from the drive block 19 while the needle bar is retained in an elevated position whereby the needle bar may remain stationary while, however, the take-up lever 10 continues its up and down motion.

While the machine is operating with the needle bar stationary and with the take-up lever moving up and down, there will be little thread demand and considerable thread slinging will result. It frequently occurs that due to this thread slinging and the normal twisted condition of the thread not under tension, a loop of thread will be thrown about the thread take-up lever. In order to prevent the thread loop from progressing down the thread take-up lever 10 to reenter the threading slot 16 and thereby unthread or double thread the take-up, the take-up lever is fashioned with a prominently raised thread sloughing apex 25, above and behind the thread retaining eye 17, which tapers downwardly toward the free end of the take-up lever to merge with a thread sloughing edge 26 encircling in front of and beneath the thread retaining eye, presenting a wall 29 of uniform thickness around the thread retaining eye 17 with an inner edge 30 forming part of the thread retaining eye. The prominently raised thread sloughing apex 25 is approximately twice as high above the center of the thread retaining eye 17 as the thread sloughing edge 26 is below the center of the thread retaining eye in order to maintain a downwardly directed upper surface 28 protruding from the sewing machine even with the take-up lever in its uppermost position. Thread sloughing is encouraged by rounding the edges in thread sloughing areas with a minimum radius of about 0.020 inch (0.5 mm), as indicated at 27. As is usual in the sewing machine art with thread handling parts, the thread sloughing areas are highly polished to prevent thread snagging, thereby providing thread sloughing edges when combined with the apex 25 and the downwardly directed upper surface 28.

In the previous constructions of the thread take-up lever, a loop of thread thrown about the lever would completely encircle the free end of the lever and be drawn towards the thread entrance slots as the take-up lever moved to the top of its stroke to the stitch setting position. In a thread take-up lever having a prominently raised apex 25 constructed above and behind the thread retaining eye 17 and tapering downwardly towards the free end of the take-up lever as herein taught, a similar loop of thread thrown about the lever would be guided by the prominence off of the free end of the lever in an overwhelming majority of occurrences. In a comparison test between a take-up lever of prior construction, B, and a take-up lever, A, constructed as taught in this patent application the following results were obtained:

Take-up	Thread	Time tested	Length of stitch, inch	Machine		Number of take-up unthreadings
				Speed, r.p.m.	Mode	
A	"A" silk	2 hrs.	1/4	60	Basting	1
	"Lily" nylon	1 hr.	1/4	60	do.	0
B	"A" silk	15 min.	1/4	60	do.	11
	"Lily" nylon	1 hr.	1/4	60	do.	2

I claim:

1. An improved thread take-up lever for a sewing machine having a frame, an endwise reciprocatory thread carrying needle and means operating in a predetermined plane relative to said frame for feeding work material under said needle said thread take-up lever operating in a plane parallel to said predetermined plane and having a thread retaining eye and a substantially

straight threading slot having an entrance from an upper exterior edge of the take-up lever to the thread retaining eye wherein the improvement comprises a prominently raised thread sloughing apex on said upper surface between said entrance to said threading slot and said thread retaining eye; a wall of uniform thickness encircling beneath and in front of said thread retaining eye, the wall having an outer thread sloughing edge and an inner circular edge forming part of said thread retaining eye; a thread sloughing edge blending into the prominently raised thread sloughing apex and tapering downwardly at any position of the take-up lever to blend with said outer thread sloughing edge of the wall encircling beneath and in front of said thread retaining eye, the thread sloughing edges being formed with minimum transverse radii of 0.02 inch to further encourage thread sloughing.

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