(Model.) 2 Sheets—Sheet 1.

H. C. GOODRICH & R. S. BARNUM.

RUFFLING ATTACHMENT FOR SEWING MACHINES.

No. 256,834. Patented Apr. 25, 1882.

Fig. 1.

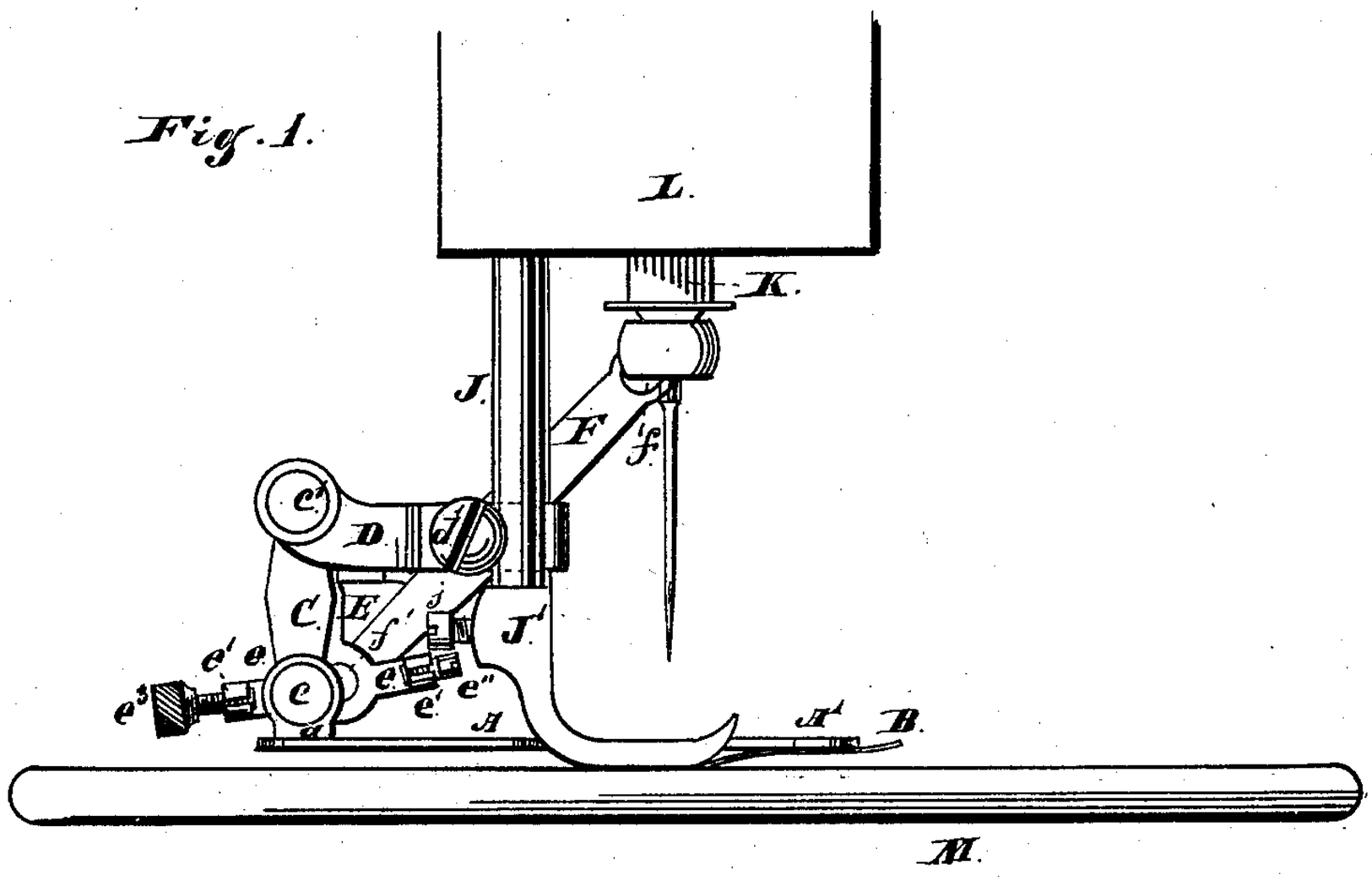
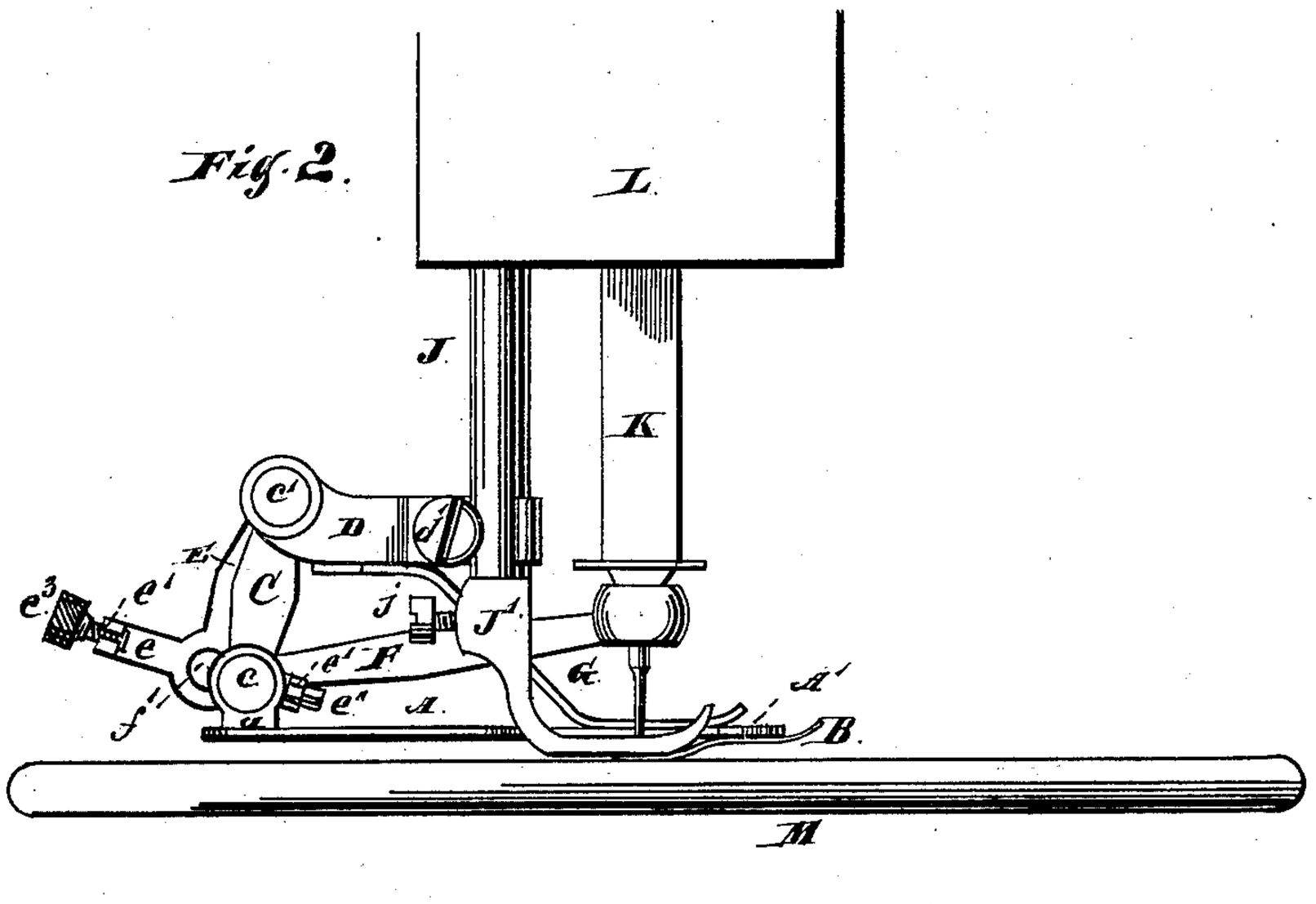


Fig. 2.



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By West + Bond
Their Attys

(Model.) 2 Sheets—Sheet 2.

H. C. GOODRICH & R. S. BARNUM.

RUFFLING ATTACHMENT FOR SEWING MACHINES.

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Fig. 3.

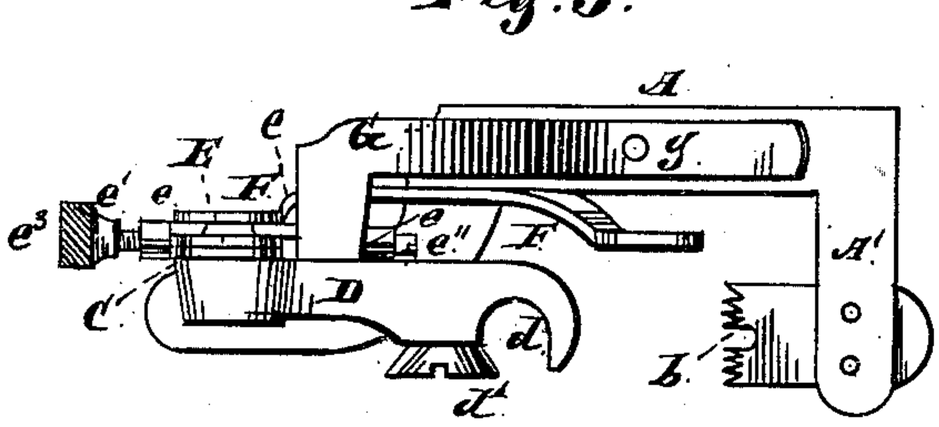


Fig. 7.

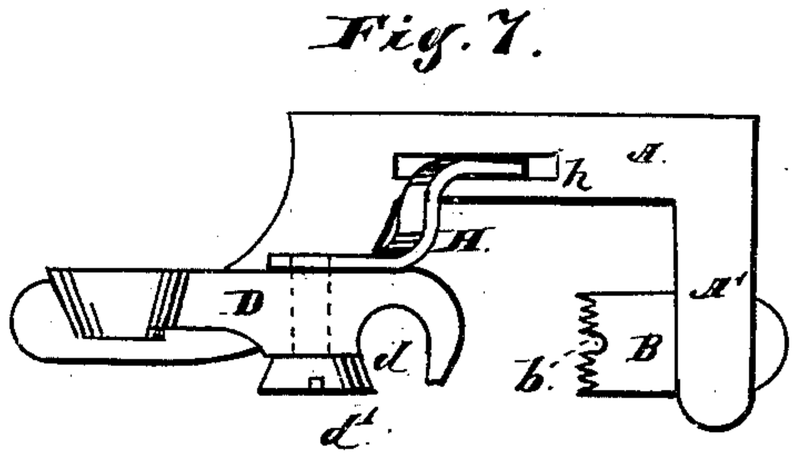


Fig. 4.

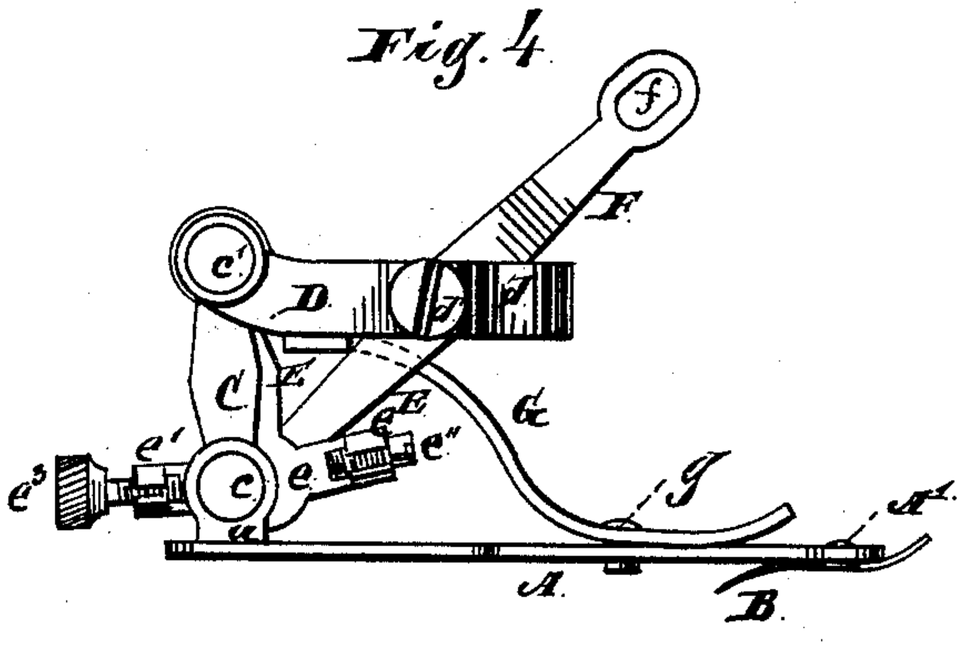


Fig. 6.

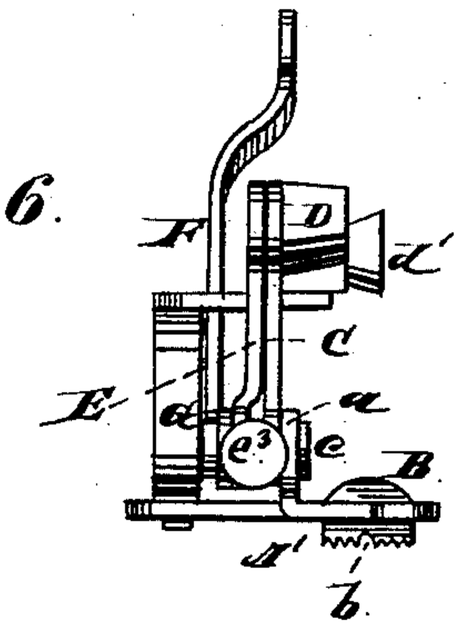
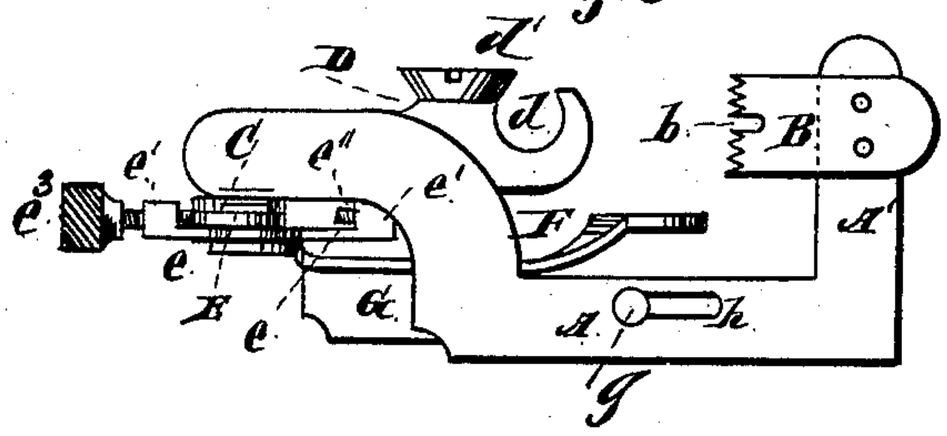


Fig. 5.



b.

Fig. 10.

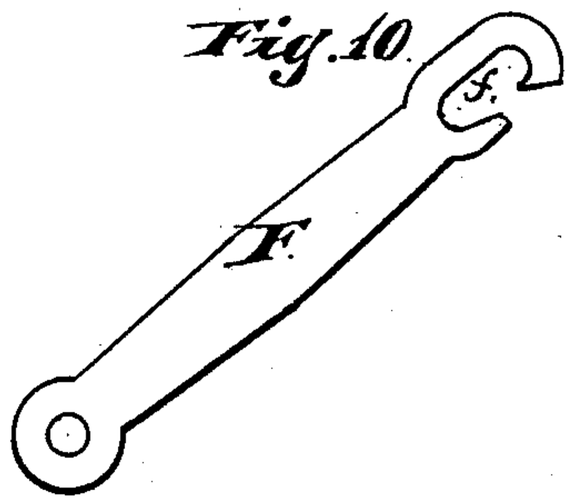
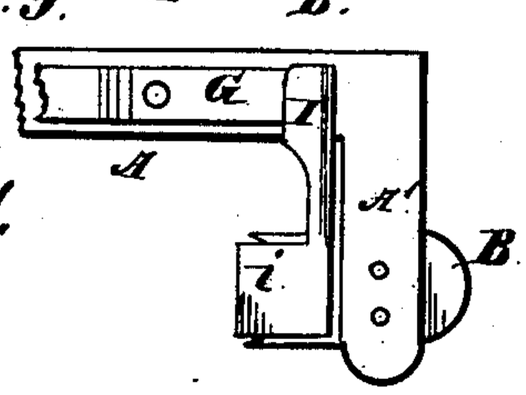


Fig. 8.

Fig. 9.



Witnesses:
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UNITED STATES PATENT OFFICE.

HARRY C. GOODRICH AND RUSSEL S. BARNUM, OF CHICAGO, ILLINOIS, ASSIGNORS TO SAID GOODRICH.

RUFFLING ATTACHMENT FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 256,834, dated April 25, 1882.

Application filed September 1, 1881. (Model.)

To all whom it may concern:

Be it known that we, HARRY C. GOODRICH and RUSSEL S. BARNUM, residing at Chicago, in the county of Cook and State of Illinois, and citizens of the United States, have invented new and useful Improvements in Ruffling Attachments for Sewing-Machines, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of the ruffling attachment attached to a sewing-machine, the figure showing an end elevation of the bed-plate of the machine and portions of the needle and presser-foot bars and a portion of the head carrying such bars, the needle and needle-bar being shown at the limit of the upward stroke; Fig. 2, a similar view to that shown in Fig. 1, showing, however, the needle-bar at the limit of its descending movement, and the parts composing the ruffler attachment in corresponding position; Fig. 3, a top or plan view of the ruffling attachment; Fig. 4, a side elevation of the ruffling attachment, showing the working parts in the position they occupy when the needle-bar is raised; Fig. 5, a bottom view of the ruffling attachment; Fig. 6, an end elevation of the ruffling attachment, showing the working parts in the position shown in Fig. 4; Fig. 7, a top or plan view of the blade-carrying plate and the support, showing a modification in the attachment of the guide-arm with the blade-plate; Fig. 8, a detail, showing a spring-plate to be used in connection with some forms of presser-foot to hold the ruffling-blade down; Fig. 9, a detail, being a top or plan view of the parts shown in Fig. 8; Fig. 10, a detail, being a side elevation of the link or arm having its upper end slotted for attachment to the needle-bar.

The object of our invention is to provide an improved ruffling attachment for sewing-machines which is so organized and operated from the needle-bar as to advance the material to form a ruffle while the needle is in a previously-formed ruffle, the first-mentioned ruffle being moved by the feed of the sewing-machine as the needle is elevated, so as to be in position to be sewed by the descent of the needle.

To these ends our invention consists essentially in the combination, with a support adapted to be attached to the presser-bar of a sewing-machine, of a reciprocating plate carrying a ruffling-blade, a suspended link connecting said reciprocating plate with said support, and devices connecting said link with the needle-bar, said devices being so constructed that the ruffle will be formed at the latter part of the descent of the said needle-bar, whereby a ruffle will be formed while the previously-formed ruffle is being sewed.

The invention also consists in the combination of a support adapted to be attached to the presser-bar of a sewing-machine, a suspended link pivoted at one end to said support, and at its other end pivotally connected with a plate carrying a ruffling-blade, and a secondary link also pivoted to the said support and connected with the needle-bar of the machine, said parts being arranged for operation so that the ruffling-blade will be advanced to form a ruffle while the needle is in a previously-formed ruffle.

The invention embraces other features, which will be hereinafter described in detail, and set forth in the claims.

In the drawings, A represents the reciprocating plate; A′, the arm of the plate carrying the feed or ruffling blade; B, the ruffling-blade; C, the suspended link carrying the reciprocating plate; D, the support by which the device is attached to the presser-foot bar; E, the suspended link for engaging the plate A and giving it a reciprocating movement; F, the link or arm through which the link E is oscillated from the needle-bar; G, the guide-plate for the plate A; I, the plate for holding the feed or ruffling blade down in connection with some forms of presser-feet; J, the presser-foot bar; J′, the presser-foot; K, the needle-bar; L, the head carrying the needle and presser-foot bars; M, the bed-plate of the machine; *a*, the ear or lip on the blade A; *b*, the opening for the needle in the ruffling-blade B; *c*, the pivot connecting the plate A with the link C; *c′*, the pivot connecting the link C with the support D; *d*, the recess or opening to receive the presser-foot bar in the support D; *d′*, the clamping-screw for securing the sup-

port D to the presser-foot bar; *e*, the side arms or extension at the lower end of the link E; *e'*, the heads or ears on the ends of the arms *e*; *e'' e*³, the adjusting-screws; *f*, the slot or opening for connecting the link or arm F to the needle-bar; *f'*, the pivot connecting the arm or link F with the link E; *g*, the guide-pin for the plate E; *h*, the slot for the guide-pin *g*; *i i'*, the operating portions of the plate I; *j*, the set-screw for attaching the presser-foot to the presser-foot bar.

In the drawings only so much of a complete machine as is necessary to illustrate the manner of attaching the ruffler and show the relation between it and the needle and presser-foot bars is shown, and of the parts shown the bed-plate M, head L, needle-bar K, presser-foot bar J, and presser-foot J', may be of any of the usual and well-known forms of construction and arrangement, the balance of the machine being also of the ordinary construction and arrangement, but not being shown or described, as they constitute no part of the invention.

The attachment is designed to be applied to any style or form of sewing-machine, and not for use only with the specific form of machine the parts of which are shown.

The plate A may be made of sheet-brass or other suitable material of sufficient strength not to bend or break easily in use, and may be formed as shown, or in some other suitable form to adapt it to the style of machine with which the attachment is to be used. As shown, it has a body or main portion, A, at one end of which is a side arm or extension, A', standing at right angles to the main portion, to which is secured a ruffling-blade, B, which may be made of spring-steel or other suitable material, having its acting end serrated and provided with a notch or recess, *b*, for the passage of the needle, and this blade may be of the form shown, or of some other form suitable to catch the material and carry it forward with the movement of the plate A.

The body of the plate, as shown, has a straight central portion, and the opposite end to that which has the side arm or extension, A', is curved or bent, the curve or bend being for the purpose of bringing its end in line for attachment to the actuating devices and their attachment to the needle-bar. This curve or bend or the form of the body or main portion of the blade A can be varied as required for attachment of the devices. At the outer end of this curved portion of the plate A is an upwardly-projecting ear or lip, *a*, having a circular opening by means of which and a suitable pivot, *c*, the plate is pivotally attached to the lower end of a link, C; but such attachment may be made in some other suitable manner, so long as it will permit the plate to turn on its pivot or connection with the link. This link C may be formed as shown or in some other suitable manner, and may be formed of sheet-brass or other suitable material. As shown, both ends are enlarged somewhat to give a broad bearing to steady the link. The upper end of this link is pivotally connected by a suitable pin or pivot, *c'*, to the outer end of a support, D, so that the link is free to swing or oscillate on its pivot or connection and give the plate A a reciprocating movement. This connection may be in the form shown or in any other suitable form that will allow the lower end of the link to oscillate or swing back and forth.

The support D may be cast or otherwise formed from brass or other suitable material, and its outer end may be of the form shown or any other suitable form, having an opening for the passage of the pin or pivot *c'* and a flat face against which the end of the link C will come in contact, so as not to bind or otherwise interfere with the free movement of the link. The forward end of this support D is provided with a recess or notch, *d*, of sufficient dimensions to fit over or onto the presser-bar, and the extreme end of the point beyond the notch is made to project somewhat beyond the face of the body of the support. The body of the support back of the notch and in close proximity thereto is provided with a screw-threaded opening to receive a screw, *d'*, the inner face of the head of which will come in contact with the face of the presser-foot bar, and in connection with the notch or recess *d* furnish a means by which the support can be firmly clamped and held in position on the presser-foot bar.

By using the notch *d* and the set-screw *d'*, arranged as described, it will be seen that the screw can be partially withdrawn and the support slipped onto the presser-foot bar, the bar entering the notch *d*, and when slipped on the support can be adjusted up or down to bring the plate A carried by the link C in proper relation to the bed plate of the machine for the blade B to act, after which by inserting the screw and making the head thereof bind onto the presser-foot bar the support will be locked thereto and cannot turn or slide thereon, the head of the screw acting to draw the support firmly against the bar in the notch *d*. This construction of support with its recess and set-screw is not here claimed as it constitutes the subject-matter of an application for a patent filed by Russel S. Barnum, September 1, 1881.

The link E may be made of sheet-brass or other suitable material, with its body formed as shown, or in some other suitable form. This link at its upper end is provided with a suitable opening to receive the pin or pivot *c'*, by means of which it is suspended from the support D, so that its lower end will oscillate or swing back and forth. The lower end of this link E is provided with side arms or extensions, *e*, one on each side, on the outer ends of which are formed or located heads or ears *e'*, having screw-threaded openings to receive the shanks of the set-screws *e''* and *e*³, and this end of the link swings in the arc of a circle that will cause the ends of the set-screws to engage with opposite sides of the ear or lip *a*, or with the lower end of the link C, so that as the link E

is swung backward the end of the set-screw e'' will strike against the edge of a or of the link C and carry the plate A backward and advance the ruffling-blade to form the gather or ruffle, and as the link E swings forward the end of the set-screw e^3 will engage the opposite edge or face of a or the link C and move the plate A away from the needle, withdrawing the blade B, by which movements the plate A is given a reciprocating movement.

The set-screws e'' and e^3 are for the purpose of giving the blade B the proper length of stroke and taking up the wear of the parts and compensating for such wear, and they also furnish a means for adjusting the movement of the link E in relation to the movement of the needle so as to cause the blade to be advanced or withdrawn at the proper time. By adjusting the screw e'' so that its engaging end will project a greater or less distance in advance of the end of its head or lip such end will strike against the face of a or the link C at the desired point in the descent of the needle-bar to give the blade B the necessary advance to carry the gather in position for the ruffle; and by adjusting the set-screw e^3 so that its engaging end will project a greater or less distance beyond its head or ear e' such end will engage the edge of a or the link C at the proper point in the ascent of the needle to carry the blade B back the required distance to gather the cloth for the ruffle, by which means it will be seen that the blade can be made to act to produce either a coarse or a fine gather, as may be desired, by simply adjusting the set-screws e'' and e^3 so that their engaging ends will act to give the blade B the required throw for the size of the gather.

In case the swing of the vibrating link E is not coincident with the movement of the needle-bar, the movements of these parts can be brought into unison by adjusting the set-screws e'' or e^3, either or both, as may be required, to bring the parts in proper time, and the same is true in case the parts become worn in use, the set-screws being adjusted to take up such wear.

The oscillating link E is swung on its pivot through the medium of a link or arm, F, one end of which is attached to the lower end of the link E by a suitable pin or pivot, f', and the other end of which is attached to the needle-bar by means of a set-screw or otherwise passing through the slot f, so that as the needle-bar descends the link will be given a backward movement, and carry with it the link E, and as the needle-bar ascends the end of the link F will be raised, advancing the link, and with it the link E, which movement will produce the reciprocating movement of the plate A, as before described. As shown in Fig. 10, the slot f is opened out on the under side, for the purpose of attaching the end of the link to the set-screw which holds the needle in position without removing such set-screw, the form of the opening being such as to allow the end of the link to be readily slipped over the shank of the set-screw, and when in position preventing such shank from passing out through the opening.

The guide-bar G is attached at one end, in any suitable manner, to the support D, and its other end is brought in contact, or nearly so, with the body of the plate A, and this end is provided with a stud or pin, g, which passes into a slot, h, formed in the body of A, by means of which pin and slot the plate A is made to reciprocate in a straight line, and any side or lateral movement or torsion of the plate is prevented from the advance of the blade, the arm or bar G being sufficiently rigid to overcome the tendency of the blade as it advances to spring or move the plate sidewise. In some cases, and for some forms of machines, this arm or bar G may be made to have a spring action to hold the blade down to its work, and instead of using the arm or bar G, located above or bearing on the upper face of the plate A, an arm or bar, H, like that shown in Fig. 7, may be used, the end of such bar passing through the slot h and taking the place of the pin g, and forming a guide and a stop for the plate A.

In some forms of machines the end of the presser-foot bar does not lie close enough to the bed-plate of the machine to act in conjunction with the blade B. With this form of presser-foot an arm or plate, I, can be attached to the end of the arm or bar G and be made to extend out sidewise, so that its outer end will come over the blade B and between it and the face of the presser-foot when the blade is advanced. This end of the plate or arm I is provided with leaves or lips with a spring action, the upper one, i, of which comes in contact with the face of the presser-foot, and the under one, i', in contact with the face of the blade, so that as the blade is advanced these spring-lips will act to press the blade down in engagement with the material.

In operation the support D is slipped onto the presser-foot bar above the presser-foot, and adjusted at the proper point to bring the blade A in correct relation with the bed-plate of the machine, and there clamped and held by the screw d', as before described. The link or arm F is attached to the needle-bar either by the set-screw for the needle or otherwise, and the device is ready for use. As the needle-bar descends the end of the arm or link F attached thereto will be carried down, carrying the opposite end thereof backward, and with it the link E, and when the end of the set-screw e'' striks a or the link C in such backward movement the plate A will also be carried backward, advancing the blade B toward the needle, and with it the material caught by the blade which forms the ruffle. On the return movement or ascent of the needle-bar the end of the link or arm F attached thereto will be raised thereby, carrying its opposite end forward, and with it the link E, and when the sef-screw e^3 strikes the face of a or the link C the plate A will be carried backward from the needle, and this

alternate advancing and returning of the blade will occur with each descent and ascent of the needle. The parts are so timed in relation to each other, and the set-screws e'' and e^3 are so adjusted to the movements of the needle-bar and the link E, that as the point of the needle begins to enter the material the end of the screw e'' will strike *a* or the link C, and advance the blade toward the needle, and with it the material for the ruffle, forming the ruffle while the needle is completing its descending movement, and the blade will remain in its forward position until the needle-bar has ascended to a point where the screw e^3 strikes the end of *a* or the link C, withdrawing the blade B by the continuation of the ascending movement of the needle-bar. This receding movement begins at or about the time the needle leaves the material, at which time the feed of the machine will act to hold the ruffle just formed between it and the face of the presser-foot in the usual manner of holding cloth in ordinary sewing, and when the blade begins its forward movement the feed of the machine is depressed so as to be non-acting, leaving a clear space beneath the presser-foot bar for the advance of the blade with the material. By this arrangement it will be seen that a single ruffling-blade only is required to do the work, dispensing with the secondary blade, which has heretofore been used in some forms of ruffling attachments for the purpose of holding the material on the withdrawl of of the blade, which office is performed in our device by the feed of the machine. In forming the ruffle the feed of the machine is out of the way, and a clear space is left for the action of the blade. The blade acts where the needle is in the material so that the needle forms a a stop to assist in the formation of the ruffle, and the blade is entirely out of the way while the needle is descending to do its work.

By means of the adjusting-screws e'' and e^3, the throw of the blade can be easily and quickly changed, and the movements of the link E can be made to coincide with the movements of the needle-bar in producing the required length of throw, and any irregularity from wear or otherwise can be compensated for.

By using the support D, which can be locked to the presser-foot bar by means of a screw d', the presser-foot can be left in place, and the attachment can be readily and quickly made and the parts adjusted in proper position for use.

Instead of using a support attached to the presser-foot bar, the links C and E can be extended up and be pivoted directly to the head of the machine or to a support attached to such head, the remaining portion of the device being left unchanged, with the links swinging from their pivotal connection to the head, and the blade operating in the same manner as where pivoted to the support or bar D.

What we claim as new, and desire to secure by Letters Patent, is—

1. In a ruffling attachment, the combination, with a support adapted to be attached to the presser-bar of a sewing-machine, of a reciprocating plate carrying a ruffling-blade, a suspended link connecting said reciprocating plate with said support, and devices connecting said link with the needle-bar, said devices being so constructed that the ruffle will be formed at the latter part of the descent of the said needle-bar, whereby a ruffle will be formed while the previously-formed ruffle is being sewed, substantially as described.

2. A reciprocating plate carrying a ruffling-blade, suspending-link C, and support D, in combination with the vibrating link E and arm or link F, for giving the plate a reciprocating movement to advance and return the blade, substantially as specified.

3. A reciprocating plate, A, carrying a ruffling-blade, and a suspending-link, C, and a support, D, in combination with the oscillating link E, set-screws e'' and e^3, and link or arm F, for reciprocating the plate A and adjusting its movements, substantially as specified.

4. A support, D, provided with a notch or recess, *d*, and a set-screw, d', to receive the presser-foot bar and clamp the support thereon, in combination with the reciprocating plate A, carrying a ruffling-blade, links C and E, suspended from the support, and a link or arm, F, substantially as and for the purposes specified.

5. A reciprocating-plate, A, carrying a ruffling-blade, B, and a guide-arm engaging the plate A, in combination with a link, C, the support D, link E, and arm or link F, substantially as specified.

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