Jan. 15, 1935. M. McCANN 1,987,964

SEWING MACHINE

Original Filed July 26, 1930 2 Sheets-Sheet 1

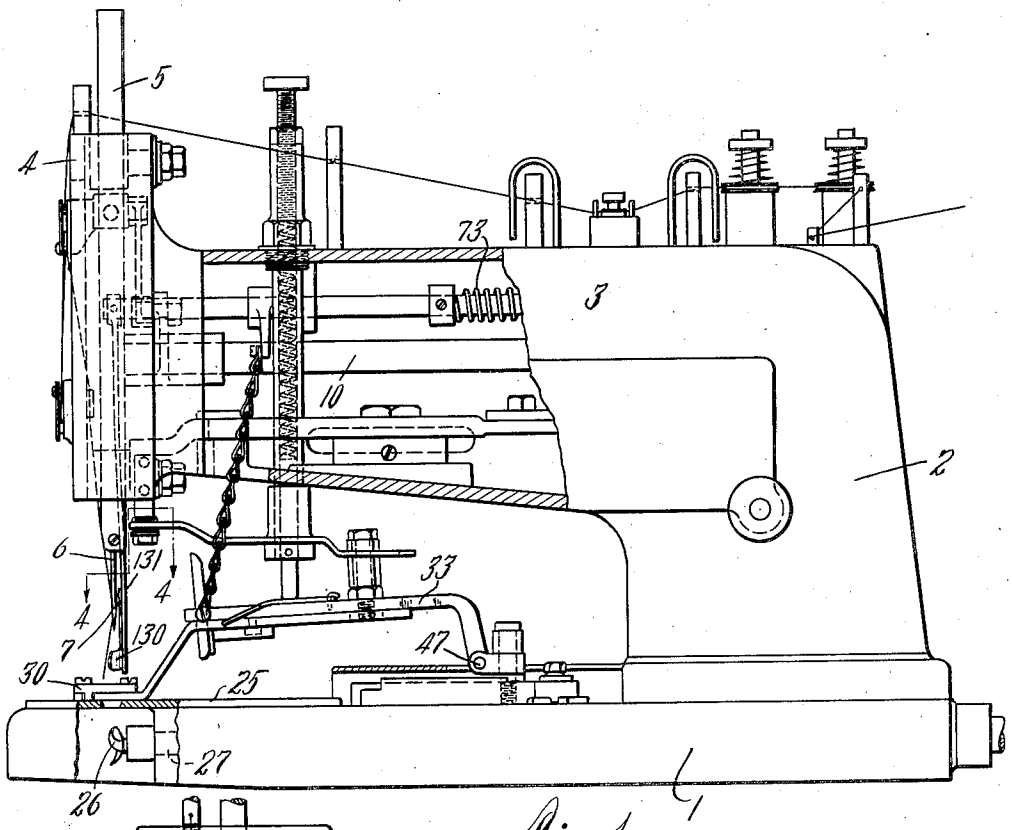


Fig. 1

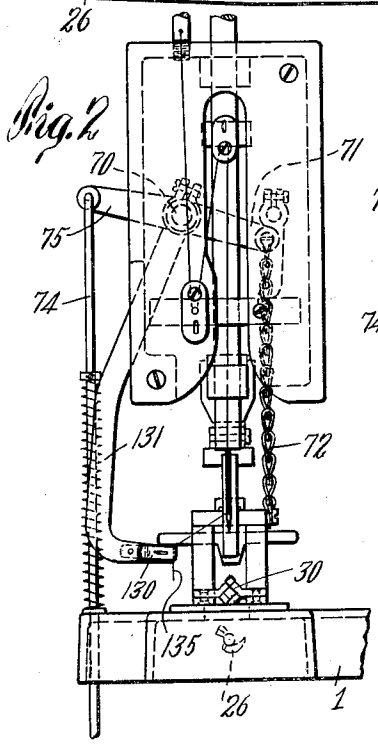


Fig. 2

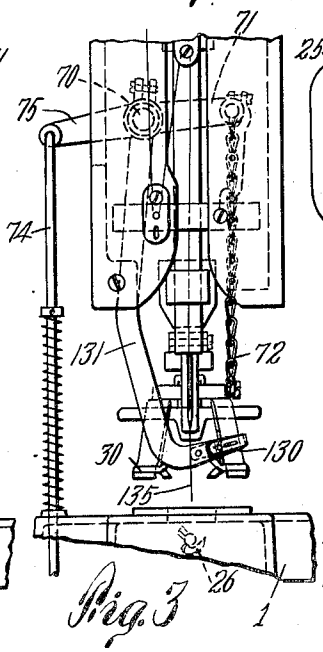


Fig. 3

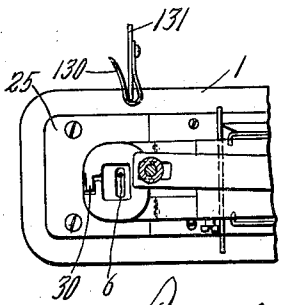


Fig. 4

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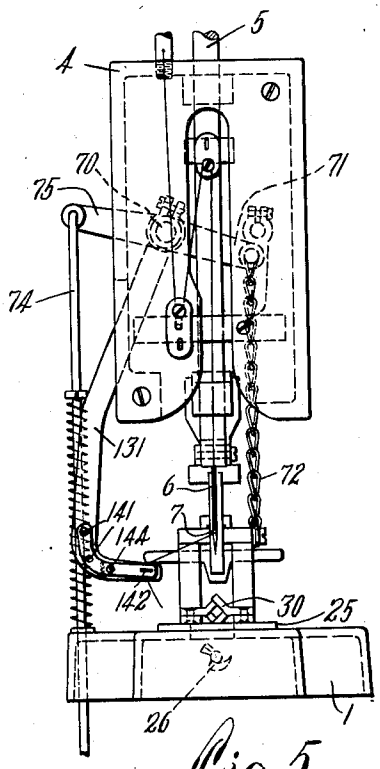


Fig. 5

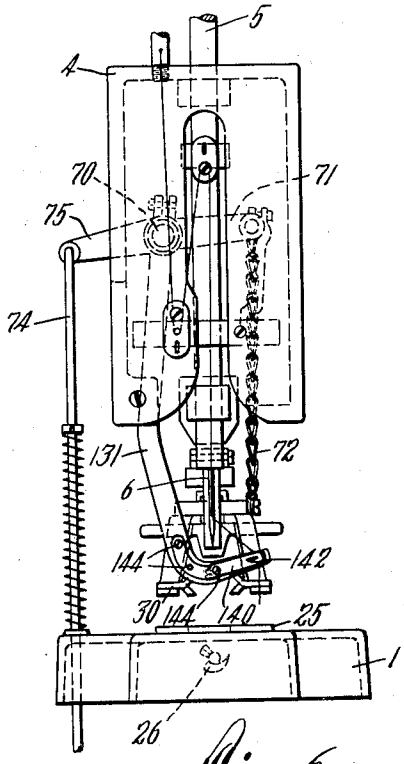


Fig. 6

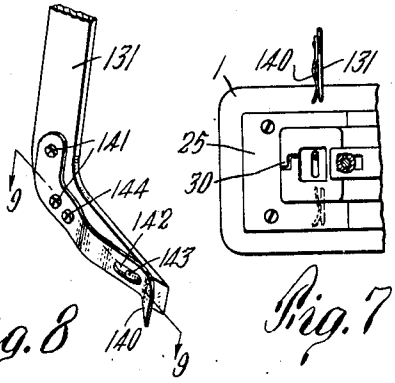


Fig. 8

Fig. 7

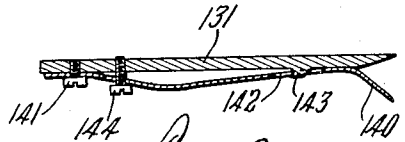


Fig. 9

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Patented Jan. 15, 1935 1,987,964

UNITED STATES PATENT OFFICE

1,987,964

SEWING MACHINE

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Original application July 26, 1930, Serial No. 470,861. Divided and this application February 6, 1932, Serial No. 591,253

5 Claims. (Cl. 112—253)

This invention relates to sewing machines and has for its object to provide means for engaging the starting end of a needle thread, more particularly in a chain stitch or single thread machine, to prevent it from being drawn back through the needle eye to unthread the needle at the start of the sewing operation.

The present application in part covers subject matter divided out from my application Serial No. 470,861, filed July 26, 1930 for sewing machines.

Referring to the accompanying drawings,

Figure 1 is a side elevation partly broken away of a single thread sewing machine of the button sewing type and embodying the invention, the machine shown being particularly intended for wrapping wires or other strands with thread, the machine forming loops of thread which are passed about the wires alternately in opposite directions, successive loops being engaged in chain stitch formation.

Figure 2 is a front end elevation of the machine showing the work holder depressed.

Figure 3 is a view similar to a portion of Figure 2, but showing the work holder elevated.

Figure 4 is a horizontal section on line 4—4 of Figure 1.

Figures 5, 6 and 7 are views similar to Figures 2, 3, and 4, respectively, but illustrating a modification.

Figure 8 is a fragmentary perspective of the thread end gripping device of Figures 5, 6 and 7.

Figure 9 is a section on line 9—9 of Figure 8.

Referring to Figures 1 to 4 inclusive, at 1 is shown the base of a sewing machine of a well known type for securing buttons with a single thread chain stitch, having a post 2 upstanding from its rear end merging with a forwardly extending arm 3 having a sewing head 4 at its forward end. At 5 is indicated a needle bar to the lower end of which a needle 6 having an eye 7 is secured.

In the machine shown suitable means not material to this invention are employed to vibrate the needle laterally between its sewing strokes, though the invention is not limited to a machine having a laterally vibrating needle.

Beneath the needle bar the base 1 is provided with a work table 25 beneath which is positioned a looper such as 26 carried by a looper shaft 27. The looper is driven in suitable timed relation to the shaft 10 by any suitable means as is well known in the art. Beneath the arm 2 is positioned a work holder 30 which may be of any desired type, depending on the work which the machine is to do. As shown it is intended to receive and carry one or more strands of wire about which it is desired to wrap the loops of thread. Whatever its form it is carried by a carrier bar 33 hinged on a horizontal pintle 47 at its rear end so that it may be raised from the work table 25, which when done at the end of the sewing operation causes the thread to be broken, freeing the work from the machine. This raising is effected as shown by rocking a rock shaft 70 having an arm 71 connected to the work holder 30 as by a chain 72. The rocking of the shaft 70 against the action of a torsion spring 73 may be effected by any suitable means such as a treadle (not shown) which may be connected thereto through a link 74 connected to an arm 75 fixed to the shaft 70 at any convenient point.

The machine may be provided with suitable take-up and tension devices which are not material to the subject matter covered by this application.

In accordance with the present invention means are provided to grasp the starting end of the thread and hold it until after the stitching operation has been well initiated since where the threads are wrapped about material, as in the present machine, there is little frictional engagement of the starting end to prevent it from being drawn back through the needle eye which would unthread the needle and prevent stitching. In order to hold the thread end to prevent it from paying back through the needle eye at the start of the machine operation it may be grasped by a tension device shown at 130 in Figures 1 to 4 inclusive. As shown this comprises a resilient hook member in which the thread end may be caught carried at the lower end of a lever 131, the upper end of which is fixed to the rock shaft 70. The parts are so positioned that when the work holder is allowed to descend toward sewing position on the work table, the hook 130 is caused to move across the needle path from the position shown in Figure 3 to that shown in Figure 2, engaging the thread end 135 and drawing it laterally away from the needle path into the position shown in Figure 2, this thread end being drawn into the bend of the hook 130 and there held with sufficient firmness so that it is not drawn back through the needle eye during the first stitch but is held for a sufficient time to insure correct formation of the first stitch. It then slips out from the tension device 130 and the stitching proceeds in the usual manner.

In Figures 5 to 9 inclusive a modification of thread end holding device is illustrated, this com-

prising a spring finger 140 fixed to the lever 131 in place of the hook 130 shown in Figures 1 to 4. This spring 140 is fixed remote from the end of the lever as at 141 and adjacent to its free end it is preferably provided with a perforation 142 through which may extend a hook 143 with a rounded back face presented toward the free end of the spring 140 projecting from the lever. The thread may be slipped in over the convex back face of the hook, which is presented toward the free ends of the parts 140 and 131, and into engagement with the oppositely presented concave face of the hook in the normal grasped position of the thread. The hook and spring act together to retain the thread end portion from too easily slipping out from between the lever and the spring. An adjusting screw 144 determines the pressure with which the spring 140 normally engages the face of the lever 131. With this arrangement the thread is engaged by the holding device on the swinging of the lever 131 produced when the work holder is raised as shown in Figure 6, and the thread is retained thereby on the motion of the work holder when the work holder is returned to operative condition. As the lever 131 is moved to take the thread while the thread is still held by both the needle and the work, the engagement of the thread by the retainer is insured, in this respect this construction being preferable to that shown in Figures 1 to 4 in which the thread engaging device moves to engage the thread after the thread has become detached from the work.

From the foregoing description of certain embodiments of this invention it should be evident to those skilled in the art that various changes and modifications might be made without departing from the spirit or scope of this invention as defined by the appended claims.

I claim:

1. In a sewing machine, sewing instrumentalities including a needle having an eye, a work table, a work holder liftable from said table at the end of a stitching operation, means including a rock shaft for lifting said holder, a lever carried by said rock shaft and having a portion movable across the normal thread path extending from said needle eye toward the work as said holder is lifted and lowered, and means at said portion for grasping said thread during one of its movements across said path and holding the thread end at the start of a succeeding stitching operation.

2. In a sewing machine, sewing instrumentalities including a needle having an eye, a work table, a work holder liftable from said table at the end of a stitching operation, means including a rock shaft for lifting said holder, a lever carried by said rock shaft and having a portion movable across the normal thread path extending from said needle eye toward the work as said holder is lifted and lowered, and a spring element cooperating with said portion for grasping said thread during one of its movements across said path and holding the thread end at the start of a succeeding stitching operation.

3. In a sewing machine, sewing instrumentalities including a needle having an eye, a work table, a work holder liftable from said table at the end of a stitching operation, means including a rock shaft for lifting said holder, a lever carried by said rock shaft and having a portion movable across the normal thread path extending from said needle eye toward the work as said holder is lifted and lowered, and a spring finger secured to said portion and lying therealong and between which and said portion the thread is passed on lifting movement of said holder, said portion having a hook extending through a slot in said finger for retaining said thread when said holder is lowered, said finger and portion acting to hold the starting end of the thread until after the start of a subsequent stitching operation.

4. A thread-grasping member comprising parts including a bar and a spring finger secured to said bar and lying therealong and between which and said bar the thread may be grasped, and a hook element carried by said bar and extending into an opening through said finger and presenting a convex portion over which the thread may pass and a concave portion for engagement with the thread in its normal grasped position.

5. A thread grasping member comprising a pair of parts yieldingly secured together and presenting a pairs of free ends between which a thread to be grasped may be passed, one of said parts having a hook provided with a rounded back face presented toward said free ends and a concave face oppositely presented and the other of said parts having an opening into which said hook normally extends.

MICHAEL McCANN.