

Nov. 1, 1927.

H. CORRALL ET AL

1,647,394

OVEREDGE SEWING MACHINE

Filed March 13, 1925

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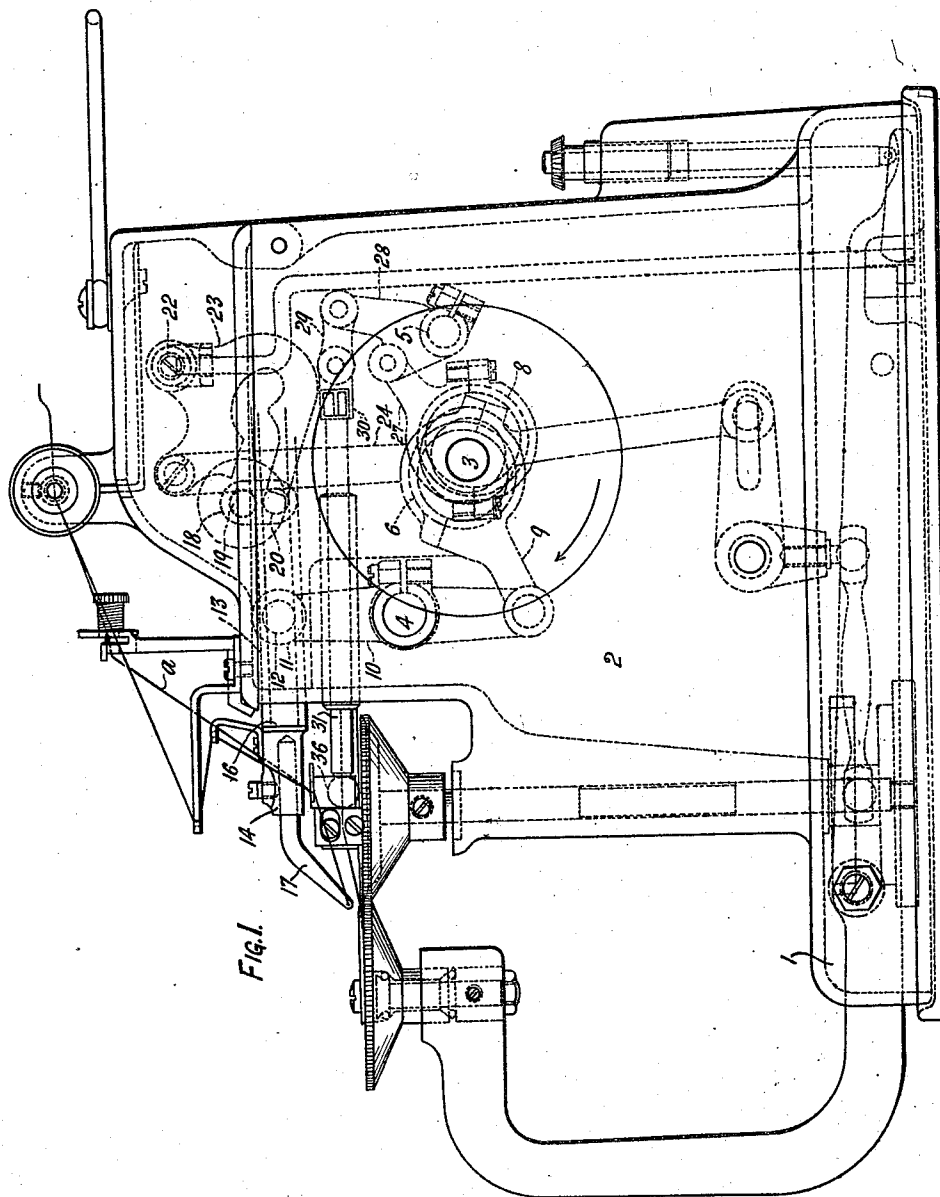


Fig. 1.

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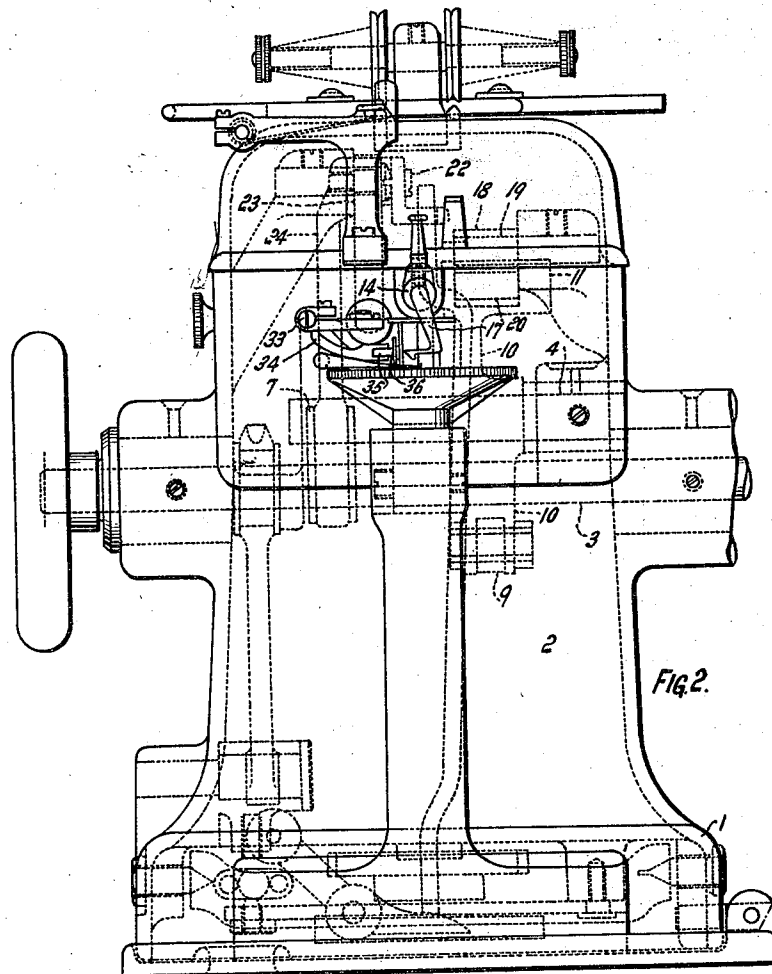
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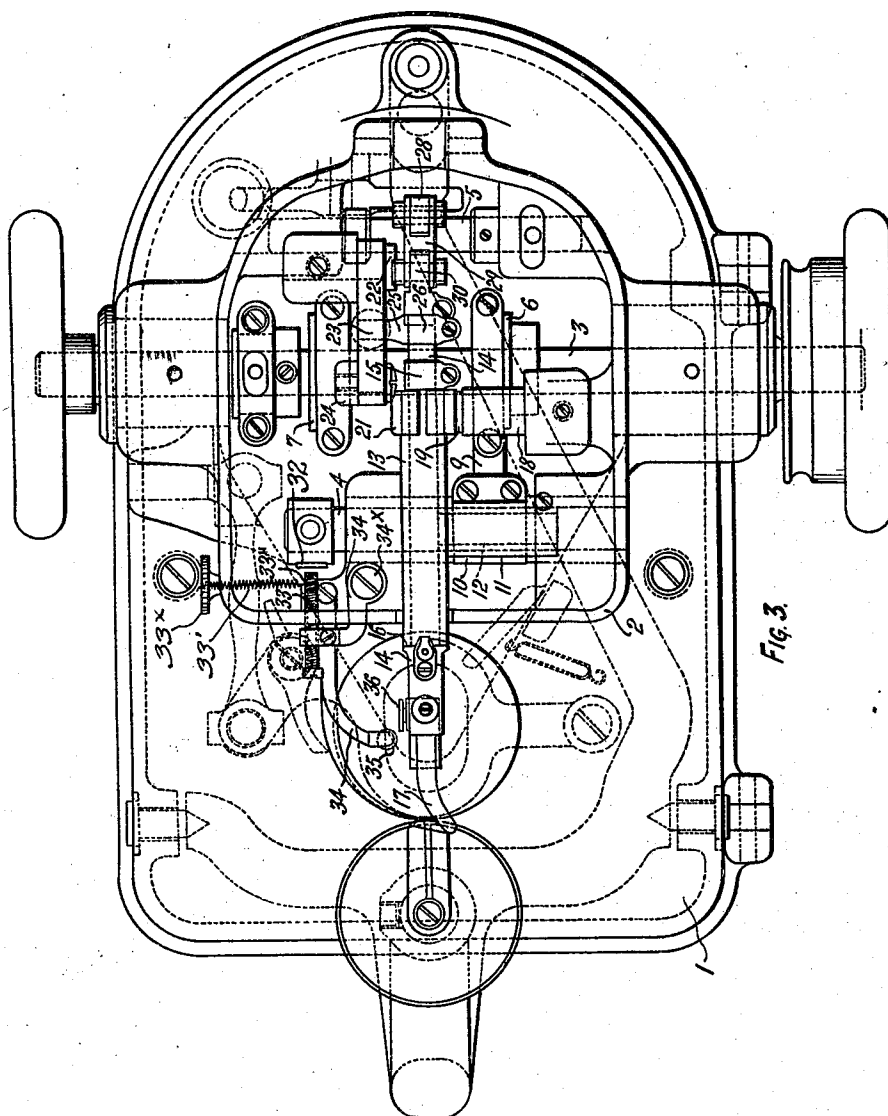
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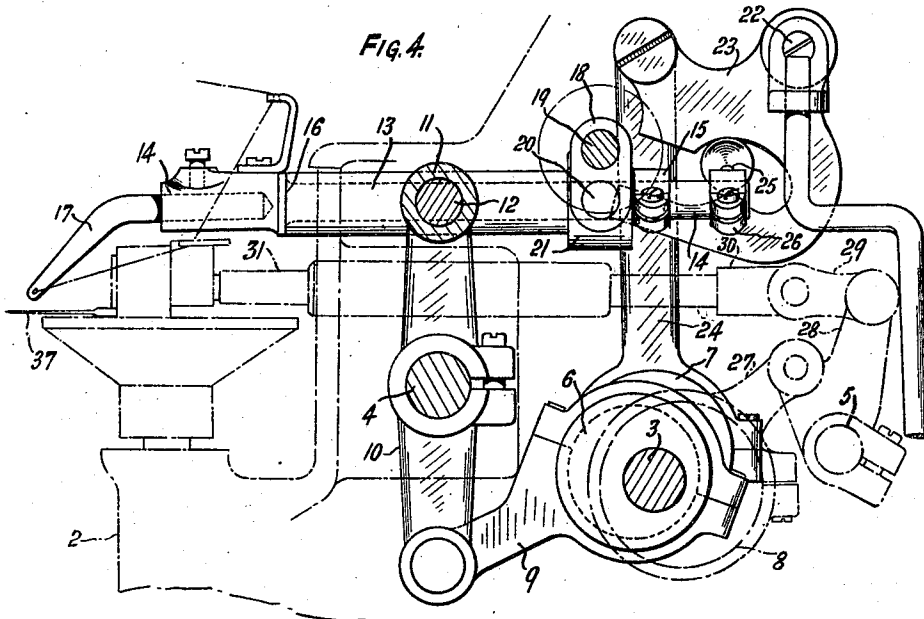
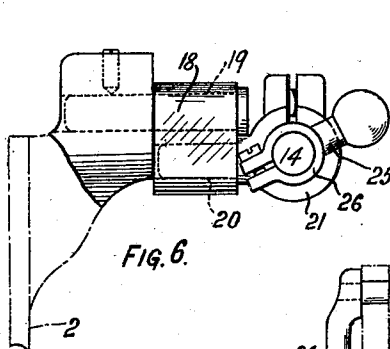
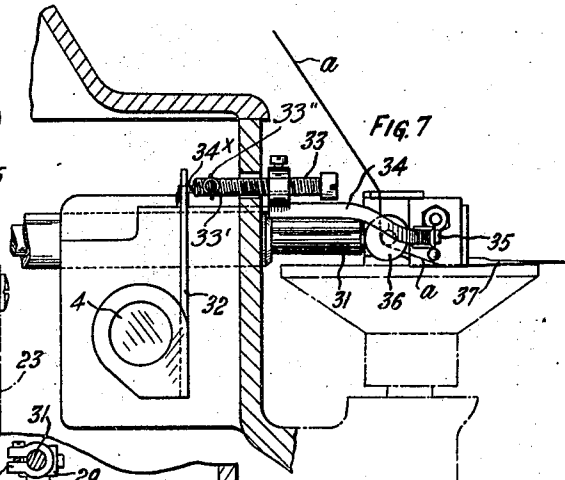
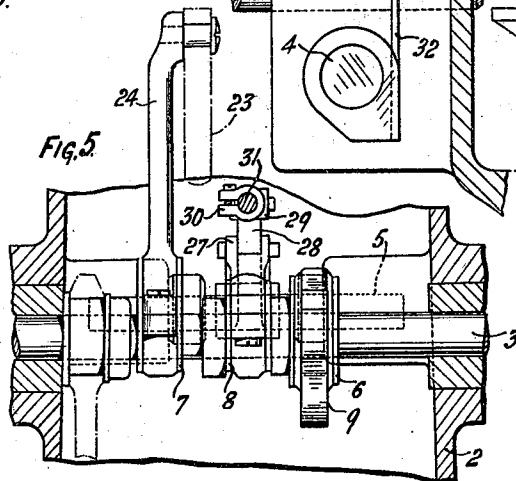
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UNITED STATES PATENT OFFICE.

HERBERT CORRALL, OF HELENSBURGH, AND JAMES HEGGIE, OF CLYDEBANK, SCOTLAND, ASSIGNORS TO THE SINGER MANUFACTURING COMPANY, OF ELIZABETH, NEW JERSEY, A CORPORATION OF NEW JERSEY.

OVEREDGE-SEWING MACHINE.

Application filed March 13, 1925, Serial No. 15,259, and in Great Britain March 26, 1924.

This invention relates primarily to looper mechanism for overedge sewing machines, particularly for glove sewing and similar uses having a thread carrying looper supported by a looper bar adapted to perform longitudinal reciprocatory movements combined with vibratory movements in a vertical plane as well as axial oscillatory movements.

The invention also comprises an improved needle-thread controlling and releasing device.

In the accompanying drawings, Figs. 1 and 2 are elevations at right angles to one another of an overedge sewing machine embodying the invention; Fig. 3 is a corresponding plan, the cover being removed; Fig. 4 is an elevation of the looper bar and the looper-actuating mechanism; Fig. 5 is a fragmentary part sectional view showing in elevation the main shaft and eccentrics thereon; Fig. 6 is a view showing more particularly the pendulous link which controls the vibratory movements of the looper-bar; Fig. 7 is a fragmentary sectional view illustrating a needle-thread nipping device.

The looper mechanism of the invention is shown mounted within a frame comprising the hollow base 1 from which rises the standard 2 provided with the transverse main or driving shaft 3 and with the rock shafts 4 and 5 parallel thereto.

Secured upon the main shaft 3 are eccentrics 6 and 7 from which the looper derives components of its movements and the eccentric 8 from which the needle-bar derives endwise reciprocatory movements hereinafter explained.

The eccentric 6 is embraced by a strap at one end of the eccentric rod 9 the other end of which is connected to the lower end of a lever 10 fixed on the rock shaft 4 the upper end of which lever 10 is formed integral with a sleeve 11 embracing a pin 12 projecting laterally from a sleeve 13 in which is journaled the looper bar 14 confined against endwise movement relatively to the sleeve 13 by a collar 15 and a shoulder 16. At its forward end the looper bar is formed with a socket in which is clamped the shank of the looper 17.

As will be understood, the rotation of the eccentric 6 effects the vibration of the lever 10 and thereby effects reciprocatory move-

ment of the sleeve 13 and thus of the looper bar 14.

18 denotes a pendulous link carried on a stationary horizontal pin 19 transverse to the looper bar 14 and supporting a pin 20 projecting laterally from a collar 21 embracing the sleeve 13. It will be evident that in the reciprocatory movement of the sleeve 13 the pendulous link 18 will be vibrated on the pin 19 and thereby the pin 20 raised and lowered to tilt the sleeve 13 and therewith the looper bar 14, thereby vibrating the looper in a vertical plane.

Above the looper-bar and on the side of the looper bar opposite that on which is located the pin 19 is a stationary pin 22 parallel to the shaft 3, on which pin 22 is pivoted a slotted cam plate 23 to which in turn is pivoted the upper end of the eccentric rod 24 the opposite end of which embraces the eccentric 7 on the shaft 3.

The cam slot in the plate 23 is entered by the ball shaped end of a pin 25 projecting laterally from a collar 26 clamped to the rear end of the looper bar 14, the cam slot including intersecting curved portions.

In the rocking movement of the cam plate 23 brought about by the rotation of the eccentric 7 concurrently with the endwise movement of the looper bar 14, the ball-shaped end of the pin 25 is raised and lowered and thereby the looper bar 14 is rocked within the sleeve 13, whereby the looper 17 is caused to perform oscillatory movements around the axis of the looper bar 14.

By swinging the pendulous cam-plate 23 on its fulcrum 22 located above the looper-bar, a shorter and more compact cam can be used and the shape of the cam-slot can be simplified and made less harsh. Hence the machine can be used at higher speeds without undue wear. The arrangement lends itself well to giving the looper-bar a relatively large loop-taking movement and a relatively small loop-shedding movement, as is desirable in the formation and tightening of the stitch. At the loop-taking part of the movement, the cam is swung forwardly and upwardly around the fulcrum 22 and the highest part or lefthand end of the cam-path Fig. 4, thus raised above the looper-bar. The ball-shaped end of the pin 25, in following the cam, imparts this extra movement to the looper. On the return or

loop-shedding movement of the looper, the cam is swung to the right and downwardly, Fig. 4, bringing the high point of the cam nearly in line with the path of the looper-bar, so that only a small loop-shedding movement is given to the looper.

The eccentric 8 is embraced by a strap at one end of an eccentric rod 27 pivoted at the other end to a lever 28 fixed to the rock shaft 5, said lever 28 being connected by a link 10 29 to a collar 30 clamped on the rearward end of the needle-bar 31. The rotation of the eccentric 8 thus effects reciprocation of the needle-bar 31.

15 Secured to the rock-shaft 4 is a tappet-arm 32 in the form of a plate-spring, Fig. 7, which in the rocking movement of the shaft 4 engages the adjustable screw-pin or follower 33 carried by the lever 34. The lever 20 34 is pivoted at 34* and carries at its free end a roller 35 adapted to track the element 36 of a needle-thread nipping device carried by the needle-bar. A tension-spring 33' looped at one end at 33'' around the screw 25 33 and anchored at its other end to the thumb-nut 33* tends to at all times hold the lever 34 in a floating position wherein the axis of the spring 33' intersects the axis of pivotal movement of the lever 34, as 30 shown in Fig. 3. In the operation of the machine, at the end of the needle-bar stroke, i. e., when the needle starts to retreat, the roller 35 is caused by the spring-arm 32 to bear with a predetermined pressure on the element 36 causing the needle-thread α 35 to be nipped. Adjustment of the screw 33 regulates the pressure of the roller 35 upon the nipper element 36.

What we claim is:—

40 1. In an overedge sewing machine, in combination with a looper bar and a looper carried by said looper bar, means for imparting to said looper bar endwise reciprocatory and vibratory movements, a cam 45 member mounted to swing on a fixed axis above said looper-bar and operatively connected with said looper bar for imparting to said looper bar oscillatory movements around the axis of said looper bar, and 50 means for swinging said cam member.

2. In an overedge sewing machine, in combination with a looper bar and a looper carried by said looper bar, a sleeve in which

said looper bar is journaled, means for imparting endwise reciprocatory movements 55 and vibratory movements to said sleeve and hence to said looper bar, a pendulous slotted cam member mounted to rock on a fixed axis above said looper-bar, a follower on said looper bar engaging said slot, and 60 means for swinging said cam member.

3. In an overedge sewing machine, in combination with a looper bar and a looper carried by said looper bar, a sleeve in which said looper bar is journaled, a main shaft, 65 a lever mounted to rock on an axis parallel to said main-shaft and having one arm pivotally connected to said sleeve for endwise propulsion of the latter, an eccentric on said main-shaft operatively connected to said 70 lever, a pendulous link for suspending said sleeve at a point spaced from its connection with said lever, a cam member mounted to swing on a fixed axis above the looper-bar and parallel to said main shaft, a follower 75 on said looper bar engaging said cam member, and connections between said main shaft and said cam member for swinging said cam member.

4. In an overedge sewing machine, in 80 combination with a looper bar, means including a rock shaft for imparting endwise reciprocatory movements to said looper bar, a reciprocatory needle bar, a needle-thread-nipping device carried by said needle bar, 85 a lever adapted to influence said nipping device, a tappet arm on said rock shaft, and means influenced by said tappet arm for rocking said lever.

5. In an overedge sewing machine, in 90 combination, a main shaft, a rock shaft operatively connected with said main shaft, a needle bar, a connection between said main shaft and said needle bar for reciprocating said needle bar, a needle-thread-nipping 95 device carried by said needle bar, a lever adapted to influence said nipping device, a tappet arm on said rock shaft, and a spring-urged follower pin adjustably secured to said lever and engageable with said tappet 100 arm.

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

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