(Model.)

J. S. SACKETT.

RUFFLING ATTACHMENT FOR SEWING MACHINES.

No. 293,091. Patented Feb. 5, 1884.

Fig 1

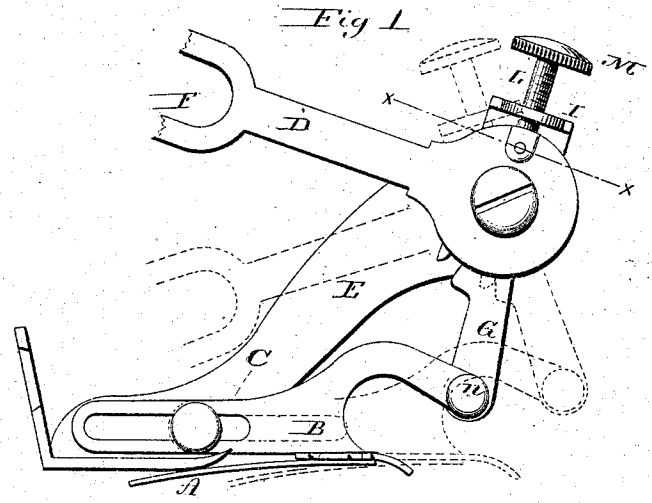


Fig 2

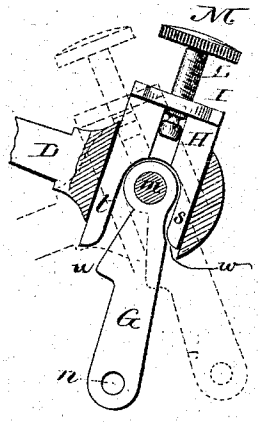


Fig. 3

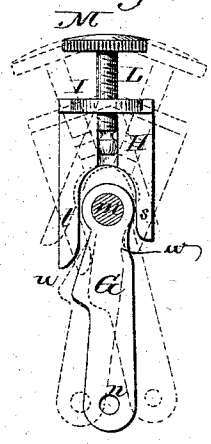


Fig. 4

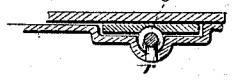


Fig. 5

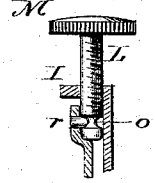


Fig. 6

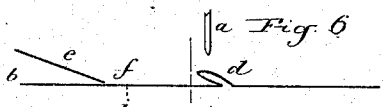


Fig 7

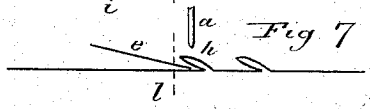
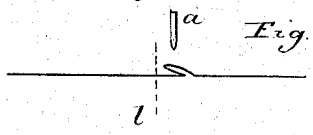


Fig. 8



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UNITED STATES PATENT OFFICE.

JOSEPH S. SACKETT, OF NEW HAVEN, CONNECTICUT, ASSIGNOR OF ONE-HALF TO JANE HALLIWELL, OF SAME PLACE.

RUFFLING ATTACHMENT FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 293,091, dated February 5, 1884.

Application filed October 15, 1883. (Model.)

To all whom it may concern:

Be it known that I, JOSEPH S. SACKETT, of New Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in Ruffling Attachments for Sewing-Machines; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a side view; Figs. 2 and 3, sectional side views to illustrate the construction and operation; Fig. 4, a transverse section on line *x x* of Fig. 1; Fig. 5, a vertical section through the upper part of the lever and slide, showing the connection between the adjusting-screw L and the slide; Figs. 6, 7, and 8, diagrams to illustrate the method of making crimps and the adjustment produced by my invention.

This invention relates to an improvement in attachments for sewing-machines designed for crimping, shirring, or plaiting a strip of fabric to produce a ruffle, commonly called "ruffling attachments." The crimping or shirring is produced by a blade to which a reciprocating movement is imparted toward and from the needle on the surface of the strip to be ruffled, and so that it takes the requisite quantity of fabric in rear of the needle and forces that quantity of fabric forward in advance of the feed of the machine, so as to crimp, shirr, or plait the fabric, each successive fold being stitched in the regular progress of the stitching mechanism. The extent of the reciprocating movement of the blade limits the quantity of fabric which shall be taken; hence the extent of movement of the blade must be adjusted accordingly as a greater or less quantity is required. To make the best work, the fold made by the crimping-blade should be laid in a position beneath the needle and equidistant forward and back of the needle, so that the needle in its descent will pass centrally through the crimp or plait, and should always pass down in the same relative position to the plait or crimp. For illustration, let *a*, Fig. 6, represent the needle; *b*, the strip which is to be ruffled; *d*, the last shirr, crimp, or plait made. It will be observed that there are three thicknesses of material in the crimp; hence for the next crimp or plait the crimping-blade *e* must retreat so far as to take material three times the width of the plait—say as at *f*. Then as the crimping-blade advances (see Fig. 7) and makes the next crimp, *h*, it presents that crimp or fold directly below the needle, and so that the needle will pass through it. Now, suppose it be desired to take less material into the crimp, the blade must not retreat to so great an extent as before—say to the point *i*, Fig. 6. In starting from that point the requisite quantity of material will be taken; but as the blade is adjusted only in one direction, it moves forward to the same point as before; hence the shirr will be laid at a different relative position to the needle, as seen in Fig. 8—that is, the needle will enter nearer the rear edge of the crimp than before, but at the same position with relation to the edge of the blade as before. The crimping-blades are usually made adjustable only in one direction; hence the position of the needle with relation to the crimp made varies according to the variation in the quantity of material contained in each crimp. In some cases the needle descends directly in rear of the edge of the last crimp laid, instead of passing through the crimp. Under such condition, if the needle pass directly in rear of the broad crimp, as indicated by the line *l*, Fig. 7, when the narrower crimp is laid, as in Fig. 8, the needle will pass down a considerable distance from the edge of the crimp, as indicated by the line *l*, Fig. 8.

The object of my invention is to avoid this irregular crimp with relation to the needle or stitch made. As the fold or crimp requires material three times the width of the crimp, as before described, two-thirds of which is in rear of the needle and one-third forward, my invention consists in mechanism, as hereinafter described, and particularly recited in the claims, whereby the adjustment is applied to the stroke of the blade one-third forward and two-thirds rearward.

A represents the crimping-blade; B, a longitudinal slide, to which the blade is attached, the slide guided on a base, C, as shown, or in

any of the usual methods of arranging and guiding the crimping-blade, this part of the ruffler constituting no part of my invention.

D is the actuating-lever, hung upon a pivot, *m*, to an arm, E, extending up from the base, and upon which it vibrates. Its forward end is bifurcated or slotted, as at F, for connection with the needle-bar, and so that the up-and-down reciprocating movement of the needle-bar will impart a vibratory movement to the lever D, substantially as in other rufflers. Hung upon the same pivot, *m*, as the lever D is a second lever, G. This lever extends downward and into connection with the slide which carries the crimping-blade, as at *n*. To impart the vibratory movement of the lever D to the lever G, a slide H is arranged in the head of the lever D, and at substantially right angles to the central line of the lever, and guided therein so as to be moved in a diametrical line. The upper end of the slide is turned at right angles to form a flange, I, and through this flange a screw, L, extends. This screw and the hole in the flange are correspondingly threaded. The screw is provided with a head, M, as a convenient means for turning it. The lower end of the screw is constructed for engagement with the head of the lever, and so that while the screw may be free to rotate it can have no longitudinal movement in said head. This is done, as represented in Fig. 5, by an annular groove, *o*, in the lower end of the screw, and a stud or projection, *r*, upon the inside of the head to enter said groove *o;* hence by turning the screw in one direction the slide H will be raised—say as from the position in Fig. 2 to that seen in Fig. 3—and in the opposite direction the slide will be returned. The lower end of the slide H is bifurcated, one leg, *s*, passing down forward of the lever G, the other leg, *t*, in rear of the lever G, and so as to bear upon that lever below its pivot. Standing, then, as in Fig. 2—the lowest position—when the lever D is raised the leg *s* will strike the lever G upon its rear side, and turn the lower end of that lever correspondingly forward to force the crimping-blade forward. On the return or descent of the lever D the other leg, *t*, will strike upon the opposite side and turn the lever G in the opposite direction, as indicated in broken lines, Fig. 2, and so as to withdraw the crimping-blade. A certain amount of play, as shown, is necessary between the two legs and the lever G, so that the lever D may be moved upward, to withdraw the needle from the work before the crimping-blade moves forward to make the crimp, and on the return the needle enters the crimp before the leg *t* will have reached the lever G upon the opposite side to withdraw the crimping-blade. This standing still or lost motion is common to most rufflers. Suppose, as in Fig. 2, when the slide H is at its extreme lowest position, the legs *s t* act upon their respective sides of the lever G, so as to give a certain extent of movement to the crimping-blade, and which is the longest throw required, and so as to present the crimp produced by the blade in its proper relation to the needle. Now, if the two sides of the lever G were parallel, and the slide H were simply raised from the position in Fig. 2 to that in Fig. 3, no effect would be produced upon the lever. Its throw would remain the same; but if that part of the lever above, where the legs *s t* strike the lever G in the position seen in Fig. 2, be made narrower, as shown, then it follows that the legs will respectively reach or come into contact with the lever at a later time. The forward side of the lever is inclined rearward, as at *u*, and the rear edge is inclined forward, as at *w*, and so that the point of bearing between the ends of the legs *s t* and the sides of the lever will approach the vertical central line of the lever G as the slide H is drawn upward, and thereby shorten the stroke of the lever G to the extent of the inclined bearings *u w*. The inclination *u*, being on the forward side of the lever G, governs the rear movement of the crimping-blade, as does the incline *w* on the rear side of the lever G govern the forward movement of the crimping-blade; and these inclines are as two to one—that is, so that the retreating movement of the blade will be shortened or increased two parts and the advance movement one part—that is to say, suppose in Fig. 2 the extreme advance movement to be indicated in solid lines and the extreme retreating movement in broken lines. As the extent of vibration of the lever D is always the same, it follows that if the slide H be moved from its position seen in Fig. 2 to that seen in Fig. 3, then in the downward movement of the lever D the leg *t* strikes the incline *u* on the lever G at a point nearer the pivot *m* than before, and throws the lever G rearward to the position seen in broken lines to the right, and on the return of the lever G the leg *s* strikes the incline *w* at a point proportionately nearer the pivot *m*, and carries the lever G forward to the position seen in broken lines at the left, and because of this change of position of the slide H with relation to the inclines on the lever G it will be observed that the extent of movement of the lever G is reduced from that seen in Fig. 2, and the reduction is in the proportion of two-thirds to the rear or right and one-third forward or to the left. By this construction I am enabled to adjust the crimping-blade so as to present the crimp always in the same relation to the needle, irrespective of the width of the crimp.

I claim—

1. The combination of a crimping-blade arranged to receive reciprocating movement, a vibrating lever, D, constructed for connection with the needle-arm, a lever, G, one end hung upon the same pivot, *m*, as the vibrating lever D, the other end substantially in connection with the crimping-blade, and a slide, H, arranged in guides in the head of the said lever D, and in a plane at right angles to the pivot on which the two levers turn, said slide made radially

adjustable in the head of the vibrating lever D, and constructed with legs *s t*, extending downward each side the pivot and so as to bear upon opposite sides of the lever G, the said lever G constructed with inclined surfaces, upon which the legs *s t* will respectively bear, and substantially as and for the purpose described.

2. The combination of the crimping-blade A, a slide carrying said blade, the lever D, hung upon a pivot, *m*, and constructed for engagement with the needle-bar, the lever G, one end hung upon said pivot *m*, the other in connection with the slide which carries the crimping-blade, the slide H, arranged in guides in the head of the lever D, and in a plane at right angles to the pivot *m*, said slide constructed with legs *s t*, extending, respectively, downward on opposite sides of the lever G, the said lever G constructed with inclined surfaces, upon which the said legs *s t* will bear, an adjusting-screw L, in connection with the head of the lever D, and the slide H, whereby said slide may be adjusted radially, substantially as described.

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