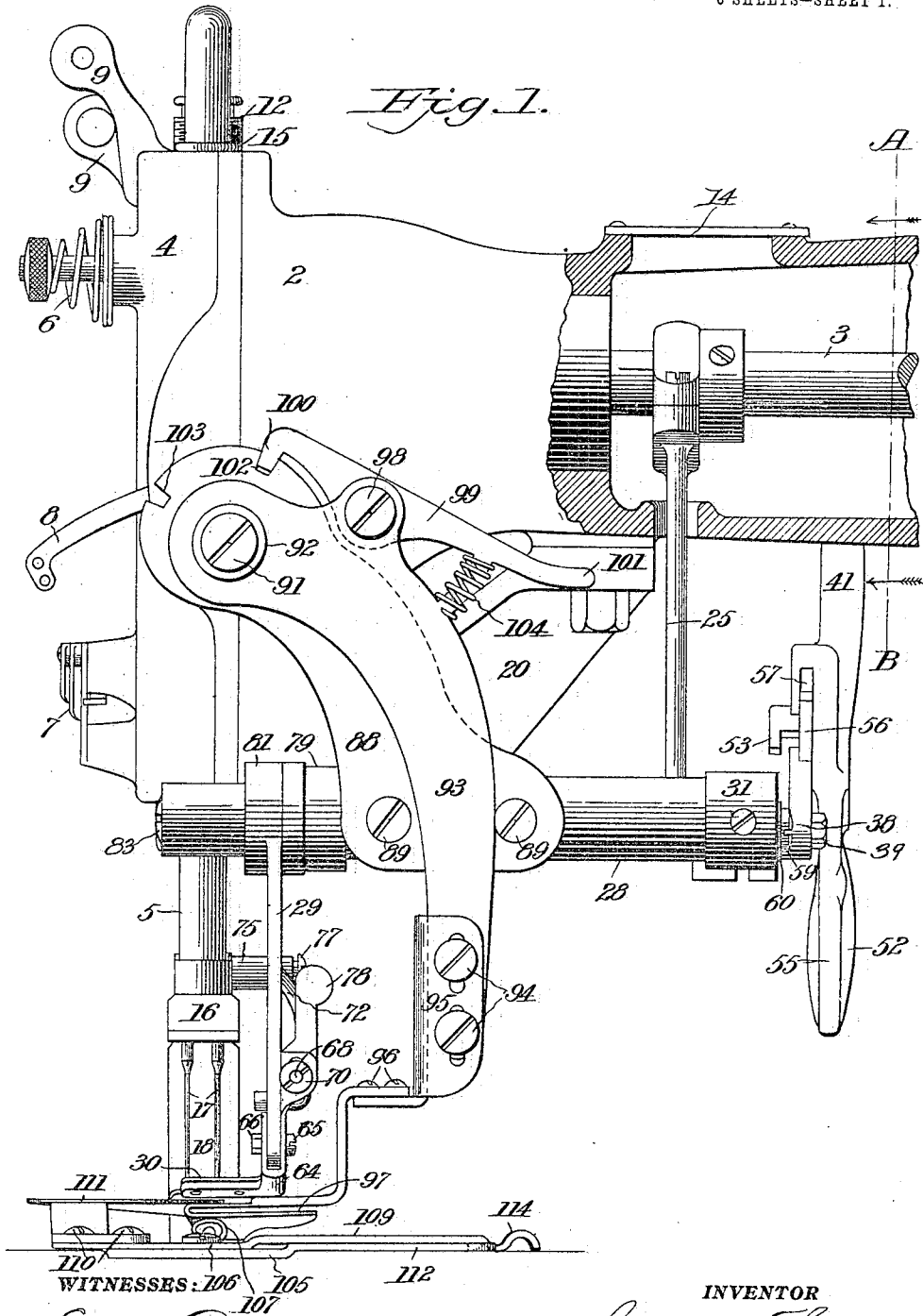


A. LAUBSCHER.
RUFFLING MECHANISM FOR SEWING MACHINES.

APPLICATION FILED NOV. 5, 1904.

6 SHEETS—SHEET 1.



WITNESSES: 106 105 112
 110 107
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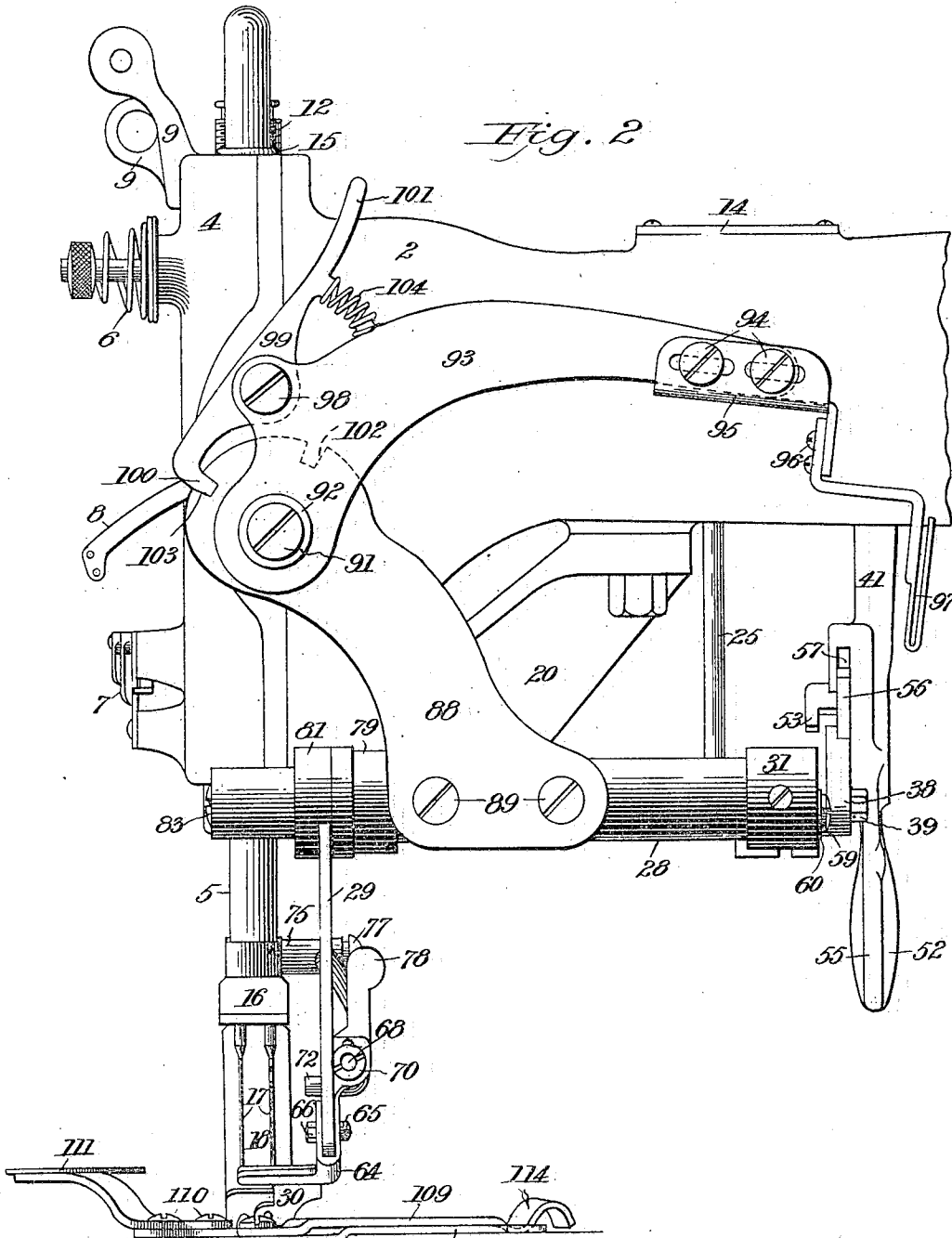
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APPLICATION FILED NOV. 5, 1904.

6 SHEETS—SHEET 2.

Fig. 2



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6 SHEETS—SHEET 3.

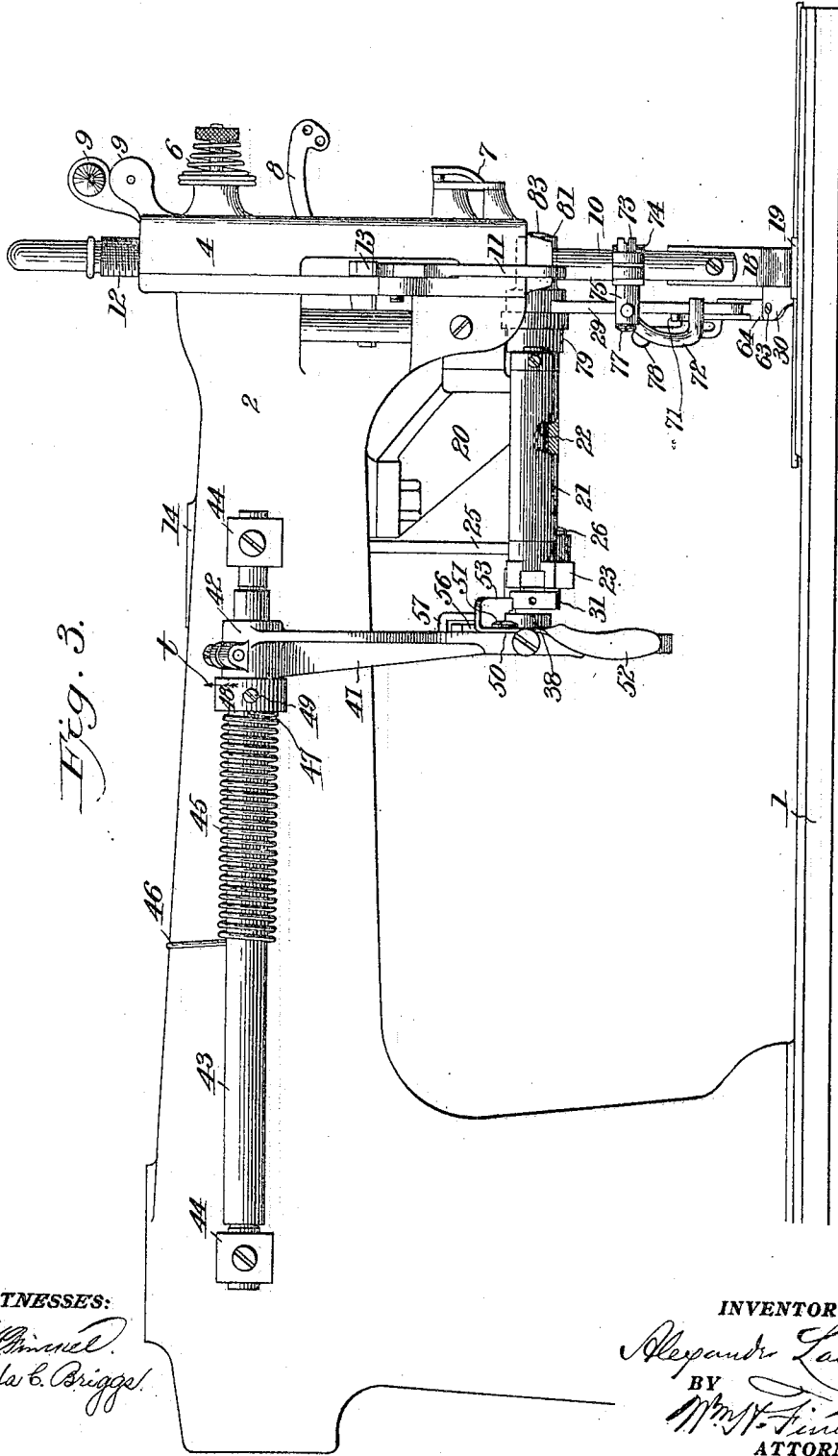


Fig. 3.

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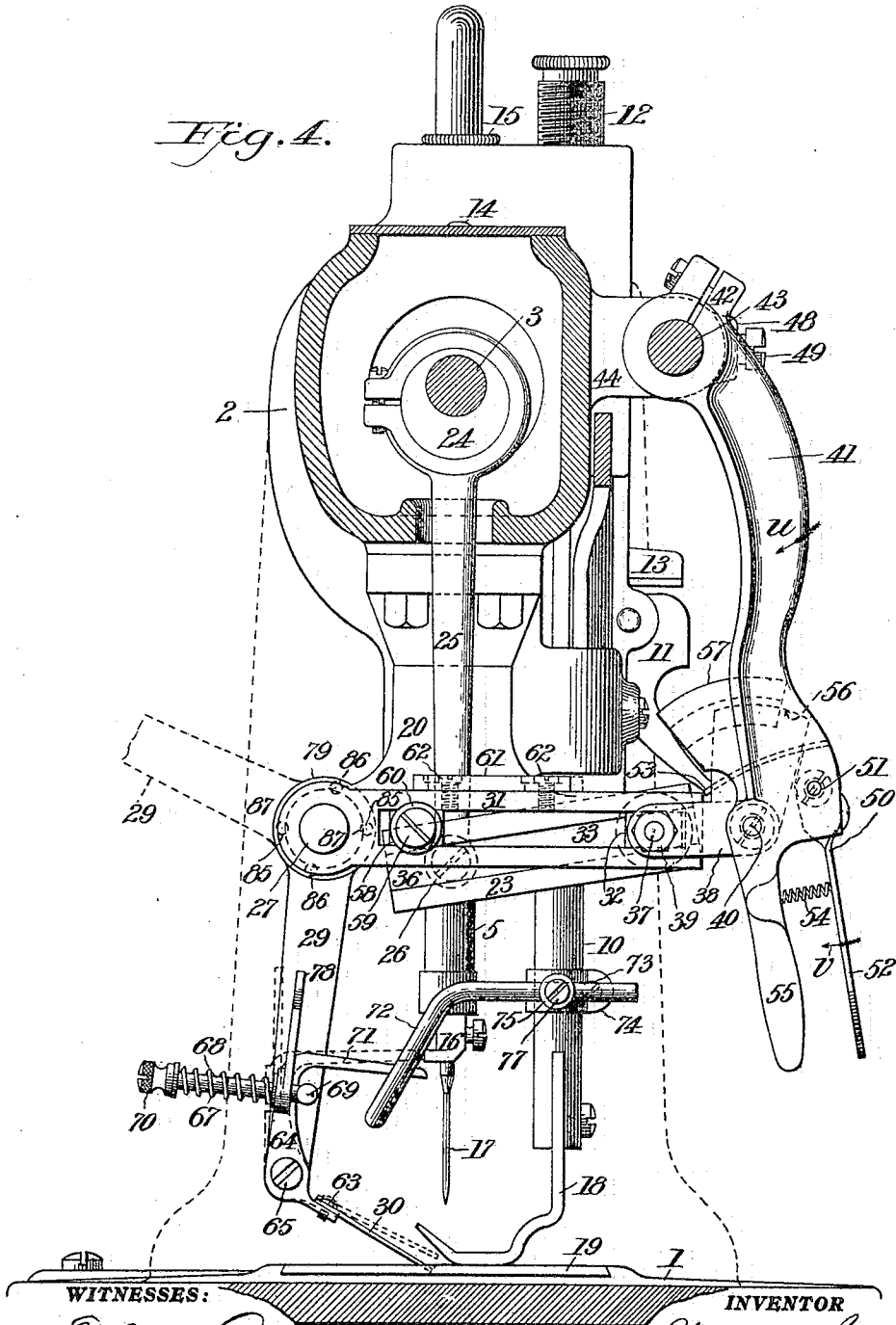
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APPLICATION FILED NOV. 5, 1904.

6 SHEETS—SHEET 4.



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APPLICATION FILED NOV. 5, 1904.

Fig. 6.

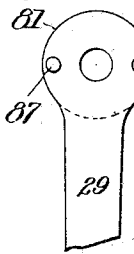


Fig. 5.

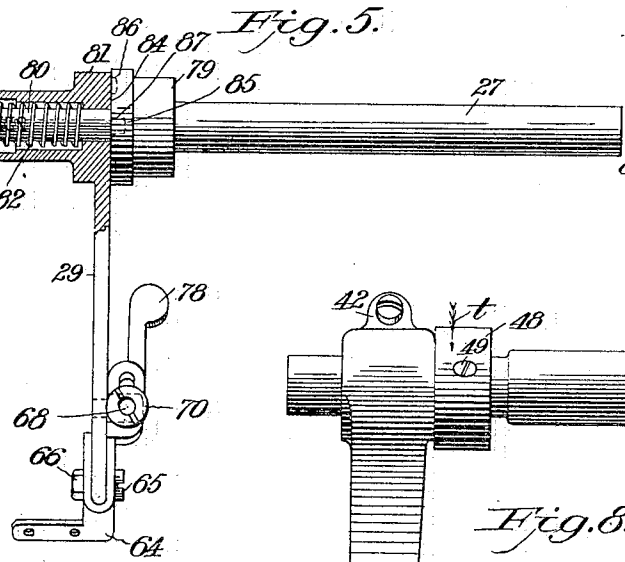


Fig. 7.

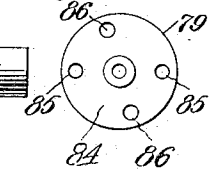


Fig. 8.

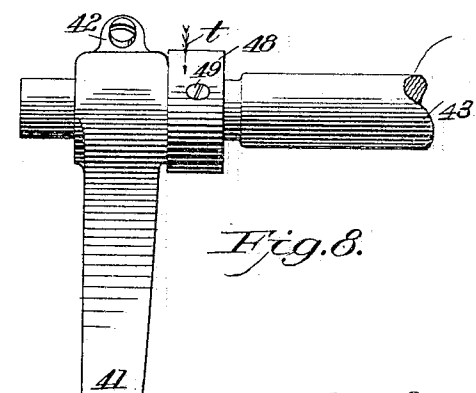


Fig. 10.

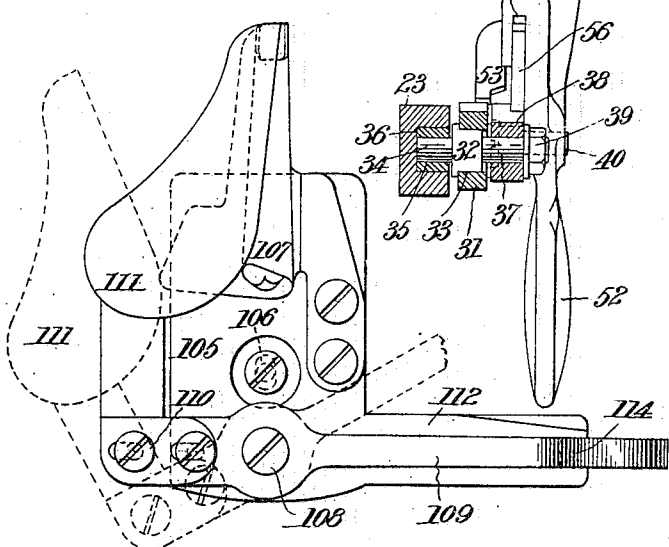
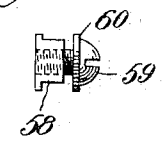


Fig. 9.



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6 SHEETS—SHEET 6.

Fig. 11.

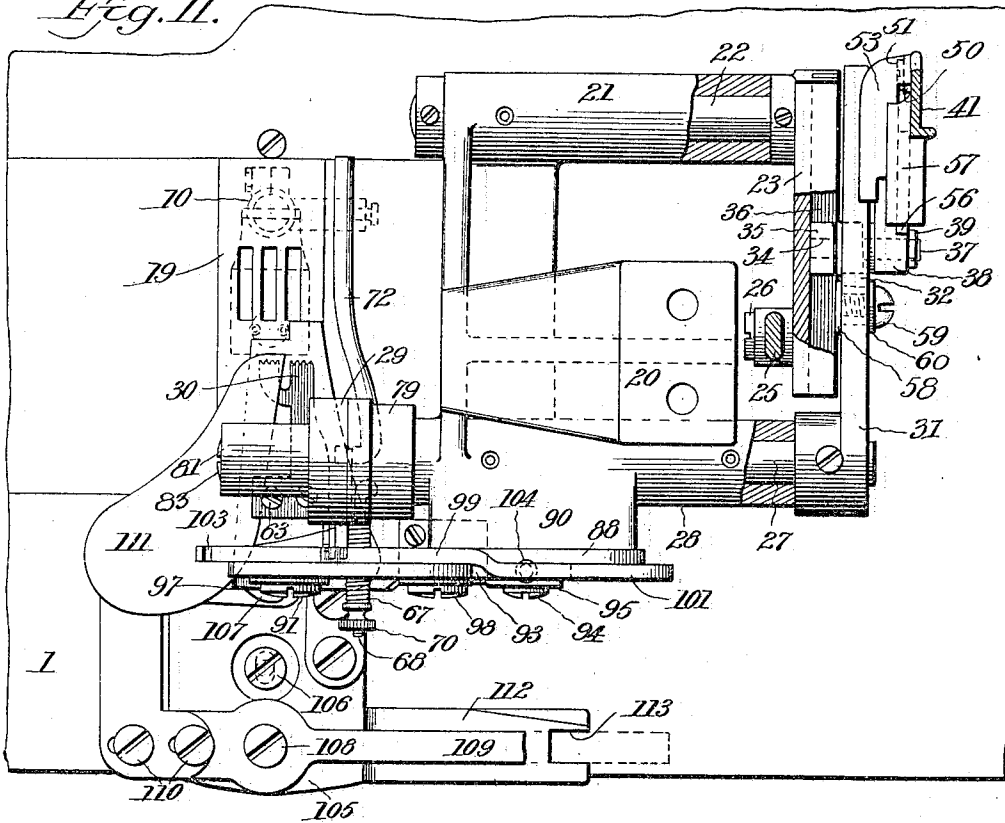


Fig. 12.

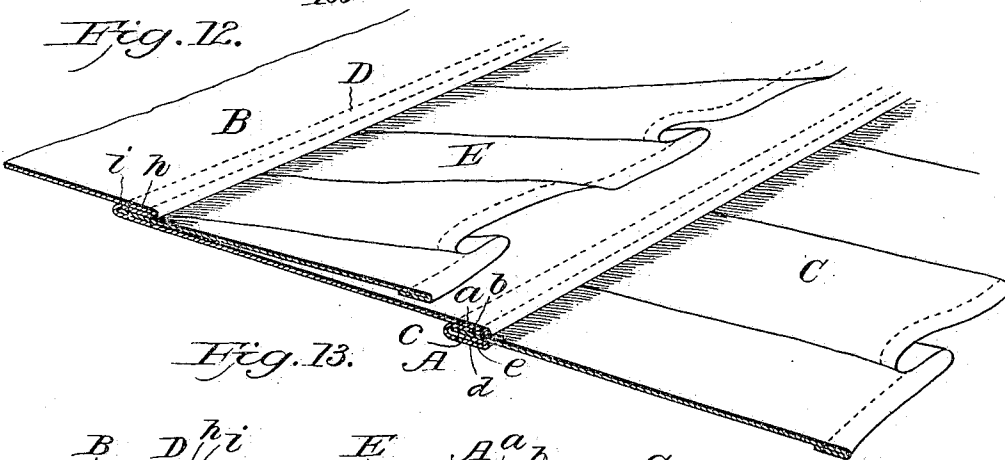
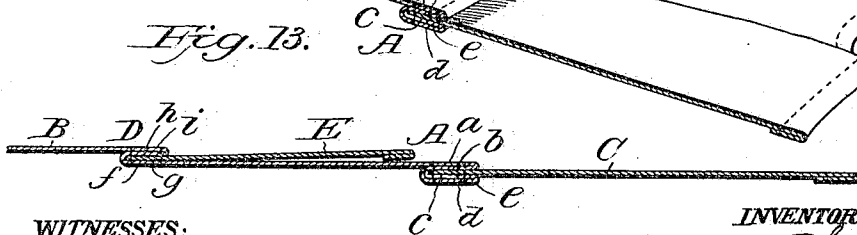


Fig. 13.



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UNITED STATES PATENT OFFICE.

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WHEELER & WILSON MANUFACTURING COMPANY, OF BRIDGEPORT,
CONNECTICUT, A CORPORATION OF CONNECTICUT.

RUFFLING MECHANISM FOR SEWING-MACHINES.

No. 809,922.

Specification of Letters Patent.

Patented Jan. 9, 1906.

Application filed November 5, 1904. Serial No. 231,552.

To all whom it may concern:

Be it known that I, ALEXANDER LAUBSCHER, a citizen of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented a certain new and useful Improvement in Ruffling Mechanisms for Sewing-Machines, of which the following is a full, clear, and exact description.

The object of this invention is to provide a ruffling mechanism for sewing-machines which at the will of the operator may be thrown into and out of operation without affecting the operation of the stitch-forming mechanism, and whereby may be joined the meeting ends of the ruffle on tubular or endless work—such, for instance, as the ruffles of dress-skirts, undershirts, pillow-cases, &c.

The invention is shown as applied to the ruffling mechanism of the Wheeler & Wilson Manufacturing Company's patent, No. 754,928, granted March 15, 1904, and in so far as it utilizes the mechanism of the invention of that patent it is in the nature of an improvement thereon whereby its utility is enhanced.

In the present invention means are provided whereby the ruffle is not only plaited by means of a crimping-blade, but the body material is folded or hemmed and folded and the ruffle applied thereto in one continuous operation. The crimping-blade may be rendered inactive or inoperative at will without stopping the stitching operation, and the whole control of the ruffling mechanism is put into the hands of the operator regardless of the stitching mechanism, and so that plaits of greater or less width may be made, as desired, and the ends of the ruffles joined.

Having thus stated the principle of the invention, I will now proceed to describe the best mode in which I have contemplated applying that principle, and then will particularly point out and distinctly claim the parts, improvements, or combinations which I claim as my invention.

In the accompanying drawings, illustrating the invention, in the several figures of which like parts are similarly designated, Figure 1 is a side elevation showing the ruffling mechanism in operative position and the overhanging arm partly broken away. Fig. 2 also is a side elevation with the separator-

blade and folder-plate adjusted and scroll-guide or hemmer removed, as when joining the meeting ends of the ruffle. Fig. 3 is an elevation of the opposite side, showing the mechanism adjusted to render the crimping-blade inactive. Fig. 4 is a sectional elevation taken in the plane of line A B, Fig. 1, with the separator-blade, folder-plate, and scroll-guide or hemmer omitted and the crimping-blade-actuating mechanism set inoperative, as in Fig. 3. Fig. 5 is a side elevation and partial section of the crimping-blade lever and its adjuncts. Fig. 6 is a rear elevation of the hub end of the crimping-blade lever. Fig. 7 is a face view of the crimping-blade-lever shaft. Fig. 8 is a side elevation of the hand-lever and part of its shaft, together with a cross-section of the coupled levers, for controlling the operation of the crimping-blade while the stitch-forming mechanism is in operation. Fig. 9 is an elevation of the adjustable stop for determining the extent of movement of the crimping-blade. Fig. 10 is a top plan view of the folder-plate, scroll-guide or hemmer, and the plate upon which said parts are mounted. Fig. 11 is a top plan view of the ruffling mechanism excepting the spring-shaft, parts being broken away and all parts in position for ruffling, as in Figs. 1 and 2. Fig. 12 is a perspective view illustrating a ruffle as applied to the body and also to the lower or free edge of a garment. Fig. 13 is a longitudinal section of the parts shown in Fig. 12.

The bed-plate 1, overhanging arm 2, needle-actuating shaft 3, face-plate 4, needle-bar 5, needle-thread tension 6, thread-controller 7, take-up 8, thread-checks 9 9, presser-bar 10, presser-bar lifter 11, presser-bar adjustable bushing 12, presser-bar-lifting collar 13, arm-plate 14, needle-bar oil-cup 15, needle-holder 16, needles 17, presser-foot 18, and throat-plate 19 may be as herein illustrated and described or of any approved construction.

To the arm 2 is bolted a bracket 20, provided with a bearing 21, in which is mounted a horizontal rock-shaft 22. This shaft has rigidly secured to one end a lever 23, which is connected with an eccentric 24, tight on the upper or needle-driving shaft 3, by means of a link or pitman 25, applied to the eccentric and having its lower end pivoted on a stud 26, secured in the lever 23.

27 is a horizontal rock-shaft mounted in a

bearing 28 in the bracket 20. One end of the rock-shaft 27 carries an adjustably-secured lever 29, upon which is mounted the crimping-blade 30. The opposite end of the rock-shaft 27 has fixed to it a lever 31, which extends alongside the lever 23. The levers 23 and 31 are adjustably coupled by a shouldered pivot-block 32, movable within a longitudinal slot 33 in the lever 31. Projecting from the block 32 is a stud 34, on which is loosely fitted a slide-block 35, which works within a longitudinal groove 36 in the lever 23. Extending from the opposite side of said block 32 is a stud 37, upon which is loosely fitted one end of a link 38, held thereon against displacement by a nut 39. The opposite end of link 38 is connected by a suitable pivot-screw 40, Figs. 4 and 8, to a hand-lever 41, which is rigidly secured, as by a suitable pinch-joint 42, to a shaft 43, mounted in suitable bearings 44, which in the present instance form a part of the overhanging arm. Encircling the shaft 43 is a coiled spring 45, mounted so that its end 46 bears against the side of the overhanging arm, its opposite end 47 being connected with the collar 48, which is secured to the shaft 43 by a set-screw 49. In practice the collar 48 is turned in the direction indicated by the arrow *t* and secured in such position as will give to the spring 45 sufficient torsion to impel the hand-lever 41 when free to be moved in the direction indicated by the arrow *u*, Fig. 4. To prevent the spring 45 from moving the hand-lever 41 in the direction indicated by the arrow *u* except at the will of the operator, a catch-lever 50 is pivoted, as by a pivot-screw 51, to the hand-lever 41. This catch-lever has a hand portion 52 and a catch 53, arranged substantially at right angles. A spring 54 is interposed between the hand portion 52 and the end 55 of the lever 41 to hold said catch-lever 50 against accidental movement in the direction indicated by the arrow *v*, Fig. 4. The link 38 is formed with a substantially right-angle portion 56, acting as a follower in a guideway 57, formed on the side of the lever 41. The employment of such guideway and follower while not essential is beneficial in preventing the block 32 from cramping when moved in the slot 33. When the catch-lever 50 is manually moved in the direction indicated by the arrow *v*, the catch 53 will be lifted and released from the end of the lever 31 and the spring 45 will impel the lever 41 in the direction indicated by the arrow *u*, which carries with it the block 32 until such movement is arrested by the stop 58. This stop is adjustably secured by a suitable screw 59 and washer 60 in the slot 33, and thus said stop 58 may be moved at the will of the operator in opposite directions in the slot 33 and during the operation of the stitch-forming mechanism to vary the throw of the crossed levers, and consequently that of the crimping-blade.

In order to increase the capacity of the machine for a variety of work, an auxiliary stop 61, Fig. 4, is secured by screws 62 to the upper face of the lever 31. One or more auxiliary stops may be employed, and, as shown by dotted lines, Fig. 4, stop 61 may be slotted, so as to be adjustable longitudinally of lever 31. The lever 41 is adjusted to place the block 32 coaxially with the fulcrum of the rock-shaft 22, as in Fig. 4, and hence when the catch 53 is released from the end of the lever 31 the spring 45 will impel the hand-lever 41, and consequently the connected block 32, in the direction indicated by the arrow *u* until such movement is arrested by catch 53 contacting with the end of the auxiliary stop 61, and when the catch is released from stop 61 the movement will be continued until block 32 is arrested by stop 58. By the use of these stops the operator is enabled, through the manipulation of the lever 41 and its catch 53, to obtain a considerable number of adjustments for varying the throw of the crimping-blade, and thereby produce a variety of ruffles of different fullness during the stitching operation, and by engaging the catch 53 with the end of lever 31, as in Figs. 3 and 4, the crimping-blade may be rendered inactive also during the stitching operation.

The crimping-blade 30 is secured by screws 63 to a lever 64, which is pivoted by a screw-bolt 65 and nut 66 to the lower end of the adjustably-secured lever 29.

67 is a spring mounted on a screw-rod 68, secured in a stud 69, riveted in the adjustable lever 29, which spring presses against the lever 64 in such manner as to keep the crimping-blade 30 pressed down upon the material.

70 is a nut on rod 68 for regulating the tension of spring 67.

An arm 71 of the lever 64 extends inwardly toward the needles and over a finger 72, which projects from the presser-bar 10 beneath said arm and is adapted to engage said arm 71 when the presser-bar is raised. To the presser-bar 10 is secured by pinch-screw 73 an adjustable pinch-collar 74, said collar being provided with a boss or projection 75, through which the finger 72 passes and in which it is adjustably secured by a screw 77, so that said finger 72 may be adjusted vertically and horizontally.

Constructed integral with the lever 64 is a hand-lever 78 for rocking the lever 64 on the pivot-screw 65 to raise the crimping-blade clear of the material when for any purpose the lever 29 is moved out of operative position, as is illustrated by dotted lines in Fig. 4.

Referring more particularly to Figs. 5, 6, and 7, the shaft 27 is provided with a hub 79 and a reduced extension 80, upon which latter is fulcrumed the lever 29 in a manner to permit said lever to be moved in the direction of the length of the shaft and also to be rotated relatively to said shaft, and to these ends the lever 29 is formed with a hub 81, hollowed

out for the reception of a spring 82, encircling the extension 80, which latter is provided with a screw 83 to hold the spring 82 compressed against the bottom of the hollowed-out portion of the hub 81, and consequently to hold the lever adjustably upon the extension 80. In the face 84 of the hub 79 are pairs of holes 85 and 86, Figs. 4 and 5, with which cooperate pins 87 on hub 81 to lock the lever 29 and its attached parts in and out of operative position. From the foregoing it will be understood that if the lever 29 and crimping-blade 30 are in operative position, as illustrated in Figs. 4 and 11, the two pins 87 will register with the two holes 85 and that when such lever is moved out of operative position, as indicated by dotted lines, Fig. 4, the said pins will register with the two holes 86. The lever 29 is hand-moved longitudinally of the extension of shaft 27 and against the resiliency of the spring 82 to withdraw the pins from the holes, and the lever when so withdrawn may be rotated on the extension 80 until the pins coact with the holes. When thus adjusting the lever 29 and its attached crimping-blade, the operator through the lever 78 raises the crimping-blade 30, so that it will swing clear of and avoid disarranging the material being operated upon.

88 is a bracket secured by screws 89 to a suitable boss 90, formed on the bearing 28 of the bracket 20. (See Fig. 11.) To this bracket 88 is pivoted by screw 91 and washer 92 a lever 93, which at its free end has adjustably secured to it by screws 94 a bracket 95, and to this latter bracket is adjustably secured by screws 96 a separator-blade 97, over which the material passes when acted upon by the crimping-blade 30. Pivotaly attached to the lever 93 by a screw 98 is a lever-latch 99, consisting of a toothed portion 100 and handle 101, such toothed portion coacting with suitable notches 102 103, formed in the bracket 88 to lock the lever 93 in or out of operative position with relation to the crimping-blade 30. Supposing the lever 93 to be in its operative position, as in Fig. 1, and it is desired to adjust it to its inoperative position, as in Fig. 2, the lever-latch 99 is forced down in opposition to the resiliency of the spring 104 to lift the tooth 100 from the notch 102, and then the lever 93 is free to be and is swung upward until the tooth 100 enters notch 103.

Referring to Figs. 10 and 11, 105 is a base-plate adjustably secured to the bed-plate 1 of the machine by a screw 106. Mounted upon this plate 105 by screws, substantially as shown, is a scroll-guide or hemmer 107. Pivotaly secured to said plate 105 by pivot-screw 108 is a lever 109, to which is adjustably secured by screws 110 a folder-plate 111. Formed integral with the base-plate 105 is an arm 112, provided at its end with a notch 113, (see Fig. 11.) which coacts with a bent portion 114 of the free spring end of the lever

109 to hold the folder-plate 111 in operative position relatively to the stitch-forming mechanism. By snapping the portion 114 into and out of the notch 113 the operator is enabled at will to adjust the folder-plate 111 into and out of operative position.

Figs. 12 and 13 illustrate one form of work producible by my invention. A represents a seam at the edge of the material B, produced by folding the material over and upon itself, as at *a b*, and then folding it around the edge *c* of the material C and under the material C, as at *d*, and folding its edge over upon itself at the under side of the material C, as at *e*. In making this seam the crimping-blade 30, separator-blade 97, and folder-plate 111 are first moved to their inoperative positions, when the material B is passed over the folder-plate 111 and its edge inserted in the scroll-guide or hemmer 107, thus forming the fold *e*. The separator-blade 97 is then returned to its operative position, when the material C is positioned to pass over said separator-blade 97 as the materials are fed to the needle. Next the crimping-blade 30 is returned to its operative position above and upon the material C, and the folder-plate 111 is moved to its operative position, carrying with it the material B and forming the fold comprising plies *a b*.

The presser-foot is now lowered, the machine put into action, and seam A formed, thus in a single operation making the ruffle and inserting it in the seam and in such manner as to cover the raw edges of both the material B and the ruffle C. In the formation of the seam D in the body of the material B the use of the scroll-guide or hemmer 107 is dispensed with, the parts 30, 97, and 111 are first moved to their inoperative positions, the material B is placed above the scroll-guide or hemmer 107 and over the folder-plate 111, the separator-blade 97 is returned to its operative position, and the material E of which the ruffle is formed is passed over the separator-blade 97 and the crimping-blade 30 returned to its operative position, thus forming the fold composed of plies *f g*. This is followed, as in seam A, by moving the folder-plate 111 to its operative position, carrying with it the material B and forming the fold comprising plies *h i*. Thus the device makes practical the formation of unlike seams without any change in the manner of adjusting the parts, and, further, if the seams are what are known as "endless" seams the parts 30, 97, and 111 may be moved out of their operative positions and the seaming completed.

It is to be noted that the machine is capable of use for stitching two ordinary seams by simply adjusting the parts 30, 97, and 111 to their inoperative positions, and it is also usable as a ruffling-machine independent of the use of the folder-plate 111 and scroll-guide or hemmer 107, and, further, it is specially adapted for the work illustrated in Figs. 12

and 13 wherein the lower edge and the body of the skirt are trimmed with differently-formed seams by simple adjustments of parts.

By the use of the term "scroll-guide" with reference to the device 107 it is to be understood that there is no limitation in function implied, since it is plain that this device acts not only as a guide in a technical sense, but also to turn the edge of the fabric in the formation of a hemmed seam.

What I claim is—

1. The combination of stitch-forming mechanism including a needle-actuating shaft, a ruffling mechanism comprising rock-levers having separate pivotal supports, means to couple said levers adjustably to vary the throw of the crimping-blade, a connection between said coupled levers and the needle-actuating shaft by means of which said levers are rocked, a vibrating crimping-blade actuated by said levers, and a hand-lever connected with the means for coupling said rock-levers for controlling the extent of vibration thereof and suspending its vibration at will.

2. The combination of a stitch-forming mechanism including a needle-actuating shaft, a ruffling mechanism including a vibrating crimping-blade, a rock-shaft from which said crimping-blade derives motion, a lever on said shaft having a vibrating connection with the needle-actuating shaft, a spring-impelled hand-operated lever having a movable connection with the rock-lever, and a spring-catch on said hand-lever for engaging said rock-lever.

3. The combination of a stitch-forming mechanism including a needle-actuating shaft, and a ruffling mechanism including a crimping-blade, a vibrating lever upon which said blade is mounted, a rock-shaft supporting said lever, a rock-shaft-actuating lever, a connection between said actuating-lever and the needle-actuating shaft, and a hand-actuated lever connected with the rock-shaft-actuating lever and adapted to arrest the movement of said crimping-blade and also to change the amplitude of vibration of said crimping-blade at will.

4. The combination of a stitch-forming mechanism including a needle-actuating shaft, and a ruffling mechanism including a rock-lever, a connection between said rock-lever and the needle-actuating shaft whereby it is vibrated, a crimping-blade, a rock-shaft from which said crimping-blade derives motion, a lever on said rock-shaft, a shiftable coupling connecting this rock-shaft lever with the rock-lever, and a hand-lever linked to said coupling and adapted to move lengthwise of the levers to change the throw of the crimping-blade lever and also to arrest its movement without arresting the movement of the rock-lever connected with the needle-actuating shaft.

5. The combination of a stitch-forming mechanism including a needle-actuating shaft,

and a ruffling mechanism including a vibrating crimping-blade lever, a rock-shaft on which said lever is mounted, a connection between said rock-shaft and the needle-actuating shaft by which the rock-shaft is actuated, and means to control the extent of movement or throw of the rock-shaft, comprising a slotted lever fixed to said shaft and coupled with the needle-shaft connection to derive motion from it, one or more stops on said slotted lever, a hand-lever, and a connection between said hand-lever and said slotted lever movable within said slotted lever to an extent limited by said stops.

6. The combination of a stitch-forming mechanism including a needle-actuating shaft, and a ruffling mechanism including a vibrating crimping-blade lever, a rock-shaft on which said lever is mounted, a connection between said rock-shaft and the needle-actuating shaft by which the rock-shaft is actuated, and means to control the extent of movement or throw of the rock-shaft, comprising a slotted lever fixed to said shaft and coupled with the needle-shaft connection to derive motion from it, a stop longitudinally adjustable in said slotted lever, a hand-lever, and a connection between said hand-lever and said slotted lever movable within said slotted lever to an extent limited by said stop.

7. In a ruffling mechanism for sewing-machines, a crimping-blade, a lever upon which it is mounted, a rock-shaft having a hub provided with holes, and a reduced axial extension, a hollow hub on said crimping-blade lever mounted on said extension, and provided with pins to engage the holes in the hub of the shaft, and a spring permitting longitudinal movement of the lever on the shaft and serving to hold the pins in engagement with the holes when said lever is adjusted into operative and inoperative positions, respectively.

8. The combination of a stitch-forming mechanism including a needle-actuating shaft, a cloth-feeding mechanism, a vibrating crimping-blade lever, a rock-shaft on which said lever is mounted, a connection between said rock-shaft and the needle-actuating shaft by which the rock-shaft is actuated, and means to control the operation and likewise the extent of throw of the rock-shaft, comprising a longitudinally-slotted lever fixed to said rock-shaft and coupled with the needle-actuating shaft connection, a hand-lever adjustably connected with the slotted lever, a catch on said hand-lever adapted to arrest the movement of the slotted lever and when released to permit a relative movement of the hand-lever and slotted lever, and a stop to limit the relative movement of the hand-lever and slotted lever.

In testimony whereof I have hereunto set my hand this 3d day of November, A. D. 1904.

ALEXANDER LAUBSCHER.

Witnesses:

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A. M. DONHEE.