

No. 736,828.

PATENTED AUG. 18, 1903.

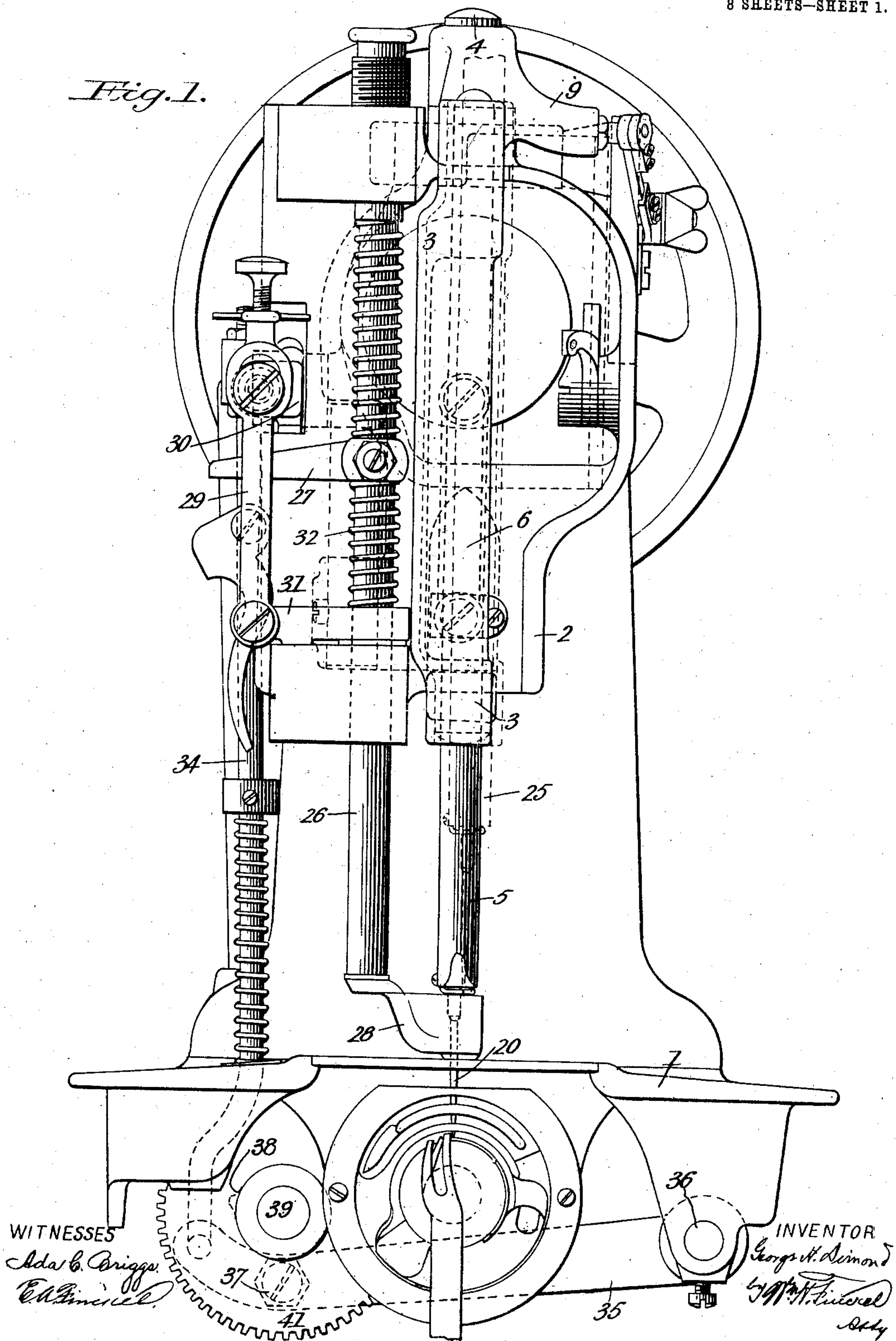
G. H. DIMOND.
SEWING MACHINE.

APPLICATION FILED FEB. 27, 1903.

NO MODEL.

8 SHEETS—SHEET 1.

Fig. 1.



No. 736,828.

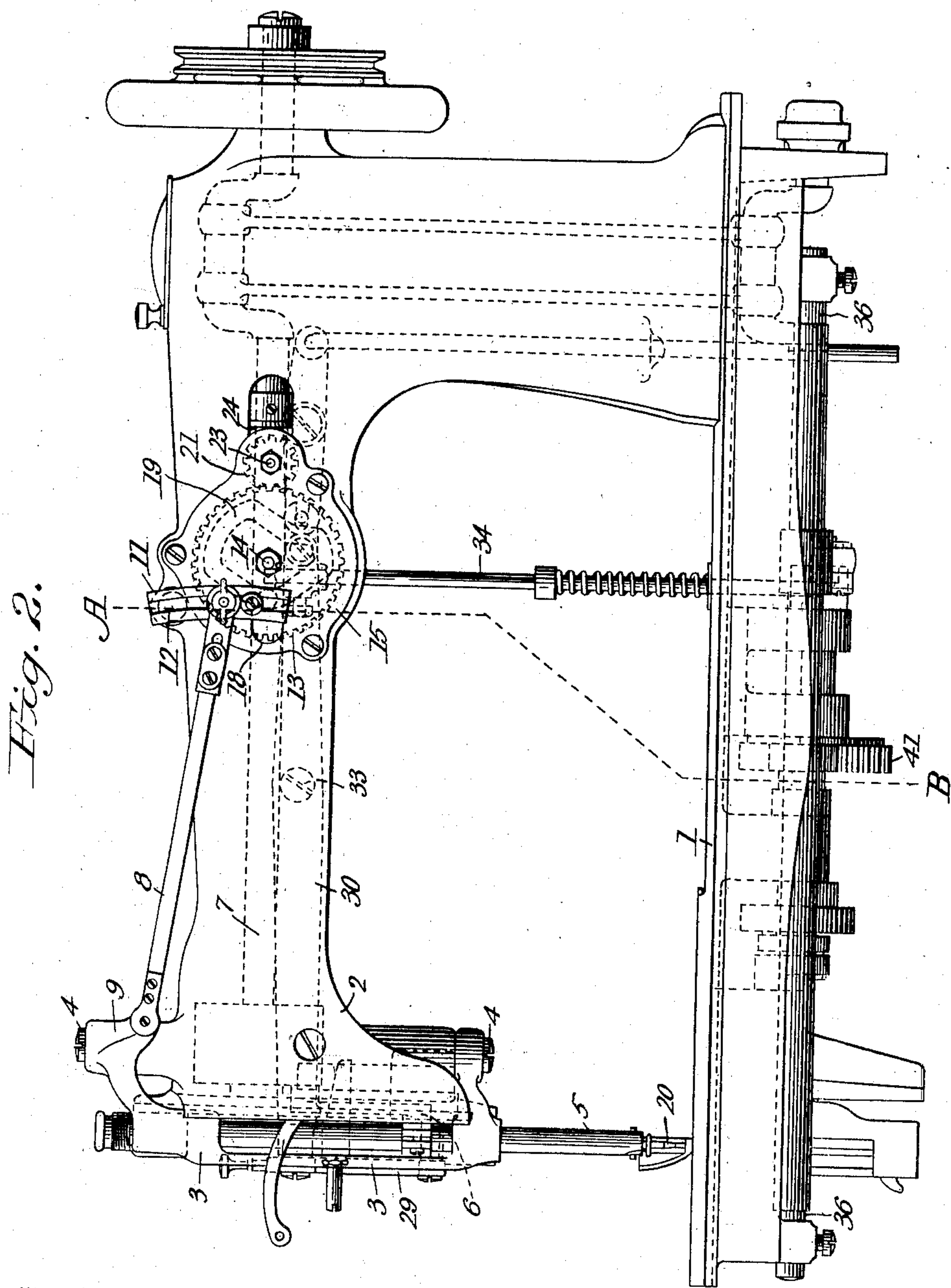
PATENTED AUG. 18, 1903.

G. H. DIMOND.
SEWING MACHINE.

APPLICATION FILED FEB. 27, 1903.

NO MODEL.

8 SHEETS—SHEET 2.



WITNESSES:

Ada C. Briggs
E. A. Finckel

INVENTOR

George W. Dimond
by M. H. Finckel
Atty.

No. 736,828.

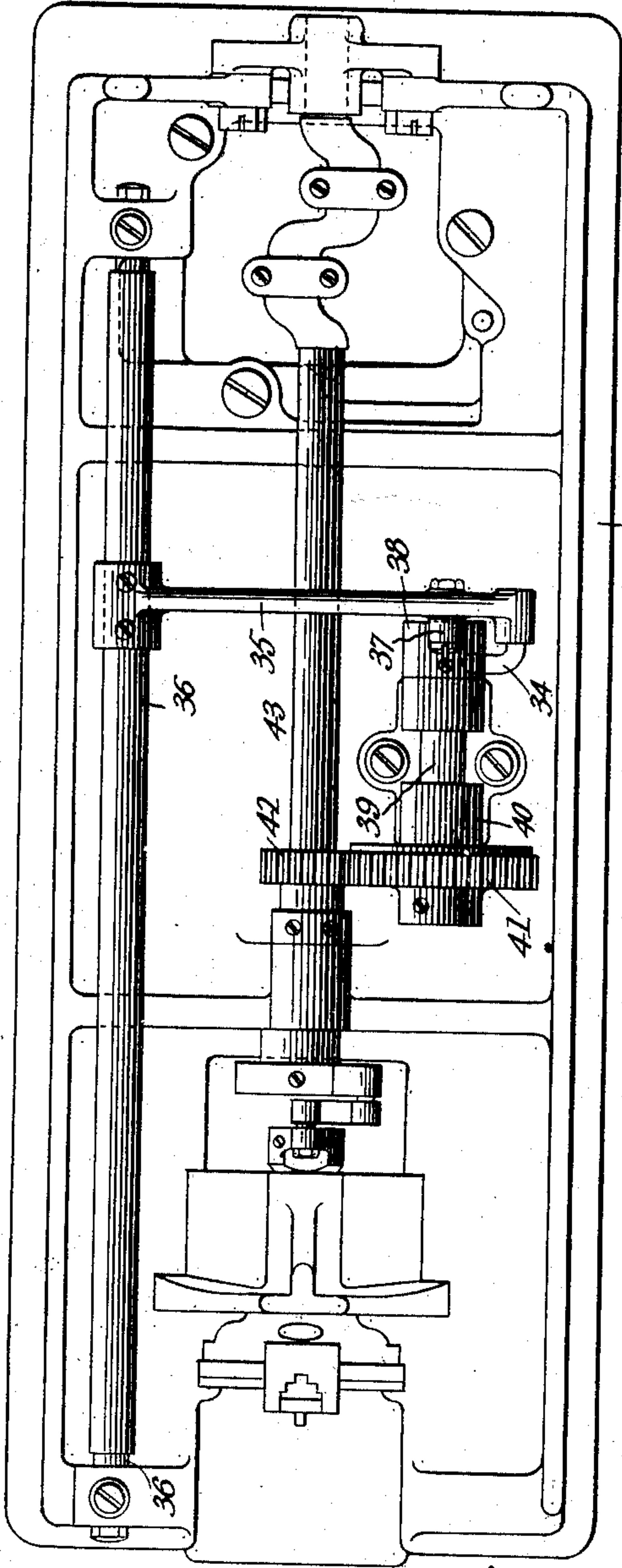
PATENTED AUG. 18, 1903.

G. H. DIMOND.
SEWING MACHINE.

APPLICATION FILED FEB. 27, 1903.

NO MODEL.

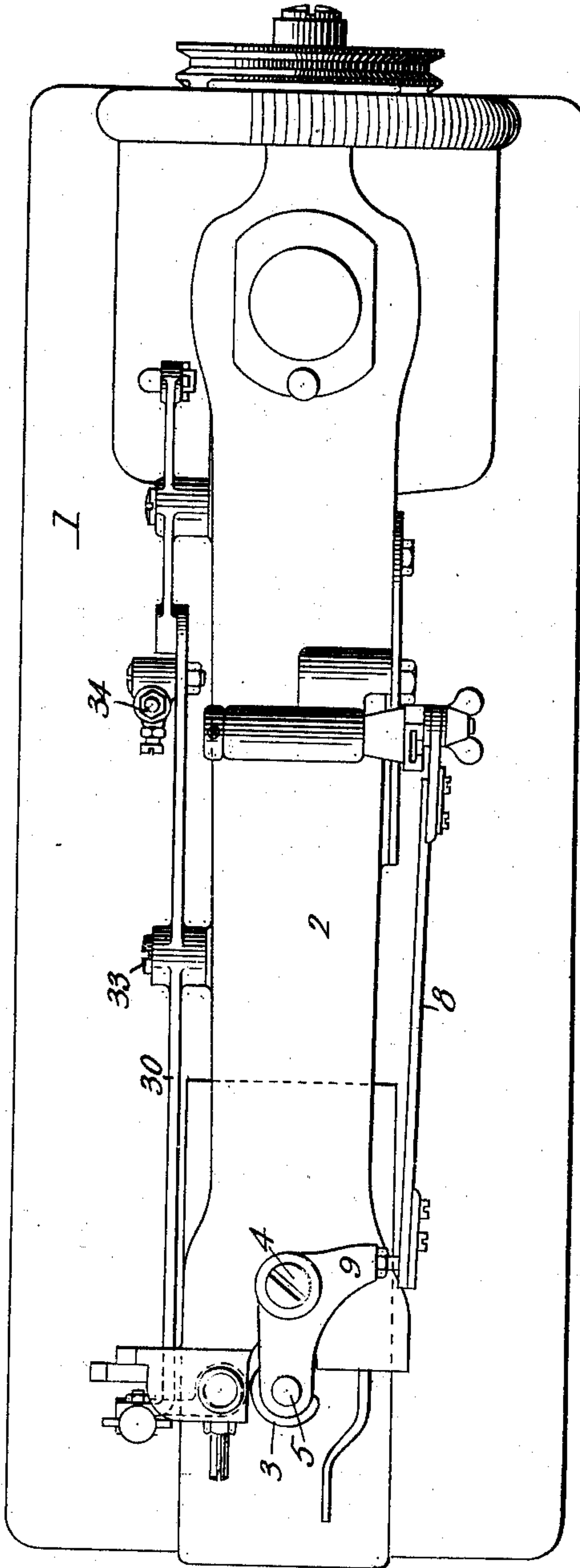
8 SHEETS—SHEET 3.



WITNESSES:

Ada B. Briggs
E. H. Dimond

Fig. 3.



INVENTOR

George H. Dimond
by W. H. Finckel
Atty.

No. 736,828.

PATENTED AUG. 18, 1903.

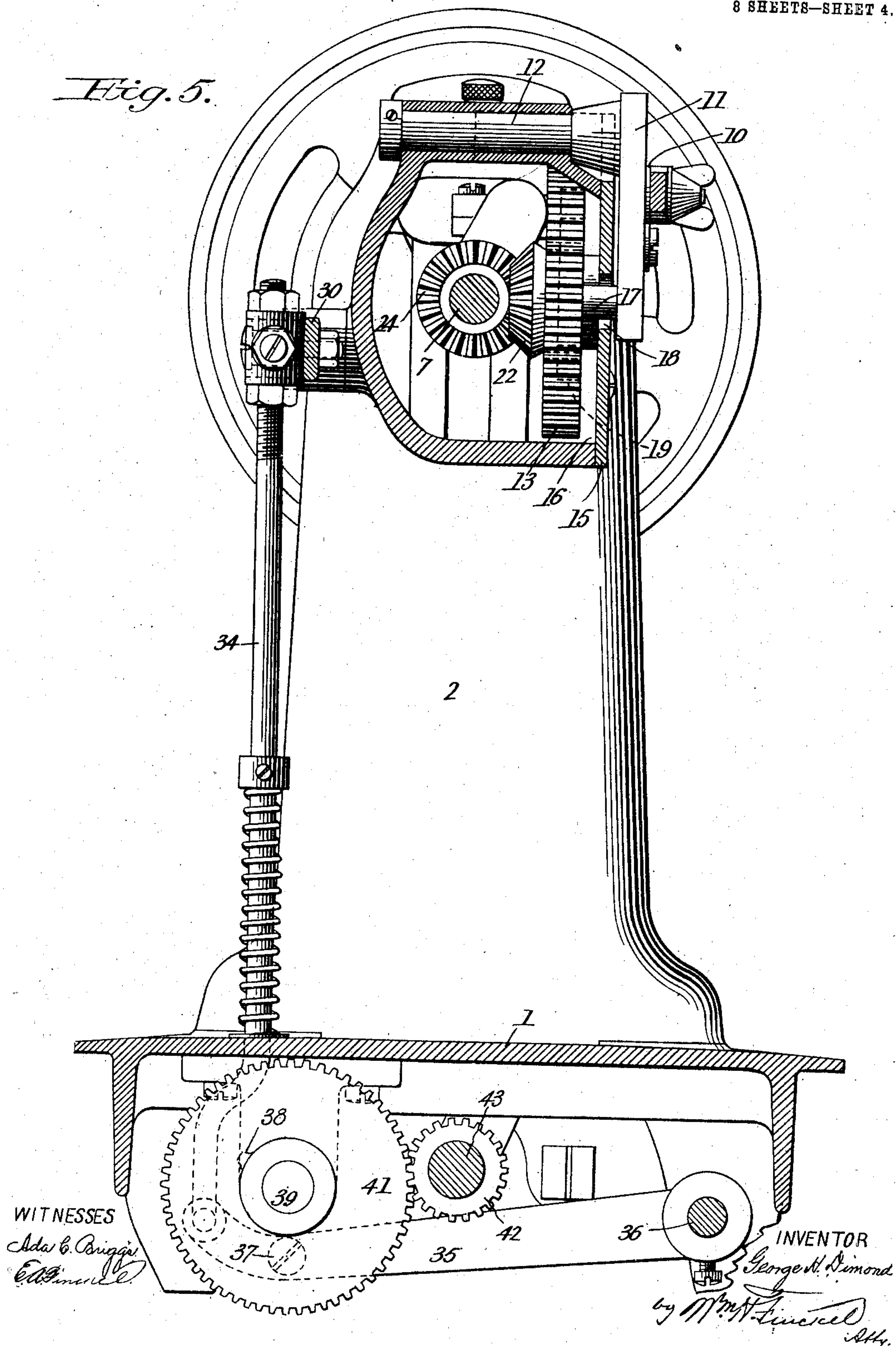
G. H. DIMOND.
SEWING MACHINE.

APPLICATION FILED FEB. 27, 1903.

NO MODEL.

8 SHEETS—SHEET 4.

Fig. 5.



No. 736,828.

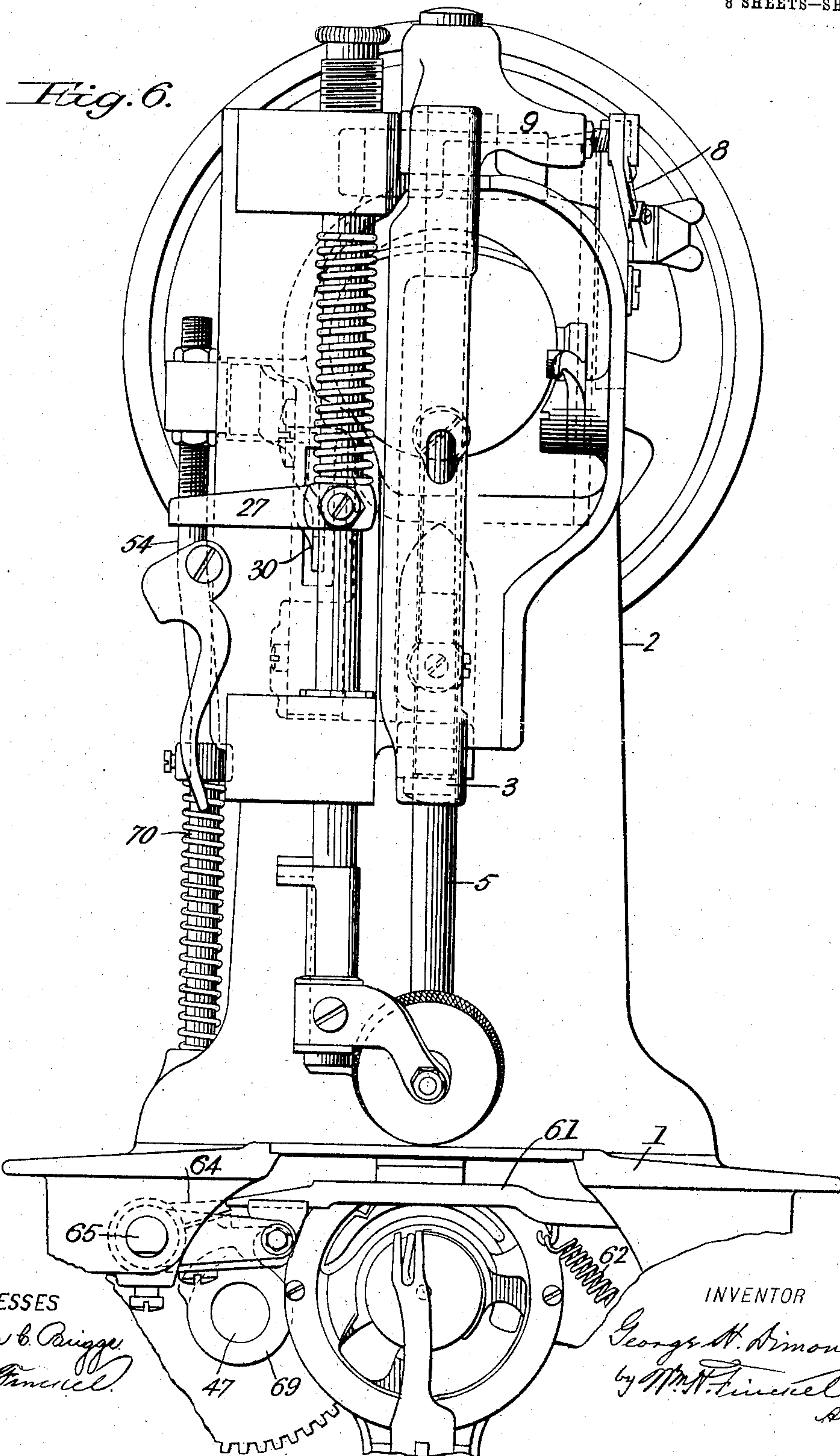
PATENTED AUG. 18, 1903.

G. H. DIMOND.
SEWING MACHINE.

APPLICATION FILED FEB. 27, 1903.

NO MODEL.

8 SHEETS—SHEET 5.



No. 736,828.

PATENTED AUG. 18, 1903.

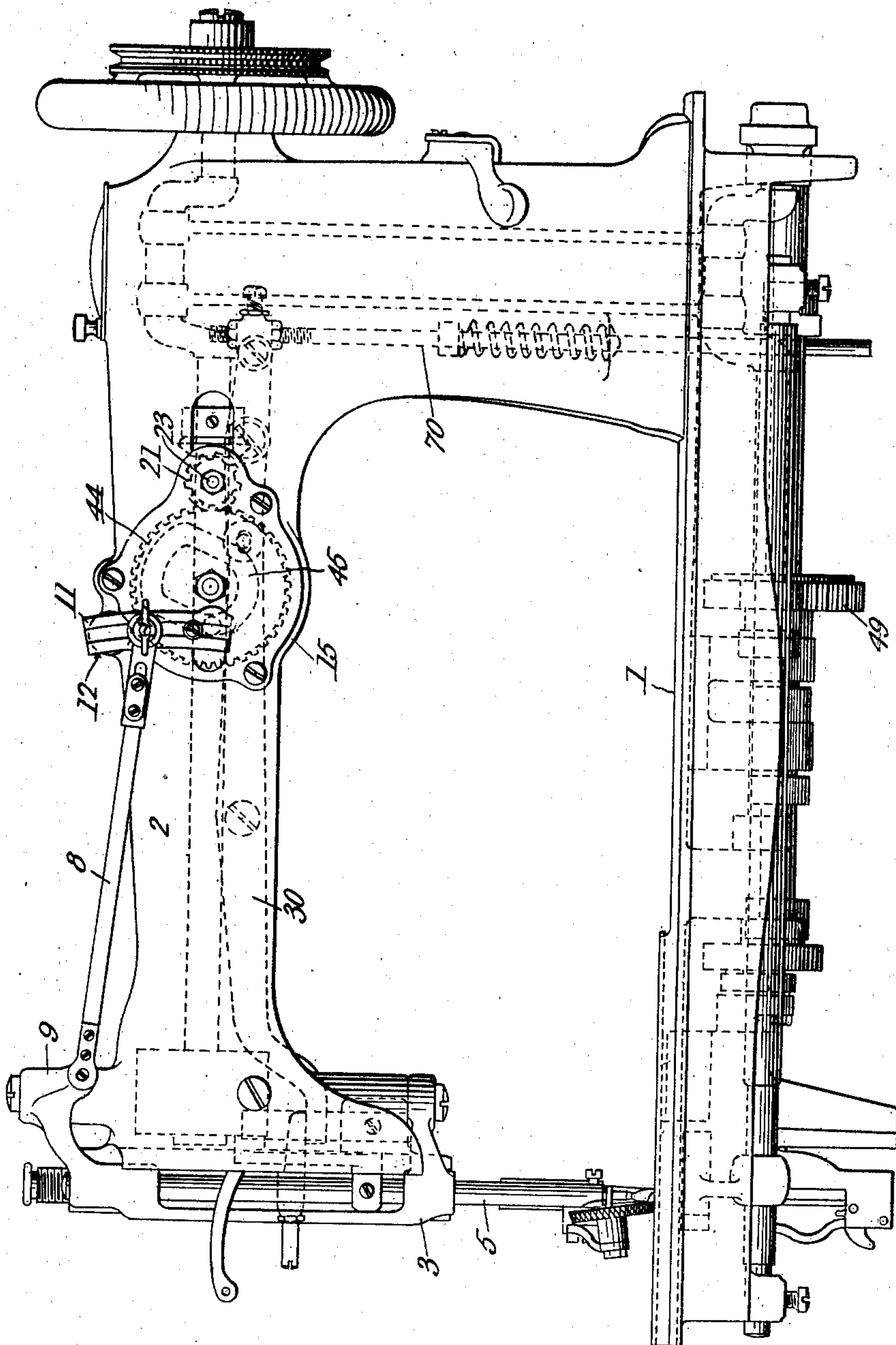
G. H. DIMOND.
SEWING MACHINE.

APPLICATION FILED FEB. 27, 1903.

NO MODEL.

8 SHEETS—SHEET 6.

Fig. 7.



WITNESSES:

Ada C. Briggs
Ed. Dimond

INVENTOR

George H. Dimond
by Wm. F. Lincoln
Att'y

No. 736,828.

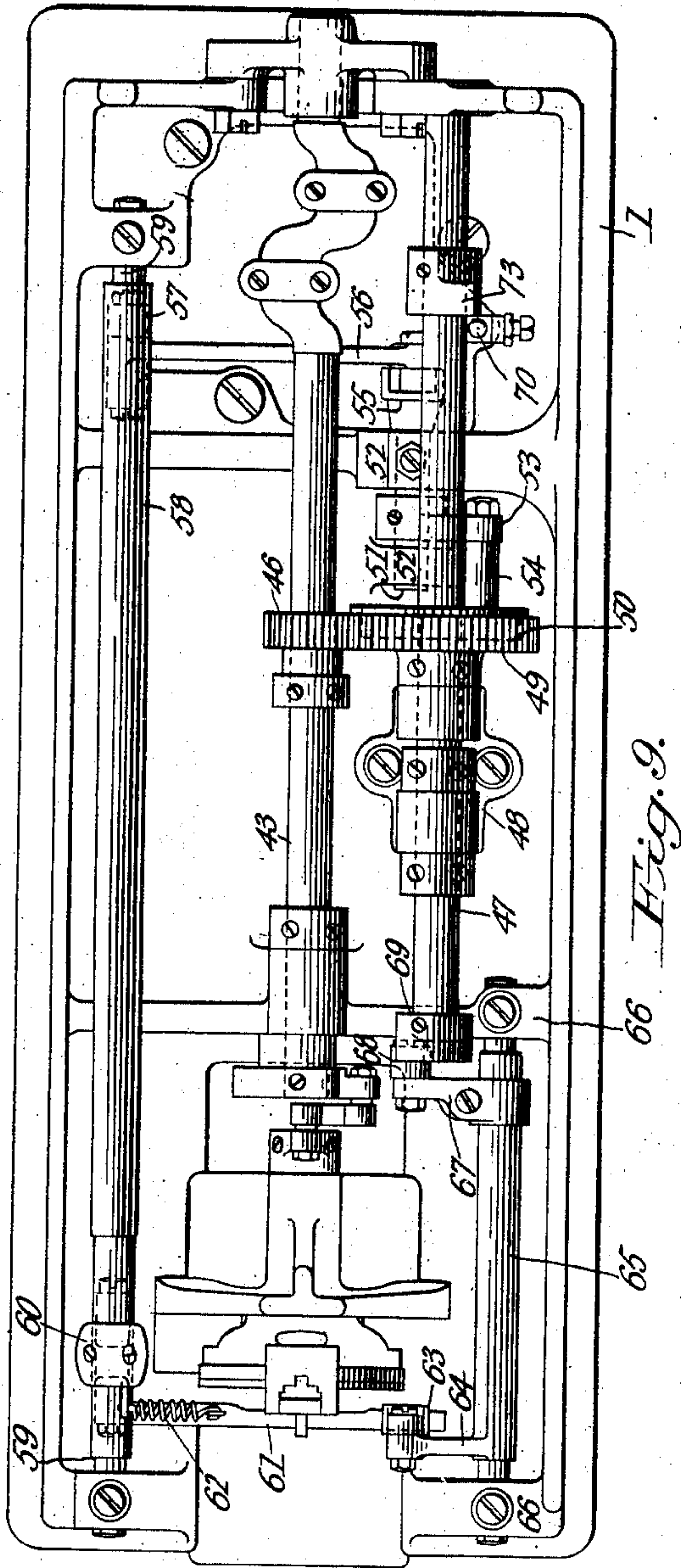
PATENTED AUG. 18, 1903.

G. H. DIMOND.
SEWING MACHINE.

APPLICATION FILED FEB. 27, 1903.

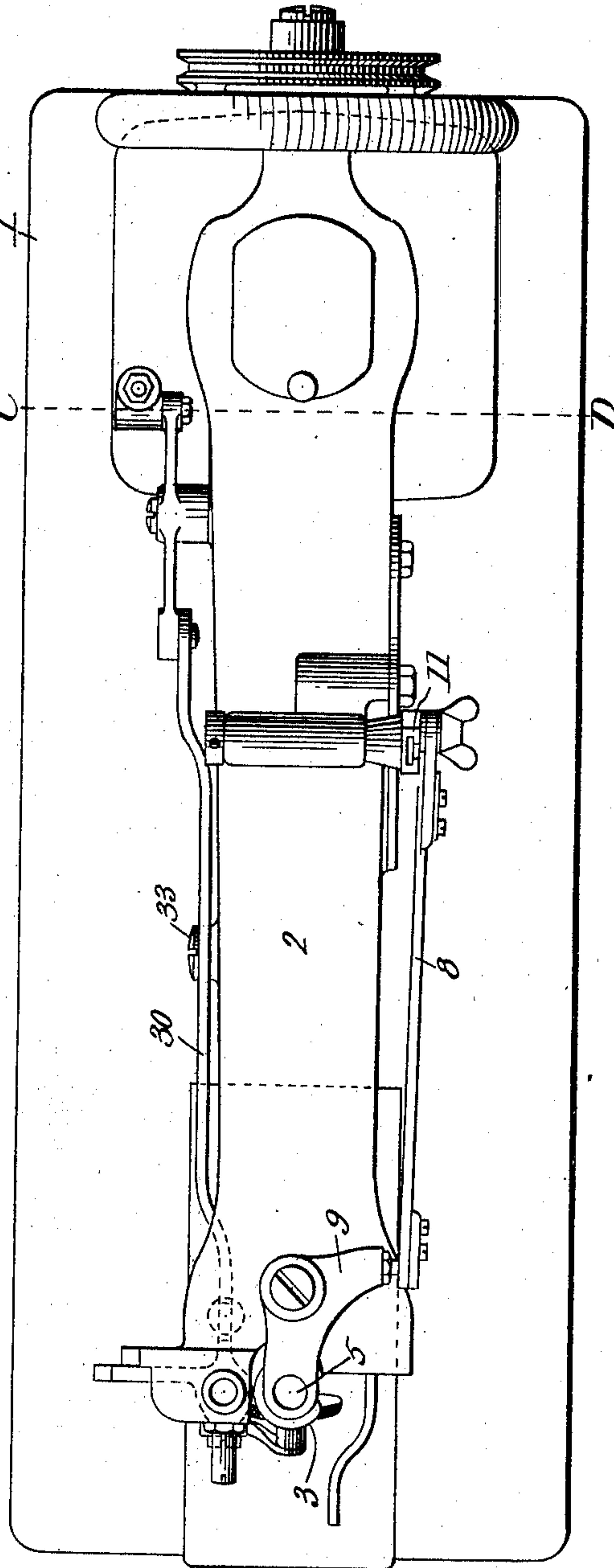
NO MODEL.

8 SHEETS—SHEET 7.



WITNESSES:
Ida C. Briggs
E. H. Dimond

Fig. 8.



INVENTOR
George H. Dimond
by Wm. H. Finckel
Att.

No. 736,828

PATENTED AUG. 18, 1903.

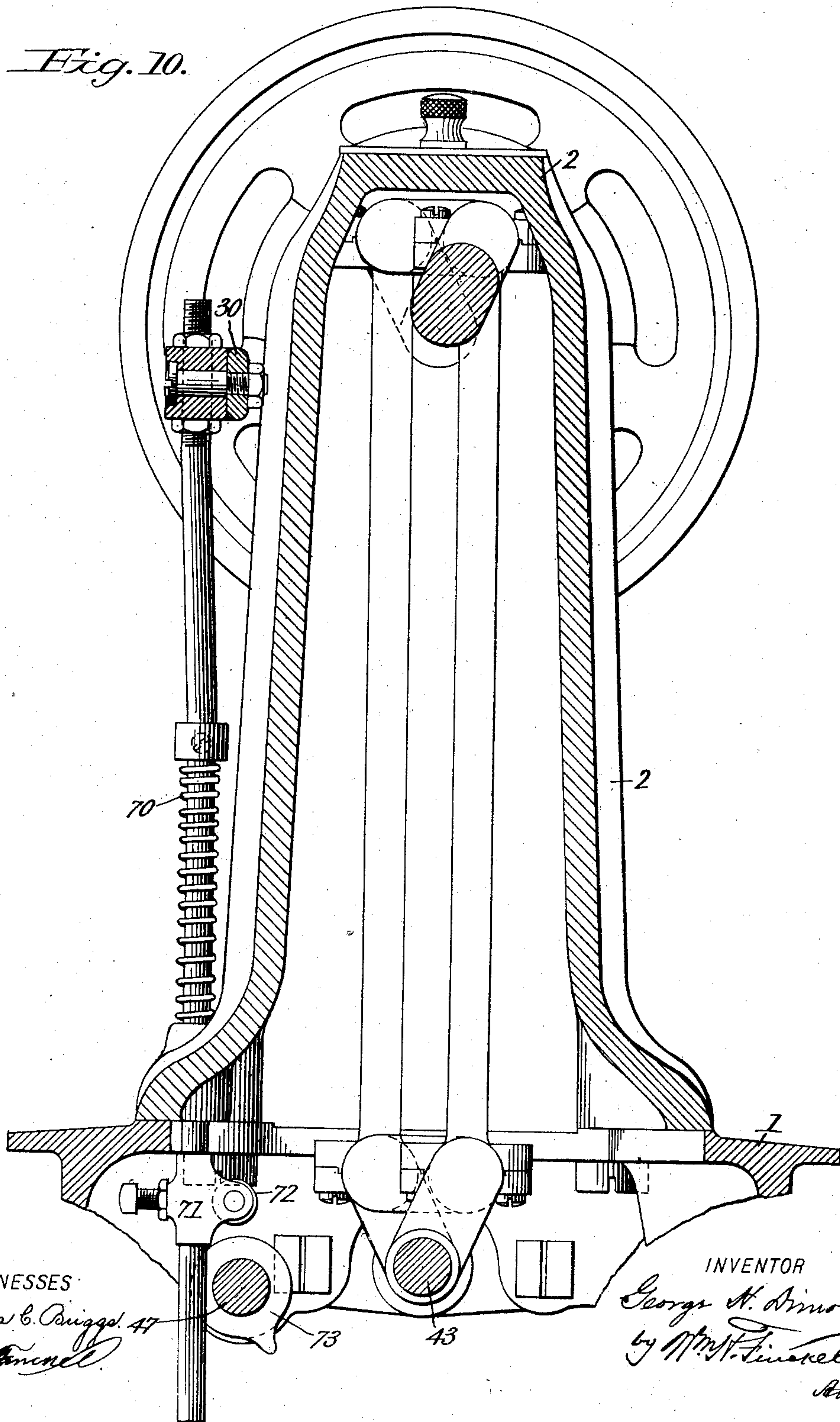
G. H. DIMOND.
SEWING MACHINE.

APPLICATION FILED FEB. 27, 1903.

NO MODEL.

8 SHEETS—SHEET 8.

Fig. 10.



WITNESSES

Ada C. Briggs 47
Edmund

INVENTOR

George H. Dimond
by M. J. Finckel
Att'y.

UNITED STATES PATENT OFFICE.

GEORGE H. DIMOND, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO
WHEELER & WILSON MANUFACTURING COMPANY, OF BRIDGE-
PORT, CONNECTICUT, A CORPORATION OF CONNECTICUT.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 736,828, dated August 18, 1903.

Application filed February 27, 1903. Serial No. 145,302. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. DIMOND, 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 Sewing-Machines, of which the following is a full, clear, and exact description.

This invention relates to stitch-forming mechanism for sewing-machines; and its object is to provide a machine for making what is known as the "triple stitch," used in the manufacture of gloves, &c., and illustrated in Patent No. 708,467, granted September 2, 1902.

The needle is given the usual vertical reciprocation and is carried in a gate which is given lateral vibration, so that in forming a seam three complete interlocked and practically superposed stitches are made between each pair of needle-punctures, or, in other words, each stitch is composed of three co-terminous stitches, while the material is moved in one direction only and advanced only as the third of the triplet of stitches is made. As in the patent referred to, so here the object of the triple stitch is to provide a tight and strong seam of great elasticity in order to yield to excessive strains, as in driving, without rupturing.

The invention is herein shown and described as applied to two forms of sewing-machines, one, Figures 1 to 5, wherein the needle is used in connection with the feeding of the material, and the other, Figs. 6 to 10, wherein the material feed-motion is independent of the needle; but the invention is not thus limited.

In the accompanying drawings, illustrating the invention, in the several figures of which like parts are similarly designated, Fig. 1 is a front end elevation of a needle-feed sewing-machine, the face-plate being removed. Fig. 2 is a side elevation. Fig. 3 is a bottom plan view. Fig. 4 is a top plan view; and Fig. 5 is a section taken in the plane of line A B, Fig. 2. Fig. 6 is a front end elevation of a sewing-machine with a modified feed-motion, the face-plate being removed. Fig. 7 is a side elevation. Fig. 8 is a bottom plan view.

Fig. 9 is a top plan view; and Fig. 10 is a section taken in the plane of line C D, Fig. 9.

Parts not specifically described—as, for example, the under-thread mechanism—are of the well-known Wheeler & Wilson sewing-machine construction.

1 is the usual bed-plate, surmounted by the overhanging arm 2.

3 is a gate pivoted to the overhanging arm 2 by screws 4, and mounted to reciprocate within said gate is a needle-bar 5, actuated in the usual manner by a link 6, operatively connected with the driving-shaft 7 (shown in dotted lines, Fig. 2) in the usual or any approved manner.

8 is a pitman, one end of which is pivoted to an arm 9, extending from the gate 3, while its opposite end is pivoted to a slide-block 10, operatively mounted in the usual manner within a grooved segment-lever 11, pivoted at 12 in the overhanging arm 2.

13 is a gear-wheel, hereinafter designated a "cam-gear," journaled upon a stud 14, tapped within the cover-plate 15, which incloses an opening 16 in the arm. The lower end of the segment-lever 11 is provided with a roller-stud 17, which projects through an opening 18 in said cover-plate and is engaged by a cam-groove 19, formed within the face of said gear-wheel 13, whereby said segment-lever 11 will be intermittently oscillated and through its connection with the gate 3 impart an intermittent oscillatory movement to the needle 20 in a direction approximately parallel with the line of the seam, or, in other words, in the direction of the feed of the work. The cam-gear 13 receives its movement from a spur-pinion 21, fast on the hub of a bevel-pinion 22, which latter is journaled upon a stud 23, tapped within the cover-plate 15, and intermeshing with said bevel-pinion 22 is a bevel-pinion 24, fast on the driving-shaft 7. The relative proportions of these toothed wheels are such that the shaft 7 will make three revolutions while the cam-gear 13 is making one revolution, and the contour of the cam-groove 19 is such that the needle-bar gate 3 will be oscillated during the first and second revolutions of said shaft while the needle 20 is raised out of the material, and

upon the third revolution said gate will be oscillated while the needle is down and in the material, so as to effect the feeding of the material. In Fig. 1 the needle-bar is shown at the downward limit of its vertical stroke and at the conclusion of the oscillatory movement of the gate 3 to effect the feeding of the material. After the needle has been withdrawn from the material and previous to taking the next stitch the gate 3 will be oscillated toward the right, Fig. 1, to position the needle-bar and needle, as shown in dotted lines at 25, in which position said gate will remain until the needle has been withdrawn from the material after completing the first stitch of the series. The gate 3 is then oscillated toward the left hand before the needle descends to the position first occupied, and a second stitch is taken. After the needle has been withdrawn from the material at the completion of the second stitch and previous to the descent of the needle for the third stitch, said gate 3 is again oscillated toward the right hand to the position occupied for the first stitch of the series, as indicated in dotted lines at 25, whereupon the needle descends for the third stitch, during the formation of which and while said needle is in the material said gate is again oscillated toward the left hand of the figure, thereby feeding the material being stitched. It will be observed that there is no feeding or advancing of the material during the formation of the first two of the three stitches used to form the triple stitch, and hence the completed seam is composed of a series of triplet stitches of great strength and elasticity. In order to prevent the needle-puncture in the material from being distorted and also to relieve the needle of unnecessary lateral strain during the feed movements, means are provided for slightly raising the cloth-presser during the feed movement, as follows:

26 is a spring-depressed presser-bar provided with a lifting-collar 27 and presser-foot 28 of any suitable form.

29 is a link the upper end of which is pivotally connected to a lever 30 and its lower end pivoted to a collar 31, loose upon the presser-bar 26.

32 is a spring interposed between the collar 31 and the lifting-collar 27.

The lever 30 is pivoted at 33 to the overhanging arm and is connected by a rod 34 at its rear end with a lever 35 on a rock-shaft 36, pivoted beneath the bed-plate. Said lever 35 carries a roller-stud 37, which is engaged by a cam 38, fast on a short counter-shaft 39, journaled within a bracket 40, secured to the under side of said bed-plate. Also fast on said counter-shaft is a spur-gear 41, which meshes with a pinion 42, fast on the loop-taker-actuating shaft 43. The gear 41 and pinion 42 are proportioned similarly to the gears which actuate the segment-lever 11, so that the movements of the lever 35 will be in proper time with the feed movements, the contour

of the cam 38 being such as to maintain the cloth-presser in slightly-raised position above the material during the feeding movement and lower the same upon the material in ample time to prevent skipping of stitches. As the outer end of the lever 30 is raised it carries up the link 29, and this tilts the collar 31 against the resistance of the spring 32 and causes it to bite against the presser-bar and lift it, and when the lever makes its return movement the spring 32 restores the collar to its normal position, so that the presser-bar is no longer engaged by it, but is free to move down through it for introducing and removing the material.

In Figs. 6 to 10, inclusive, the invention is shown in connection with a sewing-machine having means for feeding the material independent of the needle-actuating mechanism, and the parts retained in this machine from the machine shown in Figs. 1 to 5 are similarly designated, while the changes are indicated as follows: The needle-bar gate is oscillated only when the needle is withdrawn from the material, and the cam-gear 44 has a cam-groove 45 of the proper contour to effect this movement. On the hook-shaft 43 is mounted a gear-wheel 46. A counter-shaft 47 is arranged in a bracket 48, fast on the under side of the bed-plate, and has fast to it a gear-wheel 49, provided with a cam-groove 50 in its face, and this cam-groove is of such contour that the feed-bar, through connections presently described, will be actuated only at every third stitch, so as to feed the material, as previously mentioned. 51 is a short rock-shaft mounted in suitable bearings 52 and having an arm 53, provided with a roller 54, which enters the groove 50 in the gear-wheel 49. This rock-shaft 51 is provided with the usual arcuate stitch-regulating lever 55, which is engaged by the usual stitch-regulating link 56, which in turn is connected with an arm 57 on a shaft 58, mounted in bearings 59 on the underside of the machine-bed. The shaft 58 has an arm 60 adjustably secured to it, and to this arm is pivoted one end of the feed-bar 61, with a return-spring 62, fastened to the feed-bar and some stationary part of the machine. The other end of the feed-bar is engaged by a roller 63 on an arm 64 of a rock-shaft 65, mounted in bearings 66 on the under side of the machine-bed, and this rock-shaft is provided with an arm 67, which has a roller 68, engaged by a cam 69 on the outer end of the shaft 47. The cam 69 serves to rock the shaft 65 and by actuating the arm 64 transmits the rising-and-falling motion to the feed-bar, while the arm 60 and spring 62 impart the back-and-forth motion thereto. The spring 62 also serves to keep the feed-bar depressed. The presser-foot shown is of the usual roller variety mounted upon a spring-depressed presser-bar. As a means for lifting the presser-foot there is used a spring-elevated rod 70, which is connected with the rear end of the lever 30 and projects through the bed-

plate of the machine and is provided with an adjustable sleeve 71, which carries a roller 72. The shaft 47 is provided with a cam 73, which coöperates with the roller 72 to raise the rod 70, and consequently vibrate the lever 30, and the forward end of said lever 30 engages the lifter-collar 27, fast on the presser-bar. By substituting in the cam-gear 44 a cam-groove of the contour of the groove 19 in Fig. 2 a compound feed-movement will be provided wherein both the needle-bar and the feed-bar will be conjointly actuated to advance the material. Otherwise than as stated the operation of the stitch-forming mechanism in the modified machine shown in Figs. 6 to 10 is the same as that set forth in the machine first described—that is to say, a seam will be formed in which each stitch is composed of three superposed coterminous stitches, or, in other words, is a triple stitch.

What I claim is—

1. In a sewing-machine, for sewing a seam each stitch of which is composed of three coterminous stitches, an under-thread mechanism, a vertically-reciprocating needle, means to impart lateral movements to said needle in the direction of the feed, and means to feed the material in one direction only and only during the formation of the last stitch of the triplet.

2. In a sewing-machine, the combination of an under-thread mechanism, a gate, means to oscillate said gate to impart lateral motion to the needle in the direction of the feed, a needle-bar mounted in said gate and movable with it and having a needle, means to reciprocate said needle-bar, and means to hold the

material being sewed against advancement during the formation of two coterminous stitches, and to advance it during the formation of a third stitch coterminous with the first two.

3. In a sewing-machine, a stitch-forming mechanism including a reciprocating needle, a needle-bar, and an oscillating gate in which said needle-bar is carried, and by which the needle-bar is given a lateral movement in the direction of the feed to form a seam each of whose stitches is composed of three coterminous stitches, combined with a feed mechanism, and means to operate it to feed the material in one direction only and only during the formation of the third stitch of each triplet.

4. In a sewing-machine, for sewing seams each of whose stitches is composed of a triplet of coterminous stitches, a stitch-forming mechanism comprising a gate, a needle-bar having a needle mounted in said gate, means to reciprocate said needle, means to oscillate said gate for two consecutive stitches while the needle is out of the material and to oscillate it on the third stitch while the needle is in the material, and means coöperating with the needle while in the material during the formation of the third stitch to feed the material.

In testimony whereof I have hereunto set my hand this 25th day of February, A. D. 1903.

GEORGE H. DIMOND.

Witnesses:

F. W. OSTROM,
C. N. WORTHEN.