

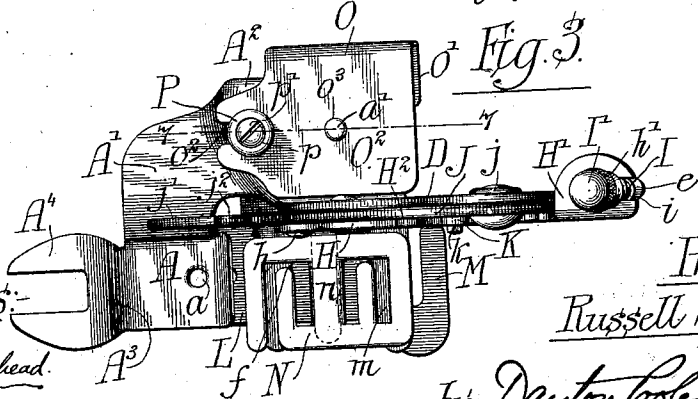
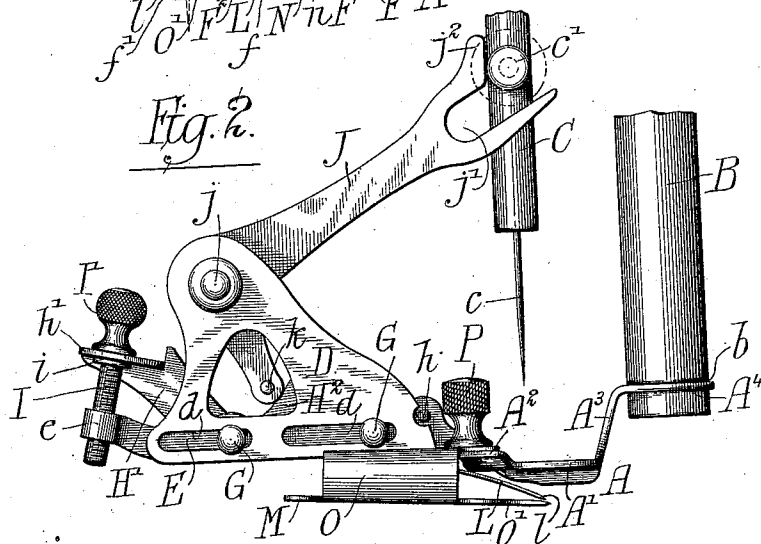
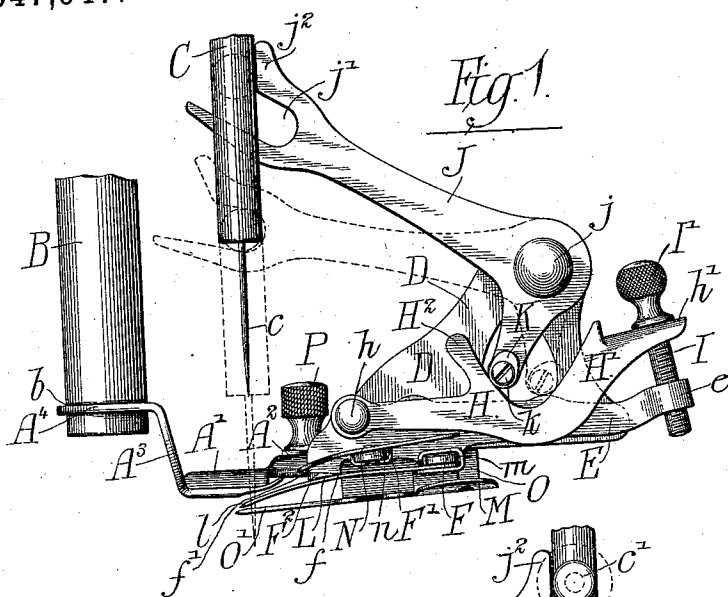
(No Model.)

2 Sheets—Sheet 1.

R. S. BARNUM.
RUFFLER FOR SEWING MACHINES.

No. 547,947.

Patented Oct. 15, 1895.



Witnesses:

Louis H. Whitehead.

John W. Adams

Inventor:

Russell S. Barnum.

by: Dayton, Cole & Brown

his Attorneys.

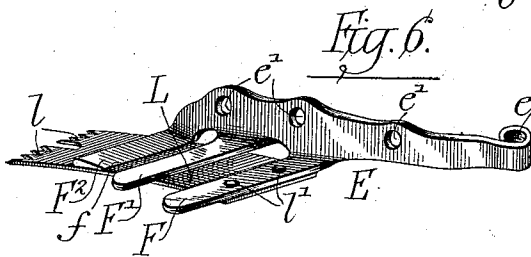
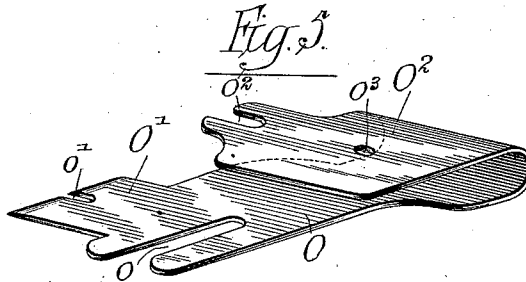
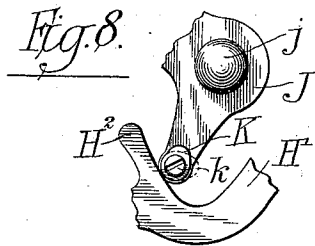
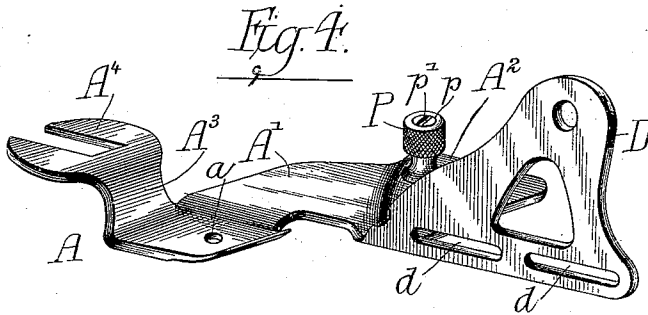
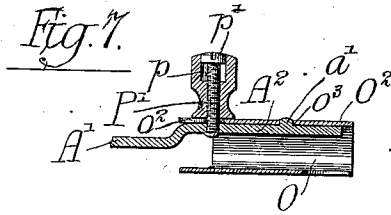
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2 Sheets—Sheet 2.

R. S. BARNUM.
RUFFLER FOR SEWING MACHINES.

No. 547,947.

Patented Oct. 15, 1895.



Witnesses:
Louis W. Whithead.
John W. Adams

Inventor:
Russell S. Barnum.
By: Dayton, Loomis & Brown
His Attorneys.

UNITED STATES PATENT OFFICE.

RUSSELL S. BARNUM, OF CHICAGO, ILLINOIS, ASSIGNOR TO FRANK L. GOODRICH, OF SAME PLACE.

RUFFLER FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 547,947, dated October 15, 1895.

Application filed September 12, 1892. Serial No. 445,660. (No model.)

To all whom it may concern:

Be it known that I, RUSSELL S. BARNUM, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful
5 Improvements in Rufflers for Sewing-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of
10 this specification.

My invention relates to that class of sewing-machine attachments known as "rufflers," which are designed to form gathered strips
15 upon dress goods and similar fabrics, and more particularly to that class of rufflers in which the principal operative parts are actuated by a vibratory bell-crank lever, the motion of which is derived from direct engagement of said lever with the vertically-reciprocating needle-bar of a sewing-machine.
20

Among the objects of my invention are, first, to so construct the actuating-lever that it shall readily compensate for or neutralize
25 any structural variations in the crimper-blade carrier, due either to the frictional wear or to slight defects in original construction; secondly, to also construct the actuating-lever in such manner as to insure the utmost degree
30 of nicety in the regulation of the movements of the crimper-blade carrier in both directions; and, thirdly, to improve the construction and operation of the ruffler generally.

A still further object of my invention is to
35 so construct the piping and band gage as to facilitate its attachment to and detachment from the ruffler and to render said gage movable by connecting it directly to the crimper-actuating arm of the ruffler.

To the above purposes my invention consists in certain peculiar and novel features of construction and arrangement, as hereinafter described and claimed.

In order that my invention may be fully
45 understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 is a side elevation of a ruffler embodying my invention and in operative connection with the presser-foot bar and needle-bar of a sewing-machine. Fig. 2 is also a side

elevation of the ruffler, but showing the opposite side of the same from that exposed in Fig. 1. Fig. 3 is a detached plan view of the ruffler. Fig. 4 is a detached perspective view,
50 on an enlarged scale, of the main frame of the ruffler and its integral presser-foot and fork-standard. Fig. 5 is a detached perspective view, also on an enlarged scale, of the separating or dividing plate of the ruffler. Fig.
60 6 is a detached perspective view, also on an enlarged scale, of the crimper-blade and the reciprocating carrier therefor. Fig. 7 is a vertical longitudinal section of the ruffler on the line 7 7 of Fig. 3, showing the construction of the non-detachable clamping-screw for connecting the dividing-plate to the ruffler. Fig. 8 is a detached view in side elevation of two adjacent portions of the crimper-carrier bar and of the actuating-lever therefor.
70

In the said drawings, A designates the presser-foot of the ruffler, this presser-foot being a thin flat plate of approximately rectangular form and extending outward longitudinally from the front end of the ruffler and at the front side thereof. From the inner
75 side of this presser-foot A projects outwardly and rearwardly a flat curved extension A', which is formed integrally with the presser-foot and which is raised slightly above the
80 level of the latter, while at the rear end of this extension A' is formed integrally the main frame-plate A² of the ruffler, this main frame-plate being also approximately rectangular in form and being raised slightly
85 above the level of the extension A'. At the front end of the presser-foot A is located a fork-standard A³, which is integral with the presser-foot and extends obliquely upward and forward a suitable distance, and at the
90 upper end of which is integrally united a forwardly-extending horizontal fork A⁴. The arms of the fork A⁴ embrace the lower end of the presser-foot bar B of a sewing-machine, said arms frictionally engaging an annular
95 horizontal groove b, which is formed in the lower end of said presser-foot bar B, the fork thus being readily detachable from the bar. Through the body portion of the fork-plate A², is formed a hole or eye a, through which the
100 needle c is reciprocated, said needle being carried in the customary manner by the lower end

of the needle-bar of the sewing-machine. To the inner edge or margin of the presser-foot A is integrally united a vertical standard D, which is of approximately triangular shape, and which is preferably of open or skeleton form, as shown. The lower limb of this standard D is formed with two horizontal slots or elongated openings d , which are disposed in longitudinal alignment with each other and the purpose of which will be hereinafter explained.

E designates the crimper-carrying arm or bar of the ruffler, this arm or bar being of suitably elongated form and extending rearwardly, as shown. At its front end this arm or bar E is provided with three horizontal parallel arms or projections $F F' F^2$, which extend toward the front side of the ruffler and which are preferably formed integrally with the arm or bar. The opposite or rear end of the arm or bar E is provided with a vertical internally-screw-threaded eye e , and the purpose of this eye and the arms $F F' F^2$ will be hereinafter explained. The crimper-actuating arm E is also formed with three openings or eyes e' , which are disposed in a horizontal series beginning at the front end of the arm. Through the rearmost eye e' , and also through the eye e' next in front of the said rearmost eye, extend two horizontal laterally-projecting studs G G, each of which extends also through one of the slots d , above described, and has at its outer end an enlarged head or button, as shown, these studs G G serving to properly direct and control the reciprocatory movements of the crimper-carrying arms, as hereinafter explained.

H designates the operating and regulating arm of the ruffler, this arm being pivotally connected to the crimper-actuating arm by a rivet h , which passes transversely through the front end of the regulating-arm and also through the front one of the three eyes or openings e' , above described. At its rear end this arm H is formed with a fork h' , which embraces a grooved shoulder i , formed upon the upper end of an adjusting-screw I. The threaded stem of the adjusting-screw I works through the internally-screw-threaded eye e of the crimper-actuating arm E, and the upper end of said screw-stem carries a milled head or knob I' , which is to be grasped by the operator's thumb and fingers while the screw is being manipulated.

The rear end portion H' of the operating and regulating arm H extends obliquely upward and rearward, as shown, so as to unite at an obtuse angle with the front end or body portion of the arm, the upper edge or margin of this end portion H' extending at a similar angle from the body portion of the arm. A projection or extension H^2 is formed integrally with the upper part of the body portion of the arm H and extends obliquely upward and forward from the arm, the upper or rear margin of the extension H^2 projecting upward and forward, or, in other words, diverging

from the front margin of the end portion H' of the arm. It will thus be seen that a recess is formed at the upper side of the arm H, this recess being of approximately V form. The purpose of this recess will also be hereinafter explained.

To one side of the vertical standard D, at the upper angle of the same, is pivotally connected an actuating bell-crank lever or arm J, a rivet or bolt j , which passes transversely through the angle of the arm or lever J and through the angle of the standard D, serving as the means for connecting said parts. The outer or rear end of the longer or upper arm of this bell-crank lever J is forked or bifurcated, as at j' , so as to freely embrace the usual clamping-screw c' , by which the needle c is retained in its socket at the lower end of the needle-bar C. It is to be particularly observed that the upper limb or arm j^2 of this fork j' is extended outward or upward from the lower arm or limb of said fork, the body portion of this upper fork-arm being somewhat shorter than that of the lower arm or limb. The purpose of this construction of the upper arm of the fork is to neutralize the effect upon the crimper-carrying arm or bar E of any irregularities in the vertical movements of the needle-bar. It has been found that even in machines of the same make or construction more or less variation occurs in the throw of the needle-bars, and it will be seen that by virtue of the extension j^2 of the bell-crank lever J if the needle-bar rises farther than is required for the proper operation of the ruffler the bell-crank lever will be lifted only during the time that the clamping-screw c' is between the parallel portions of the fork, and at the time said screw reaches the extension j^2 the latter will have assumed a vertical position, and the screw will therefore in its farther upward movement slide along said extension without lifting the bell-crank lever. As the needle-bar descends, the clamping-screw c' is carried downward past the extension J^2 , so as to enter the fork j' and thus properly depress the lever J.

At one side of the lower end of the bell-crank lever J is attached an adjustable cam or eccentric K, this cam or eccentric being attached to the bell-crank lever by a clamping-screw k . The stem of this clamping-screw extends transversely through the cam and into the lower end of the bell-crank arm, the arrangement being such that by turning the screw in one direction, so as to loosen the same, the cam may be turned axially upon the stem of the screw, as indicated in dotted lines in Fig. 8, and by turning the screw in the opposite direction the cam is clamped between the arm and the head of the screw and thus retained in its required position of adjustment for a purpose to be hereinafter explained.

L designates the crimping-blade, which is of the usual construction, and which extends longitudinally of the crimper-actuating arm

E, the rear end of the blade being riveted, as at l' , or soldered or otherwise suitably secured to the rear horizontal arm F and the front end of said blade being toothed or serrated in customary manner, as at l .

M designates the ruffle-gage, which is of skeleton form, as shown, and the connecting-sleeve m of which frictionally engages and surrounds the rear arm F of the crimper-blade carrier, the frictional engagement of the sleeve m with the arm F enabling the gage to be readily connected to and disconnected from the arm F, and also enabling the gage to be readily adjusted nearer to or farther from the carrying-arm E, according to the width of the particular ruffle which is to be made. The purpose of the gage M is to guide the strip from which the ruffle is formed.

N designates a combined band and piping gage, which is also of skeleton form, one of the two tongues of said gage being adapted to guide the band and the other the strip forming the piping between the band and ruffle, and the central connecting-sleeve n of which gage surrounds the middle arm F' and frictionally engages said arm, so as to be readily connected thereto and detached therefrom, and also so as to permit the combined band and piping gage to be likewise adjusted nearer to or farther from the crimper-carrying arm or bar E, according to the width of the particular ruffle to be made. It is to be observed that the connecting-sleeve n of this gage is located beneath said gage, so that the gage can be connected to the arm F' from above, thus materially facilitating the connection and disconnection of the gage. It is to be further observed that both the ruffle-gage M and the combined band and piping gage N are so arranged as to move with the crimper-carrying arm or box E, thus materially increasing the efficiency of the operation of said gages.

O designates the dividing or separating plate of the ruffler, the lower or body portion of this plate being of properly elongated form, so as to extend transversely beneath the presser-foot, and having a longitudinal recess o formed in its inner end. From the front margin of the inner end of the lower part of this dividing-plate projects forwardly an integral rectangular extension o' , which underlies the front end of the crimper-blade L, and the front end of which is formed with a needle-notch o' . The outer end of this lower or body portion O is turned upward and prolonged inward, so as to form an integral overlying extension O^2 . The front margin of this extension O^2 is formed with a notch o^2 to receive the clamping or attaching screw P, to be presently fully described, while a hole o^3 is formed centrally through the upper portion of the plate and receives a stud or projection a' , which rises from the main frame-plate A', the arrangement being such that the dividing-plate is prevented from turning pivotally

upon the screw P. This screw P consists of a longitudinally-bored body portion having a milled head, and having also an enlarged countersunk cavity p in the upper end of its head. The bore of the screw is internally screw-threaded, and through this bore extends an externally-screw-threaded stem P', the lower end of which is inserted through the main frame-plate A', and is upset or riveted beneath the same, so as not to be easily detachable therefrom. The head p' of this stem lies within the cavity p of the screw, while the lower part of the stem is embraced by the notch o^2 of the dividing-plate extension O^2 , the lower end of the screw P impinging upon the upper side of the extension O^2 , so as to retain the dividing-plate in proper operative position.

Now when the ruffler above described is to be used, the adjusting-screw I is turned in one or the opposite directions, so as to raise or lower the rear end of the operating and regulating arm H, and consequently so varying the position of the V-shaped recess at the upper side of said arm H relative to the lower end of the actuating-lever J as to vary the stroke of the crimper-carrier and crimper-blade in both directions, thus effectively varying the fullness of the ruffles. It is to be observed that a closely approximate adjustment of the ruffler can be attained by manipulation of the screw I, while the utmost nicety of adjustment of the crimper relative to the needle is effected by turning the cam K, as above described. This adjustment of the cam K also takes up the wear of the edges of the V-shaped recess of the crimper-operating arm. It is to be further seen that the elongated openings d in the standard D serve, in conjunction with the studs or pins G, to properly direct the movements of the crimper-carrier. It will be observed that the crimper-blade by reason of its curved form has a tendency to press directly against the under surface of the arm or bar F², and it is manifest, therefore, that when the ruffler is in operative position the forward or working end of the blade will be pressed upward slightly from the relative positions shown in Fig. 1, whereby by reason of the engagement of said blade with said bar a positive grip is insured for the front end of the ruffler-blade with the cloth. In order, however, that said bar F² shall not afford any resistance or impediment to the passage of the piping or band passing through the gage, I form or shape said arm so that its rear margin shall present a very thin or practically knife-edge, as shown at f in Figs. 1 and 6. It will thus be observed that a space f' is formed between the upper surface of the bar F² and the under side of the band-gage, thus allowing a free passage for the band. By reference to Fig. 1 it will be observed further that the piping and band gage is positioned upon the arm F' sufficiently above the ruffler-blade to afford a convenient

passage between the said piping and band gage and the upper surface of the ruffler-blade for the piping and band.

It will thus be seen that I have produced a ruffler which is simple, strong, and durable in construction, the integral character of the main frame and presser-foot especially contributing to this result, and the stroke of which is readily regulated to accord with variations in fullness of the ruffles. It is also to be seen that I have produced a ruffler the clamping-screw of the dividing-plate of which is non-detachable ordinarily, and thus cannot be readily misplaced or lost.

I claim as my invention—

1. In a ruffler for sewing machines, the combination of a main frame a crimper-carrying bar, a plurality of laterally projecting arms integral with said bar, a crimper blade secured to one of said arms, a combined band and piping-gage provided with a sleeve whereby said gage may be connected to one of said outwardly extending arms and an operating arm acting on said crimper-carrying arm, substantially as set forth.

2. In a ruffler for sewing machines, the combination, of a main frame provided with a standard, an operating arm pivotally united to said standard and adapted to engage at one end with the needle-bar of the machine, of a reciprocating crimper-carrier bar mounted upon said frame, and a second bar pivotally secured to said carrier bar at one of its ends and adjustably connected to said carrier bar at its other end, said second or pivoted bar being provided with a V-shaped recess adapted to engage one arm of the operating lever and to vary the lost motion of the operating lever by being adjusted with relation thereto, substantially as described.

3. In a ruffler for sewing machines, a reciprocating crimper-carrying arm and a crimper blade, a band and piping gage, and a ruffling gage carried by said crimper-carrying arm; said band and piping gage being arranged above the crimper blade and with a space intervening, substantially as set forth.

4. A ruffler for sewing machines, comprising a reciprocating carrier bar provided with three parallel arms, a ruffler blade secured to one of said arms and bearing against a second at a point intermediate of its length, and a piping and band gage secured to the third of said arms; a portion of said band gage extending over the second or bearing arm, but above and separate therefrom, whereby a space is afforded between said band gage and said bearing bar, substantially as and for the purpose specified.

5. In a ruffler for sewing machines, a reciprocating bar to which the crimper blade and combined piping and band gage is attached, a curved crimper-blade, and an arm secured to said reciprocating carrying-bar and bearing upon said curved crimper-blade, said bearing arm being provided with a thin or knife-edge whereby a substantially straight line is formed by the upper surface of the said bearing-arm and the adjacent upper surface of the ruffler-blade, substantially as and for the purpose specified.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

RUSSELL S. BARNUM.

Witnesses:

TAYLOR E. BROWN,
GEORGE W. HIGGINS, Jr.