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G. L. HINMAN

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RUFFLER ATTACHMENT FOR SEWING MACHINES

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Fig. 1.

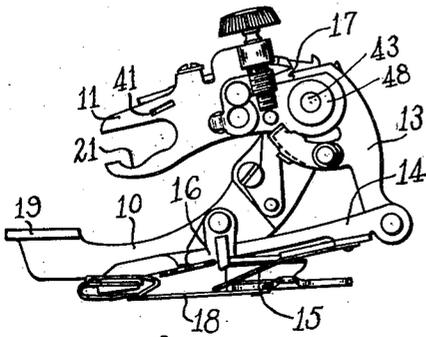


Fig. 2.

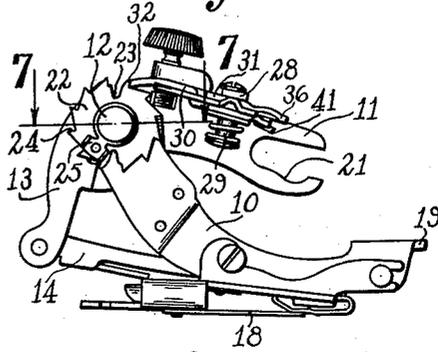


Fig. 3.

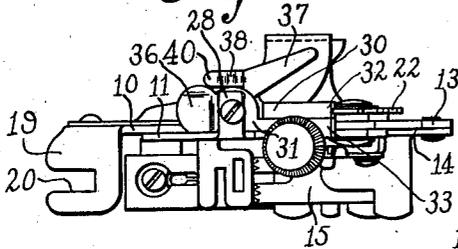


Fig. 4.

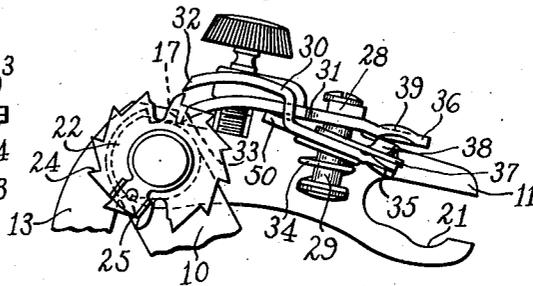


Fig. 5.

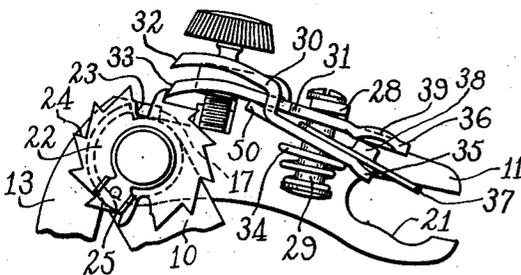


Fig. 6.

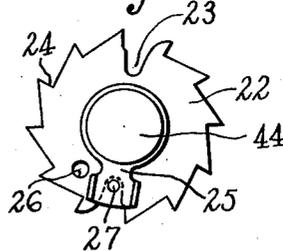
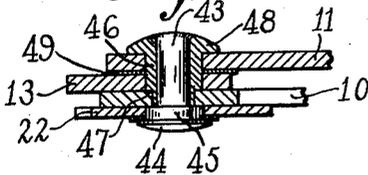


Fig. 7.



Inventor

George L. Hinman

By Rockwell Barcholon
Attorney 5

UNITED STATES PATENT OFFICE

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RUFFLER ATTACHMENT FOR SEWING MACHINES

George L. Hinman, New Haven, Conn., assignor to
The Greist Manufacturing Company, New
Haven, Conn., a corporation of Connecticut

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16 Claims. (Cl. 112—135)

This invention relates to a sewing machine attachment, and more particularly to a sewing machine ruffler or an attachment designed to make a ruffle or gather in the material fed to the machine.

In devices of this character, it is desirable to provide for various adjustments, not only to make finer or coarser gathers or ruffles, but also to provide for the spacing apart of the ruffles, that is, to vary the number of sewing machine stitches between adjacent ruffles. It has been found convenient to provide a ruffler with such adjustments that a ruffle can be made at each sewing stitch, or can be made every sixth stitch of the machine, or every twelfth stitch of the machine; that is to say, besides making a ruffle at every sewing stitch, the device may be so adjusted that it may become a "six-stitch" ruffler or a "twelve-stitch" ruffler. Also, in the present device, provision is made for throwing out entirely the ruffling mechanism, even when the attachment is in place, so that the sewing machine will do plain stitch work and make no ruffles at all.

There are, therefore, these four different adjustments or operations possible with the device shown in the present application, and, in addition, the device is relatively simple in construction and comprised of a comparatively small number of simple parts, so that it may be manufactured economically and be within the reach of sewing machine users.

One object of the invention is the provision of a sewing machine ruffler adjustable to effect single-stitch, six-stitch, or twelve-stitch ruffling, which will be of relatively simple construction.

Another object of the invention is the provision of a sewing machine ruffler adjustable for various types of ruffling work, and so constructed that the adjustments may be performed quickly and easily, even by an untrained operator.

Still further objects of the invention are to provide a sewing machine ruffler of novel construction, and one which will have a comparatively wide variety of adjustments which may be made while the attachment is in place upon the sewing machine, and which device will at the same time be efficient and positive in its operation.

To these and other ends the invention consists in the novel features and combinations of parts to be hereinafter described and claimed.

In the accompanying drawing:

Fig. 1 is a side elevational view of a sewing machine ruffler embodying my invention;

Fig. 2 is a side elevational view of the reverse side of the device;

Fig. 3 is a top plan view of the attachment;

Fig. 4 is an enlarged side elevational view of the operating lever and associated parts;

Fig. 5 is a view similar to Fig. 4 showing the parts in another position;

Fig. 6 is a detail view of the ratchet wheel; and

Fig. 7 is sectional view on line 7—7 of Fig. 2.

To illustrate a preferred embodiment of my invention, I have shown a sewing machine ruffler attachment comprising a frame member 10 to which is pivotally connected an operating lever 11 pivoted to the frame at 12. Also pivoted to the frame coincidentally with the operating lever is a swinging link 13 having its lower end attached to a ruffling blade carrier 14, which supports the ruffling blade 15 in the usual manner. The carrier 14 is elongated, as shown, and is guided between the frame member 10 and a guide stirrup 16 secured to a part of the frame. The link 13 has a shoulder 17 at its upper side by which this link or arm is actuated, as will be hereinafter described. The ruffling blade 15 is designed to be reciprocated over a fixed blade 18 in the usual manner, and it will be understood that the material operated upon passes between these two blades.

The frame 10 is designed to be attached to the presser bar of a sewing machine in substitution for the usual presser foot, and for this purpose is provided with an attaching member 19 having an attaching slot 20 designed to receive a screw which engages the sewing machine presser bar.

The device is designed to be operated by the needle bar of the sewing machine, and to this end the operating lever 11 is provided with a forked end 21 to be connected with a screw or pin upon the needle bar.

Also rotatably mounted upon the pivot 12 is a ratchet wheel 22 having two deep notches or teeth 23 and a series of shallower notches or teeth 24. As shown, there are five of these shallow notches between the deep notches, so that the deep notch will be effective every sixth step of the step-by-step movement of this ratchet wheel, as will be later explained. Pivotally mounted upon the pivot 12 adjacent the ratchet wheel is a mask member 25 designed to cover up the lower portion of one of the deep notches 23, as shown in Fig. 6. When it is desired to use both of the deep notches 23, this mask may be swung slightly to the left, as shown in Fig. 4, in which position the adjacent notch 23 is uncovered. To retain the mask in this position, the ratchet wheel is provided with an opening 26

in which lodges a raised portion 27 on the rear face of the mask member.

The operating lever 11 is provided with a bent over, horizontally disposed lug 28 to which is secured a pin 29. Upon this pin a pair of pawl members 30 and 31 are pivoted, these members being provided with openings through which the pin is received, and the openings are made somewhat larger than the pin so that the pawls will be allowed a pivoted or swinging movement in a vertical direction upon the pin.

The nebs, or forward operating ends 32 and 33 of these pawls, are spaced laterally from each other, as shown more especially in Fig. 3, the neb 32 lying within the plane of the ratchet wheel 22 to engage the teeth thereof, while the neb 33 is disposed within the plane of the link or arm 13 so as to engage the shoulder upon this arm. The two pawls are urged toward the upper portion of the pin 29 by a spring 34, the action of the spring tending to maintain the neb portions of the pawls in their lowermost positions.

Provision is made for throwing one or both of the pawls out of operation in order to perform different stitching operations. It will be apparent, from inspection of Figs. 3 and 4, that the body portions 35 and 36 of these pawls are in overlying or superposed position, and between these portions of the pawls a lever 37 is pivotally mounted on the pin 29, the lever being provided with a raised cam portion 38 designed to be moved between the body or tail portions of the pawls to separate them, or more particularly to move downwardly the tail portion 35 of the lower pawl 30 so as to raise the neb portion out of contact with the ratchet wheel, as shown in Fig. 4. The body portion 36 of the pawl 31 may be provided with a slight recess 39 in its lower face to facilitate the movement of cam 38 thereunder.

The lever 37 is also provided with an end portion 40 beyond the cam portion 38, which end portion is designed to enter an opening 41 in the operating lever 11 when the member 37 is moved to an extreme position, and hold the neb ends of both pawls in raised position, as shown in Fig. 5.

The pivot member 12 is shown more especially in Fig. 7, and comprises a rivet 43 having an enlarged head 44, and a shoulder 45 designed to abut the frame member 10. Upon the end of this rivet is placed an eyelet rivet 46, also provided with a shoulder 47 which abuts the frame member 10, and a head 48 over the outer portion of which the member 43 is riveted to hold the member 46 in place. A slightly bowed spring washer 49 may be placed between the operating lever 11 and the swinging link or arm 13 in order to hold these parts against lateral play, while at the same time preventing them from being bound frictionally together to such an extent as to prevent free movement.

The body portion 35 of the lower pawl is provided with a finger 50 which, when the neb end of the lower pawl is held in an extreme raised position, as shown in Fig. 5, will engage the upper pawl and hold it in an inoperative position out of engagement with the shoulder 17.

The operation of the device is as follows: One position of the parts is shown in Figs. 2 and 3, in which position the lever 37 has been moved outwardly so as not to spread the body portions 35 and 36 of the pawl members apart. In this position the neb portions 32 and 33 of the pawls are in substantially horizontal alignment, as shown in Fig. 2, and the neb 32 will engage the

teeth of the ratchet wheel 22. As long as this engagement is with the shallow teeth 24 of this ratchet wheel, the neb 33 will not be permitted to engage the shoulder 17, and hence there will be no movement of the ruffling arm or link 13, and no ruffling operation will be effected. However, when the neb 32 drops into one of the deeper teeth 23, as it will every sixth stroke of the operating lever 11, the neb 33 will engage the shoulder 17 and effect a forward movement of the lever 13 and ruffling blade 15 to make a ruffle in the material. In this position the device acts as a six-stitch ruffler, assuming that the mask 25 is in the position shown in Fig. 4 and does not cover one of the deep teeth 23. If it is now desired to change the device to a twelve-stitch ruffler, the mask 25 is moved to the position shown in Fig. 6, so that the lower portion of one of the deep teeth is covered up, which in effect converts the ratchet wheel into one having one deep tooth and eleven shallow teeth, so that the neb 33 will be permitted to engage the shoulder 17 upon every twelfth stroke of the operating lever 11. Thus the device is changed from a six-stitch ruffler to a twelve-stitch ruffler merely by moving the mask 25. It will, of course, be understood that the number of stitches between ruffling operations may be varied as desired by varying the number of shallow teeth 24 between successive deep teeth 23.

If it is now desired to effect a ruffle at every stroke of the needle bar of the sewing machine, the lever 37 is moved in a counter-clockwise direction with respect to its position in Fig. 3 to the position shown in Fig. 4, wherein the cam portion 38 is inserted between the pawl portions 35 and 36, thus raising the neb 32 by forcing downwardly the tail portion of this pawl member. It may be noted that the portion 36 of the upper pawl member at this time bears against the lug 28. With the neb 32 out of engagement with the ratchet wheel, the neb 33 is permitted to engage the shoulder 17 at every stroke of the needle bar, thus effecting at each stroke a movement of the swinging arm 13 and ruffling blade 15.

If it is desired to do plain sewing without removing the ruffling attachment from the sewing machine, this may be effected by pressing downwardly on the tail portion 35 of the upper pawl member to raise the neb ends 32 and 33 of both pawls from engagement with the ratchet wheel and shoulder 17, respectively. The lever 37 may then be swung until the end portion 40 thereon enters the small opening 41 in the operating lever 11. This holds both pawls in inoperative position, as shown in Fig. 5, so that, when the operating lever is oscillated, neither pawl is effective and the ruffling blade remains stationary, the sewing machine needle merely effecting a plain sewing operation. It will be apparent that in this position of the parts the lever 37 holds the pawl portion 35 in an extreme lower position, and the finger 50 on this pawl engages the forward portion of the upper pawl and holds the neb 33 in raised position, as shown in Fig. 5, out of engagement with the shoulder 17. The pivoted member 37, acting directly upon the pawl portion 35 and indirectly upon the other pawl through the finger 50, holds both neb portions in inoperative position.

While I have shown and described a preferred embodiment of my invention, it will be understood that it is not to be limited to all of the details shown, but is capable of modification and varia-

tion within the spirit of the invention and within the scope of the appended claims.

What I claim is:

1. In a sewing machine ruffler, a ruffling blade, a pivoted arm to operate said blade provided with a shoulder, a ratchet wheel adjacent said arm and having deep and shallow notches, an operating lever, a pair of pawls carried by said operating lever, one of which is adapted to engage said shoulder and the other the teeth of said ratchet wheel, and means for moving one or both of said pawls to inoperative position. 5
2. In a sewing machine ruffler, a ruffling blade, a pivoted arm to operate said blade provided with a shoulder, a ratchet wheel adjacent said arm and having deep and shallow notches, an operating lever, a pair of pawls carried by said operating lever, one of which is adapted to engage said shoulder and the other the teeth of said ratchet wheel, and means mounted adjacent said pawls and adapted to engage both thereof to move them from operative to inoperative position. 10
3. In a sewing machine ruffler, a ruffling blade, a pivoted arm to operate said blade provided with a shoulder, a ratchet wheel adjacent said arm and having deep and shallow notches, an operating lever, a pair of pawls carried by said operating lever, one of which is adapted to engage said shoulder and the other the teeth of said ratchet wheel, and a single member movably mounted adjacent said pawls and adapted to hold one or both thereof in inoperative position. 15
4. In a sewing machine ruffler, a ruffling blade, a pivoted arm to operate said blade provided with a shoulder, a ratchet wheel adjacent said arm and having deep and shallow notches, an operating lever, a pair of pawls carried by said operating lever, one of which is adapted to engage said shoulder and the other the teeth of said ratchet wheel, and a pivoted lever having a portion movable between said pawls to move one thereof to inoperative position. 20
5. In a sewing machine ruffler, a ruffling blade, a pivoted arm to operate said blade provided with a shoulder, a ratchet wheel adjacent said arm and having deep and shallow notches, an operating lever, a pair of pawls carried by said operating lever, one of which is adapted to engage said shoulder and the other the teeth of said ratchet wheel, and a three-position lever pivoted adjacent said pawls and movable to one position in which both pawls are operative, to another position in which one only of said pawls is operative, and to a third position in which neither pawl is operative. 25
6. In a sewing machine ruffler, a ruffling blade, a pivoted arm to operate said blade, said arm being provided with a shoulder, a ratchet wheel adjacent the arm and having deep and shallow notches, an operating lever, a pin carried by said lever, a pair of pawls pivoted on said pin, said pawls having horizontally spaced neb portions to engage the shoulder and ratchet respectively, and having overlying portions rearwardly of the neb portions, and means movable between said overlying portions to raise the neb portion of one pawl to an inoperative position. 30
7. In a sewing machine ruffler, a ruffling blade, a pivoted arm to operate said blade, said arm being provided with a shoulder, a ratchet wheel adjacent the arm and having deep and shallow notches, an operating lever, a pin carried by said lever, a pair of pawls pivoted on said pin, said pawls having horizontally spaced neb portions to engage the shoulder and ratchet respectively, and having overlying portions rearwardly of the neb portions, each of said pawls being movable to an inoperative position, and means movable between the overlying portions of the pawls to engage the operating lever to hold the pawls in said positions. 35
8. In a sewing machine ruffler, a ruffling blade, a pivoted arm to operate said blade, said arm being provided with a shoulder, a ratchet wheel adjacent the arm and having deep and shallow notches, an operating lever, a pin carried by said lever, a pair of pawls pivoted on said pin, said pawls having horizontally spaced neb portions to engage the shoulder and ratchet respectively, and having overlying portions rearwardly of the neb portions, spring means urging said pawls to operative positions, and cam means movable between the overlying portions of said pawls to depress the lower of said portions and raise the neb portion of such pawl from operative position. 40
9. In a sewing machine ruffler, a ruffling blade, a pivoted arm to operate said blade, said arm being provided with a shoulder, a ratchet wheel adjacent the arm and having deep and shallow notches, an operating lever, a pin carried by said lever, a pair of pawls pivoted on said pin, said pawls having horizontally spaced neb portions to engage the shoulder and ratchet respectively, and having overlying portions rearwardly of the neb portions, means movable between the overlying portions of the pawls to depress the lower of such portions and raise the neb portion of such pawl from operative position, and said means being provided with a portion engageable with the operating lever to hold said pawl in inoperative position. 45
10. In a sewing machine ruffler, a ruffling blade, a pivoted arm to operate said blade, said arm being provided with a shoulder, a ratchet wheel adjacent the arm and having deep and shallow notches, an operating lever, a pin carried by said lever, a pair of pawls pivoted on said pin, said pawls having horizontally spaced neb portions to engage the shoulder and ratchet respectively, and having overlying portions rearwardly of the neb portions, means movable between the overlying portions of the pawls to depress the lower of such portions and raise the neb portion of such pawl from operative position, said means being provided with a portion engageable with the operating lever to hold said neb portion in inoperative position, and a part on said lower pawl adapted to engage the other pawl and hold it in inoperative position when the lower pawl is moved to its extreme position. 50
11. In an attachment for sewing machines, a frame, a plurality of members adapted to be coincidentally pivoted to said frame, and means for pivoting said members to the frame comprising a pair of telescoping members passing through openings in said members and frame, each of said telescoping members being provided with a shoulder between which the frame is clamped, the opposite ends of said members being provided with enlarged heads, and the inner of said members being riveted at its unheaded end over the head of the outer of said members. 55
12. In a sewing machine ruffler, a ruffling blade, a pivoted arm to operate said blade provided with a shoulder, an operating lever, a ratchet wheel having deep and shallow notches rotatably mounted adjacent said arm, an actuating pawl carried by the lever and adapted to engage said shoulder, a controlling pawl carried by the lever and adapted to engage said ratchet wheel, and connecting means between said pawls to effect 60

engagement of the actuating pawl with said shoulder under control of said controlling pawl.

13. In a sewing machine ruffler, a ruffling blade, a pivoted arm to operate said blade provided with a shoulder, an operating lever, a ratchet wheel having deep and shallow notches rotatably mounted adjacent said arm, an actuating pawl carried by the lever and adapted to engage said shoulder, a controlling pawl carried by the lever and adapted to engage said ratchet wheel, connecting means between said pawls to effect engagement of the actuating pawl with said shoulder under control of said controlling pawl, and means to move said controlling pawl out of engagement with said ratchet wheel to render it inoperative to control the engagement of the actuating pawl with the shoulder.

14. In a sewing machine ruffler, a ruffling blade, a pivoted arm to operate said blade provided with a shoulder, an operating lever, a ratchet wheel having deep and shallow notches rotatably mounted adjacent said arm, an actuating pawl carried by the lever and adapted to engage said shoulder, a controlling pawl carried by the lever and adapted to engage said ratchet wheel, connecting means between said pawls to effect engagement of the actuating pawl with said shoulder under control of said controlling pawl, and

means to move said controlling pawl to inoperative position.

15. In a sewing machine ruffler, a ruffling blade, a pivoted arm to operate said blade provided with a shoulder, an operating lever, a ratchet wheel having deep and shallow notches rotatably mounted adjacent said arm, an actuating pawl carried by the lever and adapted to engage said shoulder, a controlling pawl carried by the lever and adapted to engage said ratchet wheel, connecting means between said pawls to effect engagement of the actuating pawl with said shoulder under control of said controlling pawl, and means to render said controlling pawl inoperative to control such engagement.

16. In a sewing machine ruffler, a ruffling blade, a pivoted arm to operate said blade provided with a shoulder, an operating lever, a ratchet wheel having deep and shallow notches rotatably mounted adjacent said arm, an actuating pawl carried by the lever and adapted to engage said shoulder, a controlling pawl carried by the lever and adapted to engage said ratchet wheel, connecting means between said pawls to effect engagement of the actuating pawl with said shoulder under control of said controlling pawl, and means to move both pawls to inoperative positions.

GEORGE L. HINMAN.