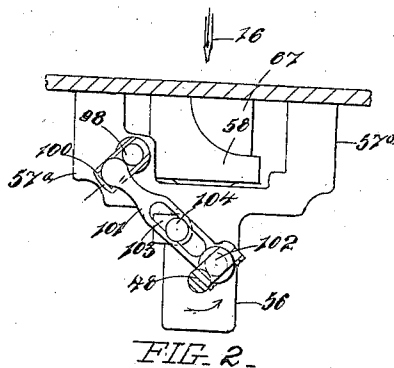
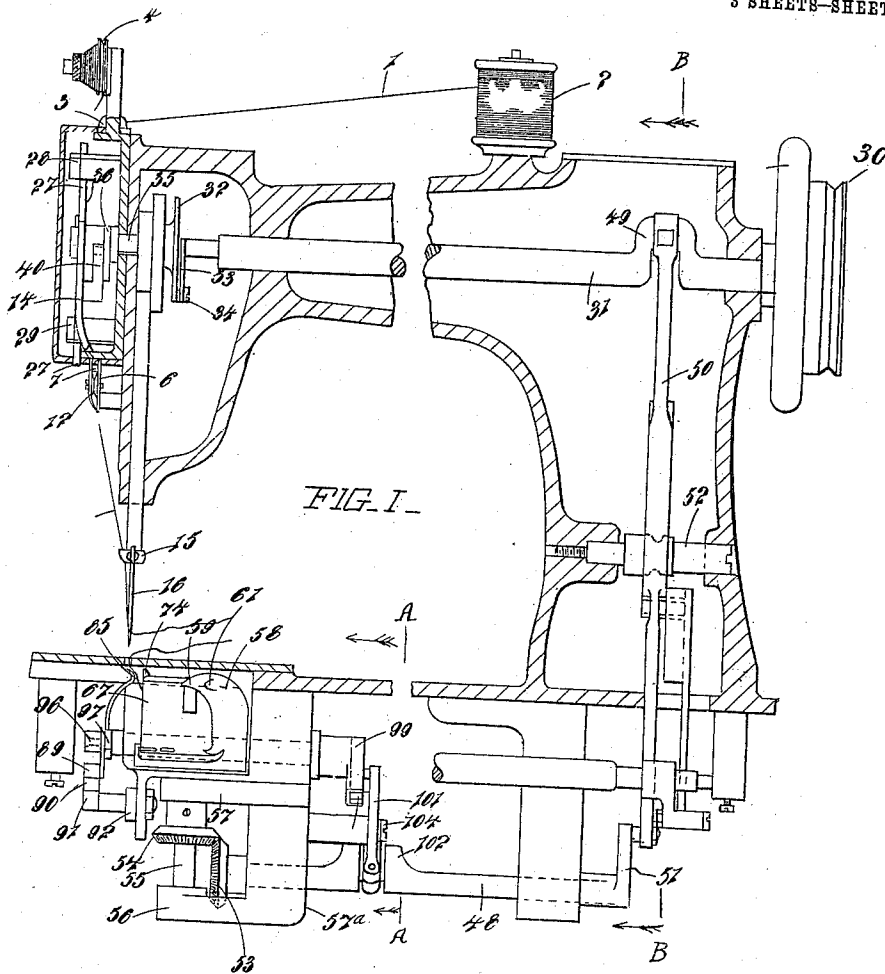


984,074.

W. J. BUTLER.
SEWING MACHINE.
APPLICATION FILED OCT. 1, 1909.

Patented Feb. 14, 1911.

3 SHEETS—SHEET 1.



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3 SHEETS—SHEET 2.

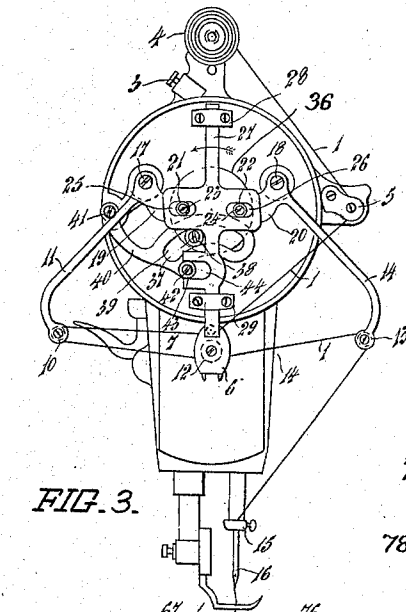


FIG. 3.

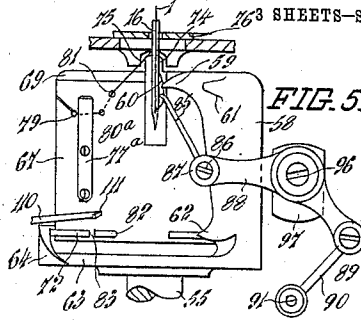


FIG. 5.

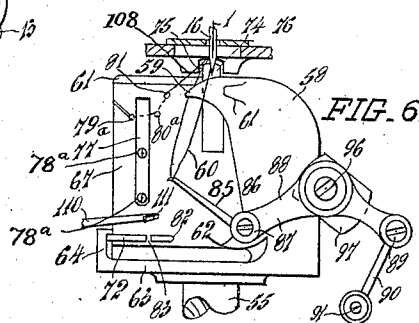


FIG. 6.

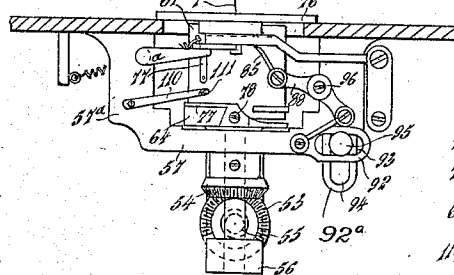


FIG. 4.

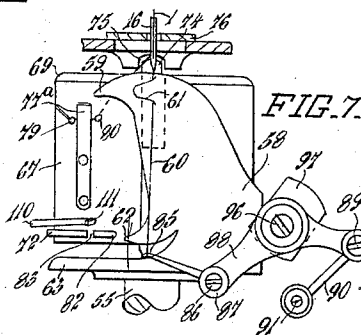


FIG. 7.

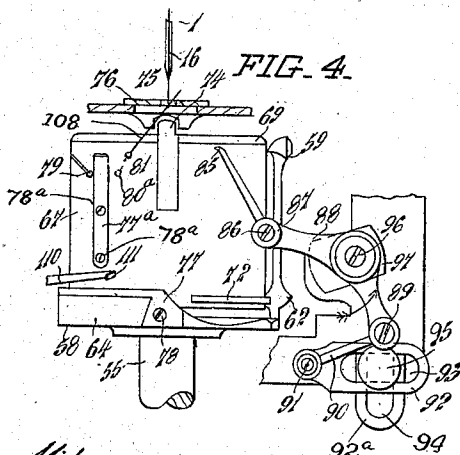


FIG. 8.

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3 SHEETS—SHEET 3.

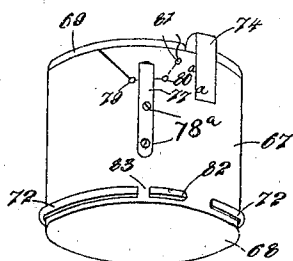


FIG. 9.

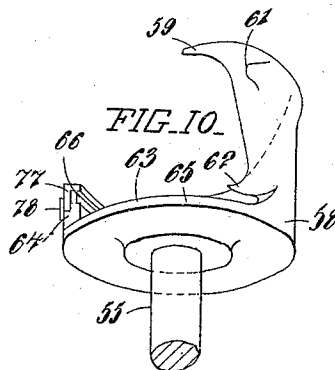


FIG. 10.

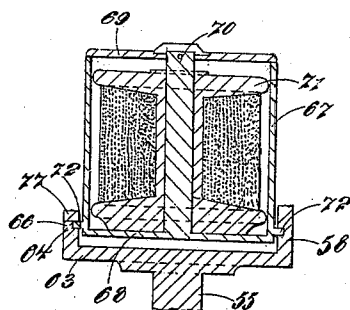


FIG. 11.



FIG. 13.

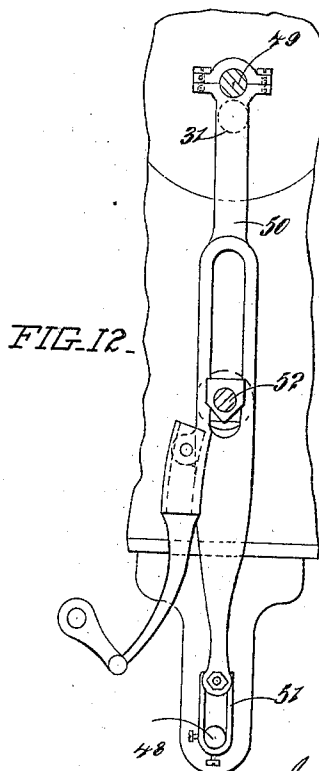


FIG. 12.

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UNITED STATES PATENT OFFICE.

WILLIAM JOSEPH BUTLER, OF AUCKLAND, NEW ZEALAND.

SEWING-MACHINE.

984,074.

Specification of Letters Patent.

Patented Feb. 14, 1911.

Application filed October 1, 1909. Serial No. 520,534.

To all whom it may concern:

Be it known that I, WILLIAM JOSEPH BUTLER, a subject of His Majesty the King of Great Britain and Ireland, and residing at Wellesley street, Auckland, in the Provincial District of Auckland, in the Dominion of New Zealand, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification.

This invention relates to lock stitch sewing machines, and has for its object to provide a novel form of mechanism for spreading the loop in the thread as required in that type of sewing machines in which the spool or bobbin carrier is arranged for the reception of an ordinary spool of thread. I attain this object by the mechanism illustrated in the accompanying drawing, in which:—

Figure 1, is a longitudinal sectional elevation of a sewing machine, Fig. 2, a cross sectional elevation on line A—A, Fig. 1, Fig. 3, an end elevation of a sewing machine partly in section, Fig. 4, an end elevation of under gear, showing the parts in their first position, Fig. 5, an end elevation showing the parts of the under gear in their second position, Fig. 6, an end elevation showing the parts of the under gear in their third position, Fig. 7, an end elevation showing the parts of the undergear in their fourth position, Fig. 8, an end elevation showing the parts of the undergear in their fifth position, Fig. 9, a perspective view of a spool receiver, Fig. 10, a perspective view of a rotating carrier, Fig. 11, a sectional elevation of a rotating carrier, spool receiver and spool, Fig. 12, a cross sectional elevation on line B—B, Fig. 1, and Fig. 13, a sectional elevation of the end of a lever.

The thread 1 from the upper spool 2 passes through check nippers 3, around a tension 4, and through a guide 5, all these said parts being of ordinary construction. The thread then passes through a guide 6 below a pin 7, the said guide being located centrally upon the end of the machine. From the guide 6 the thread passes around a grooved pulley 10 pivoted in the end of a lever 11, thence below a grooved friction pulley 12 pivoted in the guide 6, around a grooved friction pulley 13 (see Fig. 13) pivoted in a lever 14, through a needle clamp guide 15 and finally through the eye of the needle

16. The levers 11 and 14 adapted to be reciprocated in one and the same vertical plane, are pivoted upon studs 17 and 18, screwed into the head of the machine, and provided with integral arms 19 and 20, upon the ends of which friction rollers 21 and 22 are mounted upon studs 23 and 24. The rollers 21 and 22 engage horizontal slots 25 and 26 formed in a vertically reciprocating bar 27 mounted in guides 28 and 29 and receiving its movement from the driving wheel 30 by means of a shaft 31 connected to a disk 32 by a crank 33 and pin 34 of usual construction. The disk 32 is secured to a shaft 35 provided at its other end with a second disk 36 having a pin 37 and a friction roller 38 engaging a curved slot 39 formed in a lever 40 pivoted to the end of the machine upon a stud 41. A friction roller 42 mounted upon a stud 43 projecting from the lever 40 engages a fork 44 formed upon the bar 27. The rotation of the pin 37 reciprocates the lever 40, the pin 43 of which reciprocates the bar 27, and at the same time oscillates the levers 11 and 14.

The undergear is operated by a shaft 48 which derives its motion from the shaft 31 by means of a crank 49, connecting rod 50 and crank 51. These parts 48, 49, 50 and 51 are of usual construction, the connecting rod being fulcrumed and slidable upon a fixed stud 52 in a well known manner. Upon the end of the shaft 48 a miter pinion 53 is secured, and gears with another miter pinion 54, secured upon a vertical spindle 55 mounted in bearings 56 and 57 of a bracket 57^a.

A rotating carrier 58 integral with the spindle 55, has an upper hook 59 adapted to enter a loop 60 formed in the upper thread 1 in the ordinary way, and has a catch 61 projecting from its circumference. This carrier 58 has a second hook 62 near its base 63, also adapted to enter the loop 60 after the said loop has been spread in a manner hereinafter described. The base 63 has a rim 64 provided with a gap 65 in front of the hook 62 and with an internal groove 66.

A spool receiver 67 cylindrical in shape and closed by an integral bottom 68 is closed at the top by a removable cover 69. A central pin 70 integral with the bottom 68 is adapted to receive an ordinary spool 71 of thread. A circumferential rib 72 upon the

outside of the spool receiver 67 fits the groove 66, whereby the carrier 58 is free to rotate, while the spool receiver is held from rotating by an integral lug 74 which is held stationary in a slot 75 provided on the underside of the needle plate 76 or other convenient part of the machine. A portion 77 of the rim 64 is removable and is normally secured in position by a screw 78.

When it is desired to take the spool receiver out of the rotating carrier the portion 77 is removed and the receiver withdrawn laterally. The spool receiver is provided with a tension 77^a consisting of a flat spring secured by screws 78^a, and with tension holes 79, 80, and 81. The circumferential rib 72 has a portion cut away and is formed into a hook 82 for engaging the upper thread during the rotation of the carrier 58, and a notch 83 is made in the said rib 72 at a distance from the hook 82 for the purpose of retaining the thread if by any accidental circumstance the hook 82 shall have failed to operate.

The loop spreading mechanism consists of a thread hook 85 clamped by a screw 86 and washer 87 upon the end of a lever 88 fulcrumed upon a pin 89 of a link 90 pivoted by a pin 91 to a horizontal bracket 92 clamped to the bracket 57^a by a screw 95 and adjustable horizontally and vertically by slots 93 and 94 formed in the brackets 92 and 92^a respectively. The lever 88 is operated by a pin 96 projecting from a crank 97 fixed upon the end of a shaft 98 mounted in the bracket 57^a, the other end of the said shaft being provided with a grooved crank 99 fitted with a sliding block 100 mounted upon one end of a connecting rod 101, the other end of which is attached to a crank 102 formed in the shaft 48. The rod 101 has a slot 103 through which a stud 104 passes. When the shaft 48 rotates in the direction shown by the arrow in Fig. 2, the shaft 98 is rotated in the opposite direction.

In operation the needle 16 (see Fig. 5) descends through and forms a loop 60 below the material to be sewn in the usual manner. When the needle has arrived at its lowest position the upper hook 59 and the loop spreading hook 85 enter the loop 60. The thread hook 85 is made to descend by the rotation of the crank 97. (see Fig. 6) and spreads the loop 60 until it is caught by the lower hook 62 of the carrier 58 (see Fig. 7) which rotating continuously withdraws the loop 60 free from the thread hook 85 (see Fig. 8). The outer part of the loop is caught by the catch 61 as shown in Figs. 7 and 8, and the inner part of the loop, shown by a dotted line in Fig. 8 is caught upon the hook 82 and thereby retained while the catch 61 carries the outer part of the loop around the spool receiver 67 to form a lock with the thread 108 of an

ordinary spool 71 located in the spool receiver. The taking up of the large loop formed in the above manner is effected by the levers 11 and 14 which rapidly spread apart to the position shown in Fig. 3 immediately the loop 60 of thread is free to escape through the space formed by cutting away a portion of the circumferential rib 72 to form the hook 82. While the catch 61 is carrying the outer part of the loop around the spool receiver, the levers 11 and 14 slowly approach the guide 6 and pay out the thread. This slow approach of the levers is effected by curving the slot 39 of the lever 40 as shown in Fig. 3, to counteract somewhat the circular motion of the pin 37 which travels in the direction shown by the arrow, also by the raising of the lever 40 being effected while the pin 37 is remote from the pivot 41. The rapid spreading apart of the levers 11 and 14 is effected by the pin 37 depressing the lever 40 when the said pin is at or near the end of the slot 39 adjacent to the pivot 41. As the thread, after leaving the spreading hook 85 has a tendency to fly off the lower hook 62 during the rotation of the carrier 58, a guard 110 having a projecting member 111 is fixed to the bracket 57^a and approaches closely to the rotating carrier. The slack of the thread flies out by centrifugal force and strikes the member 111 and is afterward drawn behind the guard by the rotation of the carrier without leaving the hook 62.

What I do claim and desire to secure by Letters Patent of United States is:—

1. The herein described improvement in sewing machines, comprising a rotating carrier having upper and lower hooks and a catch projecting from its circumference, a stationary spool receiver within the carrier provided with a supporting flange fitting a groove formed in the carrier, and means for rotating the carrier, substantially as set forth.

2. The herein described improvement in sewing machines, comprising a rotating carrier having upper and lower hooks and a catch projecting from its circumference, a stationary spool receiver within the carrier, a pivoted link, a lever fulcrumed upon the link, a shaft provided with a crank, a pin pivoting the lever to the crank, a thread hook secured to the end of the lever, means for rotating the carrier, and means for rotating the shaft, substantially as set forth.

3. The herein described improvement in sewing machines, comprising a link, a horizontal bracket to which the link is pivoted and having a horizontal slot, a bracket having a vertical slot, a screw passing through both slots and clamping the horizontal bracket to the vertical bracket, a lever fulcrumed upon the link, a shaft provided with a crank, a pin pivoting the lever to

the crank, a thread hook secured to the end of the lever, and means for rotating the shaft, substantially as set forth.

4. The herein described improvement in
5 sewing machines, comprising a pivotally
supported link adapted to be adjusted ver-
tically and horizontally and secured in any
adjusted position, a lever fulcrumed upon
the link, a shaft having a crank pivotally
10 connected with the lever, a thread hook car-

ried by the lever, and means for rotating the shaft.

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

WILLIAM JOSEPH BUTLER.

Witnesses:

A. L. FERNEYHOUGH,
E. F. COURTNEY.