A. H. DE VOE.

SEWING MACHINE RUFFLER.

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984,081.

Patented Feb. 14, 1911.

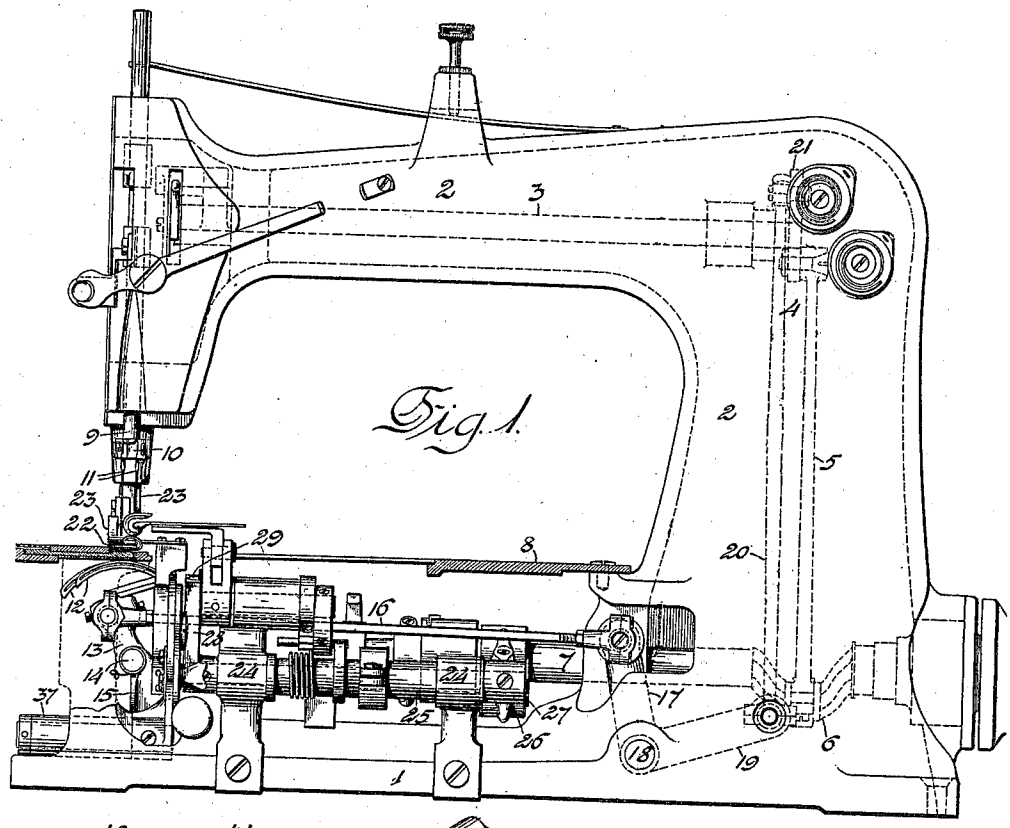

Fig. 1.

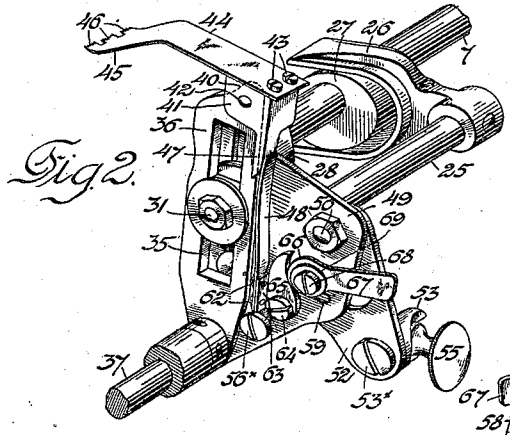

Fig. 2.

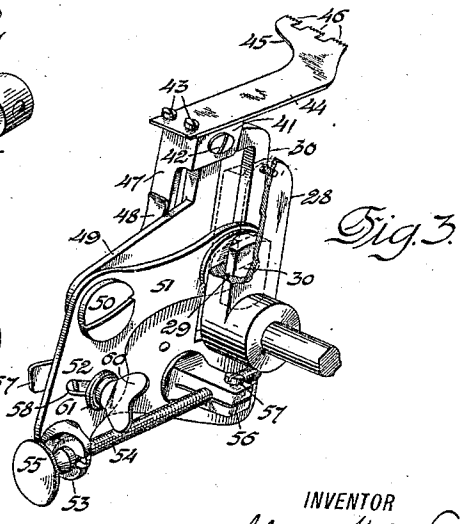

Fig. 3.

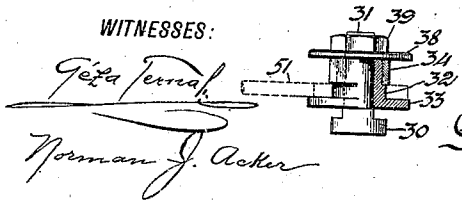

Fig. 4.

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SEWING-MACHINE RUFFLER.

984,081. Specification of Letters Patent. Patented Feb. 14, 1911.

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To all whom it may concern:

Be it known that I, ALBERT H. DE VOE, a citizen of the United States, residing at Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Sewing-Machine Rufflers, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to an improvement in ruffling mechanisms, and more particularly to that class in which the ruffling blade is carried by a vibratory arm or lever fulcrumed beneath the work-plate; and it has for its object to provide simple and conveniently operated means of adjustment of the stroke of the ruffling blade and its pressure upon the fabric to be ruffled.

In the preferred embodiment of the improvement, the ruffling blade carrying arm is slotted to receive an adjustable pivotal connection with a similarly slotted arm of a rock-shaft deriving its operative movements from the main-shaft, the ruffling blade being fixed upon a tilting block pivotally mounted upon the supporting arm and engaged accentrically to its pivot by a spring carried by said supporting arm and operating upon the block to press the ruffling blade into contact with the fabric to be ruffled. The said pivotal connection is embraced by the forked lateral arm of an angular shift-lever fulcrumed upon the blade supporting arm and having a depending arm carrying a swivel-block engaging an adjusting screw tapped into a second swivel-block upon the blade supporting arm, so that the turning of the screw to move the angular lever causes the shifting of the pivotal connection intermediate the driving and driven slotted arms to adjust the stroke of the ruffling blade.

The spring for applying lateral pressure to the ruffling blade is fixed upon a holder pivotally mounted upon the blade carrying arm and provided with a lateral finger engaged by the operative portion of a cam-lever also mounted upon the blade-carrying arm and adapted to tilt the holder so as to vary the pressure of the spring upon the pivot block which carries the ruffling blade and thereby vary the lateral pressure of the ruffling blade upon the work.

In the accompanying drawings, Figure 1 is a front side elevation of a ruffling and stitching machine such as that forming the subject of my pending application Serial No. 457,538, filed October 13, 1906, and containing the present improvements. Figs. 2 and 3 are perspective views, upon a larger scale, of the ruffling blade actuating and adjusting devices. Fig. 4 is a detail partial sectional view of the pivotal connection between the slotted actuating and ruffling blade carrying arms.

As in my application before mentioned, the machine is constructed with the base 1 and hollow overhanging bracket-arm 2 in which is journaled the needle-actuating rock-shaft 3 having the lateral crank 4 connected by means of the pitman 5 with an actuating crank 6 in the main-shaft 7 journaled in the base 1 beneath the work-plate 8. The rock-shaft 3 has at its forward end a crank and pitman connection with the reciprocating needle-bar 9 provided with a twin needle-clamp 10 carrying the needles 11 cooperating with the thread-carrying loopers 12 mounted upon the rocking carrier 13 fulcrumed at 14 upon the transversely rocking frame 15 and having a pitman connection 16 with the upright arm 17 of a bell-crank lever mounted upon a fixed fulcrum 18 and having a lateral arm 19 connected by means of a pitman 20 with a second crank-arm 21 upon the rearward end of the needle-actuating rock-shaft 3 from which the loopers derive their longitudinal loop-seizing and shedding movements.

The machine is provided with the usual feeding mechanism including the feed-dog 22, and with the presser-foot 23 opposed to said feed-dog.

Mounted in suitable bearing bosses 24 at the front side of the base 1 is the ruffler actuating rock-shaft 25 provided at its rearward end with a lateral arm 26 forked to embrace an actuating cam or eccentric 27 fixed upon the main-shaft and adapted to impart rocking movements to the ruffler shaft, the latter having fixed upon its forward end an upright arm 28 with an undercut slot 29 running lengthwise thereof in which is slidingly fitted the head 30 of a screw-stud 31 entering a sliding bushing 32

having a flange 33 resting upon one face of the arm 28 and shouldered to form a reduced portion to receive the slide-block 34 which enters a slot 35 in an upright arm 36 fulcrumed upon the supporting rocking pin 37 which is mounted within a suitable bearing at the front end of the machine bed. To the opposite end portion of the screw-stud 31 is applied a washer 38 and the nut 39 for clamping the washer 38 against the end of the bushing 32.

The slotted arm 36 is formed at its upper end with a lug 40 entering a slot in the carrier-block 41 pivoted thereon by means of the transverse pin 42, the top of said block affording a flat seat upon which is secured by means of fastening screws 43 one end of the ruffling blade 44 provided with laterally offset operative end 45 having notched and serrated work-engaging edge 46. The block 41 is provided with a depending finger 47 normally pressed toward the adjacent edge of the arm 36 by means of the flat spring 48 whose action upon the block imposes an upward pressure upon the ruffling blade 44 engaging the under side of the fabric to be ruffled. The arm 36 is formed with a forwardly projecting wing 49 carrying a screw-stud 50 upon which is fulcrumed an angular shift-lever having a lateral arm 51 forked to embrace the bushing 32 and a depending arm 52 carrying at its lower end the forked thrust-block 53 engaged by the necked portion of the adjusting screw 54 provided at the adjacent end with the head 55 and having its threaded opposite end portion fitted to a split threaded socket formed in the block 56 swiveled in the wing 49 of the arm 36 below the forked end of the arm 51 of the shift-lever. A screw 57 is applied to the split block 56 for clamping the same upon the shank of the adjusting screw 54 and imposing sufficient friction thereon to prevent its working loose. The block 53 is swiveled to the end of the shift-lever arm 52 by means of the screw $53^{\times}$ and the block 56 is similarly swiveled to the wing 49 of the arm 36 by means of the screw $56^{\times}$ passing through the latter.

The actuating arm 28 derives uniform vibratory movements from the cam 27 upon the main-shaft, but by turning the screw 54 in one or the other direction, the angular relation of the shift-lever 51 52 to the ruffling blade supporting arm 36 may be varied and the pivotal connection 31 between the arms 36 and 28 correspondingly changed to alter the operative stroke of the ruffling blade.

To insure against the displacement of the shift-lever in a given adjustment under the normal operation of the machine, which may result from lost motion between the parts 53, 54 and 56 resulting from wear, the depending arm 52 of the shift-lever is provided with a transverse slot 58 radially disposed in relation to the fulcrum-stud 50 which slot is entered by the threaded end of a clamp-screw 59 tapped into the wing 49 of the arm 36 and provided with a head in the form of a thumb-piece 60 and interposed washer 61. When this clamp-screw is used, it is obviously required to be loosened preparatory to operation of the adjusting screw, after which it is retightened to clamp the shift-lever in the new position of adjustment.

The lower end of the spring 48 is secured by means of fastening screws 62 to a flange 63 constituting one arm of a holder pivotally mounted upon the side of the wing 49 opposite the shift-lever 51 52 by means of the stud-screw 64, another arm 65 of said holder having one edge in engagement with the cam-shaped end 66 of a lever 67 fulcrumed by means of the stud-screw 68 upon the wing 49, a friction washer 69 being interposed between the head of the stud-screw 68 and the cam portion 66 of the lever. By shifting the lever 67 upwardly or downwardly, the arm 65 of the spring-holder may be moved to instantaneously change the pressure of the spring 48 upon the depending finger 47 of the ruffler blade carrying block 41.

As will be observed, the means of adjustment before described, whereby the operative movements of the ruffling blade and the pressure of the same upon the fabric to be ruffled may be varied, are disposed in the most convenient position for manipulation by the operator, both the adjusting-screw head 55 and the outer end of the lever 67 being presented to the operator at the very front of the machine, and these adjustments of the less accessible parts may be made by the operator with the greatest ease.

While the preferred form and arrangement of the component parts of the present improvement are shown and described herein, it is evident that the construction is susceptible of considerable modification without departure from the spirit of the invention. Thus, while for convenience the arms 28 and 36 are described as being slotted, it is to be understood that any suitable form of guideway for the adjustable connection between the same would be within the scope of the invention, as also certain other modifications of different parts of the mechanism.

Having thus set forth the nature of the invention what I claim herein is:—

1. A ruffling mechanism for sewing machines comprising a ruffling blade, a supporting rock-arm therefor fulcrumed below said ruffling blade and provided with a guideway, an actuating rock-arm provided

with a guideway and disposed adjacent said supporting rock-arm, means for rocking said actuating rock-arm, an adjustable connection intermediate said rock-arms and fitted to their respective guideways whereby operative movements are imparted from one to the other, and means carried by one of said rock-arms for shifting said adjustable connection lengthwise of the guideways of said arms.

2. A ruffling mechanism for sewing machines comprising a ruffling blade, a supporting rock-arm therefor fulcrumed below said ruffling blade and provided with a guideway, an actuating rock-arm provided with a guideway and disposed adjacent said supporting rock-arm, means for rocking said actuating rock-arm, an adjustable connection intermediate said rock-arms and fitted to their respective guideways whereby operative movements are imparted from one to the other, and a shift-lever pivotally mounted upon one of said arms and operatively engaging said adjustable connection.

3. In a sewing machine, the combination with the work-plate, an actuating shaft disposed beneath the same, and stitch-forming and feeding mechanisms, of ruffling mechanism comprising a ruffling blade disposed above the work-plate, an upwardly extending supporting rock-arm therefor provided with a guideway, a rocking pin affording a fulcrum for said rock-arm and disposed beneath the work-plate, a rock-shaft parallel with and disposed above said rocking pin and arranged beneath the work-plate, an operative connection between said rock-shaft and said actuating shaft, an upwardly extending actuating rock-arm fixed upon said rock-shaft adjacent the supporting rock-arm and provided with a guideway, an adjustable connection intermediate said rock-arms and fitted to their respective guideways whereby operative movements are imparted from one to the other, and means carried by one of said rock-arms for shifting said adjustable connection lengthwise of the guideways of said arms.

4. In a sewing machine, the combination with the work-plate, a rotary shaft carrying an actuating cam and disposed beneath said work-plate, and stitch-forming and feeding mechanisms, of ruffling mechanism comprising a ruffling blade arranged above the work-plate, an upwardly extending supporting rock-arm therefor provided with a longitudinal guideway, a rocking pin carrying said rock-arm and disposed beneath the work-plate, a rock-shaft parallel with said rocking pin and disposed above the same and beneath the work-plate, an arm fixed upon said rock-shaft and forked to embrace said actuating cam upon the rotary shaft, an upwardly extending actuating rock-arm fixed upon said rock-shaft adjacent said supporting rock-arm and provided with a longitudinal guideway, an adjustable connection intermediate said rock-arms and fitted to their respective guideways whereby operative movements are imparted from one to the other, and means carried by one of said rock-arms for shifting said adjustable connection lengthwise of the guideways of said arms.

5. A ruffling mechanism for sewing machines comprising a ruffling blade, a supporting rock-arm therefor having a longitudinal guideway and provided with a lateral extension, an actuating rock-arm provided with a longitudinal guideway and disposed adjacent said supporting rock-arm, means for rocking said actuating rock-arm, an adjustable connection intermediate said rock-arms and fitted to their respective guideways whereby operative movements are imparted from one to the other, and a shift-lever pivotally mounted upon said lateral extension of the supporting rock-arm and operatively engaging said adjustable connection for moving the same lengthwise of the guideways of said arms.

6. A ruffling mechanism for sewing machines comprising a ruffling blade, a supporting rock-arm therefor provided with a guideway, an actuating rock-arm provided with a guideway and disposed adjacent said supporting rock-arm, means for rocking said actuating rock-arm, an adjustable connection intermediate said rock-arms and fitted to their respective guideways whereby operative movements are imparted from one to the other, a shift-lever pivotally mounted upon one of said arms and operatively engaging said adjustable connection, and means applied to the last mentioned arm for securing said shift-lever in adjusted position.

7. A ruffling mechanism for sewing machines comprising a ruffling blade, a supporting rock-arm therefor provided with a guideway, an actuating rock-arm provided with a guideway and disposed adjacent said supporting rock-arm, means for rocking said actuating rock-arm, an adjustable connection intermediate said rock-arms and fitted to their respective guideways whereby operative movements are imparted from one to the other, a shift-lever pivotally mounted upon one of said arms and operatively engaging said adjustable connection, swiveled lugs carried respectively by said shift-lever and the arm upon which the same is mounted, and an adjusting screw swiveled within one of said lugs and tapped into the other whereby the relation of said shift-lever and arm carrying the same may be varied to adjust the position of said connection between said arms.

8. A ruffling mechanism for sewing ma-

chines comprising a ruffling blade, a supporting rock-arm therefor, a spring for applying lateral pressure to said ruffling blade, a plural-armed holder pivotally mounted upon said supporting arm and having an arm to which said spring is secured and a second arm, a cam-lever fulcrumed upon said supporting arm in operative engagement with the second arm of said holding lever, and means for imparting vibratory movements to said supporting arm.

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

ALBERT H. DE VOE.

Witnesses:

H. A. KORNEMANN,

JOSEPH F. JAQUITH.