

E. J. BOYLER.
 SEWING MACHINE RUFFLER.
 APPLICATION FILED JAN. 12, 1911.

1,011,908.

Patented Dec. 19, 1911.

FIG. 1.

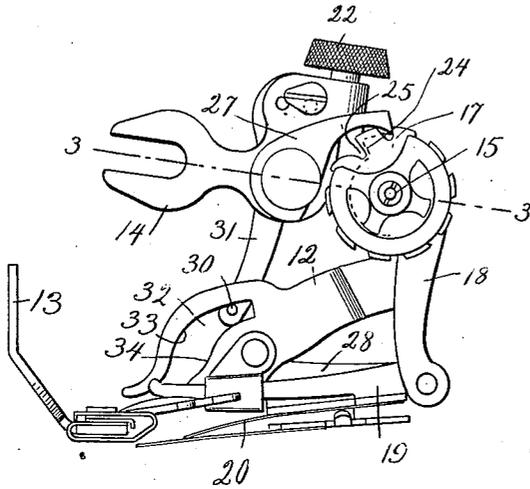


FIG. 4.

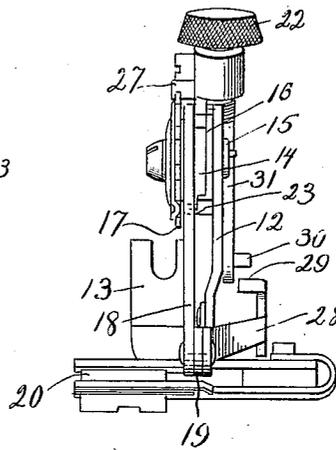


FIG. 2.

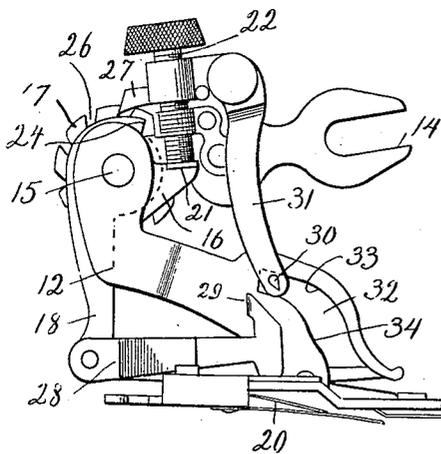


FIG. 5.

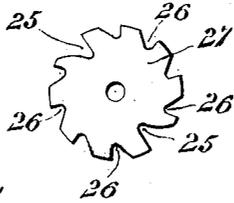
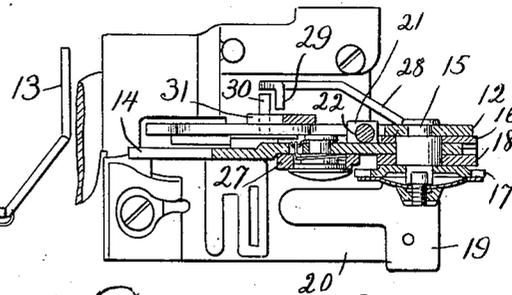


FIG. 3.



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UNITED STATES PATENT OFFICE.

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SEWING-MACHINE RUFFLER.

1,011,908.

Specification of Letters Patent.

Patented Dec. 19, 1911.

Application filed January 12, 1911. Serial No. 602,337.

To all whom it may concern:

Be it known that I, EMANUEL J. BOYLER, a citizen of Canada, residing at New Haven, in the county of New Haven and State of Connecticut, have invented or discovered certain new and useful Improvements in Sewing-Machine Rufflers, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to that class of sewing machine rufflers in which the ruffling blades are operated from the needle-bars of the machines in such a manner that the forward strokes of the ruffling blades are effected during the upward movements of the operating levers connected with the needle-bars of the sewing machines, and in which the backward movements of the ruffling blades take place during the downward movements of the needle-bars.

In some sewing machines as now made the take-ups are so timed as to complete their stitch-tightening movements after the needle-bars have commenced their downward movements. In the operation of sewing machine rufflers for such machines it is desirable that the extreme forward throws of the ruffling blades should occur simultaneously with or immediately after the take-ups have completed their stitch-tightening movements, and when the needle thread is held somewhat taut; as otherwise the ruffling operations cannot be performed in the best manner.

To this end the present invention comprises certain improvements in rufflers of that class in which the forward strokes of the ruffling blades are effected at the upward movements of the operating levers connected with the needle-bars of the machines, and the invention has for its object to provide means whereby, after the main forward movement of a ruffling blade has been effected during the upward movement of the operating lever with a sewing machine needle-bar, a slight additional forward movement may be imparted to the ruffling blade during the first part of the downward movement of the operating lever with the needle-bar, while the backward movement of the ruffling blade will be effected during the last part of the downward movement of the operating lever with the needle-bar. By thus changing the timing of the ruffling blade the ruffler will be best adapted

for cooperation with a sewing machine in which the take-up completes its stitch-tightening movement after the needle has commenced to descend for the next succeeding stitch.

In the accompanying drawings Figures 1 and 2 are opposite side views of a sewing machine ruffler embodying the present invention. Fig. 3 is a plan view of the same, partly in section, on line 3—3, Fig. 1, and Fig. 4 is a rear view of the ruffler. Fig. 5 is a detail view of the ratchet wheel.

The present invention is herein shown as being applied to a "five-stitch" ruffler such as that shown and described in the Greist and Beckert Patent No. 983,048, dated Jan. 31, 1911, but it will be understood that this invention may be embodied in other kinds of rufflers than the five-stitch ruffler referred to, and in which a ruffle or gather may, at the will of the operator, be made at each stitch, or at each stroke of the needle-bar, or, where it is desired to make larger plaits or gathers, a single plait or gather may be made at each five stitches of the machine, or at each five strokes of the needle-bar.

Referring to the drawings, 12 denotes the body of the frame of the ruffler, and which frame is preferably provided with an integral attaching portion or shank 13 by which it may be secured to the presser-bar of a sewing machine in substitution of an ordinary presser-foot. The forked operating lever 14 is pivotally mounted on a stud 15 riveted to an upright portion of the frame 12. Also pivotally mounted on the said stud are an oscillating plate 16, a ratchet-wheel 17 and a pendulous or secondary lever 18, the latter being jointed at its lower end to the carrier 19 of the ruffling blade 20. The oscillating plate 16 is provided with a projection 21 engaged by an adjustable regulating screw 22 mounted on the operating lever 14, said oscillating plate having a projection or shoulder 23 adapted to engage a front upper portion of the said pendulous lever for effecting the backward or retractive movements of said lever and of the ruffling blade connected therewith. The regulating screw 22 permits, according to its position of adjustment, of more or less lost motion between the operating lever 14 and the oscillating plate 16, so that any desired length of stroke may be imparted to the ruffling blade from said operating lever.

The pendulous lever 18 is provided at its top with a shoulder 24 and the ratchet-wheel is provided with two relatively deep notches 25 between each of which, in the
 5 form of the invention herein shown, are four relatively shallow notches 26, the said ratchet-wheel being engaged by a spring-pressed pawl 27 mounted on the operating lever 14.

10 The parts thus far described are, or may be, the same as the corresponding parts of the ruffler in said patent No. 983,048, hereinbefore referred to, and in which ruffler the entire forward movement of the ruffling
 15 blade is effected during the upward movement of the forked operating lever 14 operated from the needle-bar of the sewing machine. In the present improved ruffler an arm 28 is rigidly attached to the ruffling
 20 blade carrier 19, said arm being provided with an inwardly projecting finger 29 arranged to be engaged by a pin 30 at the lower end of a swinging arm 31 pivotally attached at its upper end to a portion of the
 25 operating lever 14, said pin projecting on both sides of said arm. The frame 12 of the ruffler is provided with an opening 32 into which the said pin 30 extends, the said opening 32 having an upper cam-formed
 30 portion or edge wall 33 and a lower cam-formed portion or edge wall 34.

With the ruffler constructed as above described the main part of the forward stroke of the ruffling blade will be effected during
 35 the upward movement of the forked operating lever with the needle-bar of the machine. During this upward stroke of the operating lever the pin 30 will be in contact with the guiding cam-formed upper wall
 40 33 of the opening 32, thereby causing the pivoted arm 31 to swing backward in such a manner as to bring the said pin somewhat above and rearward of the inwardly-projecting finger 29 of the arm 28 rigidly
 45 attached to the ruffling blade carrier 19. As there is always more or less lost motion between the operating lever 14 and the pendulous or secondary lever 18 the ruffling blade will not be retracted until the said
 50 operating lever has completed a considerable portion of its downward movement. During the initial part of the downward movement of the operating lever 14 with the needle-bar the take-up of the machine
 55 may complete its stitch-tightening movement before the pin 30 on the pivotally mounted or swinging arm 31 engages the finger 29 on the rigid arm 28; but just as this stitch-tightening movement of the take-up has been effected, and when the said pin
 60 30 engages the said finger 29, the lower cam-formed edge portion 34 of the opening 32 with which the said pin 30 is now in engagement, will cause said pin to act on the
 65 said finger and thereby force the ruffling

blade forward slightly, thus completing its forward stroke at the time or just after the take-up has tightened the stitch, and while the needle-thread is somewhat taut. After the pin 31 descends clear of the finger 29
 70 the continued movement of the operating lever causes the ruffling blade to be retracted in its usual manner; and during the upward movement of the operating lever 14 the pin 30 will be in contact with the guiding cam-formed upper edge 33 in the opening 32 so as to carry the said pin and the swinging arm 31 backward in position for a new operation.

From the foregoing it will be apparent
 80 that the present improvement provides means whereby the final forward throw of a ruffling blade may be effected during the first half of the downward movement of the operating lever, the main portion of the
 85 forward movement of said ruffling blade being effected during the upward movement of the said operating lever with the said needle-bar, and the backward or retractive movements of the ruffling blade being effected during the latter part of the downward
 90 movement of the operating lever with the needle-bar. By thus effecting the extreme forward throw of the ruffling blade during the early part of the downward movement of the operating lever with the needle-bar,
 95 and just as or immediately after the take-up has completed its stitch-tightening movement, the ruffling operation may be effectively and properly performed with a much lighter tension on the needle thread than would otherwise be required; so that in
 100 changing from plain stitching to ruffling perfect ruffling may be done with as light a tension on the needle thread as can be properly employed in doing any kind of sewing.

The invention is not to be understood as being limited to the details herein shown and described as these may be varied widely
 110 without departing from the essence of the invention.

Having thus described my invention I claim and desire to secure by Letters Patent:

1. In a sewing machine ruffler, the combination with a ruffling-blade and its carrier, of an operating lever connected therewith so as to impart a forward movement to said blade on the upward movement of said lever with the needle-bar of the machine, and means for imparting an additional forward movement to said ruffling-blade during the first part of the downward movement of said lever.

2. In a sewing machine ruffler, the combination with a ruffling-blade and its carrier, of an operating lever connected therewith so as to impart a forward movement to said blade on the upward movement of said lever with the needle-bar of the ma-
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chine, and means for imparting an additional forward movement to said ruffling-blade during the first part of the downward movement of said lever, said means comprising an arm pivotally attached to said operating lever and an arm movable with the ruffling blade carrier and with which arm said first-named arm coöperates.

3. In a sewing machine ruffler, the combination with a ruffling blade and its carrier, of an operating lever connected therewith so as to impart a forward movement to said blade on the upward movement of said lever with the needle-bar of the machine, and means for imparting an addi-

tional forward movement to said ruffling-blade during the first part of the downward movement of said lever, said means comprising an arm pivotally attached to said operating lever and provided with a pin, an arm movable with the ruffling blade carrier and having a portion engaged by said pin, and controlling cam portions on the ruffler frame also engaged by said pin.

In testimony whereof I affix my signature, in presence of two witnesses.

EMANUEL J. BOYLER.

Witnesses:

P. R. GREIST,
HUBERT M. GREIST.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."