

Feb. 2, 1971

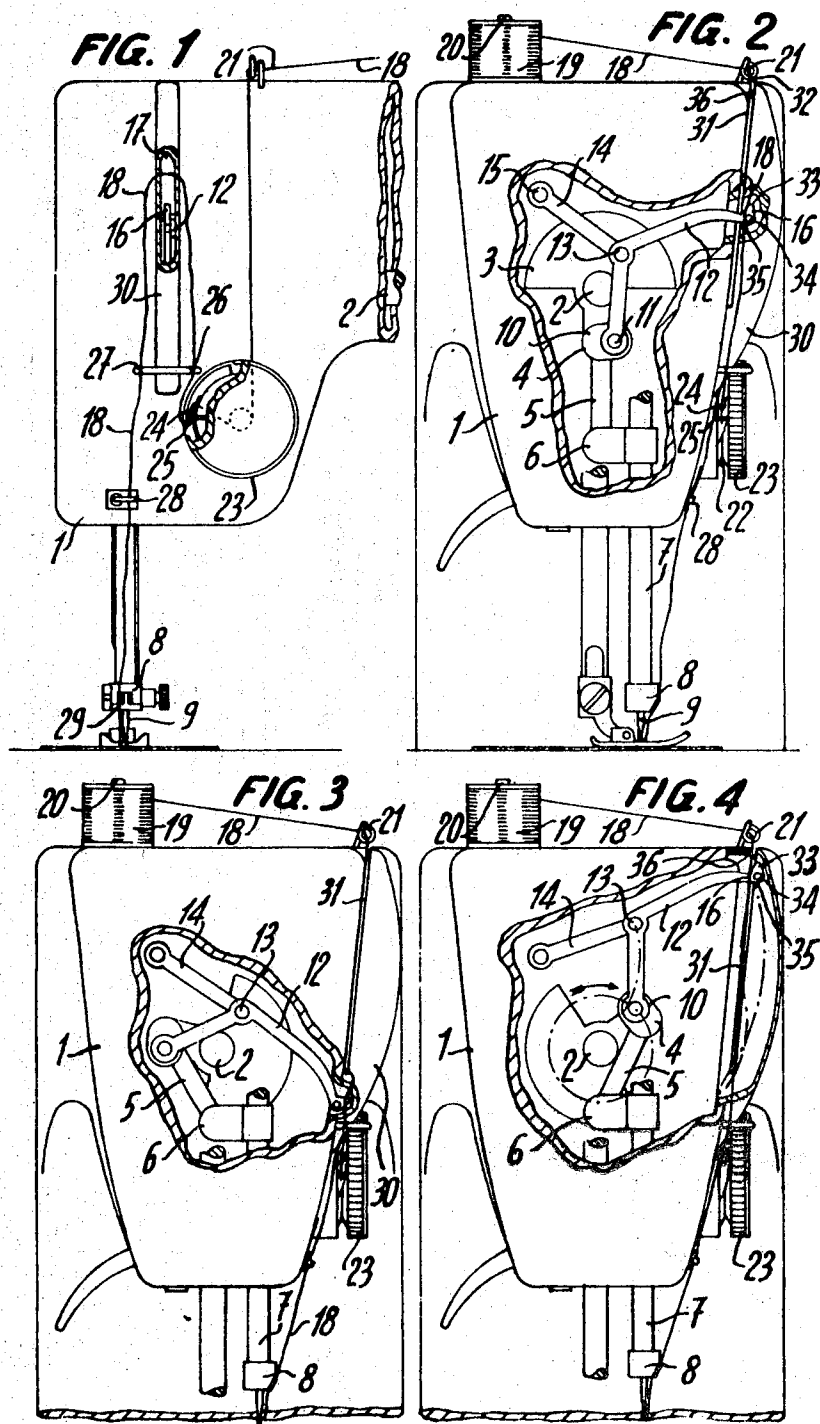
R. C. ROBERT

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THREAD TAKEUP LEVER ARRANGEMENT FOR A SEWING MACHINE

Filed Dec. 9, 1968

2 Sheets-Sheet 1



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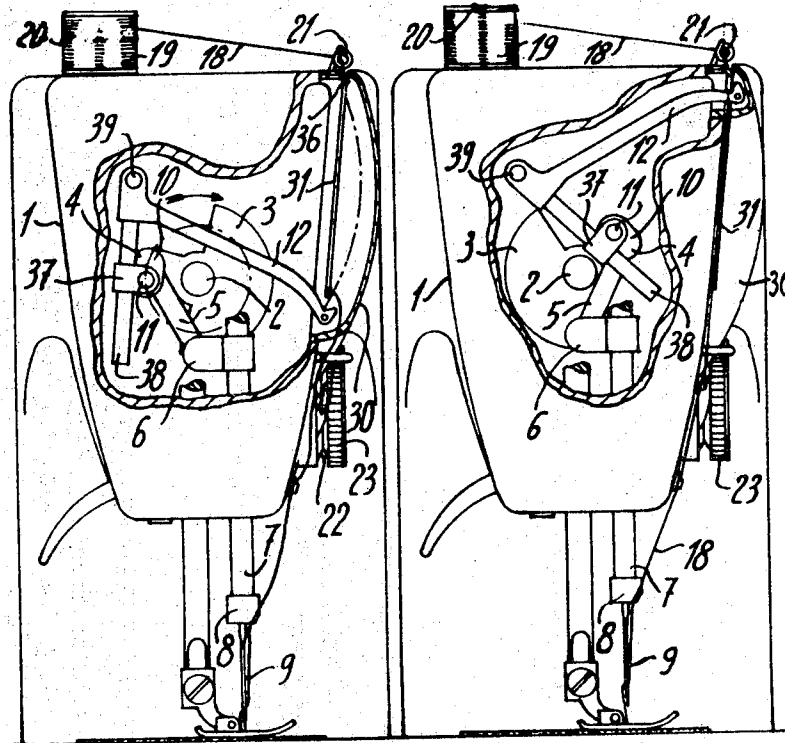


FIG. 5

FIG. 6

FIG. 9

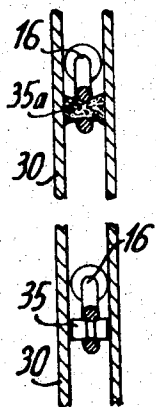


FIG. 10

FIG. 8

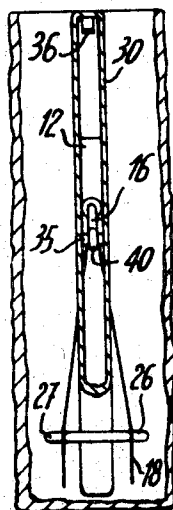
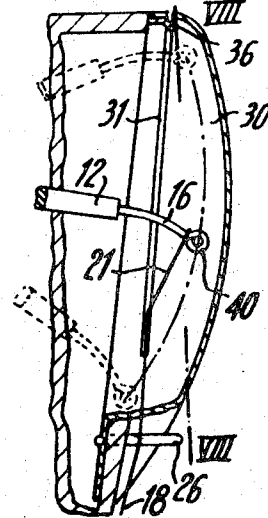


FIG. 7



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THREAD TAKEUP LEVER ARRANGEMENT FOR A SEWING MACHINE

Ramon Casas Robert, Geneva, Switzerland, assignor to Mefina S.A., Fribourg, Switzerland, a company of Switzerland

Filed Dec. 9, 1968, Ser. No. 782,332

Claims priority, application Switzerland, Dec. 22, 1967, 18,114

Int. Cl. D05b 49/00, 73/02

U.S. Cl. 112—241

8 Claims

ABSTRACT OF THE DISCLOSURE

A cover entirely encloses the free end of the takeup lever. Two slits in the cover permit the sewing thread to be inserted into the cover and left to hang freely over the end of the takeup lever, which has means to prevent the thread from slipping off the lever end.

The invention relates to a thread takeup lever arrangement, including a lever pivoted for up and down, movement and whose free end acts on the sewing thread to raise it while each stitch is made.

In the prior art sewing machines, the thread takeup lever incorporates at its free end a small hole through which the sewing thread passes, the hole usually being defined by a closed loop, in order to ensure that the thread cannot escape. The takeup lever is commonly driven by the upper shaft of the sewing machine drive mechanism, by means of a crank, a cam, or a sliding arrangement, so that the thread passing through the lever eye is "given" and then taken up during the formation of each stitch. Since the takeup lever is usually located on the front face of the machine, it is very near the head of the sewer, so that it can inflict an injury or, at the very least, strain the eyes by its up and down movement.

The purpose of the invention is to provide an arrangement which completely encloses the thread takeup lever, and in this way avoids these disadvantages.

An object of the invention is to provide a thread takeup lever arrangement having a cover for enclosing the end of the takeup lever over the entire path of its movement, and at least one opening in the cover for passage of the sewing thread.

This object and others of the invention will be apparent from the following detailed description of several embodiments.

The invention will be described, with reference to the figures of the accompanying drawings, wherein:

FIG. 1 is a side view, partly cut away, of a sewing machine head incorporating a first embodiment of the invention;

FIG. 2 is a front view, partly cut away, of the embodiment seen in FIG. 1, the takeup lever moving downwards;

FIG. 3 is a view similar to that of FIG. 2, showing the takeup lever at its lower position;

FIG. 4 is also a view similar to that of FIG. 2, and shows the takeup lever at its upper position;

FIG. 5 is a front view of a second form of the invention, the takeup lever being shown in its lowermost position;

FIG. 6 is a view similar to that of FIG. 5, the takeup lever being in its uppermost position;

FIG. 7 is a side view of a different form of the thread takeup lever;

FIG. 8 is a view taken along line VIII—VIII of FIG. 7; and

FIGS. 9 and 10 are views on expanded scale of details of the end of the takeup lever.

With reference to FIGS. 1 to 4, the first embodiment is mounted in the head 1 of the sewing machine case. A horizontal drive shaft 2 extends into the head, and carries at its head end a counterweight 3 and a crank 4. A link 5 is pivotally connected at its upper end to the crank and at its lower end to a link pin 6, fixed to the needle bar 7. The crank 4 and the link 5 move the needle bar up and down, the latter holding the needle 9 by its needle clamp 8. The pin of the crank 4 carries a secondary crank 10, of which the pin 11 mounts the thread takeup lever 12 free to pivot. A pin 13 pivotally connects the lever 12 to an arm 14, which is free to swing about an axle 15 fixed to the sewing machine case. The end 16 of the thread takeup lever 12 projects outside of the head 1 through a vertical slot 17 in the head.

In a sewing machine of this kind, the upper thread 18 moves from the spool 19, held on a spindle 20 carried by the machine case, through a thread guide 21, after which the thread is engaged between two tension discs 22 of the tension regulator 23. As the thread leaves the discs it passes over a check spring 24, a thread guide 25, a thread guide 26, through slits in the cover enclosing the takeup lever, next downwards through successive thread guides 27 and 28 and a final thread guide 29, the latter being held by the needle clamp 8, and finally through the eye of the needle 9.

In this embodiment of the invention, the thread takeup arrangement comprises an elongated member 30 serving as a cover, and having a U-shaped cross-section. This cover fits over the slot 17 of the machine case, and covers the end 16 of the takeup lever 12 over the whole arc of its movement. Two opposite slits 31, each incorporated in a respective side wall of the cover 30, permit the thread 18 to enter and leave the cover. So as to facilitate engaging the thread on the takeup lever, without having to thread the former, the two slits 31 meet at 32 at the top of the cover 30. The takeup lever end 16 does not embody the usual eye through which the thread passes, the latter, instead, simply resting freely on the upper edge of the lever end 16. Means are provided to prevent the thread from moving over the lever end 16 and, thus, under the lever 12. In this embodiment, the means for holding the thread in place comprises a nose 33 incorporated at the lever end 16. In addition, in order to exclude any likelihood that the thread can escape from the end of the lever, the end has a small hole 34 which holds a member having a low coefficient of friction, such as a pin 35 of synthetic plastic, as shown in FIG. 10, or a simple felt plug 35a, as shown in FIG. 9, which slides up and down between the side walls of the cover 30, and also acts as a guide for the lever end 16.

The cover slits 31 extend in a straight line from the point 32 to substantially the lower reversal point of the lever end 16; and, in any case, their length corresponds to the amount of thread required for a stitch.

In this embodiment, since the thread takeup lever is completely hidden from the sewer, it cannot cause injury or eye strain. Moreover, the thread 18 is very easily set in place, because it is only necessary to move it sideways in the slits 31, in order to engage it on the takeup lever. A small tongue 36, extending transversely to the junction 32 of the two slits 31, is provided at the top of the cover 30, and permits the thread 18 to be lowered into the slits 31, but prevents it from inopportunistly escaping upwards from these slits.

With the arrangement described, the thread contacts the lever 12 only when it is drawn upwards; in other words, only when the lever rises. But when the lever moves down, it does not positively draw the thread along with it, the thread being taken down by the other parts which form the stitches, so as to avoid that an excess of thread will wind itself about the takeup lever and the

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thread guides, resulting in irregular seams and tension or in broken threads while sewing.

FIGS. 5 and 6 illustrate a second form of the invention, likewise mounted in the head 1 of a sewing machine. In this form, the thread takeup lever 12 is moved up and down, not directly by the secondary crank 10, but by the crank 10 through a guide 37 mounted free to pivot on the pin 11 of the crank 10. A rod 38 is free to slide in the guide 37 and is rigidly connected to the lever 12, which pivots about an axle 39 fixed to the machine case. The sewing machine, of course, comprises the usual parts for reciprocating the needle bar, including the horizontal drive shaft 2, the counterweight 3, to which the main crank 4 is attached, the link 5 connecting this crank to the link pin 6 fixed to the needle bar 7, which carries the needle clamp 8 holding the needle 9.

The cover 30 serves the same purpose and is of the same general shape as that of the previous embodiment, and incorporates the two opposite slits 31 and the retaining tongue 36. The operation of this form of the invention is therefore similar in all respects to that of the first form.

A third embodiment, shown in FIGS. 7 and 8, also comprises the cover 30, having the two slits 31, and the tongue 36. But here the thread takeup lever 12 has an end 16 composed of a steel wire, the end 40 of which is bent to form a nose, or boss, that prevents the thread 18 from slipping over the lever end 16. Moreover, the eye formed by the wire end 40 holds either a synthetic plastic pin 35 (see FIG. 10) or a felt plug 35a (see FIG. 9), which slides between the side walls of the cover 30 and, in this way, prevents the thread from sliding under the lever 12, and acts as a guide for the lever end 16.

In a variation of this embodiment, the entire thread takeup lever can be composed of a steel wire suitably bent. This lever can also be made entirely of a synthetic plastic, and provided with a hard coating, such as by chromium plating, so that the thread slides easily over the lever without excessively wearing the latter.

In all of the embodiments illustrated, the thread 18 is never threaded through the lever end 16, but simply rests on the upper edge of the lever. However, it is apparent that the cover 30 can be mounted on any kind of sewing machine having the usual sort of thread takeup lever. In this case, the thread is threaded through the lever eye preferably when the lever is at its top- or bottom-most position, the slits 31 being suitably widened at this position to facilitate threading.

In another variation, the cover 30 is J-shape in cross-section instead of V-shape, so that it is open on one side and has only a single slit 31, incorporated in the other side.

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Although the preferred embodiments of the invention have been described, the scope of, and the breadth of protection afforded to the invention are limited solely by the appended claims.

I claim:

1. A thread takeup lever arrangement for a sewing machine comprising a lever having an end with an upper surface which is reciprocated for acting on sewing thread to raise it while a stitch is made, and a cover enclosing said lever end over the entire path of its movement, said cover being U-shaped in cross-section with two opposite side walls, each with an opening therein for passage of sewing thread, said cover having a top portion whereat the openings are joined to permit the sewing thread to be inserted into the interior of said cover where it rests freely on said upper surface of said lever.

2. The arrangement as defined in claim 1, wherein each said cover opening is a slit.

3. The arrangement as defined in claim 1, including means for causing said cover side walls to guide said lever in its movements.

4. The arrangement as defined in claim 3, including a tongue extending crosswise to the junction of said two cover openings for preventing an untimely escape of the sewing thread, once introduced, through said cover top.

5. The arrangement as defined in claim 4, including means incorporated by said lever end for preventing the sewing thread from slipping over said end and under said lever.

6. The arrangement as defined in claim 5, wherein said means incorporated by said lever end comprises a raised nose portion.

7. The arrangement as defined in claim 5, wherein said means incorporated by said lever end comprises a member fixed thereto for sliding between said cover side walls, said member having a low coefficient of friction.

8. The arrangement as defined in claim 1, wherein each said cover opening is a slit that extends approximately alongside the path taken by said lever end and has a substantial length along the cover corresponding to the amount of thread required for one stitch.

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JORDAN FRANKLIN, Primary Examiner

G. H. KRIZMANICH, Assistant Examiner