

(Model.)

J. HEBERLING.

PLAITING ATTACHMENT FOR SEWING MACHINES.

No. 247,758.

Patented Oct. 4, 1881.

Fig. 1.

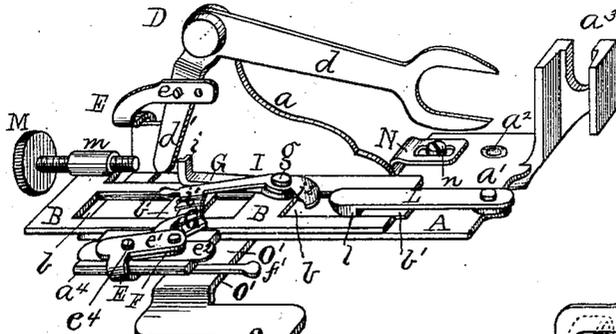


Fig. 4.

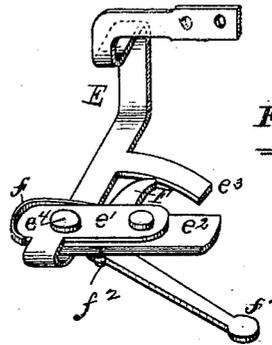


Fig. 2.

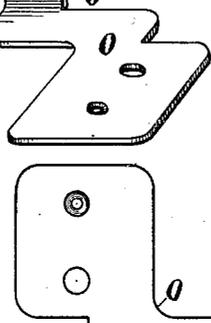


Fig. 6.

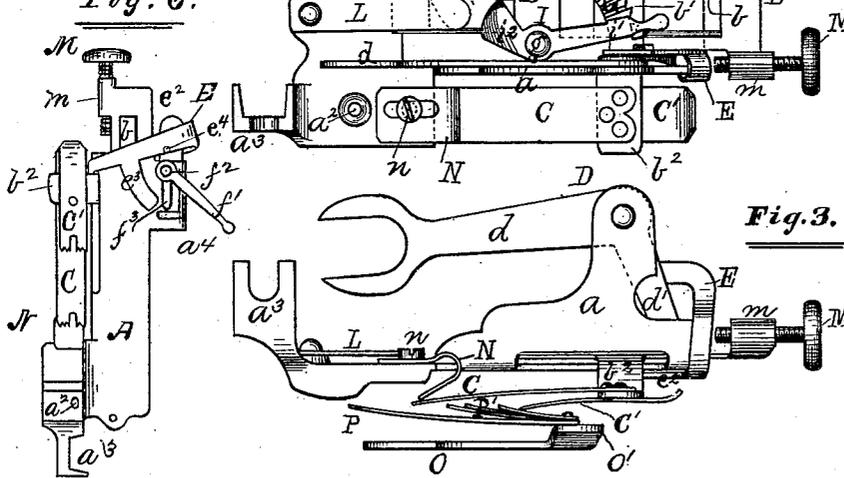


Fig. 3.

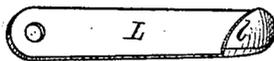
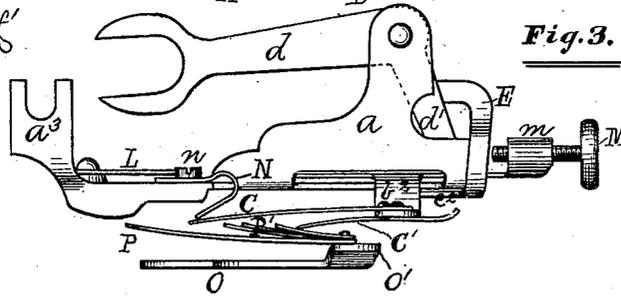


Fig. 5.

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PLAITING ATTACHMENT FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 247,758, dated October 4, 1881.

Application filed June 25, 1880. (Model.)

To all whom it may concern:

Be it known that I, JOHN HEBERLING, a citizen of the United States, residing at Mount Pleasant, in the county of Jefferson and State of Ohio, have invented a certain new and useful Improvement in Plaiting Attachments for Sewing-Machines, of which the following is a specification.

My invention relates to improvements in sewing-machine attachments for plaiting fabrics in contradistinction to attachments for ruffling fabrics.

The object of my invention is, first, to have the gathering-blade move intermittingly with the bell-crank lever and needle-bar, so that a number of stitches are made in the fabric between each successive gather made by the blade, and consequently the fabric is plaited instead of ruffled; second, to have any given number of stitches between each plait; third, to make different widths of plaits; and, finally, to adjust and maintain the different parts of the plaiter in their proper relative positions for operation after such adjustments. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of my attachment, together with the angle-plate supporting the holding-blades; Fig. 2, a plan view, and Fig. 3 a side elevation, of the same; Fig. 4, a perspective view of the yoke and pawl connecting the bell-crank lever with the ratchet-feed; Fig. 5, a perspective view of the cam-faced plate with which the adjusting pawl-lever engages; and Fig. 6 is a bottom view of my attachment, showing the slot receiving the pivot of the yoke.

The mechanism of my plaiter is supported upon a rectangular-shaped plate, A, provided with a right-angular extension or bracket, *a*, carrying the bell-crank lever, a side extension, *a'*, having needle-hole *a''*, and terminating at its outer end in a clamp, *a'''*, for securing the plate to the presser foot or bar of the machine, which may be done by means of a set-screw or other suitable device, and a grooved extension, *a''''*, carrying the yoke, its sliding block and pawl.

Mounted upon the plate A is a sliding plate, B, provided with rectangular slots *b b*, having beveled side walls engaging with and guided

by corresponding beveled lugs *b' b'* upon the plate A. This sliding plate is also provided with an arm, *b''*, extending at a right angle to its sides and through a slot at the base of the bracket *a*, and having secured upon its outer end and on top a gathering-blade, C, underneath which and the arm is a corresponding, but shorter blade, C', which is an auxiliary to the gathering-blade in drawing the fabric forward to make the gather or plait.

To the bracket *a* is pivoted a bell-crank lever D, the long arm *d* of which, when in use, engages with the needle-bar of the machine, and the short arm *d'* operates the sliding plate, as will hereinafter be fully explained.

E is a yoke or U-shaped lever, connected at one end by a pin, *e*, to the short arm of the bell-crank, and passing over the bracket *a*, and thence under the plate A, terminating at its other end in a plate, *e'*, carrying a horizontally-operating pawl, F, and its actuating-spring *f*. Underneath this pawl and its actuating-spring, and to and toward the rear end of the plate *e'*, is pivoted an adjustably-sliding plate, *e''*, resting in the grooved extension *a''''*, and provided with a friction locking-lever, *f'*, to hold it after adjusting the pawl to its proper position for operation. The locking-lever *f'* is secured to the sliding plate *e''* by means of a pin, *f''*, which enters an elongated slot, *f'''*, in the extension *a''''*, as shown in Fig. 6, so that said lever may bind against the bottom of the extension, or against a stud upon the same, to hold the lever in position to lock the sliding plate. Yoke E is provided with a vertical pin, *e''''*, which passes through it and through the plates *e'* *e''*, which pin also enters the elongated slot *f'''* and serves to pin the yoke upon said extension as well as to pin the sliding plate *e''* to the yoke. The yoke E is also provided with an arm, *e'''*, extending nearly at a right angle to it, which, pressing upon the under surface of the plate A, serves to prevent a rocking movement of the yoke.

Instead of the yoke E, above described and shown, I may substitute a right-angle lever having one arm pivoted to the bell-crank lever, and its other arm passed above and across the sliding plate and terminating in the plate *e'*, carrying plate *e''* and pawl, as in the present instance, and by so doing there would be

a decrease in friction and the construction of the connection between the bell-crank and the pawl be simplified.

Upon the upper and inner face of the sliding plate B is a pivot, g , carrying a toothed segment, G, which engages with the pawl F, said segment being provided with a vertical stud, i , to engage it with the bell-crank lever to operate the sliding plate B and the gathering-blade and cause their forward movement.

To the pivot g and upon the segment is also pivoted a spring pawl-lever, I, the under side of the long arm i' of which engages with grooves in the upper face of the segment to maintain the spring-lever at any desired point upon the segment, and thereby decrease or increase the number of stitches between each plait, as will be fully understood further on in the description.

The short arm i'' of the lever I extends at almost a right angle to the long arm, and is rounded and beveled upon its end, so that it may freely pass under a stud, l , upon the under side of a spring bracket-plate, L, which plate has its outer end secured to the forward end of the plate A, as shown in Fig. 1. The stud l is beveled upon its inner edge at an angle to the length of spring-plate L, as indicated in dotted lines in Fig. 2 and shown in Fig. 5, so that after the short arm of the lever I engages with the stud the long arm of said lever, and with it the toothed segment, will, when the sliding plate B recedes, be swung outwardly to re-engage the segment with the pawl F. By setting the spring-arm i' inwardly upon the segment the short arm is swung outwardly and is caused to move across the entire face of the beveled lug l when the sliding plate recedes, in consequence of which the segment is swung outwardly so that the pawl engages with its inner teeth, and by so setting the spring-arm at any given point on the segment the pawl is caused to engage with the segment at that point. As the pawl advances but one tooth along the segment for every stroke of the needle, the number of teeth between the spring-arm and outer end of the segment represents the number of stitches that will be made before the stud i' engages with the bell-crank to cause the gathering-blade to operate. The sliding plate B is made to recede by reason of the engagement of the short arm of the bell-crank lever with the end of a set-screw, M, which screw is secured in a lug, m , upon the rear end of the sliding plate. This set-screw serves as a means for determining the amount of lost motion of the short arm of the bell-crank, and is therefore an adjusting device to regulate the length of the backward stroke of the sliding plate, and by so doing increase or diminish the breadth of the plaits to be made, which is owing to the relative position after such stroke of the gathering-blade to the needle-hole.

N is a U-shaped deflecting-blade coinciding vertically with the gathering-blade, and hav-

ing one of the arms secured to the extension a^2 by means of a set-screw, n , and its other arm extending forward underneath the extension toward the needle-hole and on a plane slightly below that of the gathering-blade when said blade is at its extreme backward stroke. Since the gathering-blade bears against the deflector and is formed of spring-steel, it will be seen that as it moves forward it will be deflected by the blade N and caused to press upon and take hold of the fabric to be plaited, the width of the plait or gather representing the length of the forward stroke of the gathering-blade.

It will now be seen that if the lost motion of the bell-crank be diminished by advancing the set-screw M toward the short arm of the same, the length of the backward stroke of the gathering-blade will be correspondingly increased, in consequence of which the gathering-blade will take hold of the fabric to make the gather earlier during its forward stroke; and hence the width of the gather will be increased as the stroke of the blade is increased. An adjustment of the set-screw requires, also, such an adjustment of the sliding plate e^2 and the pawl as will enable the latter to engage with the toothed segment G when the sliding plate shall have reached the limit of its backward stroke, which adjustment may be made by swinging outwardly the friction locking-lever to release the sliding plate, so that it can be moved, and with it the pawl, to the desired point. However, I wish it to be understood that I do not limit myself to the means above described for varying the width of the plaits, for I may provide the deflector with a longitudinal slot, as clearly shown in the drawings, so that it may be moved toward or from the gathering blade, in which case a stud may be substituted for the set-screw M, and the yoke may be pivoted directly to the extension a^4 , instead of to a sliding plate, e' , thus providing an adjustment less complicated and as effective as that above described; or, instead of slotting the deflecting-plate, I may secure its upper end to a set-screw passing through a lug upon the extension a' , which lug and set-screw may be similar to those upon the sliding plate. The deflector may also be provided with a series of notches or figures to indicate the width of gather for which it is set, and thus operate as a gage as well as a deflector.

O is an angle-plate, provided with a horizontal arm, O', extending slightly above its surface, said arm having secured upon its outer end a holding-blade, P, above and upon which is secured a similar but shorter auxiliary holding-blade, P'. The angle-plate O is provided with suitable perforations, as shown in Figs. 1 and 2, and with set-screws, and is secured to the table of the machine in such a position that the holding-blade P will lie under and coincide with the gathering-blade, the free end of said holding-blade extending forward to in close proximity of the needle-hole. The holding-blades P P' prevent the fabric which

is placed between them and the gathering-blade from being drawn back by the gathering-blade when it recedes after having made a gather; and to make them more effective for this purpose these blades are slightly curved upwardly, and usually terminate in one or more points or teeth, such as are shown by the auxiliary blade P' in Fig. 3.

By extending the horizontal arm O' above the angle-plate, and also the surface of the table, I am enabled to simultaneously plait and stitch the fabric upon one or more thicknesses of plain fabric by passing the latter underneath the horizontal arm and feeding it with the fabric to be plaited through the machine.

The operation of my plaiting attachment is as follows, viz: The clamp a^3 is secured to the presser-foot, the arm d of the bell-crank lever connected with the needle-bar, and the angle-plate secured, as above described, to the table of the machine, when, after having set the spring-lever I upon the segment G at such a point as will cause the desired number of stitches to be made between the plaits, and then, after having adjusted the deflecting-blade, or the set-screw and pawl, as the case may be, the fabric to be plaited is placed between the gathering and holding blades, and the machine put in motion. As the needle-bar of the machine descends, carrying the long arm of the bell-crank with it, the short arm, through the medium of the yoke, causes the pawl to move inwardly and push the segment toward the bell-crank. The upward stroke of the needle-bar likewise causes the pawl to recede and re-engage with the segment at a point forward of that of its former engagement, and so on until the segment, by means of its stud i , engages with the short arm of the bell-crank, when, with the sliding plate, it is pushed forward by said arm until a gather is made and the short arm i^2 of the lever I engages with the stud l upon the spring bracket-plate L. This forward movement of the sliding plate and segment is caused by the upward stroke of the needle-bar, its downward stroke causing said plate, by reason of the engagement of the short arm d' with the set-screw, to recede, and in so doing the short arm of the lever I is caused to traverse the beveled face of the lug l and swing the segment G outwardly to re-engage it with the pawl, and so on until the plaiting is completed.

Although the means shown for connecting my attachment to a sewing-machine are particularly adapted to a Singer machine, it is obvious that said means of attachment may be varied, to adapt it to other machines, without departing from the spirit of my invention.

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

1. The combination hereinbefore set forth, with a swinging bell-crank lever and with a pivoted yoke or lever, of a sliding plate carrying the gathering-blade, and means whereby said plate is adapted to be intermittingly reciprocated by and with said bell-crank lever and yoke, for the purpose described.

2. In a plaiting attachment, the combination, substantially as hereinbefore described, of a sliding plate, a gathering-blade, and operating mechanism with an adjustable deflecting-blade engaging with and adjustable toward and from the gathering-blade, as and for the purpose set forth.

3. The combination, with a sliding plate carrying the gathering-blade and with a bell-crank lever, of a pivoted segment, an adjusting spring-lever, and mechanism for operating said segment and lever, whereby the sliding plate is released from the bell-crank lever and the gathering-blade caused to reciprocate intermittingly with the needle-bar of a machine.

4. The combination, with the bell-crank lever, the sliding plate, the segment and its actuating-pawl, and yoke or lever, of the beveled stud, and means for supporting the same, and a spring-lever engaging with said stud and with the segment, as and for the purpose described.

5. The combination, with the bell-crank lever, the sliding plate, and the adjusting set-screw, of a gathering-blade and a deflecting-blade projecting below the base-plate, substantially as and for the purpose described.

6. The combination, with the bell-crank lever, the sliding plate carrying the gathering-blade, the set-screw, and the toothed segment, of an adjustable yoke and a pawl engaging with the toothed segment, substantially as described.

JOHN HEBERLING.

Witnesses:

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JAMES H. COYNE.