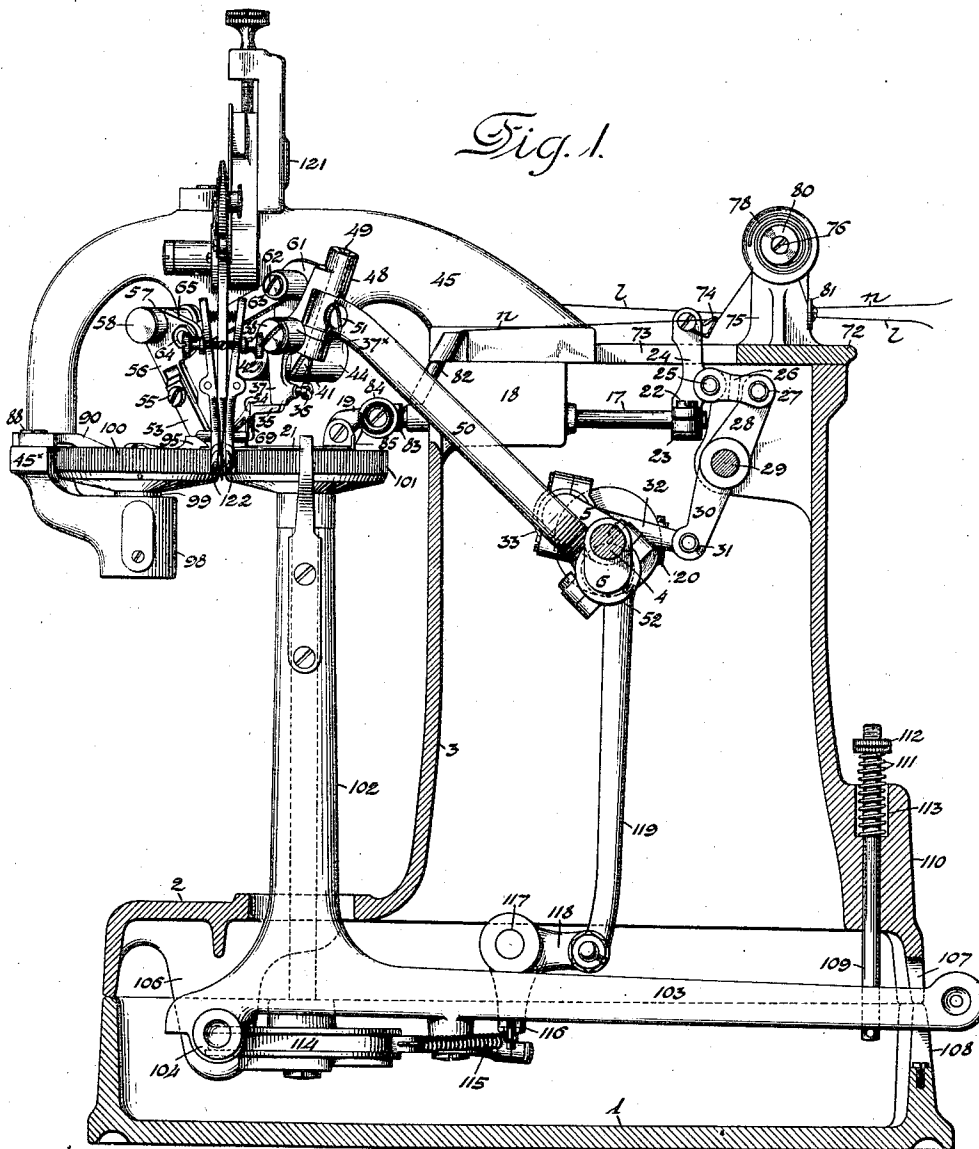


J. HEGGIE.
OVERSEAMING SEWING MACHINE.
APPLICATION FILED JULY 9, 1910.

998,770.

Patented July 25, 1911.

3 SHEETS—SHEET 1.



WITNESSES:

Reza Farman
Stas Komman

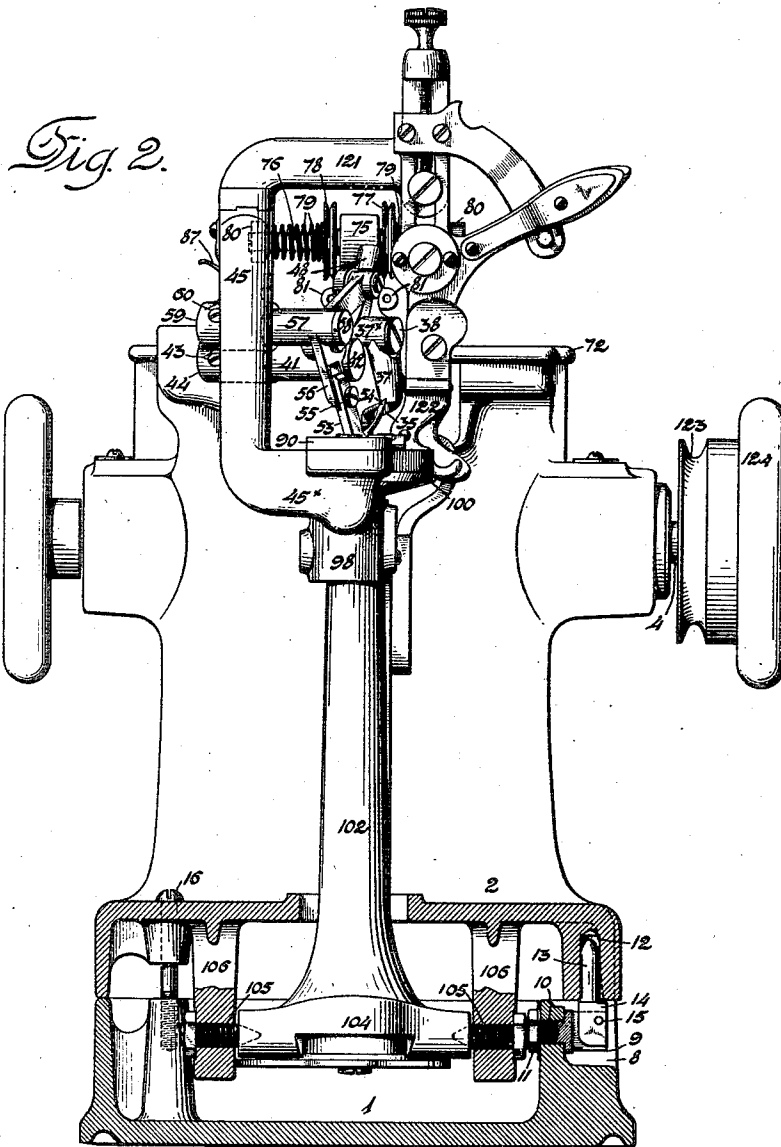
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3 SHEETS-SHEET 2.



WITNESSES:

Geza Fencs
Stas Kommann

INVENTOR

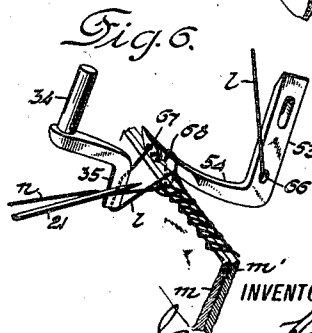
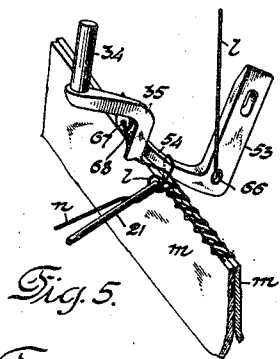
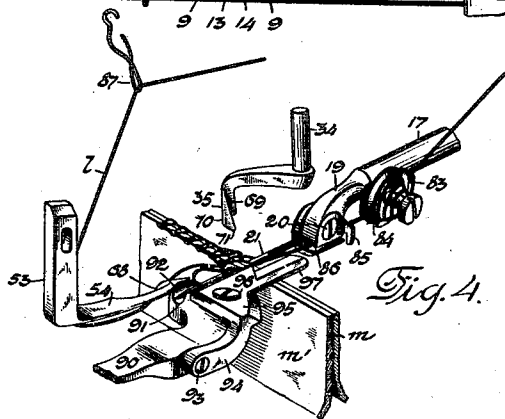
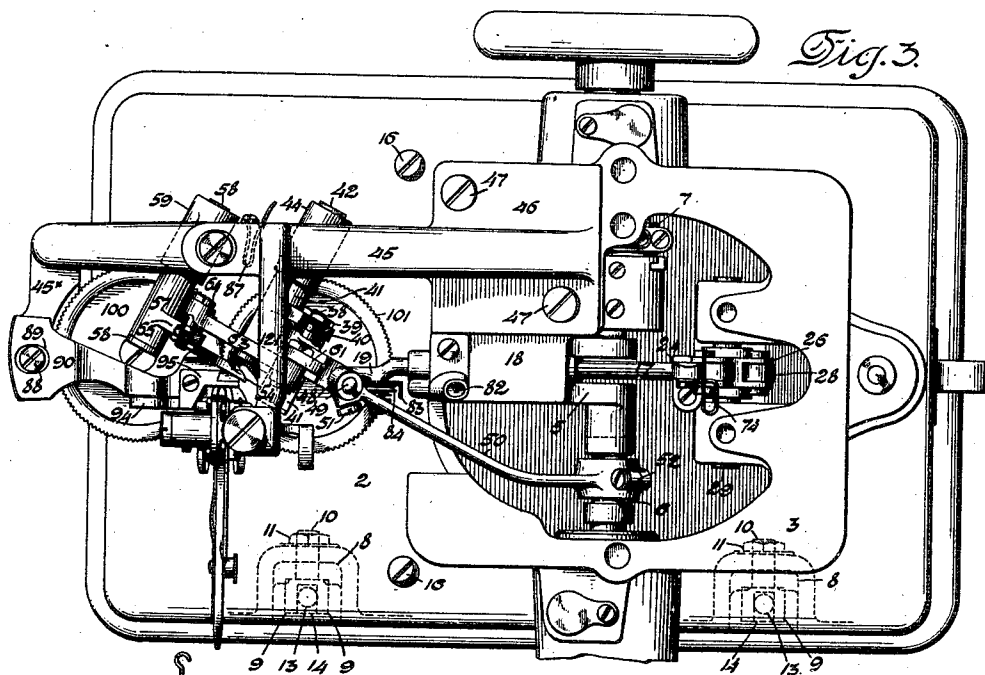
James Heggie
BY *Henry J. Miller*
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3 SHEETS—SHEET 3.



WITNESSES:
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Fig. 7.

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UNITED STATES PATENT OFFICE.

JAMES HEGGIE, OF CLYDEBANK, SCOTLAND, ASSIGNOR TO THE SINGER MANUFACTURING COMPANY, A CORPORATION OF NEW JERSEY.

OVERSEAMING SEWING-MACHINE.

998,770.

Specification of Letters Patent.

Patented July 25, 1911.

Application filed July 9, 1910. Serial No. 571,116.

To all whom it may concern:

Be it known that I, JAMES HEGGIE, a subject of the King of the United Kingdom of Great Britain and Ireland, and residing at Clydebank, Dumbartonshire, Scotland, have invented certain new and useful Improvements in Overseaming Sewing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to an improvement in overseaming sewing machines comprising looper mechanism of that type shown and described in the United States Patents to A. Grieb, No. 931,058, dated August 17, 1909, and No. 932,272, dated August 24, 1909, and it has for its object to provide an improved construction of stitch-forming mechanism in which the needle-bar and needle are arranged horizontally and the loopers or looper and loop-spreader are fulcrumed above the needle and oscillated in a vertical plane or planes inclined to that in which the needle reciprocates. The machine is particularly intended for edge-stitching-hosiery, or like goods, and by virtue of this arrangement the goods may be freely suspended clear of the stitching mechanism from the feed-rolls which engage the marginal portions of the fabric through which the needle passes.

According to the present improvement, one of the loopers is provided with a fulcrum mounted upon a movable support and has a pitman connection, preferably pivotally connected therewith by a pin disposed transversely of said fulcrum, with a crank upon the rotary main-shaft; whereby the point of the looper is given a path of movement of somewhat elliptical form of which one side is close to the needle path in the movement of the looper toward one extreme position and the other side is farther from the needle path in the return movement to opposite extreme position.

The invention will be understood more fully by reference to the accompanying drawings, in which—

Figure 1 is a front side view of a machine embodying the present improvements, with the frame in section, Fig. 2 an end elevation of the same with the base in section, and Fig. 3 a plan of the machine with the top of the standard removed. Figs. 4 5 and 6 are perspective views representing the sev-

eral operative members of the stitch-forming mechanism in different stages of the stitch-forming operation, and Fig. 7 a perspective view upon a larger scale representing a section of work provided with an overseamed edge produced by the use of the present improvement.

The machine is shown with the hollow base 1 upon which rests the rectangular bed 2 of the frame from which rises the hollow standard 3 in which is journaled the transverse main-shaft 4 provided with the needle-bar actuating crank 5 and looper-actuating crank 6 and the feed-actuating eccentric 7. The base has its upturned side wall or flange provided along one side with recesses 8 to receive the slotted heads 9 of bolts 10 passing through said wall and secured in position by the nuts 11. The depending walls or side-flanges of the bed 2 are provided above said recesses 8 with sockets 12 entered by pins 13 whose flattened heads 14 are pivotally secured within the slotted heads 9 of the bolts 10 by means of pivotal pins 15, whereby the bed 2 is hinged at one edge to the base 1. These parts are secured together near the other edge by means of screws 16.

The needle-bar 17 is mounted for horizontal reciprocation in the bearing boss 18 at the top of the standard 3 and carries the needle-clamp bracket 19 provided with a split socket in which is secured by means of the clamp-screw 20 the eye-pointed needle 21, while upon the opposite end of the needle-bar is adjustably secured by means of the clamp-screw 22 the split-collar 23 having an upwardly extending arm 24 to which is pivotally secured by means of the pin 25 one of the forked ends of a link 26 whose opposite end is pivoted by means of the pin 27 to the upwardly extending arm 28 of a rock-lever mounted upon the rock-shaft 29 and having a depending arm 30 connected by the pivotal pin 31 with the rearward end of a pitman-rod 32 having at its opposite end the strap 33 embracing the needle-actuating crank 5 of the main-shaft.

The shank 34 of one of the loopers 35, herein represented as a non-thread-carrying looper or spreader, is adjustably secured by means of the set-screw 36 in a socket of the carrying arm 37 mounted upon the shouldered fulcrum-stud-screw 38 which is secured by means of the clamp-nut 39 upon

the crank-arm 40 of a rocking sleeve or support 41 journaled upon the fulcrum-stud 42 which is secured by means of the set-screw 43 in an inclined bearing boss 44 of the forwardly projecting bracket-arm 45 having its foot 46 secured by means of screws 47 upon a seat on the top of the standard 3. The boss 37* of the looper-carrier 37 is provided with an upwardly extending and slightly offset yoke 48 in which is journaled the pivotal pin 49, disposed transverse to and offset from the fulcrum-pin 38. The transversely apertured forward end of the pitman-rod 50 is embraced by the yoke 48 and pivotally secured therein by means of the pin 49 to which it is secured by the set-screw 51, and the opposite end of the pitman-rod 50 is provided with a strap 52 which embraces the looper-actuating crank 6 of the main-shaft, whereby operative movements are imparted to the looper 35.

As the pivotal pin 49 is disposed transversely to the fulcrum-pin 38 of the looper 35, it unites the looper and pitman in a practically rigid member as regards the operative movements imparted by the actuating crank, the function of the pivotal connection being merely to compensate for the angular relation of the fulcrum of the looper-support with the main-shaft. This connection between the pitman and looper thus causes the looper to perform rocking movements upon its fulcrum corresponding with the amplitude of vibration of the pitman derived from the actuating crank 6, while the endwise movements of the pitman are also communicated to the looper in a circular path around the fulcrum of its rocking support. While the position of the pitman constantly changes relatively to the fulcrum of the looper-support, it remains substantially uniform as regards the looper and its fulcrum.

The shank 53 of the other looper 54, which is herein represented as eyed to adapt it to carry its own thread, is adjustably secured by means of the fastening screw 55 to the channeled lower portion of the looper-carrying arm 56 whose hub 57 is mounted upon the fixed fulcrum-stud 58 having its shank secured in the bearing boss 59 of the bracket-arm 45 by means of the set-screw 60. The yoke 48 of the rocking looper-carrier support is provided with a forwardly extending ear 61 to which is secured by means of the screw-stud 62 one end of a link 63 whose opposite end is secured by means of the stud-bolt 64 to a rearwardly extending ear 65 of the looper-carrier hub 57. This link 63 affords an operative connection of the looper 54 with the non-threaded looper or spreader 35 from which it derives its operative movements in a plane inclined to the needle-path and parallel with that of the path of movement of the spreader.

The looper-shank 53 is provided adjacent the base of the blade 54 with a thread aperture 66, and the blade is formed near its point with the thread-eye 67 adjacent which, and on the side nearest the path of movement of the spreader 35, it has a clearance notch 68 for the point of the spreader. The spreader-blade 35 is formed upon the side nearest the shank with a groove 69 extending lengthwise thereof and forming a lateral wing 70 with a loop-seizing point or beak 71.

The standard 3 is provided with a removable cap-plate 72 formed with a slot 73 through which extends the arm 24 which carries above the same the needle-thread take-up eye 74, and the cap-plate is also provided with a post 75 in which is mounted the transverse pin 76 carrying the two sets of tension disks 77 and 78 with a spring 79 interposed between the outer disk of each pair and a thumb-nut 80 applied to each of the split and threaded outer ends of the pin 76.

In threading the machine, the needle-thread *n* is passed through a suitable eye in the thread-guide 81 secured to the back of the post 75 and thence between the tension-disks 77, through the take-up eye 74 and the guide-tube 82 at the front of the standard, from which it passes through the guide-eye 83 and between the disks 84 of the check-tension device upon the needle-clamp bracket-piece 19, and thence beneath the guard-hook 85 and thread-slot 86 of the needle-clamp to the eye of the needle. The looper-thread *l* is led from the source of supply through another eye in the thread-guide 81 between the tension-disks 78 and thence through a guide-eye 87 depending from the bracket-arm 45 from which it passes through the eye 66 in the looper shank to the looper-eye 67.

The rigid bracket-arm 45 has a forwardly and downwardly extending portion terminating in a lateral extension 45* having a seat upon which is adjustably secured by means of the screw 88 entering a slot 89 therein the shank 90 of a needle-guard provided with a needle-receiving groove 91 having a lateral loop-deflecting lip 92 upon the loop-presenting side, the inclined edge of which is adapted to engage that portion of the needle-thread issuing from the needle-eye and to deflect it slightly upward so as to insure the seizure of the same by the point of the eyed looper in traversing its inclined path relative to the needle. To one side of the needle-guard shank 90 is pivotally connected by means of the screw 93 an arm 94 carrying a plate 95 adjustably secured upon the needle-guard member by means of the screw 96 extending through the latter, the plate 95 having an edge-guiding finger 97 extending crosswise of the line of seam and parallel with the needle. The extension 45* 130

of the bracket-arm 45 also carries a bearing boss 98 in which is journaled the spindle 99 of the pressure wheel 100 which is adapted to rotate freely therein, the feed-wheel 101 being mounted upon a spindle journaled within the upright arm 102 of a lever 103 having at its forward end a transverse member 104 mounted upon the center screws 105 which are carried by the depending lugs 106 of the bed 2; the lever 103 extending through slots 107 and 108 in the rear end flanges of the bed and the base, respectively, and being normally drawn upwardly by means of the pull-rod 109 passing through a lug 110 upon the rear of the standard 3 and having the spring 111 surrounding the same and interposed between a nut 112 upon its threaded upper end and the bottom of the socket 113 in said lug. The feed-wheel spindle carries upon its lower end a clutch-wheel 114 to which is imparted a step-by-step rotary motion by means of a common form of clutching operated by means of the connecting rod 115 attached to one arm 116 of a bell-crank-lever fulcrumed at 117 and having a second arm 118 pivotally connected with one end of a pitman 119 whose opposite end carries a strap 120 embracing the actuating eccentric 7 upon the main-shaft.

The bracket-arm 45 is provided above the line of seam with a second lateral arm 121 upon which is adjustably mounted the uncurling guide 122 adapted to receive the marginal portions of the knit fabrics to be united and flatten them out preparatory to their passage beneath the edge-guide 97 to the stitch-forming mechanism.

In the operation of the machine, the lever 103 is depressed by means of a suitable treadle connection with its eyed outer end, which retracts the feed-wheel 101 from the pressure wheel 100, and the overlapped marginal portions *m m'* of the material are inserted with their edges in contact with the guide-finger 97. The machine having been threaded as before described, power is applied to the main-shaft 4 by means of the usual belt applied to the grooved pulley 123 attached to the balance-wheel 124. The needle penetrates the material, and as it begins its retrograde movement forms a loop of its thread which is upwardly deflected by the needle-guard lip 92, as represented in Fig. 4, and such loop is entered and retained upon the shank of the eyed looper 54 as represented in Fig. 5, while the notched operative end of the spreader 35 engages the looper-thread adjacent the eye 67. As the operation continues, the point of the spreader 35 continues to descend and the looper recedes until the parts are as represented in Fig. 6, wherein the point of the spreader is at its lowest position and has distended the looper loop to embrace the needle path and the point of the needle is about

to enter the same. As the needle performs its succeeding reciprocation, the operation before described is repeated.

As the needle-bar moves back to initial position after having performed an advance movement for presentation of a needle-thread loop to the looper, it carries the take-up arm 24 with it, and the eye 74 continues to deflect the thread intermediate the tension 78 and guide-tube 82 whereby the needle-thread loop is drawn up around the looper-blade in such manner as to set the preceding stitch, while the lead of the looper-thread between the stationary guide-eye 87 and eye 66 in the looper shank is such that when the looper recedes to its extreme retracted position preparatory to a loop-seizing movement, its thread is drawn up so as to set the looper loop of the previous stitch while the last formed loop is still around the shank of the needle.

While the loopers of the present improvement are shown and described herein as respectively threaded and non-threaded, it will be readily understood that in this respect the nature and relation of these loopers is immaterial.

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

1. In an overseaming sewing machine, the combination with a rotary shaft provided with a looper-actuating crank, and a reciprocating needle operatively connected with said shaft, of a looper, a fulcrum therefor, a movable support upon which said fulcrum is mounted, a pitman embracing said actuating crank at one end and having at the other end an operative connection with the looper whereby the pitman maintains a substantially uniform angular relation with the looper and its fulcrum, a second looper coöperating with the needle and the first-named looper in producing overseam stitches, and means for actuating the second-named looper.

2. In an overseaming sewing machine, the combination with a rotary shaft provided with a looper-actuating crank, and a reciprocating needle operatively connected with said shaft, of a looper, a fulcrum therefor, a movable support upon which said fulcrum is mounted, a pitman having one end connected with said actuating crank and the other end connected with said looper by a pivotal pin disposed transverse to the fulcrum of said looper, a second looper coöperating with the needle and the first-named looper in producing overseam stitches, and means for actuating the second-named looper.

3. In an overseaming sewing machine, the combination with a rotary shaft provided with a looper-actuating crank, and a reciprocating needle operatively connected with said shaft, of a looper, a fulcrum therefor,

a fixed fulcrum, a rocking support mounted thereon and carrying the fulcrum for said looper, a pitman connection between said actuating crank and the looper and adapted to communicate to the latter rocking movements upon its fulcrum corresponding with the amplitude of vibration of the pitman derived from said actuating crank, a second looper cooperating with the needle and the first-named looper in producing overseam stitches, and means for actuating the second-named looper.

4. In an overseaming sewing machine, the combination with a rotary shaft provided with a looper-actuating crank, and a reciprocating needle operatively connected with said shaft, of two fixed parallel fulcra, a looper mounted upon one of said fulcra and adapted to cooperate with said needle, a rocking support mounted upon the other of said fulcra and carrying a laterally movable fulcrum, a second looper mounted upon said laterally movable fulcrum and adapted to cooperate with said needle and the first-named looper in the production of overseam stitches, an operative connection between said loopers whereby one derives its operative movements from the other, and a pitman connection between the second-named looper and the actuating crank of said shaft.

5. In an overseaming sewing machine, the combination with the frame comprising a base, a standard rising therefrom and a lateral bracket-arm extending from said standard, of a transverse main-shaft journaled in said standard and provided with an actuating crank, a reciprocating needle-bar journaled in bearings in and disposed transversely of said standard and transversely of the main-shaft and carrying a needle, two fixed parallel fulcrum-studs mounted in the bracket-arm at an inclination to the needle-bar, a looper-carrier mounted upon one of said fulcrum-studs, a primary looper carried thereby, a rocking support mounted upon the other of said fixed fulcra, a movable fulcrum-stud mounted thereon for circular movement therewith, a looper-carrier journaled upon said movable fulcrum-stud, a secondary looper fixed in the same, a connection between said looper-carriers, and a pitman having one end connected to said crank of the main-shaft and the other end connected with the carrier of the secondary looper.

6. In an overseaming sewing machine, the combination with the frame comprising a base, a standard rising therefrom and a lateral bracket-arm extending from said standard, of a transverse main-shaft journaled in said standard and provided with an actuating crank, a reciprocating needle-bar journaled in bearings in and disposed transversely of said standard and transversely of the main-shaft and carrying a needle, two fixed parallel fulcrum-studs mounted in the bracket-arm at an inclination to the needle-bar, a looper-carrier mounted upon one of said fulcrum-studs, a primary looper carried thereby, a rocking support mounted upon the other of said fixed fulcra, a movable fulcrum-stud mounted thereon for circular movement therewith, a looper-carrier journaled upon said movable fulcrum-stud, a secondary looper fixed in the same, a connection between said looper-carriers, and a pitman having one end connected to said crank of the main-shaft and the other end pivotally connected with the carrier of the secondary looper by a pin disposed transversely to its movable fulcrum-stud.

7. In an overseaming sewing machine, the combination with a rotary shaft provided with a looper-actuating crank, and a reciprocating needle operatively connected with said shaft, of a looper, a fulcrum therefor, a movable support upon which said fulcrum is mounted, a pitman connection between said actuating crank and the looper, a second eye-pointed looper adapted to seize loops from the needle and present its own thread to the first-named looper in the production of overseam stitches, a fulcrum for said eye-pointed looper inclined to the path of movement of said needle, means for actuating the eye-pointed looper, and a needle-guard having a loop-deflecting lip upon the loop-presenting side of the needle path and adapted to deflect the needle-thread loops laterally for seizure by the eye-pointed looper in traversing its path of movement inclined to and crossing that of the needle.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES HEGGIE.

Witnesses:

WALLACE FAIRWEATHER,
WALLACE CRANSTON FAIRWEATHER.