(Model.) 2 Sheets—Sheet 1.

J. M. GRIEST.

RUFFLING ATTACHMENT FOR SEWING MACHINES.

No. 394,972. Patented Dec. 25, 1888.

FIG. 1.

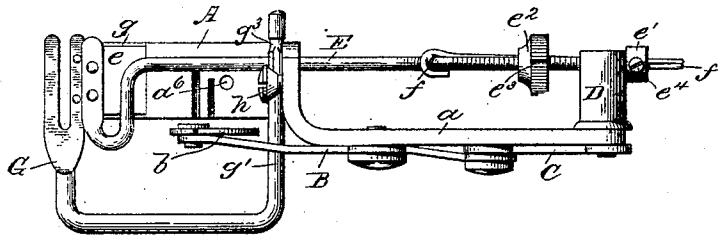


FIG. 2.

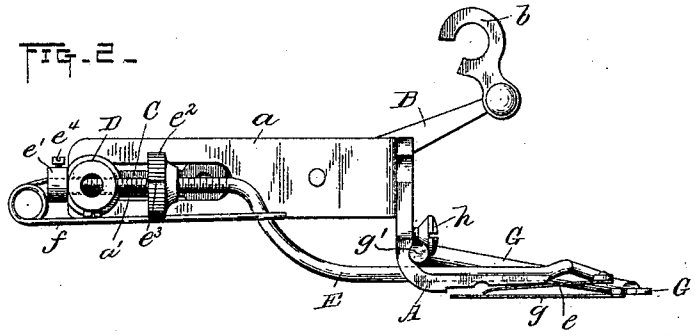


FIG. 3.

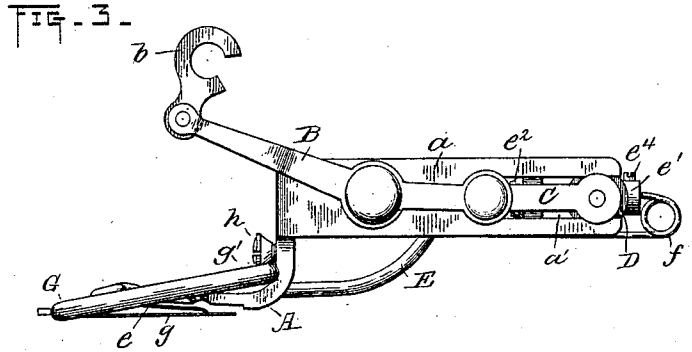
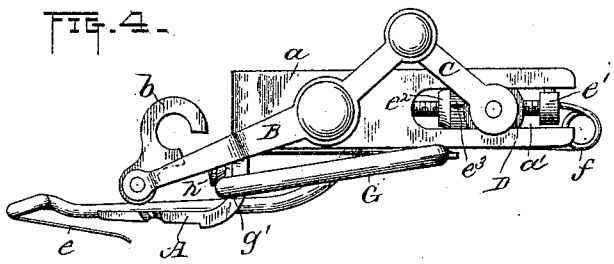


FIG. 4.



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(Model.) 2 Sheets—Sheet 2.

J. M. GRIEST.

RUFFLING ATTACHMENT FOR SEWING MACHINES.

No. 394,972. Patented Dec. 25, 1888.

FIG. 5.

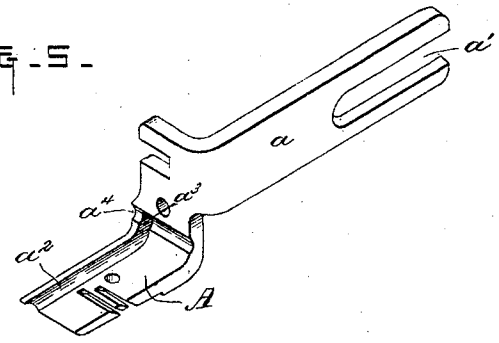


FIG. 6.

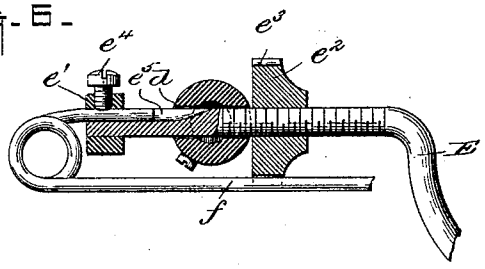


FIG. 7.

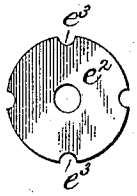


FIG. 8.

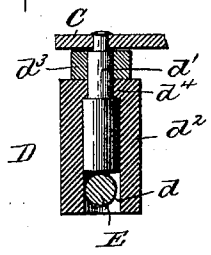


FIG. 9.

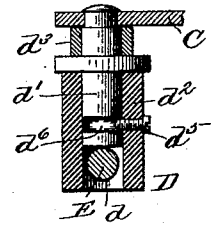
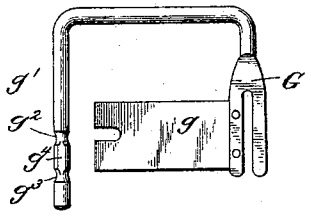


FIG. 10.



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UNITED STATES PATENT OFFICE.

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RUFFLING ATTACHMENT FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 394,972, dated December 25, 1888.

Application filed May 21, 1888. Serial No. 274,560. (Model.)

To all whom it may concern:

Be it known that I, JOHN M. GRIEST, a citizen of the United States, residing at Bayonne, (Bergen Point,) in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Sewing-Machine Rufflers, of which the following is a specification, reference being had therein to the accompanying drawings.

The object of my invention is to provide a sewing-machine ruffler of simple construction, adapted to apply the power to the best possible advantage, so that there will be a strong leverage at the moment when the ruffling-blade is about completing its forward stroke to finish a gather, and thereby cause as little drag as possible on the needle-bar, and also to provide a simple and efficient ruffler, the parts of which are mostly behind the needle of the machine, so as to be out of the way of the operator as much as possible.

In the drawings, Figure 1 is a plan view of my improved ruffler. Fig. 2 is an outer side view thereof. Figs. 3 and 4 are inner side views, with the parts in different positions. Fig. 5 is a detail perspective view of the foot and supporting-frame of the attachment. Fig. 6 is a detail view of a part of the shank of the blade-carrier and parts connected therewith. Fig. 7 is a detail view of the adjustable nut or stop on the blade-carrier. Fig. 8 is a detail sectional view of the slide connecting the blade-carrier with its operating-link. Fig. 9 represents a modification of the same. Fig. 10 is a detail view of the separator-plate and its shank or holder.

The supporting-frame of the attachment consists of a presser-foot portion, A, the shank or upright part of which is provided with a rearwardly-extending arm, *a*, having a guiding slot, *a'*, for the reception of the blade-carrier-operating slide D.

B is the operating-lever pivoted between its ends to the arm *a* rearward of the foot, the rear arm of the said lever being connected by the link C with the said slide D.

E is the blade-carrier guided in a groove, a^2, in the foot A, and *e* is the ruffling-blade attached to the front end of said carrier. The shank or rear portion of the blade-carrier passes loosely through a hole, *d*, in the slide D, and is threaded for the reception of the screw nuts or stops *e'* and e^2 on opposite sides of the said slide. If the said stops be so adjusted that the distance between them is only equal to the diameter of the slide, of course the full throw of the slide will be imparted to the blade-carrier; but if the said stops be so adjusted that their distance apart is greater than the diameter of the said slide there will be more or less lost motion between the latter and the blade-carrier, and the throw of the said carrier and of the ruffling-blade attached thereto will be less than the throw of the slide, as will be obvious.

The nut or stop *e'* is intended in use to be fixed, and the throw of the ruffling-blade will therefore be varied by adjusting the nut or stop e^2 toward or from the former stop to cause more or less lost motion of the slide. To retain the stop-nut e^2 in any position to which it may be adjusted, I preferably provide the said nut with one or more peripheral notches, e^3, for the reception of a wire-spring, *f*, which is attached to the carrier E by the set-screw e^4, tapped in the stop-nut *e'*, the end of said spring being received in a groove, e^5, in the rear end of the shank of said carrier, as shown in Fig. 6. The said spring is normally in engagement with the stop-nut e^2, but may be released from the said nut to permit the latter to be turned by a slight pressure of the finger of the operator.

The stop-nut e^2 need not necessarily be provided with the notches e^3, as the pressure of the spring *f* against the roughened or milled periphery of the said nut will prevent it from turning, although the notches, being more secure, are preferred.

The slide D consists, preferably, of a stud, *d'*, formed with two shoulders, as shown in Fig. 8, a sleeve, d^2, and an anti-friction roller, d^3, the hole *d* (through which the blade-carrier loosely passes) being made in the said sleeve. In assembling the parts the sleeve is first slipped over the stud until the angular lip d^4 of the former engages the larger shoulder of the latter. The anti-friction roller is next slipped into place and the end of the stud is then inserted in a hole of the link C

and riveted down slightly to retain the link and stud together.

In the modified form of slide shown in Fig. 9 the sleeve d^2 is retained on the stud d' by a small set-screw, d^5, the point of which is received in an annular groove, d^6, near the carrier end of the stud, the roller d^3 being between the shoulders near the other end of the stud. In both of these forms of slides the roller d^3 will have an easy fit between the upper and lower walls of the guiding-slot a' of the ruffler-frame, and thus lessen the friction between the said frame and the slide D.

Owing to the bend in the rear part of the shank or blade-carrier E, the hole a^3 in the foot A is made somewhat larger than the diameter of the said shank or carrier to enable the latter to be gotten into place in assembling the parts of the attachment. To retain the said shank or carrier in its guiding-groove a^2 in the foot A, the said foot is provided with a transverse groove, a^4, for the reception of the rear arm, g', of the holder G for the separator-plate g. The said holder, which is merely a bent piece of wire, is retained in place by a retaining-screw, h, tapped in the shank of the foot A, the said arm g' of the holder being provided with two small annular grooves, g^2 g^3, and a flattened portion, g^4, between said grooves.

When the separator-plate is in working position, the groove g^2 is beneath the head of the screw h, and the holder G is thus secured in place; but as the said screw does not tightly clamp the arm g' the holder may be turned around to the position shown in Fig. 4 to remove the separator-plate from working position when it is desired to use the ruffler for shirring; but before the said holder can be turned to the position shown in Fig. 4 it is necessary to move it laterally far enough to enable the separator-plate g to clear the blade-carrier E, and this lateral movement of the said holder is permitted by the flattened portion g^4 on the arm g', the holder being first partially turned to bring the said flattened portion opposite the screw h, then moved laterally to bring the groove g^3 beneath the head of the said screw, and then turned up to the position shown in Fig. 4. Thus the separator-plate may be thrown out of or into working position without disconnecting its holder from the attachment, and the annoyance and trouble which sometimes occur from the loss of parts which are removed in changing a ruffler from one kind of work to another are avoided.

By reference to Figs. 3 and 4 it will be seen that the link C and the rear portion of the operating-lever B form a toggle-joint, the two parts of which are brought into line with each other, as shown in Fig. 3, when the ruffling-blade is in its advanced position in making a gather, the said parts falling out of line, as shown in Fig. 4, when the said blade is retracted, the said toggle being so connected with the blade-carrier as to operate the latter positively in both directions. This arrangement of the toggle-joint is particularly desirable for the reason that the leverage of the toggle increases as the parts approach the position shown in Fig. 3, and this leverage or increased power is necessary when the gather is approaching completion, as at such time the strain on the ruffling-blade in forcing the gather under the presser-foot is the greatest.

It will be apparent that the above-described arrangement of the parts of the toggle-joint is secured by employing for an operating-lever a lever of the first class, (or a lever which has its pivotal point or fulcrum between its ends,) pivoting said lever rearward of the needle portion of the attachment, and connecting its rear arm with the blade-carrier or the operating-slide for the latter by a link. This arrangement of parts locates the blade-operating devices rearward of the needle or the needle portion of the attachment and out of the way of the operator.

The needle portion of the attachment is indicated by the needle-hole a^6 in the presser-foot and by the link b, by which the operating-lever is to be connected with the needle-bar. Of course it will be understood that the operating-lever might be forked, as is common, instead of being provided with the equally common link for connection with the needle-bar.

It will be understood that when the ruffler-separator plate is adjusted to its inoperative position, as in Fig. 4, and the ruffler is to be used for shirring, a separator-plate, work-plate, or throat-plate will be employed.

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

1. In a sewing-machine ruffler, the combination, with a supporting-frame and a blade-carrier provided at its forward end with a ruffling-blade, of a toggle formed by an operating-lever and a link, the said lever being pivoted between its ends to the said frame rearward of the presser-foot or needle part of the attachment, and the said link being pivotally attached at its forward end to the rear end of the said lever and having its rear end connected with the said blade-carrier, whereby the parts of the operating-toggle will be so arranged that they will straighten out or be brought into line when the ruffling-blade is advanced to complete a gather, and will fall out of line when the said blade is retracted, thereby affording the greatest leverage when the strain is greatest, as set forth.

2. In a sewing-machine ruffler, the combination, with a supporting-frame consisting of a foot portion provided with a rearwardly-extending arm having a guiding-slot and a blade-carrier provided with a ruffling-blade, of a transversely-extending slide, D, at right angles to the said arm and which is guided in said slot and connected with said blade-carrier, and a toggle formed by an operating-lever and a link, the said lever being pivoted

between its ends to the said frame, and the said link being jointed at its forward end to the rear end of the said lever and at its rear end to the said slide.

3. In a sewing-machine ruffler, the combination, with a supporting-frame consisting of a foot portion provided with a rearwardly-extending arm having a guiding-slot, of a blade-carrier provided at its forward end with a ruffling-blade and at or near its rear end with two stops, a transversely-extending slide, as D, guided in said slot and extending between said stops, and a toggle formed by an operating-lever and a link, the said lever being pivoted between its ends to the said frame, and the said link being jointed at its forward end to the rear end of the said lever and at its rear end to the said slide.

4. In a sewing-machine ruffler, the combination, with a ruffling-blade, of a blade-carrier having a portion of its shank screw-threaded, an adjustable stop-nut on said shank, a locking device, as spring *f*, to engage said stop-nut and hold it in place, and means for operating said blade-carrier.

5. In a sewing-machine ruffler, the combination, with a ruffling-blade, of a blade-carrier having a portion of its shank screw-threaded, operating mechanism for said carrier, the stop-nuts e' e^2, the latter provided with peripheral notches e^3, the spring *f*, to engage said notches, and the set-screw e^4.

6. In a sewing-machine ruffler, the combination, with a supporting-frame, a ruffling-blade, and operating mechanism for the latter, of the separator-plate, the bent holder G for said plate having the arm g', provided with the annular grooves g^2 g^3 and the flattened portion g^4, and the set-screw *h*.

7. In a sewing-machine ruffler, the combination, with the supporting-frame having the foot portion provided with the guiding-groove a^2, of the blade-carrier fitted to slide in said groove, the separator-plate holder G, having the arm g' above the said carrier to hold the latter in said groove, the set-screw *h*, to secure said holder in place, and operating mechanism for said carrier.

8. In a sewing-machine ruffler, the combination, with the supporting-frame, the blade-carrier, the ruffling-blade, and the operating-lever and link, of the slide D, consisting of the shouldered stud d', the sleeve d^2, having the hole *d*, and the anti-friction roller d^3.

9. A sewing-machine ruffler consisting of the combination of the supporting-frame, comprising the foot portion A and the rearwardly-extending arm *a*, having the guiding-slot a', the operating-lever B, pivoted to said arm rearward of the said foot, the link C, rearward of said lever, the slide D, movable in said slot, the blade-carrier E, having the ruffling-blade *e* at its front end and screw-threaded at its rear end, the stop-nuts e' e^2 on the threaded part or shank of said carrier, the spring for retaining the said stop-nut e^2 in adjusted position, the set-screw e^4, the separator-plate *g*, and the holder G.

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

JOHN M. GRIEST.

Witnesses:
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PHILIP DIEHL.