(No Model.)

2 Sheets—Sheet 1.

L. C. WING.

RUFFLING ATTACHMENT FOR SEWING MACHINES.

No. 492,317. Patented Feb. 21, 1893.

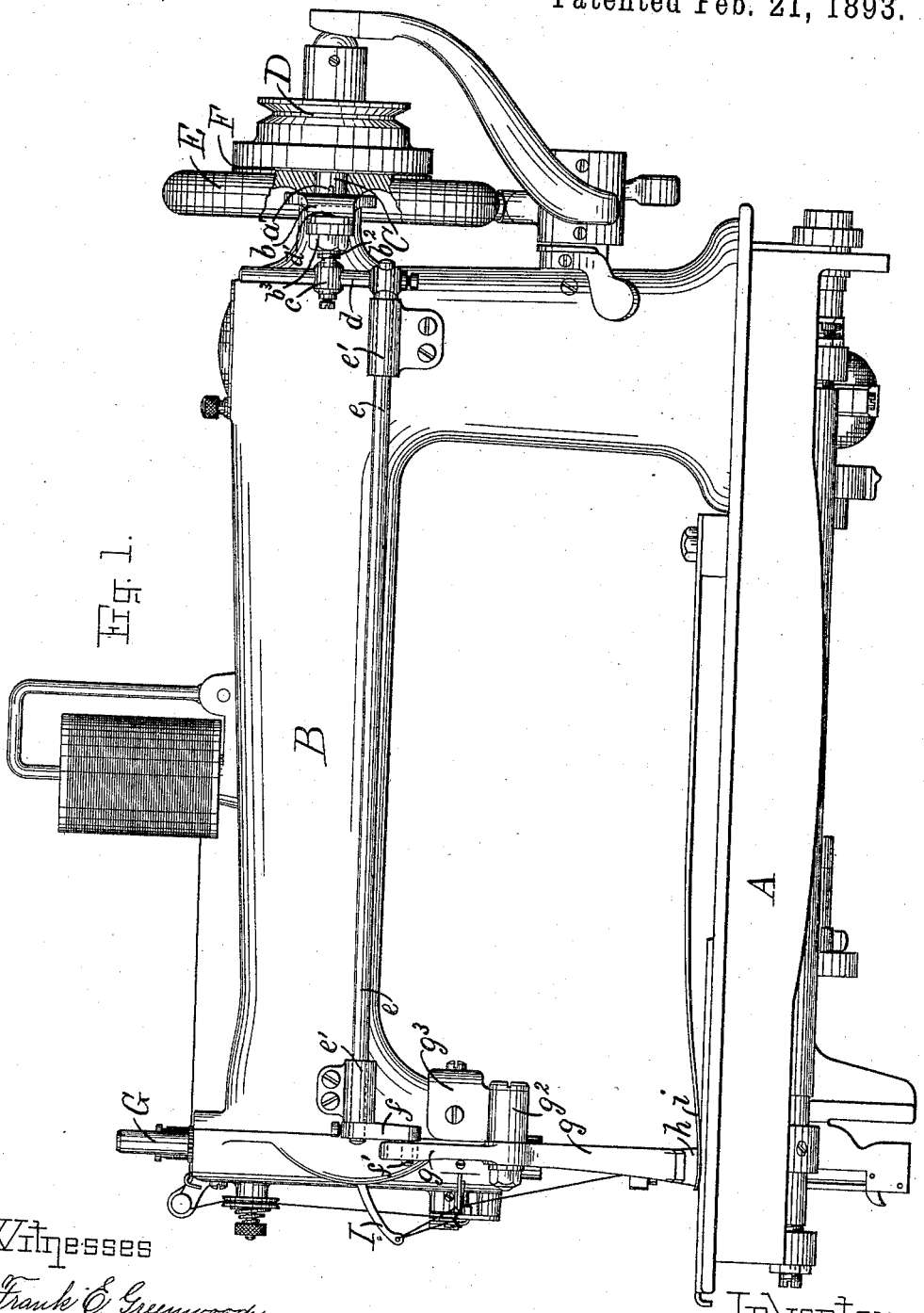

Fig. 1.

Witnesses
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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

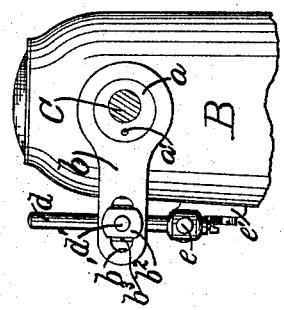


Fig. 4.

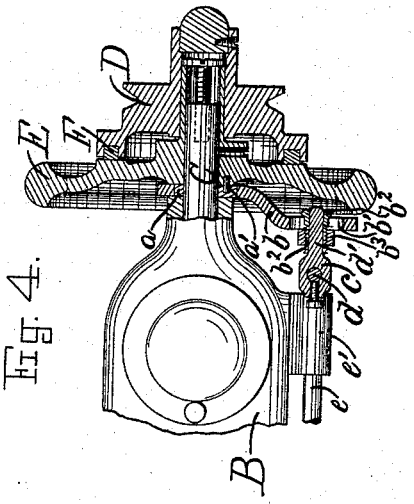


Fig. 5.

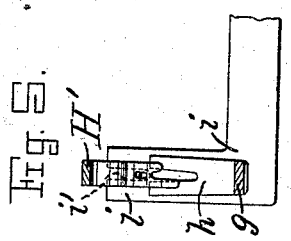
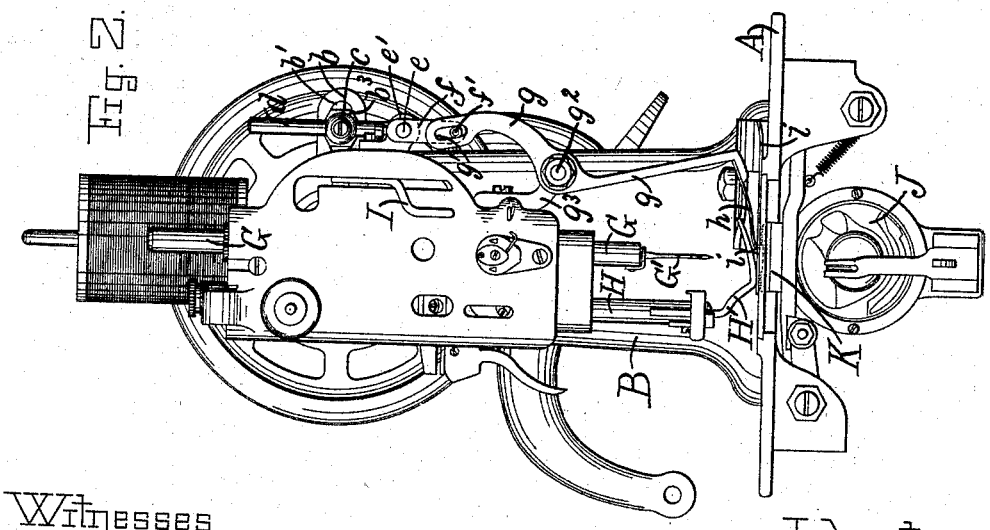


Fig. 2.



Witnesses

Frank E. Greenwood

Anna M. Dolloff.

Inventor

Lingan C. Wing

by Henry Chadbourn

his Atty.

UNITED STATES PATENT OFFICE.

LINGAN C. WING, OF SOMERVILLE, ASSIGNOR TO RICHARDSON, HOWE & LOVEJOY, OF BOSTON, MASSACHUSETTS.

RUFFLING ATTACHMENT FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 492,317, dated February 21, 1893.

Application filed March 5, 1892. Serial No. 423,882. (No model.)

To all whom it may concern:

Be it known that I, LINGAN C. WING, a citizen of the United States, residing at Somerville, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Ruffling-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming a part of this specification.

This invention relates to improvements in machines for ruffling one piece of material upon another and attaching them together by stitches. The improvement may be attached to any of the different kinds of sewing machines now manufactured.

It consists in novel mechanism to operate the ruffling blade to form the ruffle, also in means to adjust the position of the end of the ruffling blade in relation to the needle at the extreme forward movement of said blade when forming the ruffle, so as to finely adjust the stitch formed by the stitch forming mechanism in relation to the edge of the ruffle formed by the ruffling blade.

The object of my invention is to produce a simple, strong, durable and effective device which may be easily attached to any of the different kinds of sewing machines now in common use.

The invention is carried out as follows, reference being had to the accompanying drawings which represent my improvement attached to a sewing machine known as the "Wheeler & Wilson D. 12," and whereon:

Figure 1 represents a front elevation of my improved machine. Fig. 2 represents a side elevation of the machine, Figs. 3 and 4 represent detailed views of the mechanism on the driving shaft for operating the ruffling blade on the machine. Fig. 5 represents a detail plan view of the ruffling blade, the presser foot and the separator for separating the material to be ruffled from that on which it is to be stitched.

Similar letters refer to similar parts on the different figures of the drawings.

The stitch forming mechanism of the machine as well as the mechanism for operating the feeding device for the material upon which the ruffling is to be sewed forms no essential part of this invention and may be varied at will, but I prefer to use and have shown that of the machine known as the "Wheeler & Wilson D. 12."

A represents the bed plate, B the bracket arm, C the main driving shaft, D the driving pulley, E the balance wheel, F the friction clutch between the driving pulley and balance wheel, G the needle bar, G′ the needle, H the presser bar, H′ the presser foot, I the take-up, J the shuttle and K the feed-dog of the Wheeler & Wilson machine above referred to.

Upon the driving shaft is firmly mounted the eccentric *a* by means of a pin *a′* on said eccentric, which enters a recess in the balance wheel or by other equivalent means in such a manner that it will rotate with the shaft. The connecting link *b* is journaled at one end on said eccentric and at the other end it is pivoted to the block *c*, adjustable up and down on the rod *d* which is rigidly attached to and forms a crank on the rock shaft *e*. The rock shaft is journaled in the bearing *e′ e′* on the bracket arm and is provided at its outer end with the crank lever *f*, the crank pin *f′* of which moves within a slot *g′* in the upper end of the ruffling blade carrying lever *g*, which lever is fulcrumed at g^2 to the bracket arm or to a bracket g^3 attached thereto and it is provided at its lower end with a spring ruffling blade *h*, which moves upon the separator plate *i* attached to the bed plate of the machine or upon material resting on said plate whenever said lever is caused to move on its fulcrum as will be described hereinafter. The separator plate *i* is attached to the bed plate as far from the needle as is possible so as to leave as much space between it and the bed plate as is possible to allow the material to which the ruffling is to be attached to easily pass between the separator plate and the bed plate while the ruffling is being sewed thereto. The separator plate is provided with a slot *i′* as shown in dotted lines on Fig. 5, in order to allow the work to be fed

forward after the ruffling has been sewed to the material and to allow the separator plate to extend backward beyond the needle bar. It will be seen that as the driving shaft is rotated by the driving pulley it will cause the rock shaft *e* to be rocked in its bearings by means of the eccentric *a*, connecting link *b*, and rod *d*, which by means of the crank *f* will cause the ruffling blade carrying lever *g* to move on its fulcrum and thereby cause the ruffling blade *h* to move forward and back upon the separator plate or upon the material resting on said separator plate. The ruffling blade *h* is made forked in its outer end as shown in Fig. 5 in order to allow it to carry the ruffle being formed by said blade beyond the needle bar to bring the edge of the fold in the ruffle formed thereby under the needle and to allow the needle to enter the material at the edge of this fold in order to hold the ruffle firmly and intact. The action of the eccentric upon the mechanism between the eccentric and the ruffling blade, causes the ruffling blade to move toward the needle bar and to form the ruffle while the needle is in the upper part of its movement and outside or freed from the work. During this movement of the ruffling blade the material upon which the ruffle is to be sewed is prevented from moving by means of the separator and the presser foot of the machine; the eccentric will then cause the ruffling blade to be moved from the needle over the required amount of material to form the next ruffle during the time that the needle is in the lower part of its movement and within the work; thus the needle prevents the ruffling blade from drawing the material with it when it is moved away from the needle.

The amount of material to be used at one operation of the ruffling blade and consequently the size of the ruffle formed thereby is adjusted by means of the block *c* which is movable up and down on the rod *d*, and it will be seen that if the amount is to be increased it is only necessary to adjust said block down on said rod and nearer the rock shaft *e*, and that the opposite will be the case if it be adjusted up on the rod.

In order to adjust the ruffling blade in relation to the needle so as to form the stitches in their proper places on the ruffle I provide the connecting link *b* with a slot *b'* in which is adjustable the flanged sleeve b^2, which forms a bearing for the pivot pin *d'* on the block *c*. The sleeve b^2 is adjusted by means of the nut b^3 screwed upon the screw threaded exterior of the sleeve which clamps it within said slot by means of the flange on said sleeve. Thus it will be seen that if the ruffling blade does not move backward far enough to bring the stitches in their proper place it is only necessary to loosen the sleeve within the slot and to move it inward toward the driving shaft until the blade reaches its proper place and vice versa should the opposite be the case.

I do not wish to confine myself to the exact mechanism above described and shown on the drawings for adjusting the position of the stitches upon the ruffle as the same may be varied at will within the scope of mechanical skill without departing from the spirit of my invention.

It is obvious that the mechanism described for operating the ruffling blade from the eccentric on the driving shaft must of necessity undergo slight change to conform to the various stitch forming mechanisms used in connection with my device.

In using my machine the work is fed on the bed plate under the separator plate by means of the lower feed dog as usual and the ruffle is formed on top of the separator plate by means of the ruffling blade *h*.

By having the ruffling blade operated from the driving shaft directly, independent from the bed plate, and not by mechanism introduced through the bed plate, I am able to ruffle more bulky material and to form the ruffling farther from the edge of the material on account of the increased space which is left between the bracket arm and the bed plate in comparison with the ruffling machines now in common use, also, I am able to form the ruffle in sight of the operator at all times as the material rests upon the bed plate and the ruffling is made on top of said material.

My improved machine is equally well adapted to gather, ruffle or shirr material and fasten it by means of stitches without attaching it to any other piece of material, and in such cases the feed simply performs the office of feeding the material forward after it has been gathered, ruffled or shirred.

Having thus fully described the nature, construction, and operation of my invention, I wish to secure by Letters Patent and claim—

1. In a ruffling machine, the main driving shaft C the eccentric *a* mounted thereon, the link *b* mounted upon said eccentric and operated thereby, the rock shaft *e* having bearings on the machine, the rod *d* mounted upon said rock shaft adjustably and pivotally attached to said link so as to rock said rock shaft by the rotation of the main driving shaft, the crank *f* on the rock shaft, the ruffling-blade-carrying lever *g* fulcrumed to the machine and operated by the crank *f*, and the ruffling blade *h* mounted upon the lever *g* all combined in the manner described and for the purpose set forth.

2. In a ruffling machine, a ruffling blade, a rock shaft, mechanism connecting the blade with the rock shaft, and a rod on the rock shaft, combined with an eccentric on the driving shaft driven thereby, and a link operated toward and from the driving shaft by the eccentric, to operate the ruffling blade, pivotally connected to the rod on the rock shaft, the pivotal connection between the link and rod being adjustable on the link toward and from the driving shaft, whereby the position

of the ruffle formed and the position of the stitch in relation to the edge of the ruffle are adjusted, for the purpose set forth.

3. In a ruffling machine, a ruffling blade, a rock shaft, mechanism connecting the ruffling blade with the rock shaft and a rod on the rock shaft, combined with an eccentric on the driving shaft driven thereby, and a link operated toward and from the driving shaft by the eccentric to operate the ruffling blade, pivotally connected to the rod on the rock shaft, the pivotal connection between the link and rod being capable of two adjustments, one upon the rod toward and from the rock shaft whereby the size of the ruffle formed is adjusted, and the other upon the link toward and from the driving shaft whereby the position of the ruffle, and the stitches in relation to the edge of the ruffle are adjusted, for the purpose set forth.

4. In a ruffling machine, the combination, with an upper ruffling blade, a rock shaft on the machine, connecting mechanism between said ruffling blade and shaft, a rod on the rock shaft, a block on said rod, an eccentric on the driving shaft and driven thereby and a link mounted on said eccentric, of a sleeve adjustable within a slot on said link and pivotally connecting said link with said rod whereby the position of the upper ruffling blade is adjustable in relation to the needle bar of the machine, for the purpose set forth.

In testimony whereof I hereunto set my hand, in presence of two subscribing witnesses, this 26th day of December, A. D. 1891.

LINGAN C. WING.

In presence of—
J. F. OBER,
HENRY CHADBOURN.