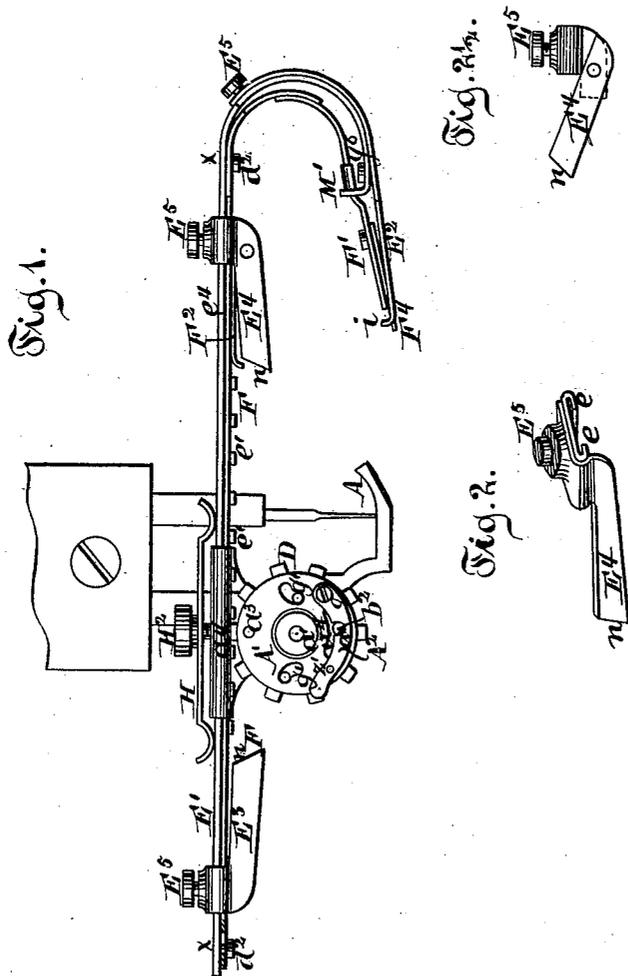


L. ONDERDONK.

Gathering and Plaiting Attachment for Sewing-Machine.

No. 211,422.

Patented Jan. 14, 1879.



Witnesses.
 Henry P. Wells
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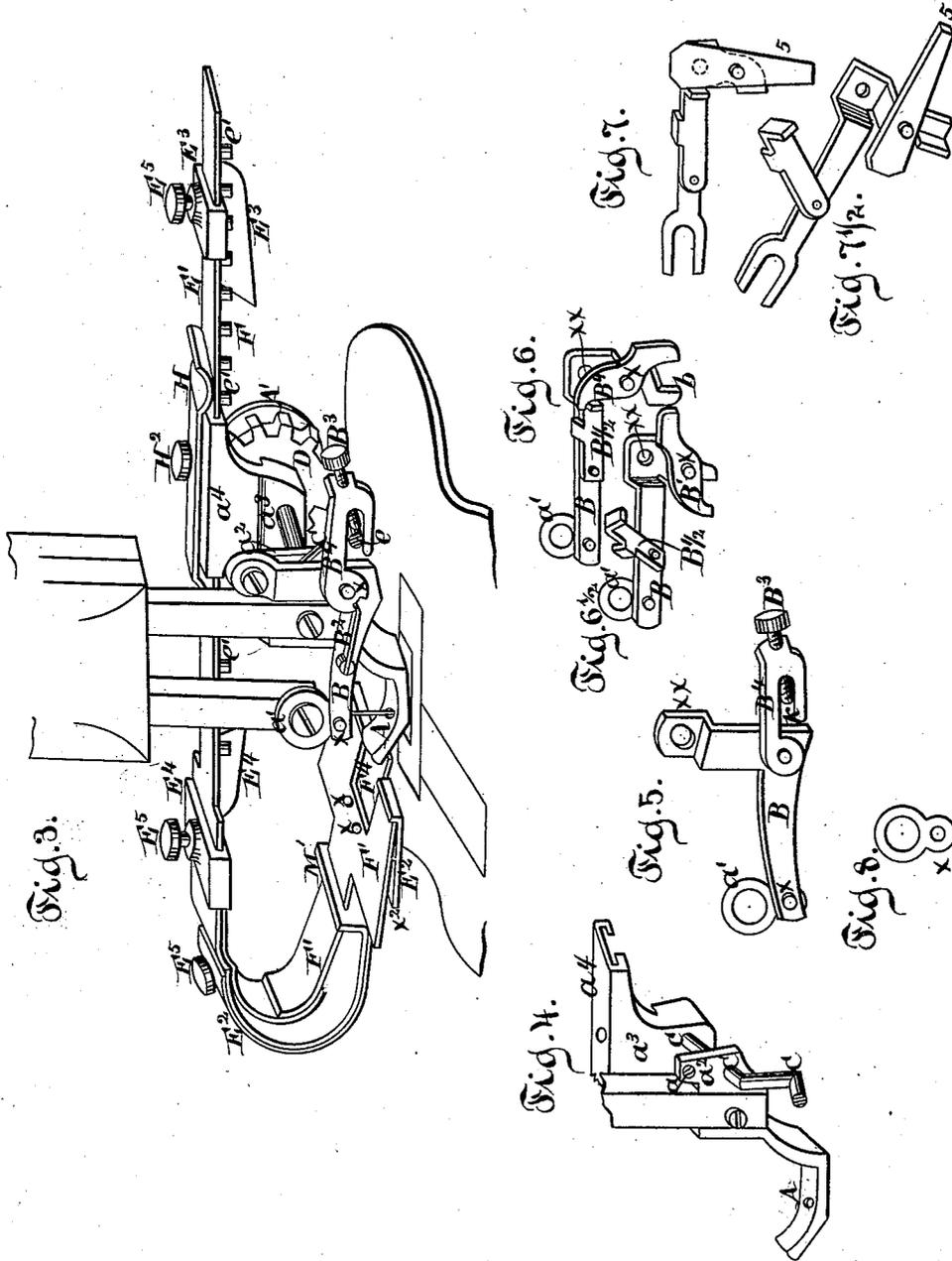
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UNITED STATES PATENT OFFICE.

LANSING ONDERDONK, OF NEW BRUNSWICK, NEW JERSEY.

IMPROVEMENT IN GATHERING AND PLAITING ATTACHMENTS FOR SEWING-MACHINES.

Specification forming part of Letters Patent No. **211,422**, dated January 14, 1879; application filed February 1, 1878.

To all whom it may concern:

Be it known that I, LANSING ONDERDONK, of the city of New Brunswick, in the county of Middlesex and State of New Jersey, have invented new and useful Improvements in Gathering and Plaiting Attachments for Sewing-Machines, of which the following is a specification, reference being had to the accompanying drawings.

My invention consists of improvements on a plaiting and gathering attachment for sewing-machines for which Letters Patent of the United States were granted me, numbered 192,183, and bearing date June 19, 1877.

In order that the said improvements and their relation to the original invention may be readily understood, it has been found necessary to reproduce in the drawings accompanying the specification the device set forth in the Letters Patent aforesaid, omitting, however, the parts for which substitutes are proposed, and inserting the substitutes in lieu thereof. As far as practicable, the lettering in the drawings forming part of this specification conforms to the lettering in my original Letters Patent.

The letter *x* in all cases represents a rivet-hole; the letters *x x*, a screw-hole.

Figure 1 represents an elevation of my invention as improved and as viewed from the left of the operator. Fig. 2 represents a detached view of an improved device for moving the shifting-plate and changing the motion of the cog-wheel in order to reciprocate the slides. Fig. 3 represents an elevation of my invention as improved, viewed from the right hand of the operator. Fig. 4 represents a detached view of an improved presser-foot to take the place of that described in my former patent. Fig. 5 represents a detached view of the improved lever attached to said presser-foot; and Figs. 6, 6½, 7, and 7½ represent detached views of modifications of said lever. Fig. 8 represents a detached view of the loop by which the lever is connected to the needle-bar. Fig. 8½ represents a detached sectional view of the cog-wheel which gives motion to the slides, the devices forming part of the same, and the rock-shaft by which said cog-wheel is oscillated. Fig. 9 represents a detached view of the carrier or disk upon which the cog-wheel is mounted, and the dogs for engaging and mov-

ing said cog-wheel. Fig. 10 represents a detached view of the shifting-plate and the latch by which it is fastened to the carrier or disk of the cog-wheel to enable the device to be employed as a gatherer. Fig. 11 represents a detached view of the cog-wheel. Fig. 12 represents a detached view of the shifting-plate with its latch removed. Fig. 13 represents a detached view of the latch. Fig. 14 represents a detached view of the slide. Figs. 15, 16, 17, and 18 represent detached views of attachments to the slide to prevent said slides approaching the needle beyond a certain point. Fig. 19 represents a partial view of the slide, showing the slot for the reception of the attachment represented in Fig. 17. Fig. 20 represents a detached view of an attachment which forms part of the slide; and Fig. 21 represents a detached view of still another attachment forming part of said slide.

Letter A, Figs. 3 and 4, represents the presser-foot of a sewing-machine, as commonly used, with the new extensions a^2 , a^3 , and a^4 , and altered from my former device to meet the requirements of the changes in lever B. The form of these extensions may be indefinitely varied by any mechanic, so long as they fulfill the conditions intended, and, thus changed, will answer the purpose equally with those given; and I claim as equivalents any such changes if they embody the following essential features.

The purpose of the extension a^2 , Fig. 14, is to give a bearing to the rock-shaft C and a fulcrum to lever B; that of extension a^3 is to provide a bearing for the other end of rock-shaft C. It may be thickened on the face toward the cog-wheel D, as shown in Figs. 3 and 4, so that that wheel bears against it; or washers may be inserted between the wheel and the face of the extension, the object being to prevent any lateral motion of the rock-shaft, and thus retain the cog-wheel fairly on the rack. The interval between extensions a^2 and a^4 should not be less, and should not be much greater, than the width of the presser-foot, so as to afford room for the needle-bar between the lever B and the slides, as shown in Fig. 3. The part a^4 is adapted to sustain the slides and permit their proper reciprocating motion.

The lever B, Figs. 1 and 5, consists of a

piece of metal, or other suitable material, bent at an angle, as shown. A loop, Fig. 8, is attached to the horizontal arm of the lever by a rivet, x , Fig. 5. Through the loop the needle set-screw passes, thus connecting said loop to the needle-bar, and compelling the horizontal arm of the lever to partake of the motion. The perpendicular arm of lever B, Fig. 5, is pierced at its upper end with a hole, $x x$, through which a screw passes into the extension a^2 of the presser-foot (a^2 , Fig. 4) at a , and on this screw said lever moves as its fulcrum. Immediately below the screw-hole $x x$, Fig. 5, the perpendicular arm of lever B receives a bend outward and then downward, as shown in Fig. 5, so as to clear the rock-shaft C. The method of combination will more fully appear in Fig. 3, where the parts may be seen in operative position.

By a rivet at the angle of lever B a piece of metal, B^4 , Fig. 5, is attached, working on said rivet as a hinge. This has the form of a lengthened hook, as shown. The extremity of B^4 most distant from the rivet aforesaid is bent inward at a right angle, and pierced with a thumb-screw, B^3 , which serves to diminish, at pleasure, the aperture within the hook. A slot may be made in the circular portion of B^4 , and a spring, B^2 , attached to lever B, as shown in Fig. 3. Until B^4 is badly worn the friction caused by the closeness of the rivet will be sufficient to retain B^4 in position; but should B^4 become loose, then the spring B^2 would remedy the defect.

The piece B^4 may be moved upward on the rivet aforesaid as a center, so as to be parallel with the perpendicular portion of lever B at any time after said lever moves backward. This at once disconnects the rest of the device. The lever B continues to move with the needle-bar; but the motion goes no farther, and the sewing-machine may be used for plain sewing, as though the device were not attached. But upon turning B^4 downward in line more or less straight with the arm of lever B, to which the loop a^1 is attached, B^4 hooks around the end of rock-shaft C, as shown in Fig. 3, and, together with the heel of the angle of lever B, incloses the end of said shaft in an almost complete slot. Then the heel of the angle of lever B forces the end of rock-shaft C in one direction as the needle-bar moves downward, and the end of the screw B^3 moves it in the other direction as the needle-bar moves upward, and a rocking motion is imparted to the shaft. Thus, by inclosing the end of the rock-shaft in the hook B^4 , Fig. 5, the attachment is thrown into action, and gathers or plaits, while by raising the hook B^4 so as to release the end of the rock-shaft, the attachment ceases to operate, and the sewing-machine does plain sewing; and thus, by raising and lowering B^4 alternately, a group of plates may be made to alternate with a space of plain sewing, or what is known as "cluster-plaiting."

The function of said thumb-screw B^3 is to

modify the length of the slot formed as aforesaid, and consequently the throw of the rock-shaft. The cog-wheel D partakes of the motion of the rock-shaft, as heretofore. Therefore, the greater the throw of that shaft the greater will be the oscillation of the wheel and consequent motion of the slides at each rise and fall of the needle.

Figs. 6 and $6\frac{1}{2}$ show a substitute for lever B and B^4 . The loop a^1 is attached to the needle-bar and to lever B, as before. The extremity most distant from the loop is bent downward instead of upward, as in Fig. 5. It is secured by a screw through hole $x x$ to the hole a in the extension a^2 of the presser-foot, Fig. 4. The jaws seize the end of rock-shaft C; consequently the angular part of the lever through which the screw passes must be bent inward, so that there may be room for the crank of the rock-shaft between the jaws and the extension of the presser-foot. This substitute is provided with attachments $B\frac{1}{2}$ and B^4 , Figs. 6 and $6\frac{1}{2}$, of the shape, and connected with rivets, as shown. Fig. 6 shows the device ready for operation. The longer arm, B^4 , is raised from the position shown in Fig. $6\frac{1}{2}$ until it assumes the position shown in Fig. 6. $B\frac{1}{2}$ is then moved downward from the position shown in Fig. $6\frac{1}{2}$ to that shown in Fig. 6. Thus B^4 is locked, and, together with the extremity of lever B most distant from the loop a^1 , forms a fork, inclosing the extremity e , Fig. 3, of rock-shaft C, forcing it to assume the motion of the lever, and setting the entire plaiter in motion. Upon raising $B\frac{1}{2}$ and depressing B^4 to the positions shown in Fig. $6\frac{1}{2}$, the rock-shaft is released, ceases to move, and the sewing-machine is in condition to do ordinary sewing.

Figs. 7 and $7\frac{1}{2}$ represent another modification of lever B. The loop may be dispensed with by forming that end of lever B into a fork or open slot, as shown in Fig. 7, which embraces the needle set-screw.

When the form shown by Fig. 7 is used, that end of the rock-shaft seen at e , Fig. 3, is provided with a slot, in which the extremity 5 is inserted, and thus motion is communicated to the shaft. It may be uncoupled from the rock-shaft in substantially the same manner as Fig. 6, as fully appears from Figs. 7 and $7\frac{1}{2}$.

The rock-shaft is identical with that in my former patent. It receives from the lever B a motion of oscillation, and communicates it to the wheel D, as shown by Figs. 1 and 3.

The rock-shaft terminates at the end beyond wheel D with a screw, as shown at s , Fig. 9, and a square shoulder. (Shown at s , Fig. $8\frac{1}{2}$.)

After the rock-shaft is inserted through its bearings in the extensions of the presser-foot, as in Fig. 4, the cog-wheel D is placed on, as shown in Fig. $8\frac{1}{2}$, and turns freely on it.

The device shown in Fig. 9, which is pierced through its center with a square hole to correspond with the square on the rock-shaft, is then driven on to the position as shown in B^1 , Fig. $8\frac{1}{2}$, which is a section of Fig. 9.

The extension of B¹ (shown only in Fig. 8½) bushes the hole in the center of the cog-wheel, Fig. 11, so as to isolate it from the rock-shaft. On that bushing, however, the cog-wheel, were it not for the dogs *i i*, Fig. 9, would be free to revolve. The dogs *i i*, their pins *d'*, and spring *d* are identical with those shown in my former application; but the position of the plate B¹ and its attachments, in reference to the slides, is changed. Now when in combination with said slides, (as in Fig. 1,) the dogs point upward toward the slides, instead of downward and away from them, as heretofore. This is to give room for the pin *b*², Fig. 9, which is new, the function of which will be hereinafter described.

The shifting-plate, Figs. 10 and 12, is then placed on plate B¹, as shown in Fig. 8½, and the whole secured by a screw-nut, as shown.

In the shifting-plate several changes have been made. The positions of the slots *g' g'*, Fig. 12, have been changed to correspond with the changed position of the dogs *i i*, Fig. 9, so that the pins *d' d'* may project through them.

The pin *a*³, Figs. 8½ and 12, has been added, and takes the place of the rectangular projection on the periphery of the shifting-plate in my former device. The slot *a*⁴, Figs. 10 and 12, has also been introduced. Through this slot the pin *b*² projects. A piece of spring metal has been added, (shown in the Figs. 10 and 13,) secured to the shifting-plate by a pivot at *o*, Fig. 13, on which it hinges. It is provided with a notch, *a*⁴, and a pointed projection at *z'* on its side next the shifting-plate.

The shifting-plate is provided with a countersink at *z'*, Fig. 12; so that after the slides begin to move toward the needle the catch A² may be sprung away from the shifting-plate, then moved on the pivot *x*, and the pointed projection snapped into the countersink *z*. Then the catch A² assumes the position as shown in Fig. 10, embracing and locking the pin *b*². The shifting-plate is then locked to the plate B¹, the change in the dogs is prevented, and the motion communicated through cog-wheel D to the slides is limited to a reciprocating motion to each rise and fall of the needle, and the machine gathers until the pin *b*² is released by springing the catch A² away, so as to release the pin *b*² from the notch *a*⁴. The width of the gather may be controlled by increasing or diminishing the throw of the rock-shaft through the screw B³, Fig. 3.

Motion being imparted to the cog-wheel D by the means described, the said wheel feeds the slides forward until the motion of the shifting-plate is arrested by the pin *a*³ coming in contact with one or the other of the stops E³ E⁴, which shifts the position of the shifting-plate with respect to the plate or carrier B¹, as will more fully hereinafter appear. The pins *d' d'* then change their position in the slots *g' g'*. The operating-dog is then withdrawn and the other comes into action; the wheel reverses, and the slides follow, all as in

my former patent. But the motion of the shifting-plate is arrested in a different and in the following manner: Upon the combined slides E¹ and F, and after they are joined together, a piece of metal having the form of E⁴, consisting of a slide or clasp having a stoppling-blade, and which I denominate an "adjustable stop," is slipped on and secured by a thumb-screw, E⁵, Fig. 1, at such a point that, when the cog-wheel D, in its passage over the rack or slide F, has engaged the last tooth or pin *e'* toward the curved ends of the slides E¹ and F, then the pin *a*³ in the shifting-plate, Figs. 1 and 10, will strike the free end of stop E⁴. The motion of the shifting-plate is then arrested and the position of the pins *d' d'* are changed. The dogs and cog-wheel follow, and the motion of the slides is reversed.

In the adjustable stop E⁴ the blade part may be hinged to the part embracing the slides E¹ and F on a pivot, as shown in Fig. 2½. Then if at any time while the device is disconnected from the sewing-machine the position of the cog-wheel D becomes such that the pin *a*³ in the shifting-plate strikes upon the lower edge of the adjustable stop E⁴, instead of the part shown at *n*, then the blade part can be pushed upward, the pin *a*³ released from beneath it, the wheel restored to its proper position, and then upon returning the blade part as before the fault is corrected.

Upon the straight extremities of the slides E¹ and F is placed another adjustable stop, similar in all respects except that a hinged blade is useless, and that the blade part must be attached on the opposite side of the part embracing the slides, so that both stops E³ and E⁴ will be in the same plane, and a little outside of that edge of the slides E¹ and F which is nearest the cog-wheel.

The adjustable stop E³ may be adjusted at any point by means of the set-screw E². The stop E⁴ is adjustable solely for the purpose of gathering—that is, after the pin *b*² is locked by the spring-hasp *a*², as shown in Fig. 1, then, as heretofore explained, the shifting-plate becomes a unit with the plate B¹, which underlies it. The shifting-plate cannot shift the dogs, the cog-wheel moves forward and backward a part of a revolution only with every rise and fall of the needle-bar, and the slides partake of its motion. The slides are then drawn toward the needle by the last pin or tooth of the rack, but are pushed from the needle-bar by actions of the shifting-pin *a*³ in the shifting-plate (see Fig. 1) against the end, at *n*, of the adjustable stop E⁴.

The width of the gather can be controlled by varying the throw of the rock-shaft, as hereinbefore set forth; but except when gathering, the stop E⁴ should be so adjusted as to come in contact with the pin in the shifting-plate and arrest its motion when the extension of the presser-foot through which the slides traverse comes in contact with the shoulder *e*⁴ of the upper or outer slide, E¹. Then the slides will have approached the

needle to the proper point for the best operation of the device, and the stop E^4 will then be placed nearly as shown in Fig. 1.

The adjustable stop E^3 is also adjustable in the same manner, but for the purpose of plaiting only. The nearer the stop E^3 is set to the stop E^4 the narrower the plaits, which are, in all cases, one-half the distance between the needle and the spring-piece F^4 , (see Fig. 1,) measured when the shifting-pin a^3 comes in contact with the edge n of the stop E^3 ; or, in other words, the position of stop E^3 determines how far the ends of the slides which move the cloth should recede from the needle before the motion is changed to approach the same. Half of this distance is the width of the plait.

The method by which the adjustable stops are attached to the slides E^1 and F may be modified; but their adjustability should be retained, or the range of work of which the device is capable will be very much limited. Moreover, it is essential that they be so connected to the slides that the advance motion which the slide F receives before it transmits its motion to the slide E^1 , and which is fully described in my former patent, be not interfered with, since this slight motion closes the jaws upon the cloth, forcing it to fold and advance under the needle, and also opens the jaws, so the slides may recede from the needle for a fresh plait without withdrawing the cloth. The shape of the stops E^3 and E^4 may be changed as well.

The essence of my invention in this particular is to oppose at any desired point within the limits described an obstacle to arrest the motion of the pin a^3 , and consequently of the shifting-plate, and thus, through its parts, to reverse the motion of the slides. I have described and shown in stop E^3 and in stop E^4 a cheap and effective form. Next in order of motion come the slides E^1 and F . The form of slide E^1 is more clearly shown in Fig. 14 than can be described in words. The straight portion of the slide is the same as heretofore, except that it is made wider than and overlaps slide F about one-sixteenth of an inch on each side, Figs. 1 and 18. The shoulders e^1 e^4 , Fig. 14, have been added to the slides to limit the approach of the slides to the needle, and should be placed as shown in the drawing, or so that when the shoulder e^4 is in contact with the extension a^4 of the presser-foot the needle occupies the slot F^4 , Fig. 21. The curved termination M^1 of the slide E , Figs. 14 and 1, is entirely different. It consists of a lip bent upward a little less than one-fourth inch, and at right angles, or nearly so. Before the lip is bent the extremity is pierced with a T-shaped slot, M^2 , the stem of said slot, Fig. 14, being about one-eighth inch wide, and the head or horizontal part large enough to admit the curved extremity of the plate F^1 , Fig. 21. This will require the portion which is to form the lip to be a little wider (say, one-sixteenth of an inch on each side) than the adjoining

part of plate F^1 , as shown in Fig. 14. The bend is then made at such a point that the lower side of the curved part of the plate F^1 , when passed through the horizontal part of the slot M^2 , is raised about one-eighth inch above the stem of said slot, as shown in Fig. 1.

Attached to the curved extremity of the slide E^1 , and overlapping it, is the plate E^2 , Fig. 2. It is of sheet metal, of the shape indicated more clearly in the drawing than can be done by words, and provided with the slot x^2 , through which the cloth passes, and the slot h^2 , to uncover and coincide with the slot seen at F^4 in Fig. 21. The screw-hole $x x$ in plate E^2 , Fig. 20, is so placed as to coincide with the hole $x x$ in Fig. 14, and a thumb-screw is placed therein to connect them. The rivet h^3 , Fig. 20, is inserted in the stem portion of the T-shaped slot aforesaid, and the connection is complete. This termination E^2 of the slide E^1 is substantially the same, though changed in form, and has the edge $i i$, Fig. 20, bent upward in a lip in the same manner and for the same purpose. I have separated it from slide E^1 , so that it may be removed and a similar piece substituted, having the slot x^2 , Fig. 20, on the other side, so that, having substituted one piece for the other, the operator may feed the cloth at will, either on the right or left hand. These different parts and their mutual relation can, perhaps, be better understood by consulting Figs. 1 and 3.

The slide F is made a little narrower than slide E^1 , as and for the purpose hereinbefore set forth. It is provided with pins $e' e'$ (or a rack) to engage the cog-wheel, and with the slots $d^2 d^2$ to receive the rivets in Fig. 14, all as and for the purpose set forth. At the place shown in Figs. 18 and 19 it is pierced with a slot about one-eighth inch wide and about three-fourths inch long. The extremity of this slot should be a little less distant from the nearest of the pins or rack than the intervals between any two of those pins. On the same side of the slide F as the pins or rack, and so placed that its free end can be sprung up into the slot, is a spring, of metal, having the form shown in Fig. 17, and also having its free end bent downward in a curve, so as to project from the slide F to the same or a little greater distance than the pins. It is permanently secured to slide F by two rivets, as shown in Figs. 15, 16, and 18. An inspection of Fig. 1 the spring F^2 will show the arrangement quite clearly. Figs. 15 and 16 are inserted to show the operation of the device. Its function is as follows: The cog-wheel D , in its motion from right to left, (see Fig. 16,) may pass beyond the range of the pins. The wheel may continue the motion indefinitely without injury, since it merely raises and releases the spring, without otherwise affecting the machine; but as soon as the motion of the wheel is reversed (see Fig. 15) a tooth of the wheel will engage the bent end of spring, which, acting as a pin or continuation of the rack, will feed the cog-wheel into the rack. Thus the spring F^2

acts as an escapement, and insures the machine from damage from lack of skill on the part of the operator.

The curved end of the slide F beyond (Fig. 18) the point of attachment of the spring F² is widened, as shown, to equal the slide E¹. It curves to the right, as does the slide E¹, coinciding with it in shape, and terminates as shown in Fig. 1.

The plate F¹, Fig. 21, is a rectangular piece of metal with a curved extension, shouldered at y⁶ y⁶, and provided with the ears y⁵ y⁵, cut from the metal itself, so that while one end remains attached the free ends may be bent upward, as shown, or in any direction, and for a purpose hereinafter set forth.

The front edge of the plate F¹ is provided with a slot. This slot is almost filled with a slip of spring metal, F⁴, made very thin, preferably of steel, riveted on the under side at x, and projecting somewhat (say, one-sixteenth inch) beyond the front edge of the plate F¹, and provided with a slot having a semicircular termination to permit the passage of the needle. The function of plate F⁴ is merely to ease the fold of the cloth under the presser-foot, and not to push it or move it in any way. It should somewhat exceed the presser-foot in width. The front edge of plate F¹ should equal in length the lip i i of the plate E², Fig. 20.

The slide F is placed underneath the slide E¹, (see Figs. 1 and 3,) and secured to it, as in my former patent. The curved portion of the plate F¹, Fig. 21, is then thrust through the slot in the extremity M¹ of slide E¹, Fig. 14, up to the shoulders y⁶ y⁶, Fig. 21. The ears y⁵ y⁵, Fig. 21, are bent so that they abut against the metal bounding the sides of said slot, so that the plate F¹ may not be withdrawn from its position, yet not so close as to prevent its rocking on the bottom of the slot. The curved end of the slide F will then lie between slide E¹ and the extension of the plate F¹, as will clearly appear from Fig. 1.

Upon consulting Fig. 1 it will be evident that when the slides move from the presser-foot the curved end of slide F (that slide moving a short distance before it communicates its motion to slide E¹, as in my former patent) approaches slide E¹, and leaves the curved end of the plate F¹ free, so that it (F¹) may slip easily over the cloth; but when the motion of the slides, for the same reason, changes, the curved end of slide F moves away from the slide E¹ and comes in contact with curved end of the plate F¹. Said plate then turns upon the lower edge of the slot in the extremity M¹ of the slide E¹ as a fulcrum, and the cloth is sewed between it and the plate E². The lip i folds it upward, and it is drawn up to the needle to be sewed down.

I have now clearly described the different changes in my invention, distinguishing the old from the new.

The fundamental principle upon which my invention rests and its method of operation, as far as its practical use is concerned, are unchanged.

The improvements I have described herein all work automatically; and, moreover, I have hereinbefore fully described the function and purpose and advantages of each.

I claim as new and desire to patent—

1. The combination, with the lever B, or its equivalent devices, provided with extension B⁴ and plaiting or ruffling device and connecting mechanism, the said lever being adapted to be engaged and disengaged at will from the mechanism to be operated by the same, essentially as set forth.

2. The combination of the presser-foot, provided with extensions, substantially as described, the rock-shaft C, and the lever B, or its equivalents, provided with an extension adapted to be engaged and disengaged at will from said rock-shaft, substantially as specified.

3. The combination of the presser-foot, provided with extensions a² a³ a⁴, the lever B, provided with extension B⁴, having thumb-screw B³, or equivalent devices, and rock-shaft C, substantially as specified.

4. The combination of the plate B¹, having dogs i i, spring d, and pin b², with catch A² and shifting-plate A¹, for the purposes set forth and described.

5. The shifting-plate A¹, having slots g' g' and slot a⁴, in combination with the hasp A² and plate B¹, provided with pin b², substantially as specified.

6. In combination with the cog-wheel D, plate B¹, having dogs i i, spring d, and pin b², the shifting-plate A¹, provided with shifting-pin a³, slot a⁴, and spring-hasps A², substantially as specified.

7. The rack F and the adjustable stops E³ E⁴, in combination with the wheel D, having the shifting-plate A¹, provided with the pin a³, substantially as described and shown.

8. The spring F², acting as an escapement or extra tooth, in combination with a cog-wheel, D, and slide F, substantially as set forth and specified.

9. The slide F, provided with a rack, e¹, and having the slot F³ and the spring F².

10. The slide E¹, provided with the lip M¹, and having the slot M², in combination with plate F¹ and slide F, provided with a rack, as described.

In testimony that I claim the foregoing improvements in gathering and plaiting attachments for sewing-machines, as above described, I have hereunto set my hand this 7th day of January, 1878.

LANSING ONDERDONK.

Witnesses:

CHARLES H. DUELL,
HAMILTON B. TOMPKINS.