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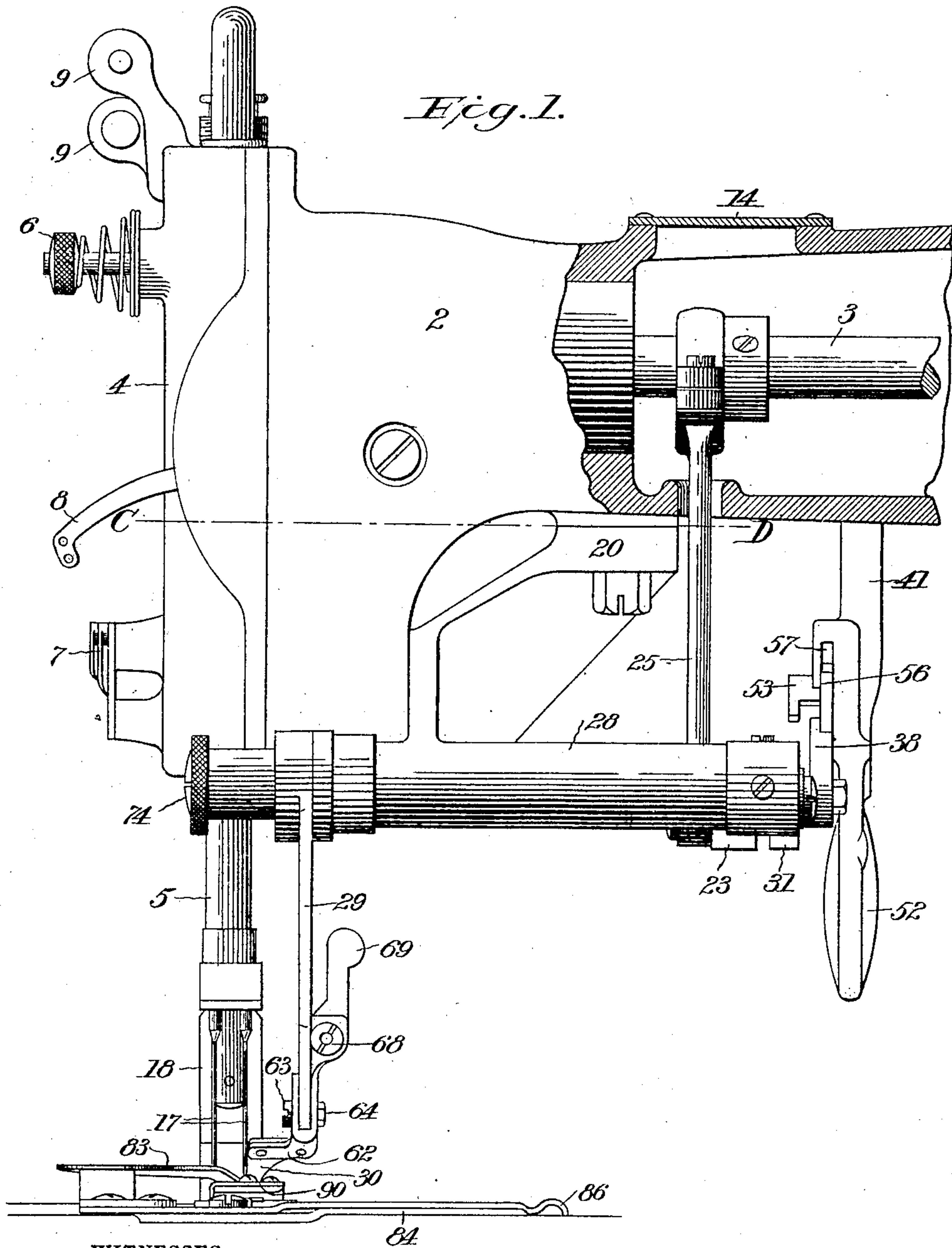
PATENTED MAR. 17, 1908.

A. LAUBSCHER.

RUFFLING MECHANISM FOR SEWING MACHINES.

APPLICATION FILED JUNE 19, 1905.

5 SHEETS—SHEET 1.



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6 SHEETS—SHEET 2.

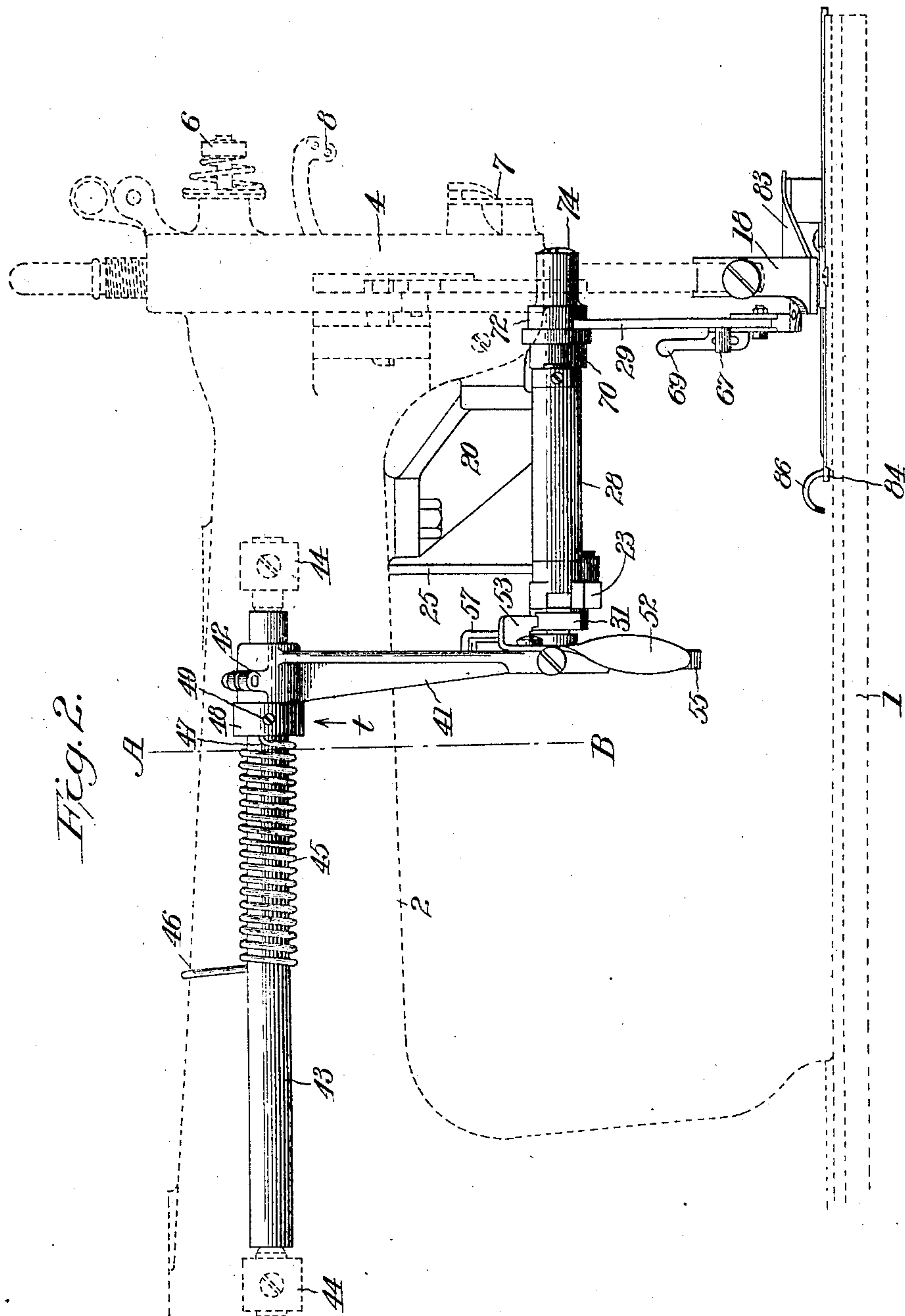


Fig. 2.

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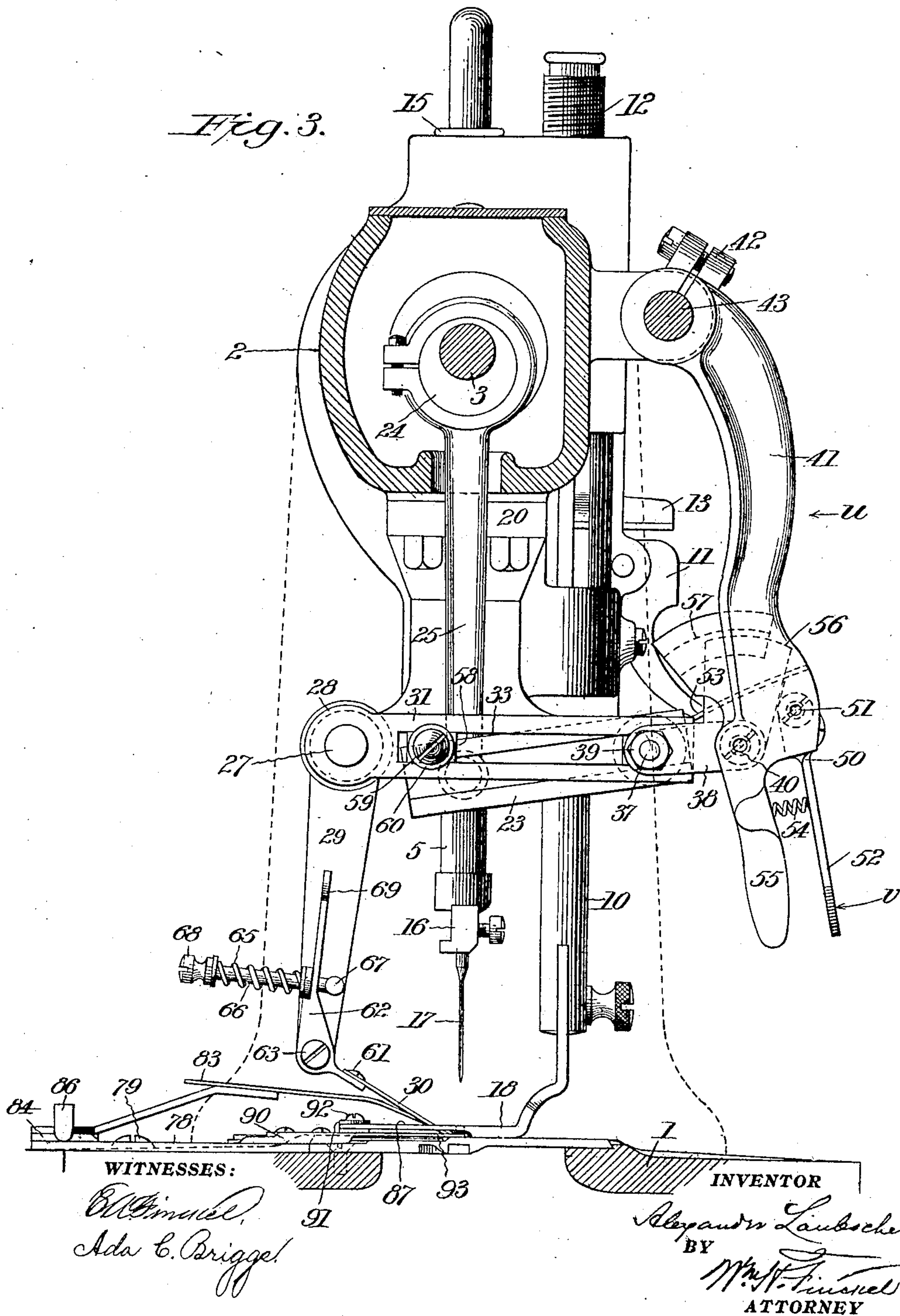
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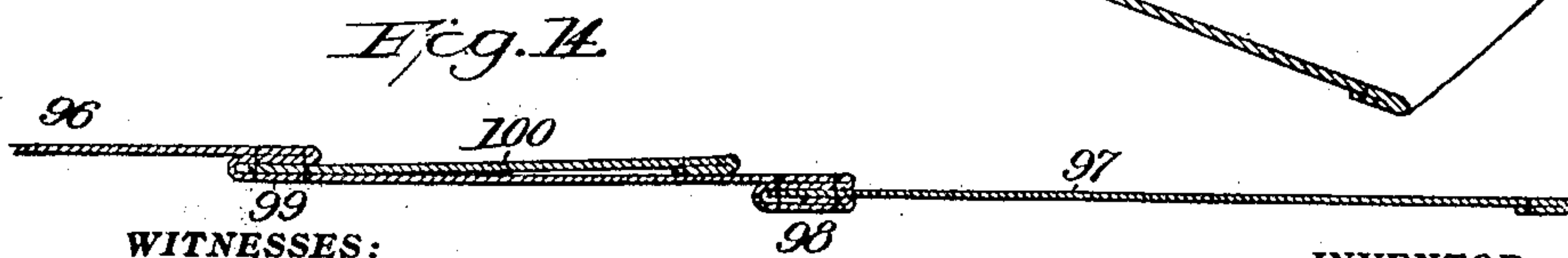
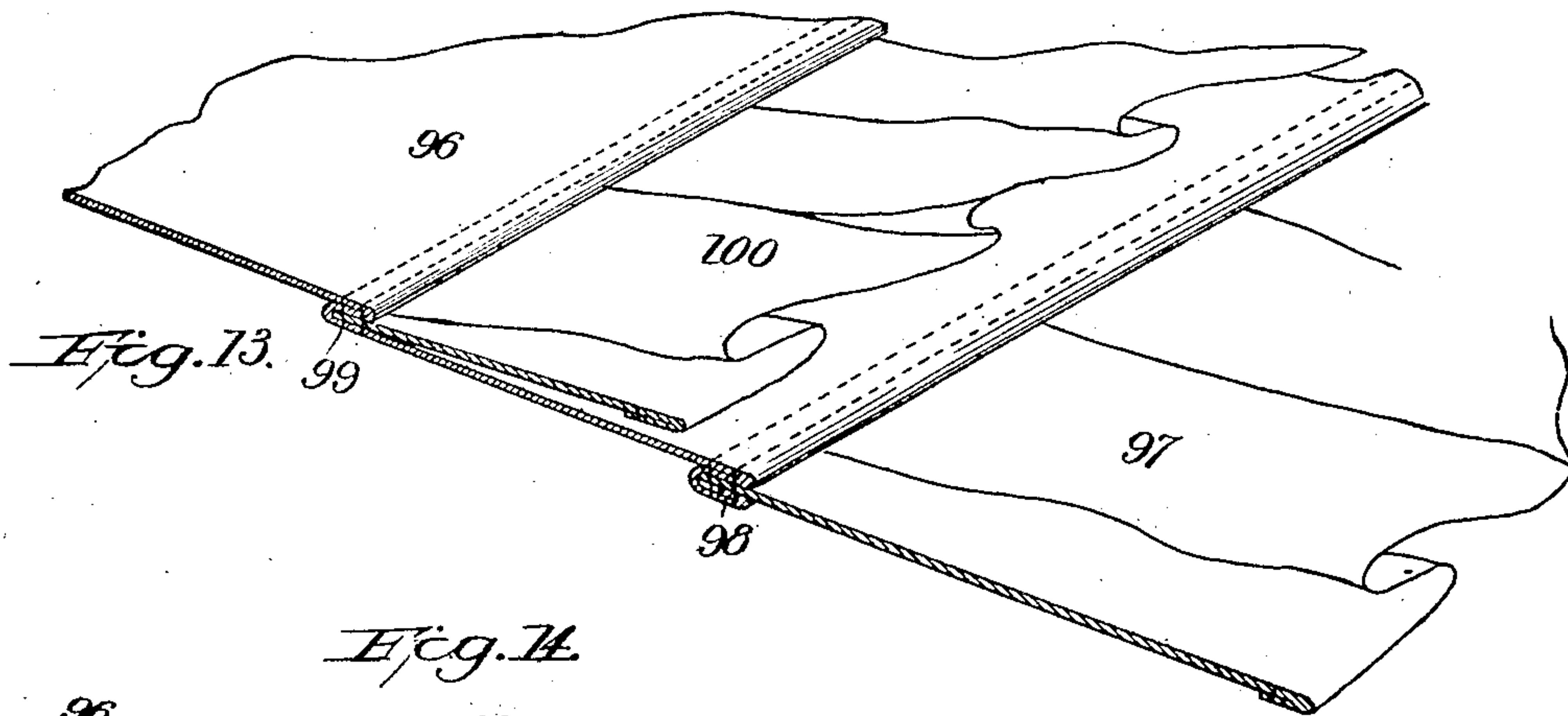
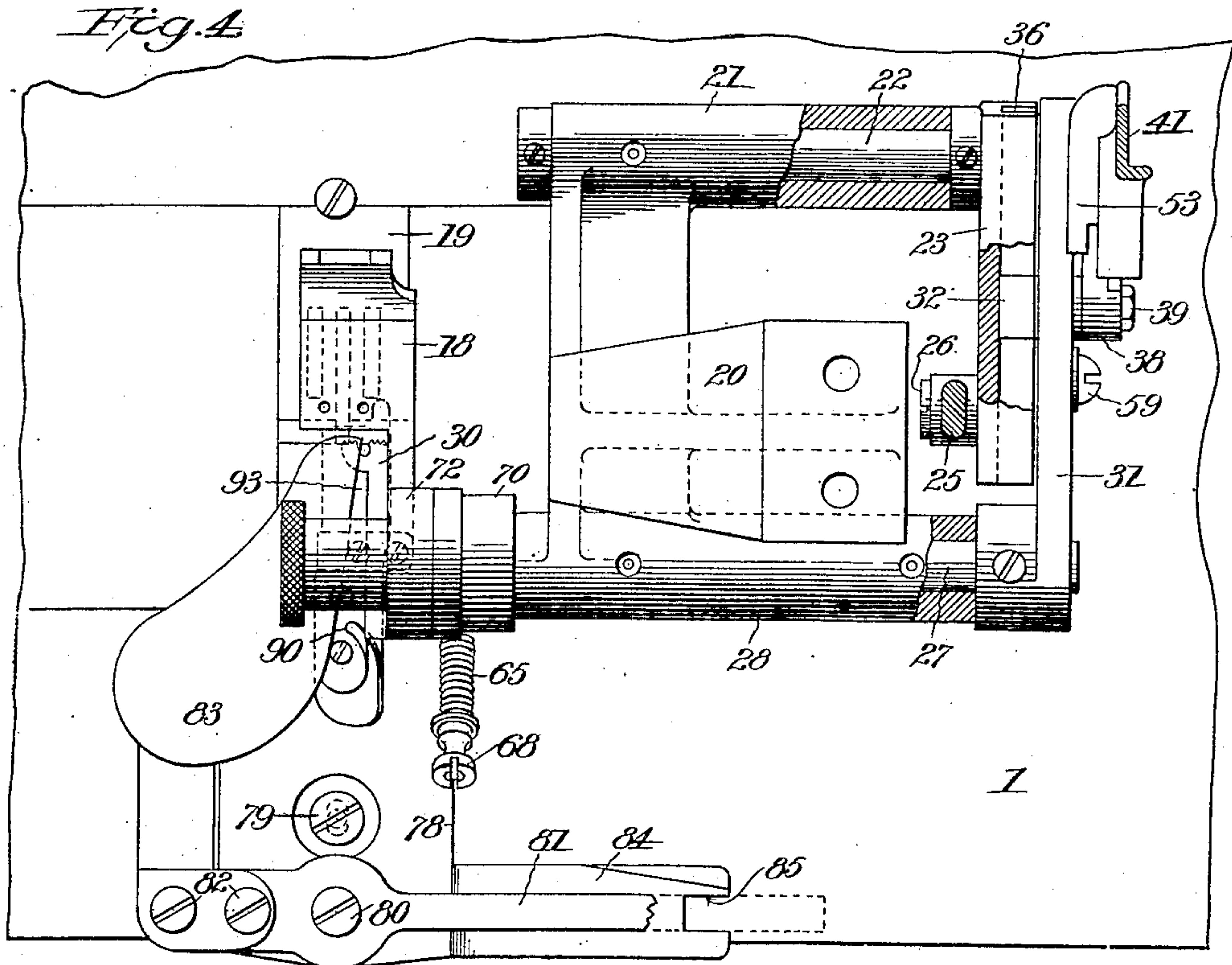
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5 SHEETS—SHEET 4.



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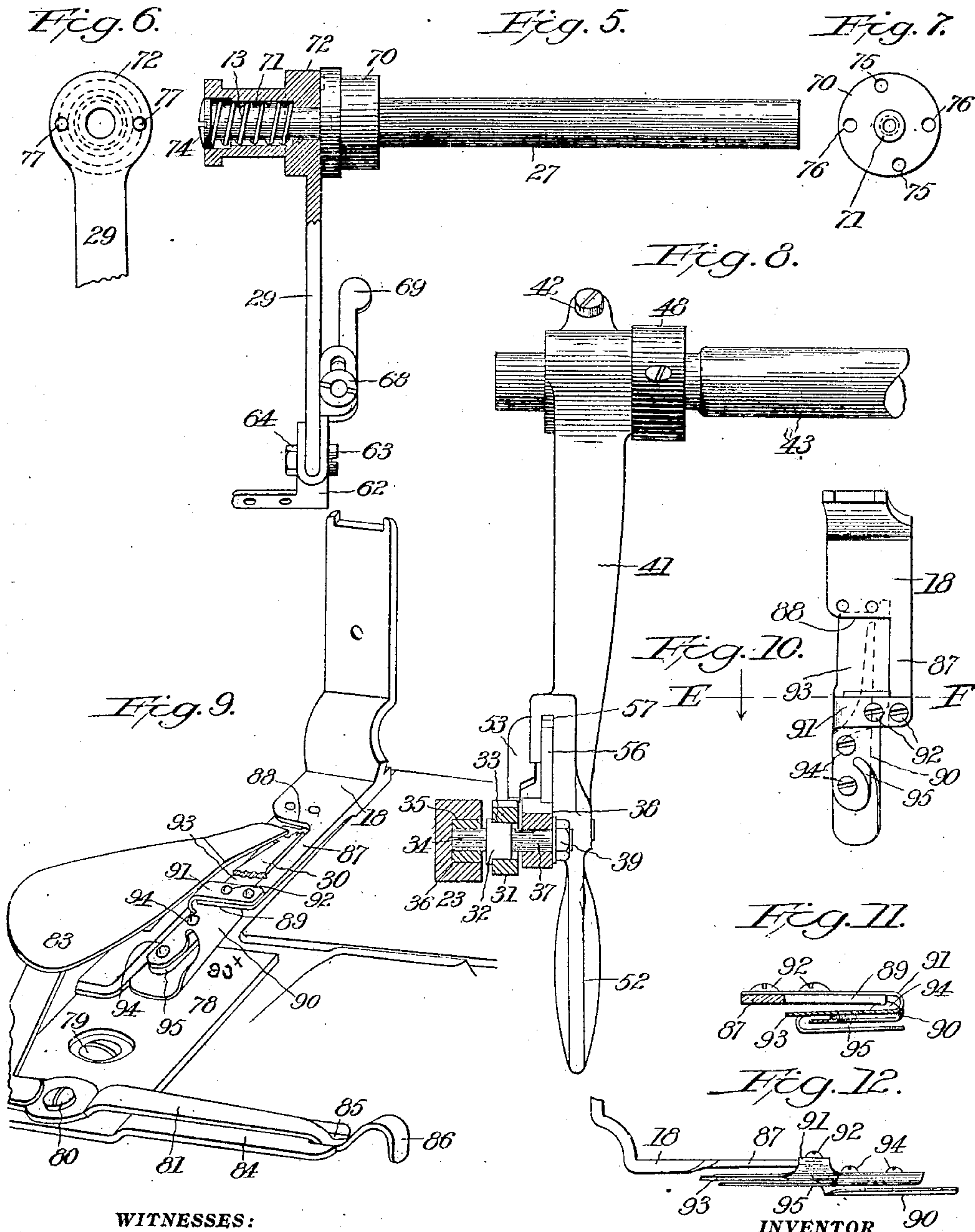
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5 SHEETS—SHEET 5.



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# UNITED STATES PATENT OFFICE.

ALEXANDER LAUBSCHER, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR, BY MESNE ASSIGNMENTS, TO SINGER MANUFACTURING COMPANY, A CORPORATION OF NEW JERSEY.

## RUFFLING MECHANISM FOR SEWING-MACHINES.

No. 882,254.

Specification of Letters Patent.

Patented March 17, 1908.

Application filed June 19, 1905. Serial No. 265,978.

*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.

One object of this invention is to provide a sewing machine whereby plaiting, ruffling or edge-turning, may be independently effected, or the three operations carried on conjointly and by a single presentation of the material to the action of the stitch-forming and cloth-feeding mechanisms of the sewing machine, and without any change in construction or permanent change in the adjustment of parts.

A further object is to combine with the ruffling mechanism means which, at the will of the operator, will permit the crimping-blade of the ruffling device to be thrown into or out of operation, without interfering with the action of the stitch-forming and cloth-feeding mechanisms, making it convenient for the operator to join the meeting ends of the ruffle when operating on tubular or endless work, such, for instance, as dress skirts, underskirts, pillow-cases, etc.

In the present invention the edge-turner is arranged beneath a presser-foot from which it is suspended, and the presser-foot is cut away to expose the upper surface of the edge-turner so that the crimping-blade will cooperate with this exposed surface in the operation of ruffling and utilize it as a strip-plate.

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 partially broken away. Fig. 2 is an elevation of the opposite side, showing in dotted lines a portion of the bed-plate and overhanging arm of the sewing machine together with the face-plate and attached parts. Fig. 3 is a sectional elevation taken in the plane of line A—B, Fig. 2. Fig. 4 is a top plan view of the ruffling mechanism taken on the line C—D, Fig. 1. 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 hub on the crimping-blade rock-shaft. Fig. 8 is a sectional side elevation of the hand-lever and attached parts. Fig. 9 is a perspective view of the presser-foot, edge-turner, folder-blade, and portion of crimping-blade. Fig. 10 is a top plan view of the presser-foot and edge-turner detached. Fig. 11 is a cross-section on line E—F, Fig. 10. Fig. 12 is a front side elevation of the presser-foot and edge-turner. Fig. 13 is a perspective view illustrating the application of ruffles to the body and lower edge of a garment. Fig. 14 is a longitudinal section of parts shown in Fig. 13.

1 is the bed-plate of the sewing machine, 2 the overhanging arm, 3 needle-actuating shaft, 4 face-plate, 5 needle-bar, 6 needle-thread tension, 7 thread-controller, 8 take-up, 9 thread-checks, 10 presser-bar, 11 presser-bar lifter, 12 presser-bar adjustable bushing, 13 presser-bar lifting-collar, 14 arm-plate, 15 needle-bar oil-cup, 16 needle-holder, 17 needles, 18 presser-foot, and 19 throat-plate.

20 (see Fig. 4) is a bracket bolted to the arm 2 and 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, Fig. 3, 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 (Fig. 4) 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, and 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, Fig. 8, movable within a longitudinal slot 33 in the lever 31. Projecting from the block 32 is a stud 34 upon which is loosely pivoted 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, Figs. 1, 3, 4 and 8, held thereon against displacement by a nut 39. The opposite end of link 38 is connected by a suitable pivot-screw 40, Fig. 3, 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, Fig. 2, mounted so that its end 46 bears against the side of the overhanging arm, its opposite end 47 being connected with a collar 48 which is secured to the shaft 43 by a 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. 3. 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*.

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, and serving to keep the parts in alignment and thereby 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 rock-shaft 27 and consequently that of the crimping-blade. The lever 41 is adjusted to place the block 32 coaxially with the fulcrum of the rock-shaft 22, and, hence, when the catch 53 is released from the end of 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 stop 58. Hence, by means of lever 41, in connection with stop 58, catch 53, and the end of the lever 31, the operator is enabled to control the action and inaction of the crimping-blade during the stitching operation.

The crimping-blade 30 is secured by screws 61 to a lever 62, which lever is pivoted by a screw-bolt 63 and nut 64 to the lower end of the adjustably secured lever 29. 65 is a spring mounted on a screw-rod 66 secured in a stud 67 riveted in the adjustable lever 29,

which spring presses against the lever 62 in such manner as to keep the crimping-blade 30 pressed down upon the material. 68 is a nut on rod 66 for regulating the tension of spring 65. 69 is a hand-lever on and for rocking the lever 62 on the pivot-screw 63, to raise the crimping-blade clear of the material when for any purpose the lever 29 is moved out of operative position.

Referring more particularly to Figs. 1, 2, and 5, the shaft 27 is provided with a hub 70 and a reduced extension 71 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 72 hollowed out for the reception of a spring 73 encircling the extension 71, which latter is provided with a screw 74 to hold the spring 73 compressed against the bottom of the hollowed out portion of the hub 72, and consequently to hold the lever adjustably upon the extension 71. In the face of the hub 70 are pairs of holes 75, and 76, with which cooperate pins 77 on hub 72, to lock lever 29 and its attached parts in and out of operative position. If the lever 29 and crimping-blade 30 are in operative position, as illustrated in Fig. 3, the two pins 77 will register with the two holes 76, and when such lever is moved out of operative position the said pins will register with the two holes 75. The lever 29 is hand-moved longitudinally of the extension of shaft 27 and against the resiliency of the spring 73, to withdraw the pins from the holes, and the lever when so withdrawn may be rotated on the extension 71 until the pins coact with the holes. When thus adjusting the lever 29, and its attached crimping-blade, the operator, through the lever 69, raises the crimping-blade 30 so that it will swing clear of and avoid disarranging the material being operated upon.

78, Figs. 4 and 9, is a base-plate adjustably secured to the bed-plate 1 of the machine by a screw 79. Pivotaly secured to said plate 78 by a pivot-screw 80, is a lever 81, to which is adjustably secured by screws 82 a folder-blade 83. The base-plate 78 is provided with an arm 84 having at its end a notch 85 which coacts with a bent portion 86 of the free spring end of the lever 81 to hold the folder-blade 83 in operative position relatively to the stitch-forming mechanism. By snapping the portion 86 into and out of the notch 85 the operator is enabled at will to adjust the folder-blade 83 into and out of operative position.

The presser-foot 18 is provided with an extended portion 87 cut away at 88 and at its free end having the lateral extension 89, thus leaving an open space between the lateral extension and the needle-holes.

90 is an edge-turner provided with an



overtaken portion 91 by which the edge-turner is secured, through screws 92, to the lateral extension 89 of the extended portion 87. The edge-turner 90 is secured to the presser-foot so as to bring the surface 93 of the top portion of the edge-turner just below and between the needle-holes and the lateral extension 89, and it is upon this surface that the crimping-blade acts to form the ruffles as the material is fed to the action of the stitch-forming mechanism. It is the top portion of the edge-turner 90 in connection with the curved slot 90<sup>x</sup> in said edge-turner which acts to form the under fold in the material, as illustrated in Figs. 13 and 14.

94 are screws by which the usual tongue 95 is secured to the edge-turner.

In the operation of the machine, when stitching a ruffle at the edge of a garment, the free edge of the goods 96 is passed into the edge-turner, as is common when making a fold at the edge of the material, the folder-blade 83 is then moved to position, as shown in Fig. 4, and the goods caused to pass under and over it and over and under the edge-turner. Next, the material 97 forming the ruffle is passed in between the upper surface 93 of the edge-turner 90 and the lateral extension 89 and under the crimping-blade 30, the crimping-blade extending partially under the folder-blade, and as the material is fed along it is folded and stitched, as illustrated by seam 98, Figs. 13 and 14, and at the same time the ruffle is formed and stitched into position. In forming seam 99 the material instead of being passed into the edge-turner is passed under it, the folder-blade is then brought to the position shown in Fig. 4, the ruffling strip 100 placed as in seam 98 and seam 99 is formed.

From the foregoing it will be understood that the edge-turner is attached directly to the presser-foot so that the edge of the material can be passed into the edge-turner, or the body of the material be passed under the edge-turner and between it and the cloth-plate of the sewing machine, and that the upper portion of the edge-turner acts as a stripper-plate for the crimping-blade in the formation of the gathers constituting the ruffling and, further, it is to be understood that the operations of forming the folds of seams 98 and 99 are independent of the operation of the gathering and the stitching-in of the ruffling-strips, and this latter operation may be omitted or such trimming may or may not be gathered or plaited, as desired.

The described construction permits the use of the machine as a single or multiple needle machine, a ruffling machine, an edge-turning and stitching machine, a folding and stitching machine, an edge-turning and ruffling machine, or for stitching an ordinary seam, due mainly to the equipping of the presser-foot with an edge-turner constructed

and combined with the presser-foot so that its upper surface will act as a stripper-plate in connection with the operation of the crimping-blade, and such upper portion of the edge-turner also acting as a folding-plate or blade in connection with the opening in the presser-foot, which opening permits the upper fold of the material to pass over the upper portion of the edge-turner and under the rear portion of the presser-foot, at the same time permitting the body of the material or the under fold to pass below the edge-turner, thus making of the edge-turner a folder-plate or blade, to be used independently of the function of an edge-turner; and it is the providing of this folding element of the presser-foot that is one of the features which mainly distinguishes the present invention from that set forth in my United States Patent No. 809,922, dated January 9, 1906.

The mounting of the edge-turner above the cloth-plate and its coaction with the crimping-blade as a stripper-plate and the stripper-plate acting as a folder-plate or blade, and so combining the ruffling and folder-blades that they can be adjusted into and out of operative position, give to the device as a whole an extended application, making it convenient to effect different productions without any change in construction. Further, the attaching of the edge-turner to the presser-foot and the constructing of such edge-turner with an upper portion or plate capable of acting as a folder-blade, and constructing the presser-foot so as to permit of the fold of the material being fed over, under, and away from the presser-foot, give to the machine superior utility for the laying and stitching of folds or plaits, independently of other productions.

What I claim is:—

1. In a ruffling mechanism for sewing machines, a presser-foot, an edge-turner carried by the presser-foot, a pivoted folder-blade arranged alongside of and cooperating with the edge-turner to fold over the edge of the material, and a crimping-blade, the upper portion of the edge-turner serving as a stripper-plate which in conjunction with the folder-blade acts to hold the work as the crimping-blade recedes.

2. In a ruffling mechanism for sewing machines, a presser-foot, a folder-blade, and a crimping-blade, in combination with an edge-turner carried by the presser-foot, said presser-foot having an opening through which the edge-turner is exposed to the action of the said blades.

3. In a ruffling mechanism for sewing machines, a presser-foot having a lateral extension beyond the needle-hole therein and cut away at one side between the needle-hole and lateral extension, an edge-turner arranged beneath the presser-foot and sup-



ported upon said lateral extension with its upper surface exposed by said cut-away portion, a folder-blade pivotally arranged alongside of the edge-turner, a crimping-blade and a support therefor by which said crimping-blade is maintained above the presser-foot and engages the said upper surface of the edge-turner.

4. In a ruffling mechanism for sewing machines, an adjustably secured vibrating crimping-blade, an adjustably secured folder-blade, an edge-turner, and a presser-foot carrying said edge-turner and having an opening to expose the upper surface of the edge-turner to the action of the crimping-blade and folder-blade to form ruffles or plaits as the material is fed to the action of the stitch-forming mechanism.

5. In a ruffling mechanism for sewing machines, an adjustably secured vibrating crimping-blade, an adjustably secured folder-blade, an edge-turner, and a presser-foot carrying said edge-turner and having an opening to expose the upper surface of the edge-turner to the action of the crimping-blade and folder-blade to form ruffles or plaits as the material is fed to the action of the stitch-forming mechanism, in combination with means including a hand-lever for controlling the movements of the crimping-blade at the will of the operator.

6. In a ruffling mechanism for sewing machines, a needle-actuating shaft, a presser-foot, a rock-shaft mounted in a suitable bearing, a lever provided with a crimping-blade, said lever being adjustably secured upon one end of said rock-shaft, a lever projecting from the opposite end of said rock-shaft, a second rock-shaft mounted in a suitable bearing, and a lever projecting from said second rock-shaft and crossing and coupled to the lever on the first-mentioned rock-shaft, and connections between said second rock-shaft and needle-actuating shaft for transmitting vibratory movements to the crimping-blade, in combination with an edge-turner carried by the presser-foot above and free of the bed-plate of the sewing machine.

7. A ruffling mechanism for sewing machines, adapted to be thrown into and out of operation without interference with the stitch-forming mechanism, comprising essentially a crimping-blade, a crimping-blade actuating shaft and connections including a cam and coacting lever between said actuating shaft and crimping-blade for imparting vibratory movements to said crimping-blade, a presser-foot, and a folder-blade, in combination with an edge-turner carried by the presser-foot which is cut away to expose the upper surface of the edge-turner and enable it to serve as a stripper-plate to hold, in connection with the folder-blade, the gathered material.

8. In a ruffling mechanism for sewing machines, a presser-foot, an edge-turner carried by said presser-foot, a folder-blade arranged alongside of and cooperating with the edge-turner to fold over the material, and a crimping-blade, in combination with manually controlled means for controlling the movements of the crimping-blade.

9. In a sewing machine, a crimping-blade, combined with a presser-foot, and a stripper-plate and an edge-turner both carried by the presser-foot, said presser-foot having an opening in its upper side through which the stripper-plate is exposed to the action of said crimping-blade, and means for supporting said crimping-blade located wholly above the opening in said presser-foot.

10. In a ruffling mechanism for sewing machines, a presser-foot, an edge-turner carried by the presser-foot, a pivoted folder-blade arranged alongside of and cooperating with the edge-turner to fold over the edge of the material, and a crimping-blade, the upper surface of the edge-turner serving as a stripper-plate to hold the work as the crimping-blade recedes, and upon which the individual ruffles are formed by the action of the crimping-blade.

11. A ruffling mechanism for sewing machines, adapted to be thrown into and out of operation without interference with the stitch-forming mechanism, comprising essentially a crimping-blade, a crimping-blade actuating shaft and connections including a cam and coacting lever between said actuating shaft and crimping-blade for imparting vibratory movements to said crimping-blade, a presser-foot, and a folder-blade, in combination with an edge-turner carried by the presser-foot which is cut away to expose the upper surface of the edge-turner and enable it to serve as a stripper-plate to hold the gathered material.

12. In a sewing machine, including stitch-forming and cloth-feeding mechanisms, the combination of a presser-foot provided with a blade for effecting a fold of the material, with a folder-blade adjustably secured independently of the presser-foot, said presser-foot provided with an opening in front of and in line with the stitch-formation for the passage of the material beneath said presser-foot as said material is fed over said blade to the action of the stitch-forming mechanism.

13. In a sewing machine, including stitch-forming and cloth-feeding mechanisms, the combination of a presser-foot provided with a blade for effecting the under fold of a three-ply fold, with a folder-blade adjustably secured independently of the presser-foot for effecting the upper fold of said three-ply fold, said presser-foot provided with an opening for the passage of the upper two of said three plies beneath the presser-foot in



their travel with the under ply to the action of the stitch-forming and cloth-feeding mechanisms.

14. In a sewing machine, a presser-foot, a crimping blade, a lever pivoted above and independently of the presser-foot and carrying the crimping blade, and a stripper plate and an edge-turner both carried by the presser-foot, said presser-foot having an opening in its upper side through which the stripper-plate is exposed to the action of said crimping blade.

15. In a sewing machine, a presser-foot, a crimping-blade, a depending lever to which

said crimping-blade is rigidly secured, means to throw the lever and its attached crimping-blade into and out of operation, and a stripper-plate and an edge-turner both carried by the presser-foot, said presser-foot having an opening in its upper side in line with the coacting portions of said crimping-blade and stripper-plate.

In testimony whereof I have hereunto set my hand this 15th day of June A. D. 1905.

ALEXANDER LAUBSCHER.

Witnesses:

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