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CIRCULARLY MOVING HOOK SEWING MACHINE.

APPLICATION FILED MAR. 2, 1921.

1,438,076. Patented Dec. 5, 1922.

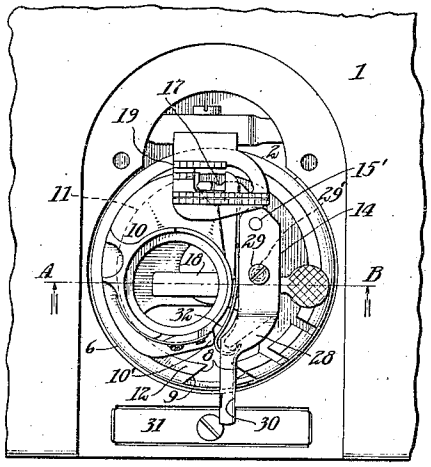


Fig. 2

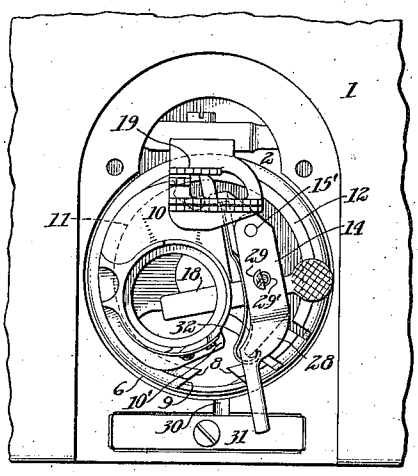


Fig. 3

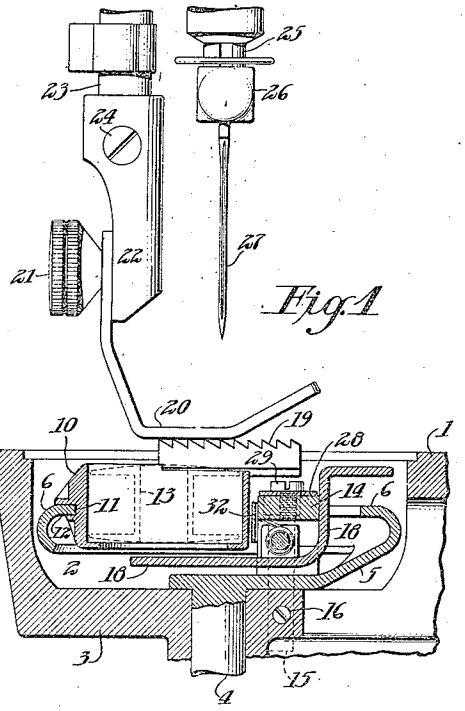


Fig. 1

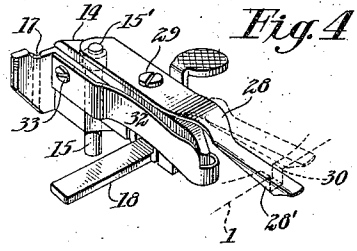


Fig. 4

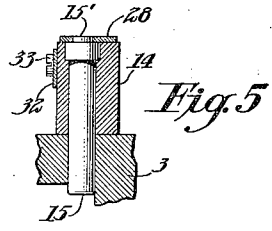


Fig. 5

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Patented Dec. 5, 1922. 1,438,076

UNITED STATES PATENT OFFICE.

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CIRCULARLY-MOVING-HOOK SEWING MACHINE.

Application filed March 2, 1921. Serial No. 449,037.

To all whom it may concern:

Be it known that we, GEORGE WOELFEL and WILLIAM HOPF, citizens of the United States, residing at Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Circularly-Moving-Hook Sewing Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to sewing machines of the oscillating hook type, as disclosed for instance in the patent to P. Diehl and A. Grieb, No. 663,696, of December 11, 1900, and its object is to simplify and improve the holder or position bracket forming the subject of the patent to George Jackson, No. 1,388,114 of August 16, 1921, in order that the thread-case can be more easily removed from the loop-taker without removal of the holder or any of its parts, thus facilitating the removal of obstructions which may have lodged in the flange-and-groove connection between the thread-case and loop-taker or which may have been deposited in the cavity in the sewing machine work-support in which the lower thread-handling devices are located.

The invention has for its further object to provide for adjustment of the clearance between the holder or position bracket and the sewing machine thread-case.

In the preferred form of the improvement the thread-case holder is provided with a spring-member in the form of a latch whose free end is adapted to enter a notch in the work-support. When the latch is disengaged from its notch the holder can be swung out of normal position relative to the thread-case to permit the lateral displacement of the thread-case preparatory to its removal from the loop-taker.

The spring-member or latch is preferably adjustably mounted upon the holder so that the thread-clearance between the thread-case and the holder, with which it contacts, can be varied.

In the accompanying drawings, Fig. 1 is an elevation of a portion of a sewing machine to which the improved thread-case holder is applied, the lower thread handling mechanism being shown in section through the line A—B of Fig. 2. Figs. 2 and 3 are top plan views of the lower thread handling mechanism with the throat-plate and cover-plate removed, showing the thread-case holder in normal and retracted positions, respectively. Fig. 4 is a perspective detail of the holder and a portion of the work-support showing, in dotted lines, the spring-member when in retracted position; and Fig. 5 is a sectional detail of the holder and its pivotal support.

Referring to the drawings, 1 denotes the sewing machine work-support in which is formed the cavity 2 for housing the lower thread handling mechanism and across the bottom of which extends a bracket 3 forming a bearing-support for the vertically disposed hook-shaft 4 which is suitably actuated by mechanism such as that disclosed in the Diehl and Grieb patent before referred to. Secured to or made integral with the upper end of the hook-shaft and extending radially therefrom is the arm or spoke 5 of the horizontally disposed circularly moving hook or loop-taker 6, the inner face of which is formed with a loop-seizing beak or hook 8 outside of which is a throat 9 in which the loops of needle-thread are carried around the thread-case 10.

To support the thread-case upon the loop-taker, the former is provided with a peripheral groove 11 which is entered by the rib or flange 12 of the loop-taker 6. The thread-case 10 is suitably recessed to receive a bobbin 13 containing a mass of lower thread.

In order to retain the thread-case 10 in cooperative relation with the loop-taker 6, a holder or position bracket 14 is pivotally mounted within the field of action of the loop-taker upon the shoulder pin 15 entering a suitable aperture in the bracket 3 and retained in the latter by the set-screw 16. One end of the holder 14 is provided with the needle-guard 17 while its other end extends in proximity to the flange 12 of the loop-taker 6. Suitably journaled upon the holder 14 is the bobbin ejecting lever 18 having an arm extending below the bobbin 13 disposed within the thread-case 10.

The machine is provided with the usual feed-dog 19 opposed to which is the usual presser-foot 20 secured by the screw 21 upon the holder 22 fixed upon the presser-bar 23 by the screw 24. Secured to the needle-bar

25 by the needle-clamp 26 is the needle 27 which cooperates in a well known manner with the circularly moving hook or loop-taker 6 in the formation of stitches. As so far described the construction and operation does not differ substantially from that disclosed in the Diehl and Grieb patent referred to, the loop of needle-thread being passed about the thread-case in substantially the same manner as in that of the patented construction.

According to the present improvement the bobbin case holder is provided with a latch or spring-member 28 the flattened end of which is apertured to receive the reduced head 15′ of the pin 15 while its other end is reduced in width and formed with depending sides 28′. Intermediate its ends the spring member 28 is fixedly secured to the holder by the screw 29, the aperture 29′ through which the screw passes being slightly larger than the shank of the screw to permit a slight lateral adjustment of the holder 14 relative to the spring-member about the pivot 15. The free end of the spring-member 28 extends over the flange 12 of the loop-taker 6 and enters a notch 30 formed in the work-support 1 adjacent the cover-plate spring 31. The holder 14 retains the thread-case 10 in position upon and restrains it from movement with the oscillating loop-taker 6, but the thread-case is not in contact with the holder except at or near its opposite ends or horns against one or the other of which the thread-case will rest lightly. The point of contact between the loop-discharging or heel portion 10′ of the thread-case 10 and the holder 14 is afforded by a buffer spring 32 secured to the holder by a screw 33 the free end of the buffer spring being spaced from and embracing the end of the holder. The yielding contact between the buffer-spring 32 and the thread-case serves to lessen or deaden any noise which might be occasioned during the passage of the thread-loops between these parts.

During the normal operation of the machine, the thread-case 10 and holder 14 occupy the position shown in Fig. 2; that is, the free end of spring-member 28 is seated within and maintained in the notch 30 of the work-support and thereby retains the thread-case 10 supported upon the flange 12 of the loop-taker 6. If for any cause, it is desired to remove the thread-case from the loop-taker, which might be necessary when the flange and groove connection between the two become clogged or jammed by obstructions, or when access is desired to the cavity in the sewing machine work-support in which the lower thread-handling devices are located, the free end of the spring-member 28 may be raised by a screw-driver or finger nail clear of its notch 30 in the work-support and shifted to the right, as illustrated in Fig. 3. This will provide sufficient clearance between the holder 14 and the thread-case 10 to permit the latter to be displaced transversely of the axis of movement of the loop-taker or in a direction parallel with its plane of movement so that the flange 12 of the loop-taker 6 will clear the peripheral groove 11 of the thread-case 10 and permit the latter to be removed from the field of action of the loop-taker. After the thread-case has been removed from its operative position within the loop-taker, the groove 11 of the thread-case and the flange 12 of the loop-taker may be readily cleared of any obstruction such as lint or thread ends which may have prevented the free movement of the loop-taker about the thread-case. Removal of the thread-case will also give free access to the cavity 2 in the work-support to facilitate the removal of any foreign matter which may have found lodgment upon the bracket 3.

To restore the thread-case 10 in operative relation with the loop-taker, it is lowered into position until its groove 11 is opposite the flange 12 of the loop-taker when by a slight lateral movement, the flange of the loop-taker will again be engaged by the groove in the thread-case whereupon the holder 14 is shifted to the left until the free end of the spring member or latch 28 drops into the notch 30 of the work-support. The parts are then again in the position shown in Fig. 2 in the proper relation for a sewing operation.

In assembling the lower thread handling mechanism in the sewing machine work-support, the clearance between the buffer spring 32 and the loop discharging or heel portion 10′ of the thread-case 10 must be regulated to a nicety to maintain quietness in operation while affording a free passage for the lower limb of the needle-thread loop as it is cast about the thread-case and drawn up by the take-up. In the machine of the present improvement this is readily accomplished by loosening the fastening screw 29 entering the holder 14, the aperture 29′ in the spring-member 28 being larger than the shank of the screw, and shifting the holder the requisite amount relative to the spring-member 28 until the desired amount of clearance is provided for.

It will be observed that the shoulder-pin 15 constitutes the primary means employed in positioning the holder 14 within the field of action of the loop-taker, which holder is sustained upon the bracket 3 depending from the sewing machine work-support, and that the fastening screw 29 constitutes auxiliary means by which adjustment of the thread-clearance between the buffer-spring 32 and the heel-portion 10′ of the thread-case 10 may be effected.

Having thus set forth the nature of our invention, what we claim herein is:—

1. In a sewing machine, in combination, a circularly movable loop-taker, a thread-case peripherally supported by said loop-taker, a holder positioned within the field of action of said loop-taker for retaining said thread-case in position upon and for restraining its movement with said loop-taker, and a latch carried by said holder to permit its displacement relative to said thread-case.

2. In a sewing machine, in combination, a work-support, a circularly movable loop-taker housed within a cavity in the work-support, a thread-case having at one side a bearing in and supported by said loop-taker, a holder positioned within the field of action of said loop-taker and having a portion adapted for engagement with the other side of said thread-case to confine it to said bearing and restrain it from movement with the loop-taker, and a spring-member secured to said holder and in operative engagement with said work-support to permit displacement of said holder relative to said thread-case favorable for the removal of said thread-case from said loop-taker.

3. In a sewing machine, in combination, a work-support, a circularly movable loop-taker housed within a cavity in the work-support, a thread-case having at one side a bearing in and supported by said loop-taker, a holder positioned within the field of action of said loop-taker and having a portion adapted for engagement with the other side of said thread-case to confine it to said bearing and restrain it from movement with the loop-taker, and a spring-member secured to said holder with its free end entering a notch in the work-support whereby when the spring-member is disengaged from its notch the holder may be displaced from normal operative relation with the thread-case to permit removal of the latter from the loop-taker.

4. In a sewing machine, in combination, a circularly movable loop-taker, a thread-case peripherally supported by said loop-taker, a pivotally mounted holder positioned within the field of action of said loop-taker for retaining the thread-case in cooperative relation with the loop-taker, a stationary stop for retaining the holder in operative position, and means whereby said holder may be shifted relative to said stationary stop to a position permitting removal of the thread-case from the loop-taker.

5. In a sewing machine, in combination, a work-support, a circularly movable loop-taker sustained by said work-support, a thread-case peripherally supported by said loop-taker, a holder positioned within the field of action of said loop-taker for retaining said thread-case in cooperative relation therewith, primary means for positioning the holder on the work-support, and means auxiliary thereto for adjusting the clearance between the thread-case and holder.

6. In a sewing machine, in combination, a work-support, a circularly movable loop-taker sustained by said work-support, a thread-case peripherally supported by said loop-taker, a holder positioned within the field of action of said loop-taker for retaining said thread-case in cooperative relation therewith, primary means for positioning the holder upon the work-support, a buffer spring carried by said holder and in engagement with said thread-case, and means auxilliary thereto for adjusing the clearance between the thread-case and buffer-spring.

7. In a sewing machine, in combination, a circularly movable loop-taker, a thread-case peripherally supported by said loop-taker, a holder positioned within the field of action of said loop-taker comprising relatively movable members one of which is adapted to retain the thread-case in cooperative relation with the loop-taker and the other of which engages a stationary part of the machine, and means whereby said parts may be adjusted relative to one another to vary the clearance between the thread-case and holder.

In testimony whereof, we have signed our names to this specification.

GEORGE WOELFEL.
WILLIAM HOPF.