(Model.)

A. JOHNSTON.

RUFFLING ATTACHMENT FOR SEWING MACHINES.

No. 259,643. Patented June 13, 1882.

Fig. 1.

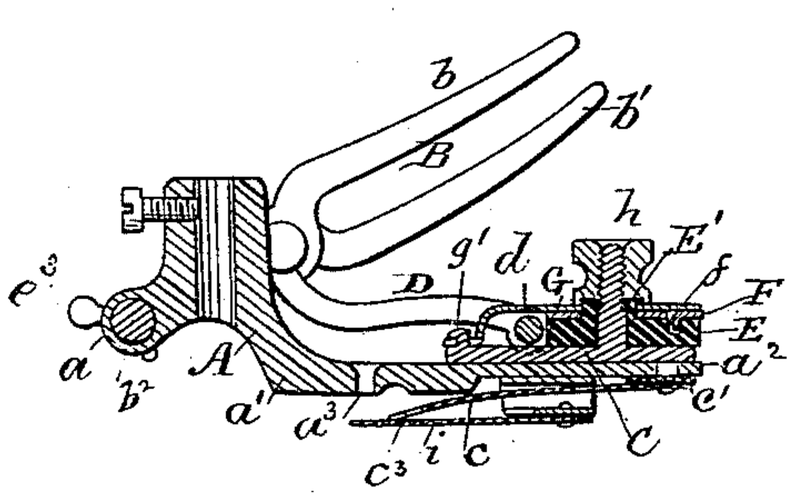


Fig. 2.

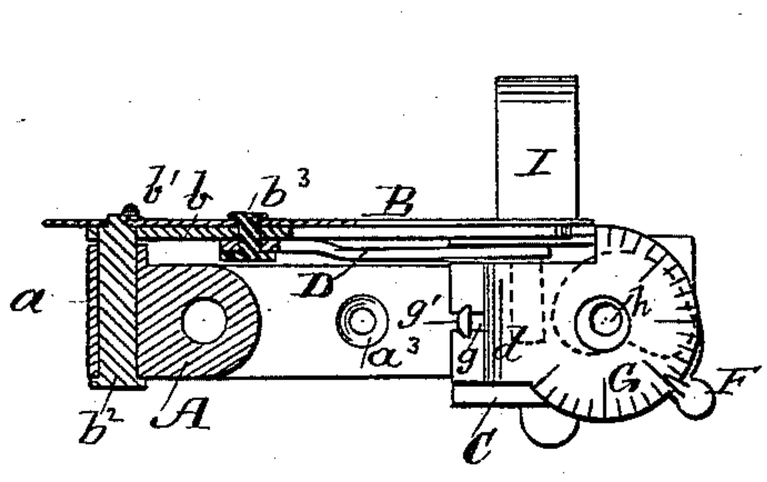


Fig. 3.

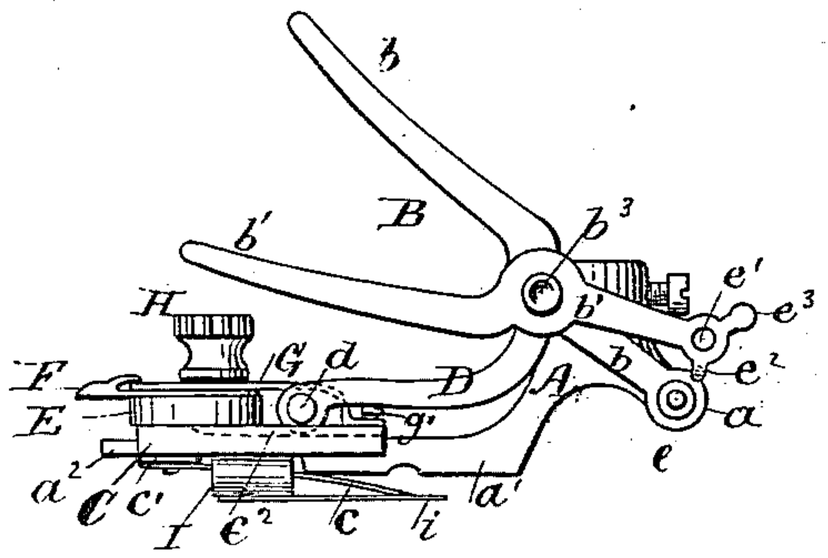


Fig. 4.

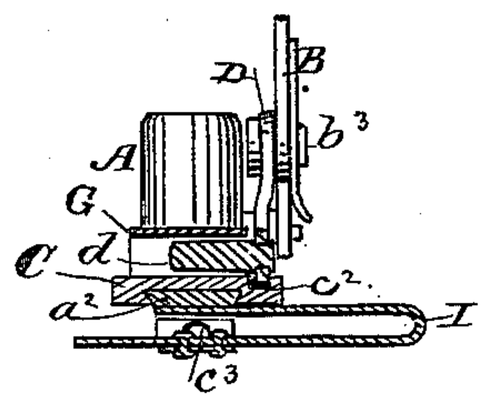


Fig. 5.

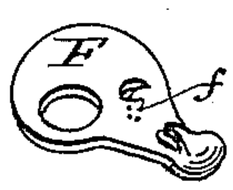
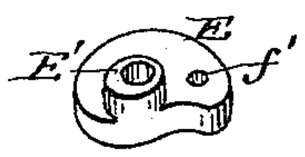


Fig. 6.



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UNITED STATES PATENT OFFICE.

ALLEN JOHNSTON, OF OTTUMWA, IOWA.

RUFFLING ATTACHMENT FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 259,643, dated June 13, 1882.

Application filed March 29, 1882. (Model.)

To all whom it may concern:

Be it known that I, ALLEN JOHNSTON, of Ottumwa, in the county of Wapello and State of Iowa, have invented a new and useful Improvement in Ruffling or Gathering Attachments for Sewing-Machines, which improvement is fully set forth in the following specification.

This invention has reference to ruffling or gathering attachments, and is in part applicable to such attachments generally, but has particular application to ruffling attachments in which the ruffler-blade is operated from the needle-bar of the sewing-machine positively in both directions, and which comprise a frame, usually adapted to be attached to the presser-bar of the sewing-machine, a forked lever for receiving the motion of the needle-bar, a blade-carrier supporting the ruffler-blade, and devices for communicating the motion of the lever to the blade-carrier and for adjusting the stroke of the blade.

The invention has reference, first, to the adjustment of the stroke of the ruffler-blade. In ruffling or gathering attachments as heretofore constructed the movement of the ruffler-blade has commonly been regulated or adjusted in one direction only—that is, the ruffler-blade in its forward movement advances to the same position with respect to the needle, and its stroke is made longer or shorter by means of devices which vary the limit of its backward stroke. It is now found that a better result is effected by causing the ruffler-blade to move farther forward beyond the needle in making a full gather than when a scant gather is being made. In the present invention, therefore, in addition to the means employed for varying the backward stroke of the ruffler-blade, devices are provided by means of which the ruffler-blade can be made to move on its forward stroke a greater distance beyond the needle when its stroke is lengthened, and vice versa, according as a full or scant ruffle is being made. This is preferably accomplished by a double eccentric, or combined eccentric and cam, effecting the one the forward limit and the other the backward limit of the stroke of the ruffler-blade, and both simultaneously and by the same operation.

The invention relates, secondly, to the operating-lever, through which motion is communicated from the needle-bar to the blade-carrier. In the present invention one of the arms or branches of the operating-lever is made movable, being independently pivoted so that it can be opened out and closed upon the needle-screw or projection on the needle-bar, whereby the putting in place and removal of the attachment is greatly facilitated. By this arrangement also it is possible to run the machine without working the ruffler while the latter is in place by simply opening the arms of the operating-lever so far that the needle-screw or projection on the needle-lever in its movement does not come in contact with them.

The invention relates, thirdly, to the special construction and combination of parts, as hereinafter more fully set forth.

The accompanying drawings which form a part of this specification represent a ruffling attachment constructed in accordance with the invention.

Figure 1 is a vertical longitudinal section, partly in elevation; Fig. 2, a plan view, partly in horizontal section; Fig. 3, a rear elevation; Fig. 4, a vertical cross-section, and Figs. 5 and 6 detail views in perspective of the adjusting devices. In Fig. 3 the arms of the operating-lever are shown open and in Fig. 1 closed.

A is the ruffler-frame, adapted, as shown, to be secured to the presser-bar of the sewing-machine. It comprises the projection or extension *a*, to which the operating-lever B is pivoted, the presser-foot a', and the plate or continuation a^2, which supports the blade-carrier C. It is pierced at a^3 for the passage of the needle. The operating-lever B is attached to a short cross-shaft, b^2, having a bearing in the projection *a* of the frame. It is composed of two branches, b b', adapted when in place on the machine to embrace between them the needle-screw or a projection on the needle-bar. The arm b is rigidly connected with the cross-shaft b^2, while the arm b' is detachably connected therewith and pivoted at b^3, so as to allow it to be opened out or moved away from arm b when for any purpose this is desirable. To arrange the lever for operation arm b' is closed upon the needle-screw or projection. In so doing the upwardly-turned toe e^2, on its lower end, rides over pin e on arm b, and the

said pin, entering hole e' in arm b', holds the latter in place during operation. To open out arm b' in removing the attachment from the machine, for instance, the said arm is released from the engagement of pin e by pushing on the lip or projection e^3 of arm b', when the latter is free to turn on its pivot b^3. The link D, jointed to lever B, transmits the motion of the latter to blade-carrier C, which is provided with an undercut groove, and adapted to slide lengthwise on extension a^2 of the frame A.

On the end of link D is a pin or cross-head, d, which works between two stops on said blade-carrier, formed, as shown, by the turned-down end of plate G and the edge of the adjusting-cam E. The position of plate G is adjustable by eccentric E′ entering a hole therein, said plate being slotted at g for the passage of holding-pin g'. (See Fig. 2.) The cam E and eccentric E′ are formed in one piece, so that their operation effects the lengthening or shortening of the space in which works cross head d simultaneously at both ends. The combined cam and eccentric turn freely on pin h secured to the carrier-plate, and they are moved by means of cam-plate F, which also turns on pin h as a center and engages with cam E by means of a projection, f, entering a hole, f', in said cam. The cam and eccentric are so constructed that when turned by plate F, so that cam E shortens at one end the space in which cross-head d works, eccentric E′ acts to draw plate G in a direction away from the needle, and thus shorten the space at the other end. The blade-carrier will then have a longer movement in both directions, the amount of lost motion of link D being lessened. By turning cam-plate F in the opposite direction the reverse result will be accomplished—that is, the space in which the cross-head of link D works will be lengthened in both directions, the amount of lost motion of said link thereby increased, and the movement of the blade-carrier C proportionately diminished.

It will thus be seen that by the arrangement described, beside varying the limit of the backward movement of the ruffler-blade, it may be made to advance on its forward motion a greater or less distance beyond the needle, and that the same adjustment which increases the length of stroke of the ruffler-blade causes it to advance a greater distance beyond the needle, and vice versa.

Plate G is graduated, as shown, and cam-plate F provided with a pointer to indicate the length of stroke of the ruffler-blade. The upper end of pin h is screw-threaded and a threaded nut, H, is provided, by which the plates F and G and the combined cam and eccentric are firmly clamped to the carrier-plate C. When it is desired to change the position of the adjusting devices, they are released by unscrewing nut H.

In the device shown the ruffler-blade c is attached to the metal strip c', riveted to the under side of the carrier-plate, and the slot c^3 in said blade is made sufficiently deep to admit of its passing the desired distance beyond the needle.

The separator-plate i, against which the gathering is done, is attached in the usual way to the end of a bent strip of metal, I, the bend being sufficiently deep to admit the material to be ruffled. The separator-plate may, however, be dispensed with and the ruffler-blade arranged to gather upward against the presser-foot.

To keep the link D from lateral movement a groove, c^2, is formed in the carrier-plate C, in which the end of said link works, being kept therein by contact with the top of plate G.

It will be seen that by removing nut H the plate G can be detached from the blade-carrier, pin g' slipping through slot g, and the carrier can then be drawn off the extension-piece a^2, on which it slides. This arrangement is found to be of great convenience, as it affords ready access to the ruffler-blade should the teeth of the same become blunted or should its operation be defective from any other cause.

Many modifications may be made in the details of construction without departing from the spirit of the invention, and parts of the invention may be used separately. For example, the invention is shown embodied in a ruffler having the blade-carrier supported on the presser-foot and operated from the needle-bar; but it can be applied in whole or in part to rufflers in which the blade-carrier is supported on the cloth-plate or on the head of the machine, or to those in which it is operated from the needle-lever or from the feed. It is also in part applicable to attachments in which the ruffling-blade is operated positively in one direction and is returned by a spring, as well as to those in which it is operated positively in both directions, and also to attachments in which the motion is imparted to the ruffler-blade by a bell-crank lever, by a toggle, by cams, or by other devices heretofore known and used, as well as to those in which a lever and link are used, and to those which have not as well as to those which have lost motion between the blade-carrier and operating device.

The cam E and eccentric E′ may be made adjustable independently of each other, if desired.

Having now fully described my said invention and the manner of carrying the same into effect, what I claim is—

1. The combination, in a ruffling attachment, with the ruffler-blade adapted to move past the needle and blade-carrier, of operating mechanism adapted to reciprocate the blade and carrier at each reciprocation of the needle, and comprising means for regulating the stroke of said blade and carrier, so that the length of stroke is increased or diminished simultaneously at both ends, and the ruffler-blade moves farther past the needle for full than for scant gathers, but not to the extent of the increased fullness of the gathers, substantially as described.

2. The combination of a ruffler-frame, an op-

erating device—such as a lever attached to or carried by said frame, and adapted to be vibrated at each stroke of the needle—a blade-carrier separate from the aforesaid device, but connected with the same so as to be operated thereby, a ruffler-blade adapted to move past the needle, and adjusting means for increasing or diminishing the blade-carrier's movement simultaneously and progressively at both ends, so that the carrier moves farther past the needle for full gathers than for scant ones, substantially as described.

3. The combination, with a blade-carrier, a reciprocating device, and stops through which motion is imparted from said device to said carrier, of an adjusting device connected with both said stops for moving them in opposite directions to increase or diminish the space between them, substantially as described.

4. The combination, with the operating-lever and a link connected therewith, of a sliding blade carrier having two stops between which a pin or cross head on said link works, so as to move said blade-carrier in both directions, said stops being adjustable toward and away from each other, substantially as described.

5. The combination of the operating-lever, link, and cross-head, blade-carrier, and stops on said blade-carrier for limiting the lost motion of said link, said stops being connected together so as to be simultaneously adjustable toward and away from each other, substantially as described.

6. The combination of the blade-carrier, movable top plate, and combined cam and eccentric, constructed and operating substantially as described.

7. The combination of the blade-carrier, reciprocating device for communicating motion thereto, movable top plate on said carrier, eccentric engaging with said plate, and cam attached to or in one piece with said eccentric, said eccentric and cam being adjustable, substantially as described.

8. The combination, with the cam for regulating the stroke of the ruffler-blade, of a lever or plate detachably connected with said cam, and provided with a handle for operating the same, substantially as described.

9. The combination, with the blade-carrier and the operating-lever, of a link jointed to said lever at one end, and having its opposite end guided by a groove in the body of the blade-carrier, substantially as described.

10. The operating-lever having its arms separable, in combination with a blade-carrier, devices connecting the blade-carrier and operating-lever, and adjusting means between the carrier and lever for regulating the stroke of the carrier independently of that of said lever, substantially as described.

11. In a ruffling attachment, an operating-lever with two branches or arms adapted to receive between them the needle, screw, or like projection, one arm or branch being pivoted independently of the other, and combined with a catch for holding it parallel, or nearly parallel, with the other arm or branch, so as to leave a slot substantially the width of said screw or projection, as set forth.

12 In a ruffling attachment comprising a sliding blade-carrier supported on an extension or projection of the ruffler-frame, and a lever pivoted to said frame and connected with said blade-carrier, a detachable device, such as the top plate, held in place by a set-nut, and forming part of the connection between the blade-carrier and lever, so that on removal of said device the blade-carrier may be removed from the ruffler-frame without disturbing the other parts of the attachment, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

ALLEN JOHNSTON.

Witnesses:
PHILIP MAURO,
H. P. DE VOL.