

(Model.)

2 Sheets—Sheet 1.

J. S. SACKETT.

RUFFLING ATTACHMENT FOR SEWING MACHINES.

No. 293,090.

Patented Feb. 5, 1884.

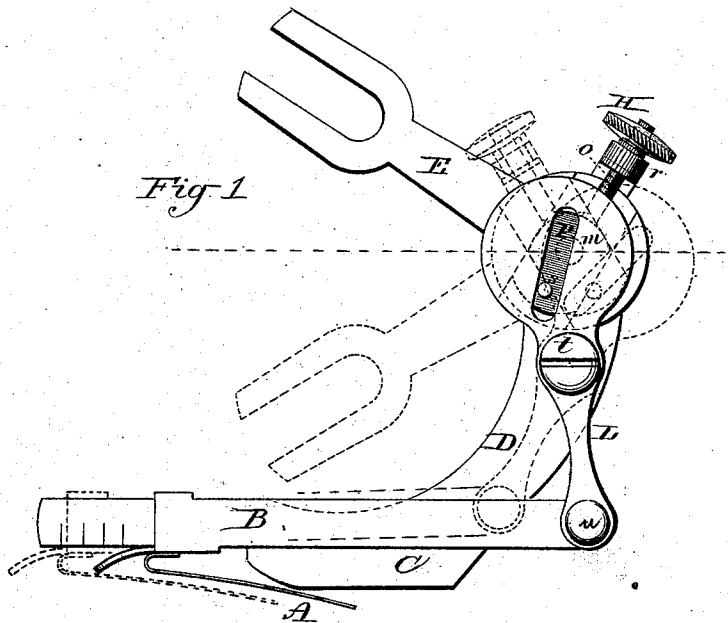


Fig 2

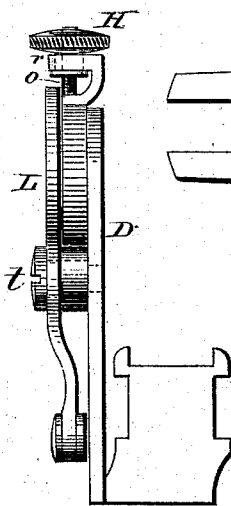


Fig 3

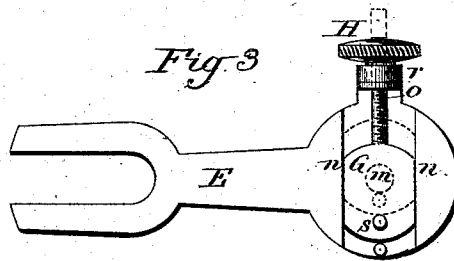
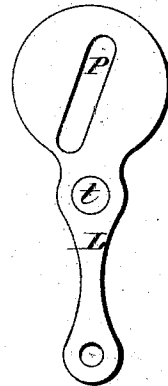


Fig 4



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(Model.)

2 Sheets—Sheet 2.

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Fig 5

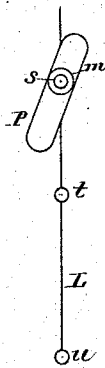


Fig 6

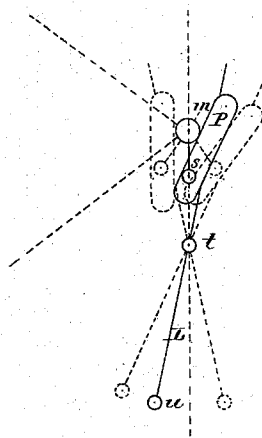


Fig 7

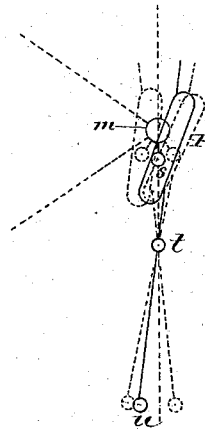


Fig 8

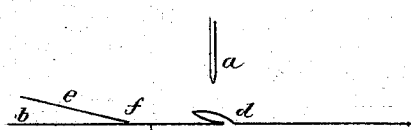


Fig 9

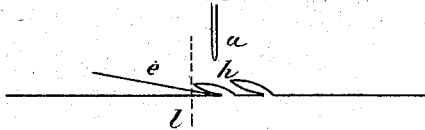
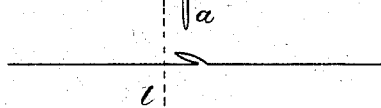


Fig 10



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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. 293,090, dated February 5, 1884.

Application filed October 1, 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 of the attachment; Fig. 2, a front view; Fig. 3, the lever E detached, showing the slide G in its guides; Fig. 4, the lever L detached; Figs. 5, 6, and 7, diagrams to illustrate the operation of the invention; Figs. 8, 9, and 10, diagrams to illustrate the method of making crimps and the adjustment produced by my invention.

This invention relates to an improvement in ruffling attachments for sewing-machines, with special reference to the adjustment of the reciprocating movement of the crimping-blade. 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 double-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 according as a greater or less fullness 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, or should always pass down in the same relative position to the crimp or plait. For illustration, let *a*, Fig. 8, 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. 9) 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. 8. 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. 10—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. 9, when the narrower crimp is laid, as in Fig. 10, the needle will pass down a considerable distance from the edge of the crimp, as indicated by the line *l*, Fig. 10.

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 forward of the needle and one-third to the rear, my invention consists in mechanism, as more fully 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, attached to a reciprocating slide, B, in the usual manner for ruffling devices, and so that the recip-

rotating movement imparted to the slide B will impart such movement to the crimping-blade. This operation is too well understood to require particular description in this specification. The slide is arranged upon a base or frame, C, which may be attached to or made a part of the presser-foot or otherwise attached to the machine.

D is an arm extending up from the base, to which the lever E is pivoted, as at *m*. This lever is constructed for engagement with the needle-bar by a slot, F, in the usual manner, so that the up-and-down movement of the needle-bar will impart a corresponding vibratory movement to the lever E.

Diametrically across the head end of the lever E guides *n* are formed, between which rides a slide, G. From this slide a screw, *o*, extends upward through an ear, *r*, on the head of the lever, and in the ear *r* is a nut, H, fixed as to longitudinal movement but free to be rotated. This nut is internally threaded to correspond to the thread of the screw *o*, that portion of the nut above the ear forming a head by which it may be conveniently turned. By turning the nut H, therefore, the slide G will be raised or lowered according to the direction in which the nut is turned—say as from the down position in Fig. 3 to the up position indicated in broken lines, same figure.

Upon the slide G is a stud, *s*, and which moving with the slide G has its position changed with relation to the center or pivot *m* according to the extent to which the nut is turned. This stud communicates the vibration of the lever to the mechanism connecting with the crimping-blade, as hereinafter described; hence as that stud stands in one—say its most distant—position from the center, as seen in Fig. 3, the greatest extent of throw is produced, and that extent of throw will be diminished accordingly as the stud approaches the center, until directly upon the center no motion will be communicated by the stud.

Between the stud *s* and the crimping-blade a lever, L, is hung upon a pivot, *t*, and so as to be turned freely thereon. The lower arm of the lever is in connection with the slide which carries the crimping-blade—say as at *u*, or otherwise. The upper arm of the lever L extends up and stands in a plane parallel with the head of the lever E, and in that arm of the lever is a slot, P. This slot is diagonal to the vertical line of the lever, inclining downward and forward, as seen in Figs. 1 and 4, and is broader than the diameter of the stud *s*, and when in place, as in Fig. 1, the stud *s* rides in slot P; hence as the lever E vibrates, the stud *s*, working in the slot P, strikes the rear side of that slot in its descent and the forward side in its ascent, and turns the lever L, say, from the position seen in Fig. 1 to that in broken lines same figure, and return.

It will be evident that the extent of vibration imparted to the lever L will depend upon the position of the stud *s* with relation to the

center of vibration of that lever—that is to say, if it stands concentric with the pivot on which the lever vibrates, then no movement would be imparted to the lever L, but as the stud is moved downward, or away from the center, the vibration of the lever will be imparted to the stud, and the vibration of the stud will be communicated to the lever L. Therefore by adjusting the stud *s* toward or from the center of vibration, the swing or movement of the lever L will be correspondingly adjusted. The difference between the diameter of the stud and the width of the slot permits a play of the stud between the two sides of the slot, so that when the lever stands in its up position, as seen in Fig. 1, it must descend far enough to bring the stud against the opposite side of the slot before it will communicate movement to the lever L, and on the return the stud must return to the other side of the slot before it can commence the return of the lever. This lost motion between the stud and the sides of the slot is sufficient for the ascent and descent of the needle between the movements of the crimping-blade, as found in all practical ruffling devices. Were the slot P in the lever L in a vertical line drawn through the center *t* and the pivot *m*, the throw of the lever produced by the action of the stud *s* would be equal to both sides of that vertical line irrespective of the eccentricity of the stud *s*. When the stud *s* is moved into a position concentric with the pivot *m*, the central line of the inclined slot crosses the center of the said stud and pivot, as indicated in the diagram, Fig. 5. In this position no movement would be imparted to the lever L, the stud *s* simply turning in the slot. Now, suppose the stud to be moved away from the center to its extreme eccentric position, as indicated in Fig. 6, in such movement, it will be observed, the lever L is turned upon its center *t*, throwing its lower end or point, *u*, to the left—that is, from the position seen in Fig. 5 to that seen in Fig. 6. The vibration of the stud *s* is as from the broken lines at the left to the broken lines at the right. The stud working in the slot will turn the lever from one extreme to the other, carrying the point *u* in the direction of the advance of the crimping-blade to the position indicated by the broken lines at the right, and in the opposite direction or retreat of the crimping-blade to the position indicated in broken lines at the left. Now bring the stud *s* and the parts connected back into the position seen in solid lines, Fig. 6, where the stud *s* is in a vertical line drawn through the center *t* and the pivot *m*. Then move the stud *s* toward the pivot to reduce its eccentricity—say to the extent seen in solid lines, Fig. 7. This movement of the stud *s* will turn the lever L so as to bring its lower end nearer the vertical line, as seen in Fig. 7. This reduction of the eccentricity of the stud reduces the extent of vibration of the lever L. The movement of the lever under this condition will be to ad-

vance the point *u* to the position seen in broken lines at the right, or retreat, as seen in broken lines at the left. This reduction of the movement or vibration of the lever *L* is indicated
 5 by the spaces between the vertical broken line and the broken lines at the right and left of it, and as compared with the same lines in Fig. 6 it will be observed that the distance
 10 between the central line and the line at the right and left has been reduced from the position seen in Fig. 6 in the proportion of one part to the right or advance and two parts to
 the left or retreat; hence the inclination of the slot *P* is such with relation to the stud *s* that
 15 in the adjustment of the stud toward or from its center of motion it throws the lever *L* from the vertical central line in the proportion of
 one part to the right or advance to two parts
 20 to the left or retreat, and from such adjustment it follows that the advance and retreat of the crimping-blade will be correspondingly
 varied, and such adjustment of the crimping-blade will cause it to always present the forward
 25 and rear edge of the crimp 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
 30 vibrating lever constructed for connection with

the needle-arm, a slide, *G*, arranged in guides in the head of the lever at substantially right angles to the central line of the lever, carrying a stud, *s*, and made adjustable with relation
 35 to the center of vibration of the lever, substantially as described, and the lever *L*, one arm in substantial connection with the crimping-blade, the other arm constructed with a diagonal slot, *P*, within which the said stud
 40 works, substantially as described.

2. The combination of the crimping-blade
 45 *A*, a slide carrying said blade, the lever *E*, constructed for engagement with the needle-bar, and with guides *n n* at right angles to the central line of the lever, the slide *G*, arranged
 between said guides, carrying the stud *s* and constructed with the screw *o*, the nut *H*, arranged in the head of the lever for rotation,
 but without longitudinal movement, and through which said screw *o* passes, and the lever
 50 *L*, hung upon a pivot between the pivot of said lever *E* and the slide, one arm connected to the slide, the other arm constructed with a diagonal slot, *P*, within which the stud *s*
 works, substantially as described.

JOSEPH S. SACKETT.

Witnesses:

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