

954,847.

W. T. AUCKRAM.
SEWING MACHINE.
APPLICATION FILED NOV. 2, 1908.

Patented Apr. 12, 1910.

3 SHEETS—SHEET 1.

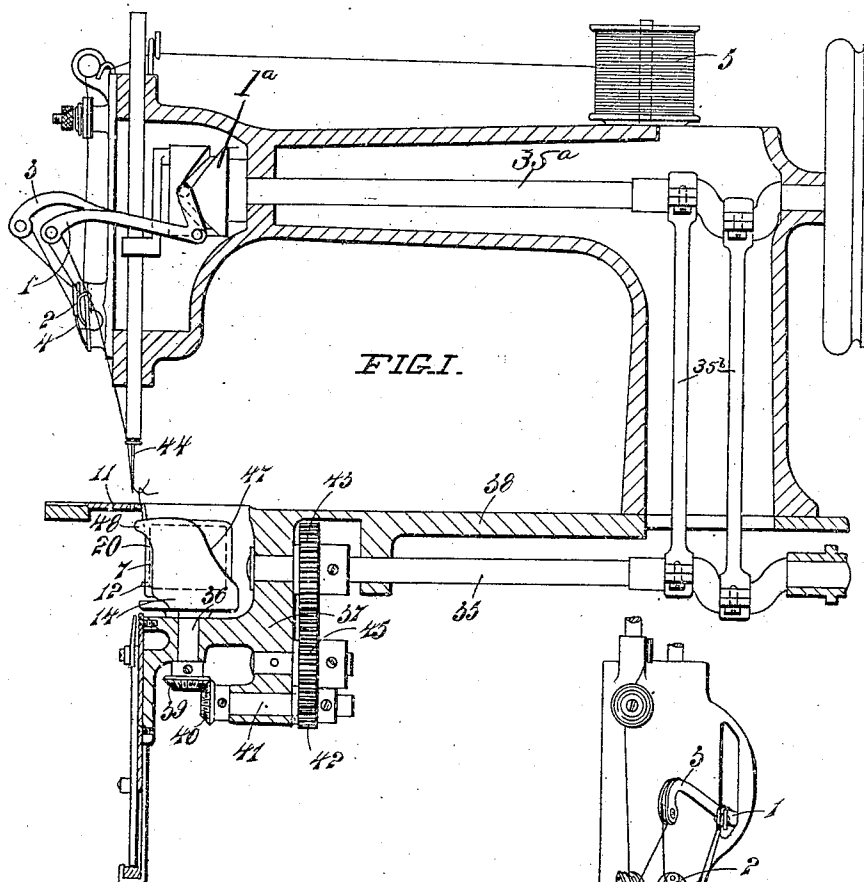


FIG. 1.

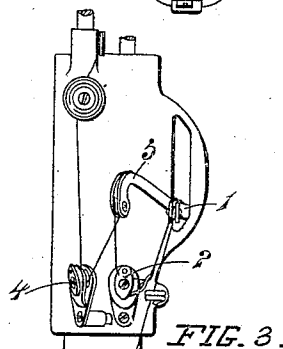


FIG. 3.

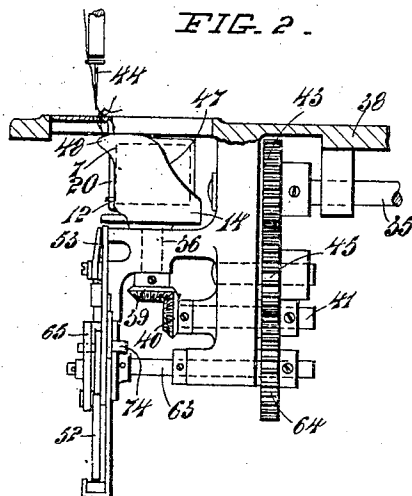
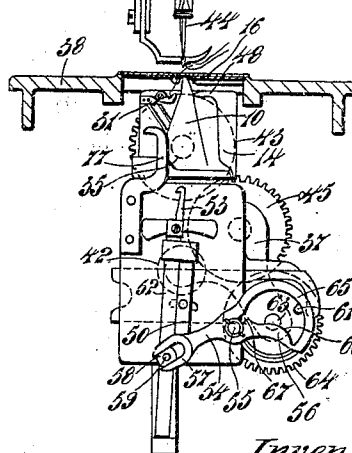


FIG. 2.



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FIG. 5.

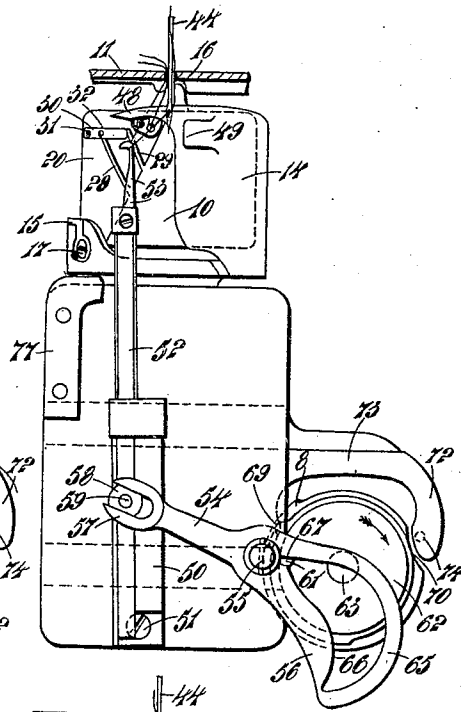


FIG. 7.

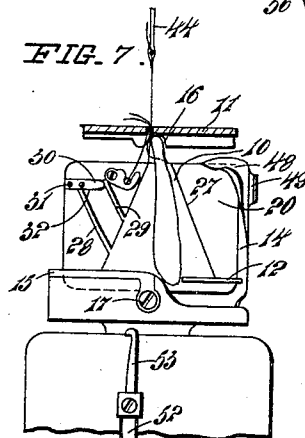
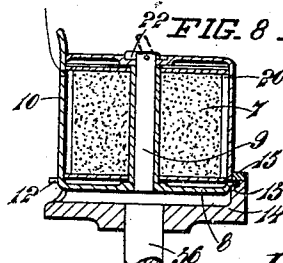


FIG. 8.



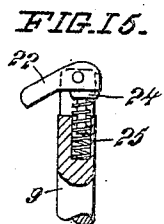
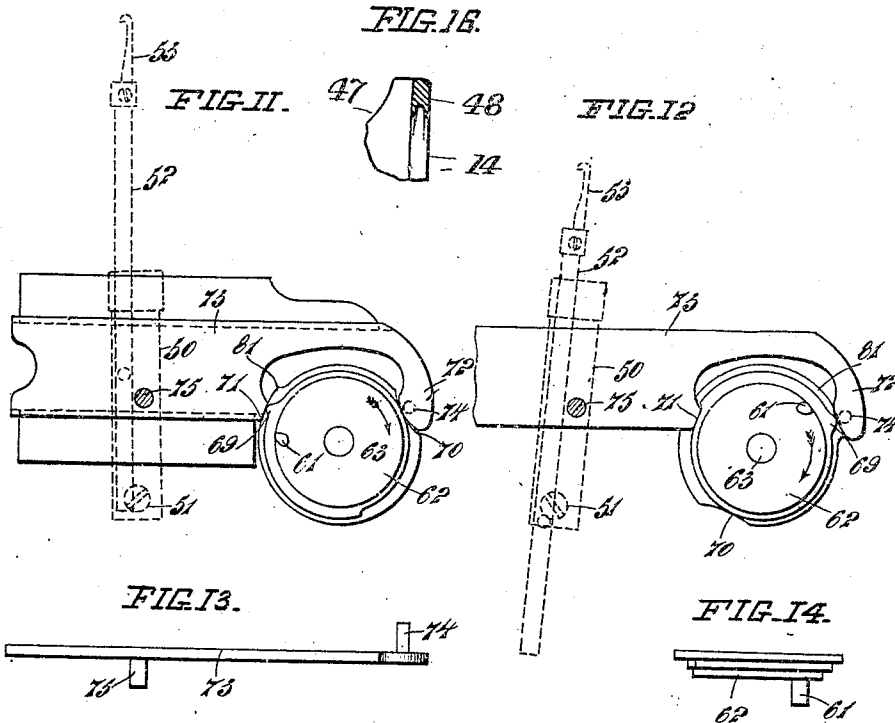
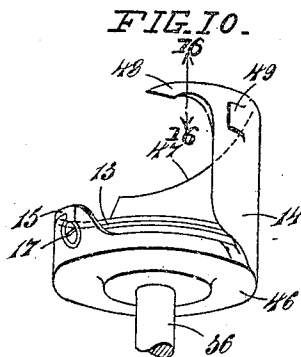
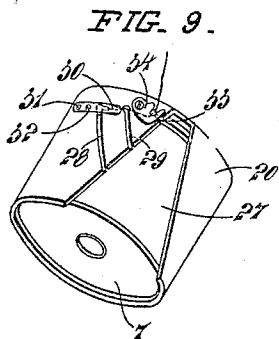

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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

WILFRID THOMAS AUCKRAM, OF OTAHUHU, AUCKLAND, NEW ZEALAND.

SEWING-MACHINE.

954,847.

Specification of Letters Patent. Patented Apr. 12, 1910.

Application filed November 2, 1908. Serial No. 460,674.

To all whom it may concern:

Be it known that I, WILFRID THOMAS AUCKRAM, a subject of His Majesty the King of Great Britain and Ireland, residing at Otahuhu, 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 sewing machines in which the lower thread is drawn from a reel corresponding to the reel from which the upper thread is derived.

The invention consists of improvements in certain mechanical devices arranged to produce the results hereinafter fully specified, the points of novelty being designated in the claims concluding this specification.

The drawings, together with the description of them, illustrate the form my invention may assume.

Figure 1, is a longitudinal sectional elevation of a machine embodying the invention, Fig. 2, is a longitudinal elevation of undergear, Fig. 3, an end elevation thereof, Figs. 4, 5, 6, and 7 end elevations of undergear, Fig. 8, a sectional elevation of a reel case and attached parts, Fig. 9, a perspective view of a reel case and reel, Fig. 10, a perspective view of a rotary looper, Figs. 11, and 12, elevations of a compound cam and slide, Fig. 13, a plan of a horizontal slide, Fig. 14, a plan of a compound cam, Fig. 15, a sectional elevation of a stem and spring catch. Fig. 16 is a detail sectional view on the line 16-16 of Fig. 10.

A loop is made in the upper thread large enough to pass around a reel case containing a reel of thread, and to permit of this operation the take up lever is duplicated.

Referring to the drawing, to a take up lever 1 and its tension 2 of usual construction, is added an arm 3 branching from the said lever and operating in conjunction with a second tension 4. The take-up lever is vibrated by the action of a cam 1^a on a driving shaft 35^a. Suitable cranks on this shaft are connected by links 35^b with cranks on the main shaft 35 of the machine. The quantity of thread drawn from the reel 5 by the lever 1 and its arm 3 is considerably greater than the quantity which is drawn in the ordinary way when the arm 3 is not employed.

Referring now to the undergear, a reel 7

similar to the reel 5 is supported upon a reel case consisting of a dished plate 8, a vertical stem 9 fixed centrally to the plate, and a vertical retainer 10 having its upper end adapted to engage a notch 16 in the work plate 11 and thus prevent the reel case from rotating. The reel case is supported by its rib 12 in the race 13 of a rotating looper 14, a cap 15 above the said rib preventing the reel case from rising, part of the said cap being removable and held by a screw 17. The end of the rib 12 forms a hook 18, and other hooks 19 are formed by notching the rib for the purpose of engaging the upper thread. The reel case has a cap 20 nearly surrounding the reel 7 and held in position by a catch 22 pivoted to the top of the stem 9 and operated by a plunger 24 and a spring 25. The catch 22 prevents the cap from rising until the said catch is raised to the position shown by dotted lines in Fig. 8. A gap 27 in the cap is filled by the retainer 10 of the reel case. Slots 28 and 29 are formed in the cap, the top of the slot 28 being covered by a flat spring 30 held by screws 31 in a groove 32 formed in the cap. A third slot 33 formed in the cap is covered by a guard 34. These slots and the guard are similar to the usual construction of such parts.

The rotating looper 14 (see more particularly Fig. 10) is fixed to or integral with a vertical spindle 36 mounted in a bracket 37 (see Figs. 1 and 2) secured to the base 38 of the machine. Rotary motion is imparted to the spindle and looper by miter wheels 39 and 40 fixed respectively to the spindle 36 and a horizontal spindle 41, and by toothed wheels 42 and 43 secured respectively to the spindle 41 and the main shaft 35 of the machine, both toothed wheels gearing with an idle wheel 45. The wheels are geared to rotate the looper twice for each stroke of the needle 44.

The looper 14 comprises a circular base from which rises an irregular shaped rim terminating at its highest part in a hollow hook 48. Behind this hook 48 is a second hook 49 projecting from the circumference of the rim 47.

Below the rotating looper 14 is pivoted a slide 50 upon a stud 51 secured to the bracket 37. A bar 52 adapted to be reciprocated in the slide 50 carries at its upper end a loop making hook 53, and is operable by a combined lever 54 and cam 56 pivoted upon a stud 55 secured to the bracket 37. A jaw 57

upon the lever 54 engages a slide block 58 pivoted by a stud 59 to the slide bar 52. The lever 54 and cam 56 are oscillated by a pin 61 projecting from a compound disk cam 62 fixed to a shaft 63, which is rotated by a toothed wheel 64 gearing with the idle toothed wheel 45, the ratio of the teeth being such that the hook 53 operates once to each operation of the needle 44.

The cam 56 consists of a perforated enlargement, so shaped that when the pin 61 is traveling along the curved part 65 of the perforation, no motion is imparted to the jaw 57, and when the said pin travels along the curve 66, the jaw 57 raises the hook 53 until the pin enters the recess 67 when a quick return action is imparted by the lever to the said hook 53.

The compound disk cam 62 (see Figs. 11 and 12) has a projection 69 at one part of its circumference and a recess 70 at another part thereof. The projection is adapted to engage a shoulder 71 of a slide 73, at the same time that a pin 74 projecting from the tail 72 of the said slide is opposite the recess 70. A pin 75 fixed to the slide 73 projects through a slot 76 in the bracket 37 and enters a hole in the slide 50. When, therefore, the projection 69 operates the slide 73, the slide 50 is oscillated to the position shown in Fig. 5. The part 81 of larger diameter of the cam 62 is adapted to contact with the pin 74 for the purpose of oscillating the slide 50 to the position shown in Fig. 12. A loop guard 77 (see Fig. 3) fixed to the bracket 37 extends upwardly at the side of the looper 14.

The parts operate as follows:—When the needle 44 has descended to the position shown in Fig. 4, the take up lever 1 and its arm 3 commence to descend to supply thread for forming a loop around the reel case in a manner well known in sewing machine operations. The hook 48 of the looper 14 enters the loop formed in the thread at the back of the needle 44, and the loop spreading hook 53 enters the cavity of the said hook 48. The projection 69 of the compound disk cam next contacts with the shoulder 71 and operates the slide 73 to throw the hook 53 forward to the position shown in Fig. 5. At the same time the lever 54 and cam 56 cause the hook 53 to descend in its slide 50 until it reaches the position shown in Fig. 6, dragging down the thread and forming a loop 79, the outer part 78 of which is caught by the hook 49, the part 80 of the loop within the looper being retained by the hook 18 or one of the hooks 19, the guard 77 causing said part to move into position to be carried into said hook by the rotation of the looper. The guard 77 is provided to insure the engagement of the hooks 18 or 19 with the loop. The centrifugal force due to rotation of the

looper, might cause the loop to move outwardly and into a position where it would not be engaged by one of said hooks if the guard 77 were omitted. The part 78 of the loop is carried around the reel case by the hook 49 while the part 80 is held by the hook 18, and just prior to the reel case completing its revolution, the take up lever 1 tightens the thread and casts it off the hook 49, a complete lock stitch being the result. The part 81 of larger diameter upon the cam 62 contacts with the pin 74 to draw back the slide 73 and bring and retain the hook 53 in the sloping position shown in Fig. 12, the shoulder 71 receding against the smaller diameter of the cam. The hook 53 is thus ready to be projected by the lever 54 accurately into the hollow of the hook 48, where it is ready to renew the cycle of operations.

No claim is herein made to the construction of the take-up lever and means for operating the same, illustrated and described, as the same forms the subject of a divisional application, Serial No. 503,898, filed June 23, 1909.

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

1. In a sewing machine, a looper comprising a circular base, a spindle integral with the base, an irregular rim rising from the base and terminating in a grooved hook, a second hook behind the first hook, a reel case race, and means for rotating the looper, as set forth.

2. In a sewing machine, the combination of a work-plate, a reel case comprising a dished-plate, a vertical central stem, and a vertical retainer engaging a notch in the work-plate, a rotating looper having a groove receiving a rib upon the reel case, an irregular shaped rim which terminates at its highest point in a grooved hook, and a second hook behind the first said hook and projecting from the circumference of said rim, and a cap arranged within the rim of the looper and having a gap receiving the vertical retainer on the reel case.

3. In a sewing machine, a loop spreading hook, a bar carrying the hook, a pin projecting from the bar, a pivoted slide receiving the bar, a combined lever and cam reciprocating the hook, there being a jaw upon the lever, and a slide block engaged by the jaw and fitting the pin on the bar, as set forth.

4. In a sewing machine, a loop spreading hook, a bar carrying the hook, a pivoted slide receiving the bar, a combined lever and cam reciprocating the hook, and a cam having a projecting pin engaging the aforesaid cam, as set forth.

5. In a sewing machine, a loop spreading hook, a bar carrying the hook, a pivoted slide receiving the bar, a horizontal slide having a projecting pin engaging the piv-

oted slide, and a compound cam engaging the horizontal slide, as set forth.

6. In a sewing machine, the combination of a loop spreading hook, a pivotally mounted slide supporting said hook, a horizontal slide engaging said pivoted slide, a cam adapted to reciprocate said horizontal slide, and means actuated by said cam for reciprocating the spreading hook on the pivoted slide.

7. In a sewing machine, a loop spreading hook, a bar carrying the hook, a pivoted slide receiving the bar, a horizontal slide having a projecting pin engaging the pivoted slide, and a compound cam having a projection, a recess and a part of larger diameter engaging the horizontal slide, as set forth.

8. In a sewing machine, a loop spreading hook, a bar carrying the hook, a pivoted

slide receiving the bar, means for reciprocating the bar in the slide, a horizontal slide having a projecting pin engaging the pivoted slide, and a compound cam engaging the horizontal slide, as set forth.

9. In a sewing machine, a loop spreading hook, a bar carrying the hook, a pivoted slide receiving the bar, a combined lever and cam reciprocating the hook, a horizontal slide having a projecting pin engaging the pivoted slide, and a compound cam engaging the horizontal slide, as set forth.

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

WILFRID THOMAS AUCKRAM.

Witnesses:

JAMES HENRY MACKIE,
THOMAS MARSHALL JOHNSTONE.