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Patented July 25, 1899.

W. M. AMMERMAN & E. J. TOOF.
RUFFLER ATTACHMENT FOR SEWING MACHINES.

(Application filed Mar. 26, 1897.)

(No Model.)

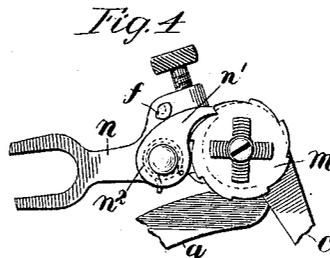
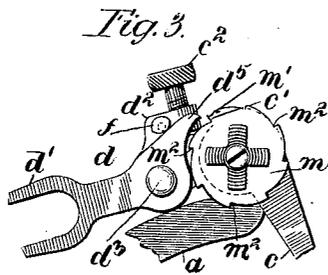
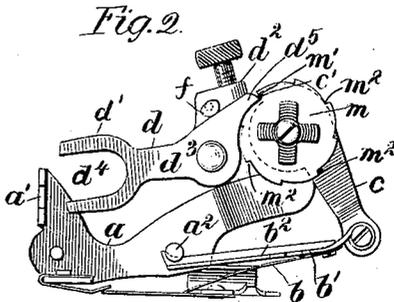
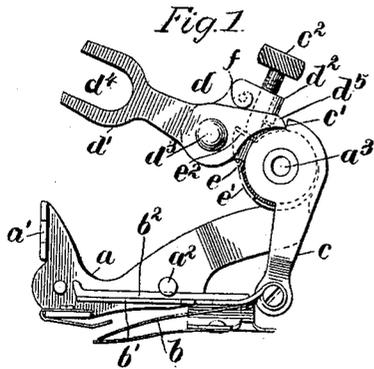


Fig. 5.

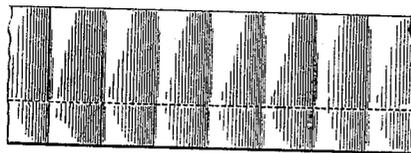


Fig. 6.



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RUFFLER ATTACHMENT FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 629,736, dated July 25, 1899.

Application filed March 26, 1897. Serial No. 629,326. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM M. AMMERMAN and EDWIN J. TOOF, citizens of the United States, and residents of the city and county of New Haven, State of Connecticut, have invented certain new and useful Improvements in Ruffler Attachments for Sewing-Machines, of which the following description, taken in connection with the drawings herewith accompanying, is a specification.

This invention relates to ruffling attachments for sewing-machines. In this class of attachments the ruffling-blade, which is operated from the needle-bar through the medium of intermediate connecting mechanism, is usually operated to make a plait in the goods at each upward stroke of the needle, which plait is stitched at the succeeding downward stroke of the latter. In this manner, although adjusting means are provided for regulating the stroke of the ruffling-blade, and thereby the width of the plaits, it will be understood that a plait is made at each operation of the needle-bar in the formation of a stitch and also that the distance between the plaits is regulated by the length of the stitch. In some classes of work, however, it is desirable to have a greater space between the plaits than that allowed by the longest stitch and at the same time to have the goods sewed independently of such space between the plaits, and it is the object of our present invention to provide a ruffling attachment having means whereby it may be readily adapted for either making a plait at each stitch of the sewing mechanism or only at certain predetermined times during the operation of such sewing mechanism, whereby any desired space may be had between the plaits and the length of stitch be regulated independently of such space. This object we secure by means of a construction and combination of parts embodying our invention, as hereinafter set forth in detail and pointed out in the claims.

Referring to the drawings, Figure 1 represents a side elevation of a ruffling attachment with one of the parts embodying our invention removed therefrom. Fig. 2 also represents a side elevation of the same with that

part detached from the device as shown in Fig. 1 in position thereon. Fig. 3 represents a detail view illustrating a different position of certain of the parts from that shown in Fig. 2. Fig. 4 represents a modification in the construction of the attachment to be hereinafter referred to; and Figs. 5 and 6 represent a plan and an edge view, respectively, of a piece of material which is plaited and stitched with our improved attachment.

To explain in detail, *a* represents the frame, upon which the several parts forming the attachment are supported and which, as herein shown, is provided with a notched arm *a'* for detachable connection with the presser-bar of a sewing-machine, upon which the attachment is adapted to be supported and held in operative position.

The ruffling-blade (represented at *b*) is secured to a sliding carrier *b'*, which latter, as herein shown, is provided with a flange *b²*, which is engaged by the head *a²* of a pin or screw on the supporting-frame, by which the carrier is guided and retained in its proper position relative to the frame *a*. The carrier *b'* is pivotally connected at one end with the lower end of a vertically-arranged lever *c*, which latter at its upper end is pivotally supported upon a hollow stud *a³*, which is carried by the frame *a*. This lever *c* is adapted to be vibrated to give the connected ruffler-blade its reciprocating movement, and the means for actuating the same, as shown in Figs. 1, 2, and 3, consists of a lever *d*, which is formed in two sections *d¹* and *d²*, pivotally connected together at *d³*, the part *d²* being hinged upon the stud *a³* of the supporting-frame and the part *d¹* at its outer end *d⁴* being bifurcated for connection with a suitable projection on the needle-bar, from which latter the lever is operated in the usual manner. This said section *d¹* is pivotally connected at a point between its ends with the section *d²* and at its inner end *d⁵*, which we term a "pawl," is adapted to engage with a projection *c'* on the upper end of the lever *c*, as shown in Fig. 1, so that as the lever *d* is raised by the needle-bar the said end *d⁵* engages with the said projection *c'* and forces the lower end of the lever *c* and the connected ruffler-blade forward.

A disk e , supported upon the said stud a^3 of the supporting-frame, so as to turn or oscillate thereon, is provided with a lip or projection e^2 on one side thereof for engaging with the inner edge of the lever c and with a second projection e^2 on its opposite side, which is adapted to be engaged by one end of an adjusting-screw c^2 , which is supported and carried by the section d^2 of the lever d . By this means when the lever d is lowered by the needle-bar the screw c^2 engages with the projection e^2 on the disk e and moves or rotates the latter sufficiently to cause the projection e' on its opposite side to engage with the lever c and give the latter, with the connected ruffler-blade, its backward or return throw. The upper edge of the lever-section d' is engaged by a cam f , which is supported on the section d^2 , so that the two sections will be caused to move together upon the downward stroke of the needle-bar and the inner end d^5 of the section d' be caused to engage with the projection c' on the lever c at the upward stroke of the needle-bar in order to secure the operation of the parts as set forth.

With the several parts of the attachment arranged as described and as shown in Fig. 1 it will be obvious that the ruffler-blade will receive a forward and backward throw at each up-and-down stroke, respectively, of the needle-bar and the throw of the ruffler-blade, and thereby the width of the plaits be regulated by the screw c^2 , which latter may be adjusted to engage with the projection e^2 on the disk e sooner or later to cause the lip e' on said disk to engage with the lever c and move the same, with the connected ruffler-blade, backward.

In order that the lever d may be operated and actuate the lever c and connected ruffler-blade only at certain predetermined times, whereby the space between the plaits may be as great as desired and greater than that allowed by the action of the feed for a single stitch, we have located a disk m upon the stud a^3 of the supporting-frame and adjacent to the lever c , so that the inner end d^5 of the lever d , which engages with the projection c' on the lever c , as described, may also engage with its periphery. This disk, as shown in the drawings, is provided with one notch m' in its periphery of sufficient depth to extend below the upper edge or point of the said projection c' on the lever c , whereby the end d^5 of the lever d when extending therein may engage with the said projection c' , as shown in Fig. 2. The disk m is also provided with a series of notches m^2 in its periphery of a depth only about flush with or above the upper edge of the projection c' on the lever c , so that the end d^5 of the lever d when extending therein cannot engage with the said projection c' , but will be carried thereover when the disk is turned, as will be described.

The operation of the device as described is as follows: The cam f , which is movably

supported by a stem or pin f' , carried by the section d^2 of the lever d , may be turned into engagement with the upper edge of the section d' , so as to hold the inner end of the latter in close engagement with the periphery of the disk m within the notch m' therein, as shown in Fig. 2, and when held in such engagement the lever-sections and the disk m are locked, so as to move together and the pawl end d^5 of the section d' be caused to engage with the projection c' of the lever c at each upward stroke of the needle-bar, as before described relative to Fig. 1. When it is desired to secure a greater space between the plaits than that allowed by the adjustment of the feed for the length of the stitch, however, the cam is turned around to a position, as shown in Fig. 3, whereby the pawl end d^5 of the section d' will be moved out of said notch m' in the disk m at the downstroke of the needle-bar, as shown in said Fig. 3. At the upward stroke of the needle-bar, after the parts have taken the position as shown in Fig. 3, it will be obvious that the section d' will be moved, while the other parts remain stationary, until its pawl end d^5 has been moved into the notch m' of the disk m and engages with the projection c' of the lever c . Then upon the continued upward movement of the lever d the lever c is moved thereby to give the ruffler-blade its forward stroke. Now at the next downward stroke of the needle-bar to operate the lever d and give the lever c and connected ruffler-blade their backward throw the disk m remains stationary, while the pawl end d^5 of the section d' moves out of the notch m' in said disk and down to a position so as to engage with the preceding notch m^2 at the next upward stroke of the needle-bar, the said notch m^2 having now been moved up to the position occupied by the first notch at the beginning of its movement. As the lever d is now moved upward the pawl end d^5 is carried in the said notch m^2 over and past the projection c' of the lever c without engaging therewith, and consequently without actuating the lever c and connected ruffler-blade. The pawl end d^5 now successively engages with each preceding notch m^2 at each upward movement of the lever d and is so carried over the projection c' until the deepened notch m' is again brought around to a position to receive the pawl end d^5 and allow the latter to engage with the projection c' on the lever c , whereby the latter may be operated to give the connected ruffler-blade another forward movement and form a plait in the goods. It will be understood that during the operation of the lever d intermediate of the times of its engagement with the disk m in the deepened notch m' therein that the goods are being fed forward by the action of the feed and stitched, as shown in Figs. 5 and 6. In this manner it will be understood that the distance between the plaits may be regulated independently of the stitching by providing

the disk *m* with one or more notches like that at *m'*, arranged at such distances apart as may be desired between the plaits.

Referring to Fig. 4, we have shown a lever *n*, corresponding to the lever *d* of the other figures, which is formed in one integral piece and provided with a pawl *n'*, pivotally secured thereon for engaging with the notches in the disk *m* and projection on the lever *c*, as before described relative to the pawl *d'*. In this instance the pawl is movably held in operative position as adjusted by the cam *f* and in contact with the latter by a spring *n²*.

Having thus set forth our invention, what we claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a ruffler attachment for sewing-machines, the combination, with the supporting-frame, and the ruffler-blade, of a ruffler-blade lever pivotally supported upon said frame and having pivotal connection with the ruffler-blade, means moving independent of the ruffler-blade lever for engaging directly with and operating the same, means for controlling the action of said lever-engaging means and rendering the same inoperative relative to the lever at certain predetermined times, and adjusting means for rendering said controlling means inoperative, for the purpose set forth.

2. In a ruffler attachment for sewing-machines, the combination, with the supporting-frame and the ruffler-blade, of a ruffler-blade-operating lever, a vibrating lever having movement independent of said ruffler-blade lever and provided with means for engaging with and operating the same, a controller for engaging with said lever-engaging means and rendering the same inoperative relative to the lever at certain predetermined times, and means for positively locking together said controller and lever-engaging means whereby the controller may be rendered inoperative, for the purpose set forth.

3. In a ruffler attachment for sewing-machines, the combination, with the supporting-frame and the ruffler-blade, of a ruffler-blade-operating lever, a vibrating lever having movement independent of said ruffler-blade lever and provided with means for engaging with and operating the same, a rotary disk having notches of different depths for receiving said lever-engaging means and rendering the same inoperative relative to the ruffler-blade lever at certain predetermined times, and adjusting means for rendering said disk either operative or inoperative relative to the lever-engaging means, for the purpose set forth.

4. In a ruffler attachment for sewing-machines, the combination, with the supporting-frame and the ruffler-blade, of a ruffler-blade-operating lever having a shoulder or projection, a vibrating lever provided with a pawl for engaging with said projection on the ruffler-blade lever, means for engaging with said pawl and riding the same over the projection

on the ruffler-blade lever at certain predetermined times, and adjusting means for rendering said pawl and pawl-engaging means either stationary or movable relative to each other, for the purpose set forth.

5. In a ruffler attachment for sewing-machines, the combination, with the supporting-frame and ruffler-blade, of a ruffler-blade-operating lever having a shoulder or projection, a vibrating lever having a pawl for engaging with said projection on the ruffler-blade lever, a rotary disk supported by said frame, provided with a series of notches in its periphery to receive the said pawl of the vibrating lever, one of which notches is of sufficient depth to receive the said pawl therein for engagement with the projection on the ruffler-blade lever, and another notch being of such depth relative to said projection as to ride the pawl over the latter, and adjusting means for rendering said pawl and rotary disk either stationary or movable relative to each other, for the purpose set forth.

6. In a ruffler attachment for sewing-machines, the combination, with the supporting-frame, ruffler-blade, and the ruffler-blade lever pivotally supported upon said frame, of an operating-lever formed in two sections hinged together, one end of said lever being pivoted upon the supporting-frame and its opposite end being provided with means for connection with the needle-bar of a machine, the inner end of the needle-bar-engaging section being adapted to serve as a pawl for engaging with a projection on said ruffler-blade lever, a disk pivotally supported adjacent to the latter lever, provided with a series of notches in its periphery to receive the said inner or pawl end of the lever-section, the said notches being of different depths relative to the projection on said ruffler-blade lever so as to either allow the pawl to engage with said projection or ride it over the latter, and means carried by one section for engaging with the other so as to cause the two sections to move together when moved in one direction, substantially as and for the purpose set forth.

7. In a ruffler attachment for sewing-machines, the combination, with the supporting-frame, ruffler-blade, and the ruffler-blade lever pivotally supported upon said frame, of an operating-lever formed in two sections hinged together, one end of said lever being pivoted upon the supporting-frame and its opposite end being provided with means for connection with the needle-bar of a machine, the inner end of the needle-bar-engaging section being adapted to serve as a pawl for engaging with a projection on said ruffler-blade lever, a disk pivotally supported adjacent to the latter lever, provided with a series of notches in its periphery to receive the said inner or pawl end of the lever-section, the said notches being of different depths relative to the projection on said ruffler-blade lever so as to either allow the pawl to engage with said projection or ride it over the latter, and

adjusting means supported by one lever-section for engaging with the other or disk-engaging section so as to either hold the pawl end of the latter in engagement with said disk or allow movement of the same relative to the latter, substantially as and for the purpose set forth.

8. In a ruffler attachment, the combination, with a supporting-frame, ruffler-blade, and the ruffler-blade lever pivoted upon said frame, of a pivoted operating-lever for engaging with said ruffler-blade lever to move the same in one direction, and a pivoted disk

through which movement of said ruffler-blade lever in the opposite direction is communicated from the operating-lever, said disk being independent of connection with either of said levers and having one projection for engaging with the ruffler-blade lever and a second projection to be engaged by the operating-lever.

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