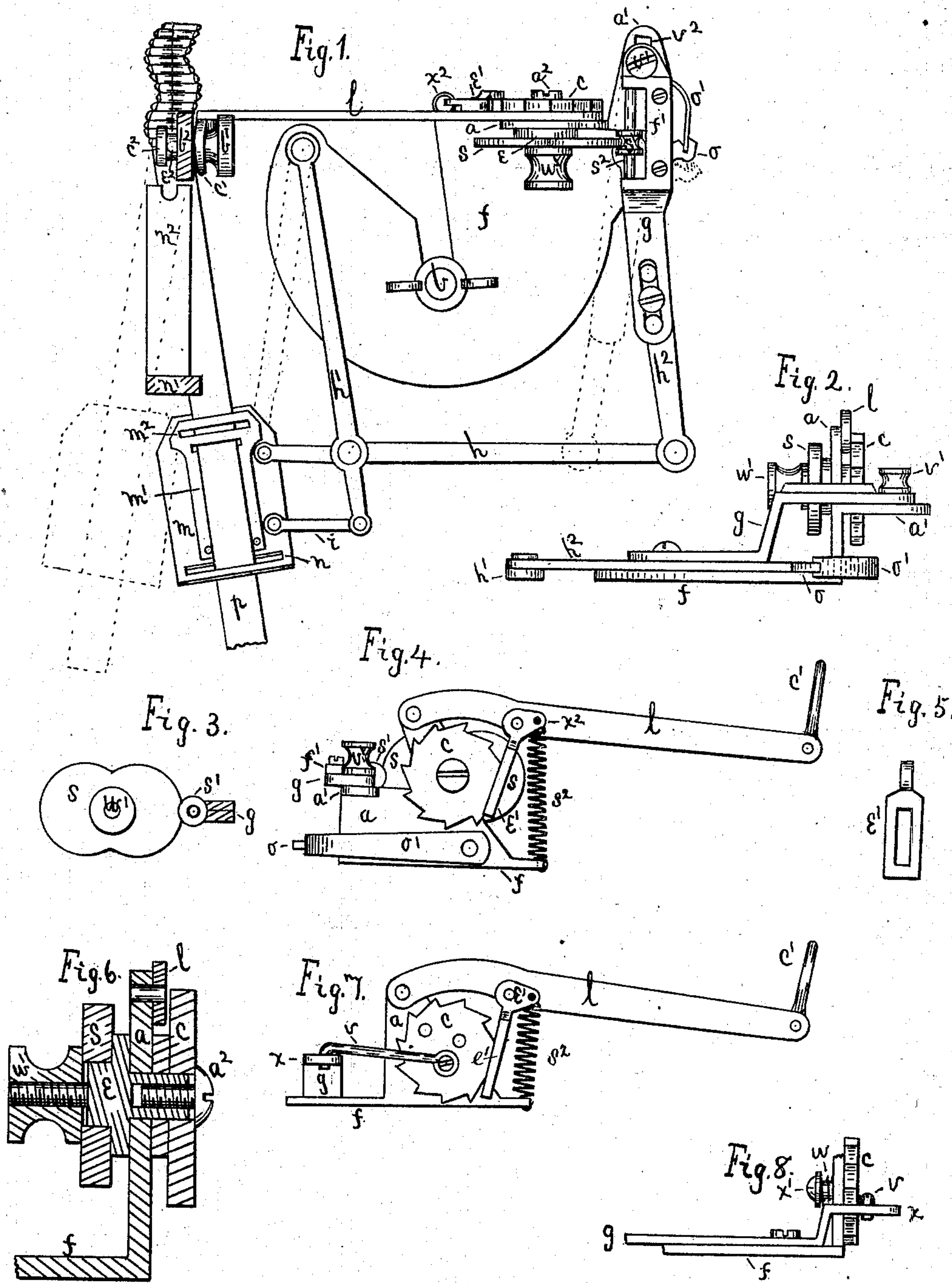


(Model.)

E. D. FELLOWS.

RUFFLING OR PLAITING ATTACHMENT FOR SEWING MACHINES.  
No. 252,447.

Patented Jan. 17, 1882.



Witnesses.  
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# UNITED STATES PATENT OFFICE.

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## RUFFLING OR PLAITING ATTACHMENT FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 252,447, dated January 17, 1882.

Application filed July 2, 1881. (Model.)

To all whom it may concern:

Be it known that I, EDGAR D. FELLOWS, of Watertown, Jefferson county, New York, have invented a new and useful Improvement in Ruffling or Plaiting Attachments for Sewing-Machines, of which the following is a specification.

My invention relates to a sewing-machine attachment; and its main features consist, first, in a guide by which a strip of cloth to be plaited by the ruffler is carried from side to side across the line of sewing in the arc of a circle whose center is at or near the needle; second, in combination with the guide and ruffler, a cam which actuates the guide and gives a peculiar form to the scallops, depending upon the shape of the cam.

In the drawings, Figure 1 is a plan. Fig. 2 is a right-hand side elevation. Fig. 3 represents the cam and detached parts. Fig. 4 is a rear elevation. Fig. 5 represents the pawl. Fig. 6 is a section through the cam and ratchet on an enlarged scale. Figs. 7 and 8 represent a modification of the invention, in which the curve motion is given to the guide by means of a connecting-rod or pitman instead of the cam.

In the general description of my invention, Figs. 7 and 8 will not be referred to unless specially mentioned in connection with the modification.

The frame *f* of the attachment is fastened by screw *b* to the base-plate of a sewing-machine. It has a vertical flange, *a*, which has a horizontal flange, *a'*. Ratchet-wheel *c* and cams *s* are on the short shaft or stud *e*, supported by and turning in the upright flange *a'* of frame *f*. Stud *e* and the manner of holding cam *s* by nut *w'*, and ratchet *c* by screw *a<sup>2</sup>* are shown in Fig. 6. Ratchet *c* is turned by means of lever *l* and pawl *e'*. The end of lever *l* is provided with a pivoted hook, *c'*, which hooks on the neck of needle-nut *b'*. The needle-yoke *c<sup>2</sup>*, needle *e<sup>2</sup>*, needle-bar *b<sup>2</sup>*, and needle-nut *b'* are ordinary and well-known parts of a sewing-machine. The vertical motion of needle-bar *b<sup>2</sup>* in sewing actuates lever *l*. Pawl *e'* is pivoted to lever *l*, and is held against the circumference of ratchet-wheel *c* by spring *s<sup>2</sup>*, whose upper end is fastened to the short arm *x<sup>2</sup>* of pawl *e'*, and the lower end

to frame *f*. The pawl is slotted, as shown in Fig. 5, for the teeth of the ratchet to enter.

A reciprocating movement in the arc of a circle and extending a suitable distance on each side of the line of sewing is given to guide *m* by means of pivoted parallel bars *i* and *h*, parallel arms *h'* *h<sup>2</sup>*, lever *g*, roller *s'*, and cam *s*. For the purpose of moving guide *m* in the arc of a circle whose center is at needle *e<sup>2</sup>*, arms *h'* *h<sup>2</sup>* are pivoted to frame *f* in line with the needle, and the bar *h* is pivoted to the arms parallel with said line, and extending parallel with bar *i*, pivoted to arm *h'* to the guide *m*, the distance from arm *h'* to the center of the guide being equal to the distance from needle *e<sup>2</sup>* to where arm *h'* is pivoted to frame *f*. By thus moving guide *m* in such an arc that a straight line lengthwise of the guide and through its center will always strike needle *e<sup>2</sup>*, all slack in the cloth strip *p* between the needle and the guide, and also all tendency to twist or wrinkle, so as to impede the work or mar its beauty and regularity, are prevented.

Lever *g*, at its rear end, is pivoted at *v'* to flange *a'* of frame *f*, and is slotted near its front end, where it is adjustably pivoted to arm *h<sup>2</sup>*, for the purpose of regulating and determining the extent of movement given to guide *m*. The same purpose may also be effected by means of slot *v<sup>2</sup>* in flange *a'* for pivot *v'* to enter, so that lever *g* and its fulcrum *v'* will be adjustable to increase or diminish the distance between fulcrum *v'* and rollers *s'*. Bar *f'* is bolted to lever *g* and supports the ends of shaft *s<sup>2</sup>*, on which roller *s'* is turned by cam *s*. When lever *g* is being adjusted, as above described, roller *s'* slides on its shaft *s<sup>2</sup>*. Roller *s'* is kept in contact with cam *s* by the force of spring *o'*, which bears against the lateral projection *o* of arm *h<sup>2</sup>*. Spring *o'* is attached to frame *f*.

Guide *m* is a thin metallic plate having a slot, *n*, at its rear end, and also provided with a tension-spring, *m'*, having one or more slots, near its front end, for strips of cloth of different widths to pass through.

The ruffling-blade *n<sup>2</sup>* and a section of the arm *n'* (shown in Fig. 1) are parts of the ruffler. The strip of cloth *p* to be plaited by the ruffler passes through slot *n* in guide *m* and through one of the slots *m<sup>2</sup>* in spring *m'*, where tension



is produced by compression of the strip between the guide and spring. When needle-bar  $b^2$  ascends, lifting with it lever  $l$ , the pawl  $e'$  turns ratchet  $c$  and cam  $s$ , thereby moving lever  $g$  and the arms and bars connecting it with guide  $m$ , so as to give a vibratory motion to the latter. The position of guide  $m$  in Fig. 1 is at the right of the sewing-line, and its position when moved to the left hand is shown by dotted lines. Hook  $c$ , being pivoted or jointed to lever  $l$ , prevents lateral strain on the needle-bar and allows the hook to accommodate itself to the neck of the needle-nut  $b'$ .

The pawl  $e'$ , by being recessed or slotted, as shown in Fig. 5, to receive the ratchet-teeth, leaves a support on the pawl at each side of the teeth to sustain the direct strain of turning the ratchet-wheel  $c$ , and also prevents the pawl from being pulled away from the ratchet by any lateral motion given to it by needle  $e^2$  when taking a long stitch. Spring  $s^2$ , by being attached to the base of frame  $f$  and to the short arm  $x^2$  of pawl  $e'$ , not only keeps the latter in contact with the ratchet, but also prevents hook  $c'$  from becoming dislodged from the neck of the needle-nut. Pawl  $e'$  and the ratchet-teeth are in such relative positions that the ratchet  $c$  and guide  $m$ , with intermediate parts, are moved by the pulling force of the pawl.

By taking off screw-nut  $w'$  the cam  $s$  may be removed and a different-shaped cam put in its place for the purpose of changing the form of the scallops in the plaiting. The cam may be of a form that will produce the same shaped scallops that would be made by using instead of the cam a connecting-rod or pitman,  $v$ , as shown in Figs. 7 and 8, to connect an extension,  $x$ , on either of the arms  $h'$   $h^2$  with the ratchet-wheel  $c$ , and if such a shaped scallop be desired the cam might be removed, and one of the arms  $h'$   $h^2$  or lever  $g$  be actuated by a ratchet-wheel through a pitman. In the modification as shown in Fig. 8, spring  $w$  on stud  $x$  produces the necessary tension on ratchet  $c$  to prevent its being turned by the pawl sliding over the ratchet-teeth.

In my invention as I have described it the guide in every position points directly toward the needle; but it may be of approximate though less value if the guide moves in the arc, as described, without the center line lengthwise of the guide always pointing to the needle, as would be the result if the bar  $i$  were dispensed with and the guide rigidly attached to the projecting end of bar  $h$ . The guide may also be moved in an arc by dispensing with all the bars, arms, and levers except lever  $l$  and arm  $h'$  and connecting the latter by a pitman with the ratchet, or a wheel rotated by a friction-clutch as a substitute or equivalent for a ratchet, the guide being rigidly attached to arm  $h'$ . In all such modifications the guide will move in an arc whose radius will be either directly or approximately in line with the needle.

I do not claim as a part of this invention

the combination of the ruffler with a reciprocating strip-guide, both in one attachment, nor the combination of the ruffler with a strip-guide having a pendulous motion, such claims having already been made by me in another application for Letters Patent for an improvement in plaiting attachments for sewing-machines, filed June 27, 1881.

I claim as my invention—

1. A cloth-guide having reciprocating motion across the line of sewing in an arc of a circle whose radius is in line, or approximately in line, with the needle, in combination with the ruffler, said guide being adapted to be connected with and operated by sewing-machine mechanism, for the purpose of forming scalloped plaiting, substantially as described.

2. A cloth-guide having reciprocating motion across the line of sewing and adapted to be connected with and operated by sewing-machine mechanism, in combination with the ruffler and with a cam to determine the shape of the scallops, for the purpose of forming scalloped plaiting, substantially as described.

3. The ratchet-wheel  $c$  and its pawl and cam  $s$ , or their equivalent, in combination with guide  $m$  and levers and bars arranged intermediate the guide and ratchet, to transmit to the guide a reciprocating motion in an arc of a circle whose center is at the needle of the sewing-machine, substantially as described.

4. The spring  $s^2$ , having one end attached to pawl  $e'$  and the other and lower end to frame  $f$ , in combination, with pawl  $e'$ , ratchet  $c$ , lever  $l$ , and hook  $c'$ , said hook being adapted to engage the needle-nut  $b'$ , substantially as described.

5. The parallel arms  $h'$   $h^2$ , pivoted to frame  $f$  in line with needle  $e^2$ , in combination with guide  $m$  and the bar  $h$ , pivoted to said arms and parallel with said line, substantially as described.

6. The parallel arms  $h'$   $h^2$ , pivoted to frame  $f$  in line with needle  $e^2$ , in combination with guide  $m$  and bars  $h$  and  $i$ , the bars  $h$  and  $i$  being parallel with each other and with said line and pivoted to the guide and to arm  $h'$ , and bar  $h$  being also pivoted to arm  $h^2$ , substantially as described.

7. The slotted adjustable lever  $g$  and frame  $f$ , slotted at  $v^2$ , in combination with cam  $s$  and the pivoted arm  $h^2$ , substantially as described.

8. The adjustable lever  $g$ , provided with sliding roller  $s'$  and its shaft  $s^2$ , in combination with cam  $s$  and pivoted arm  $h^2$  and frame  $f$ , substantially as described.

9. The lever  $l$ , provided with hook  $c'$ , pawl  $e'$ , ratchet  $c$ , cam  $s$ , roller  $s'$ , lever  $g$ , spring  $o'$ , arms  $h'$   $h^2$ , bars  $h$  and  $i$ , and guide  $m$ , all attached to frame  $f$ , in combination with the ruffler, and adapted to be connected with and operated by sewing-machine mechanism, substantially as described.

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