

No. 685,162.

Patented Oct. 22, 1901.

A. E. MILLER.  
BROOM SEWING MACHINE.

(Application filed Feb. 7, 1900.)

(No Model.)

7 Sheets—Sheet 1.

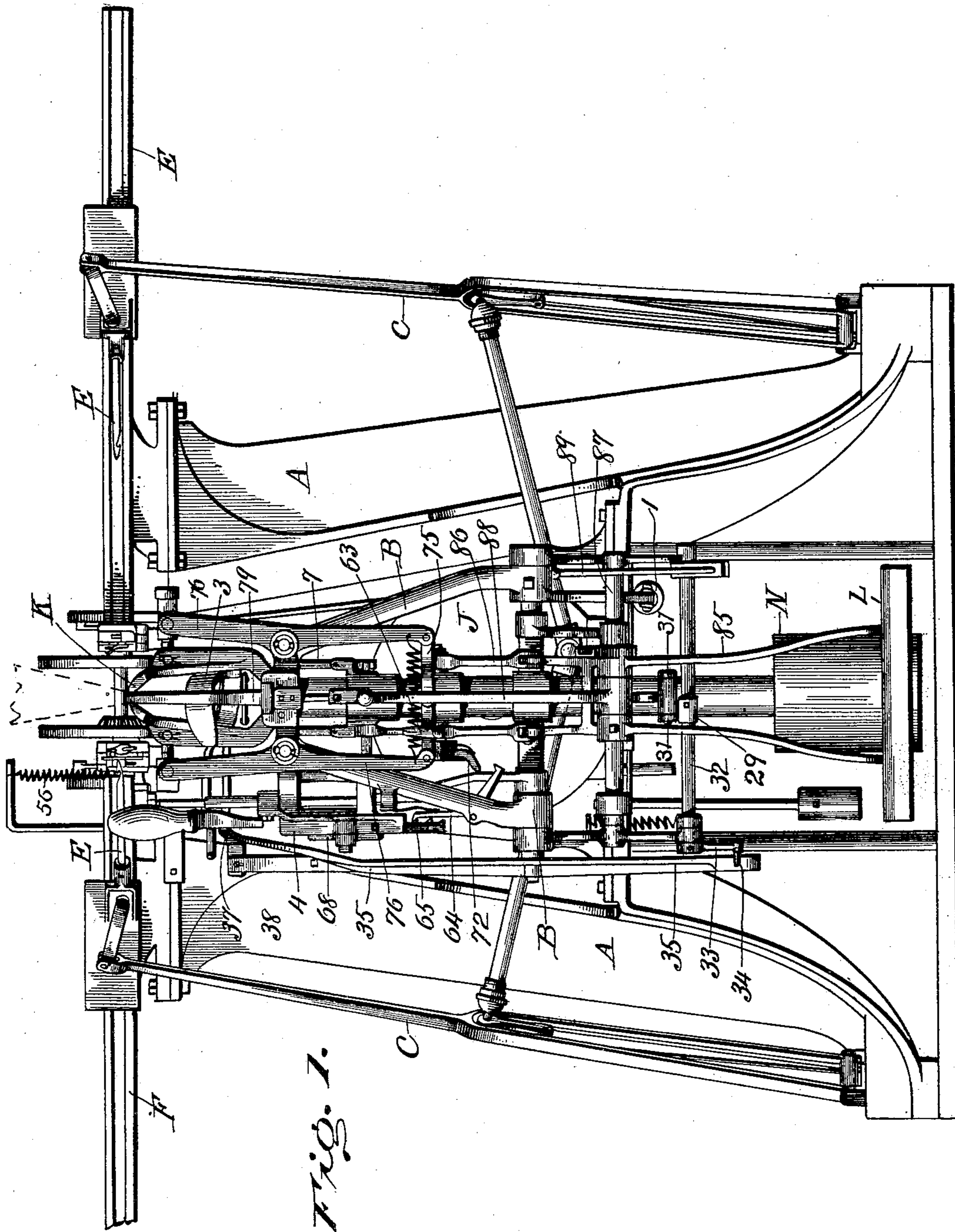


Fig. 1.

Witnesses

E. M. Almsted  
William E. Neff

Inventor  
Andrew E. Miller  
By Watson & Watson  
Attorneys

No. 685,162.

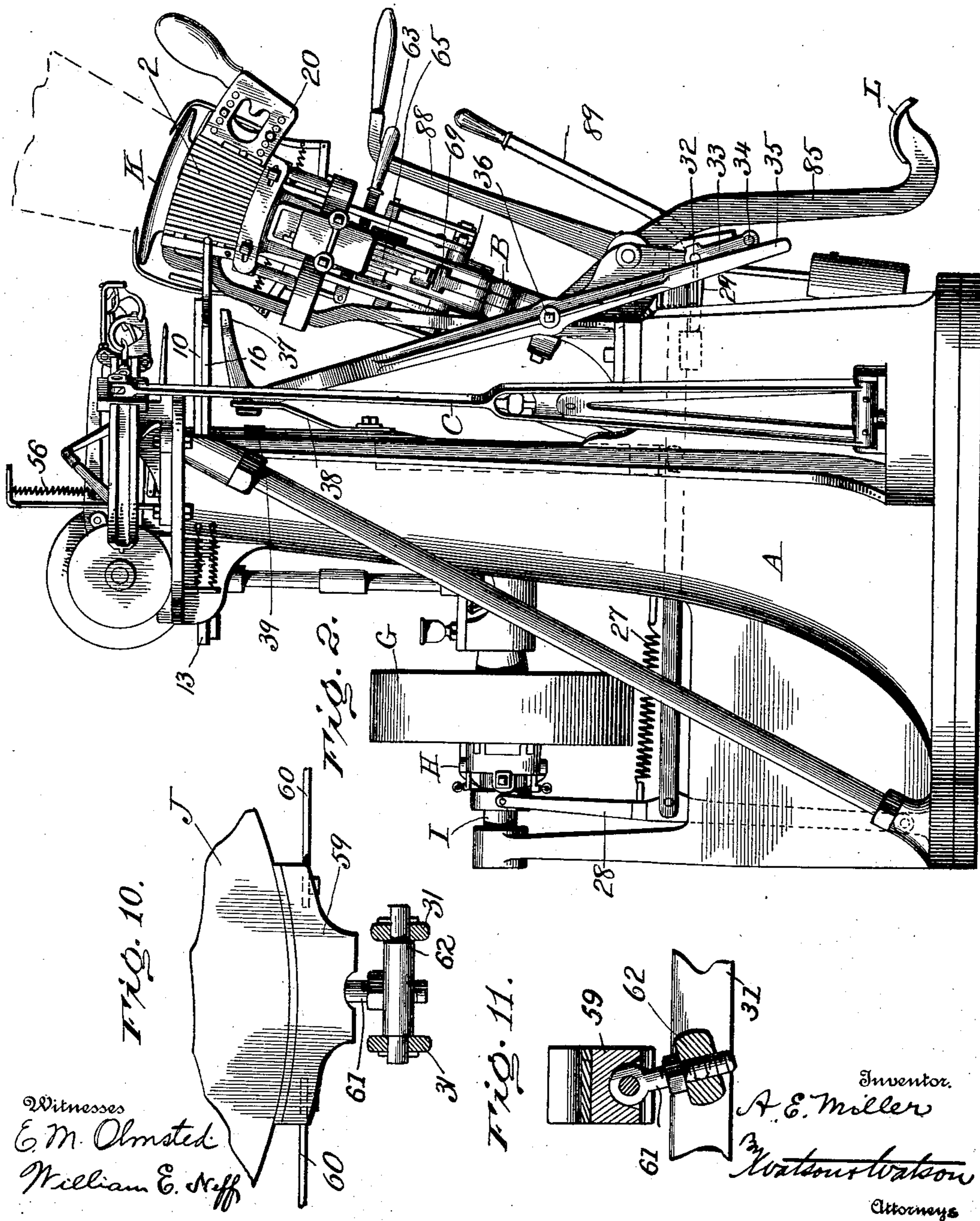
Patented Oct. 22, 1901.

A. E. MILLER.  
BROOM SEWING MACHINE.

(Application filed Feb. 7, 1900.)

(No Model.)

7 Sheets—Sheet 2.



Witnesses  
E. M. Olmsted  
William E. Neff

Fig. 11.

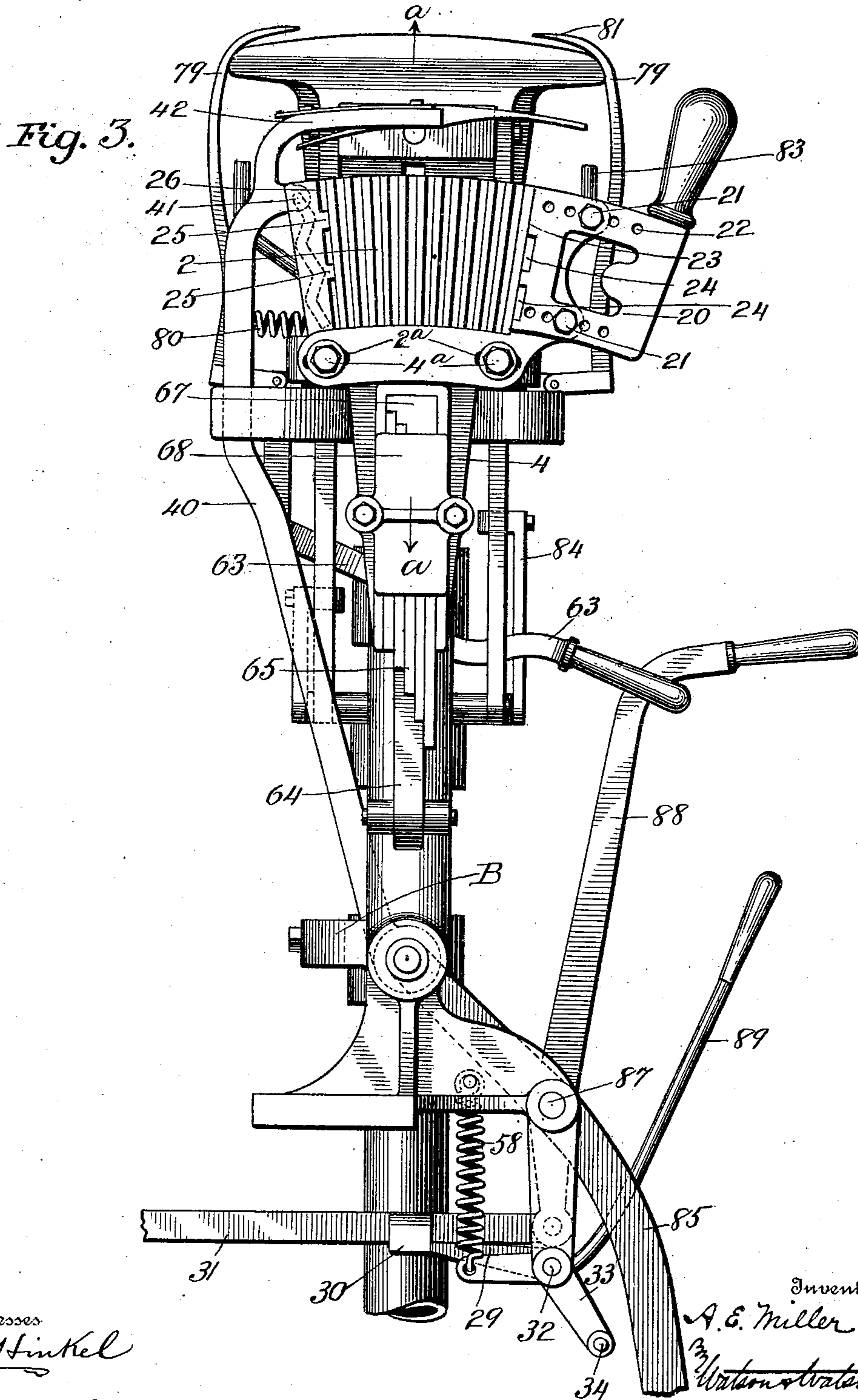
Inventor.  
A. E. Miller  
Watson & Watson  
Attorneys

A. E. MILLER.  
BROOM SEWING MACHINE.

(Application filed Feb. 7, 1900.)

(No Model.)

7 Sheets—Sheet 3.



Witnesses

*J. G. Hinkel*

*William E. Steff*

Inventor

*A. E. Miller*

*Watson & Watson*

Attorneys

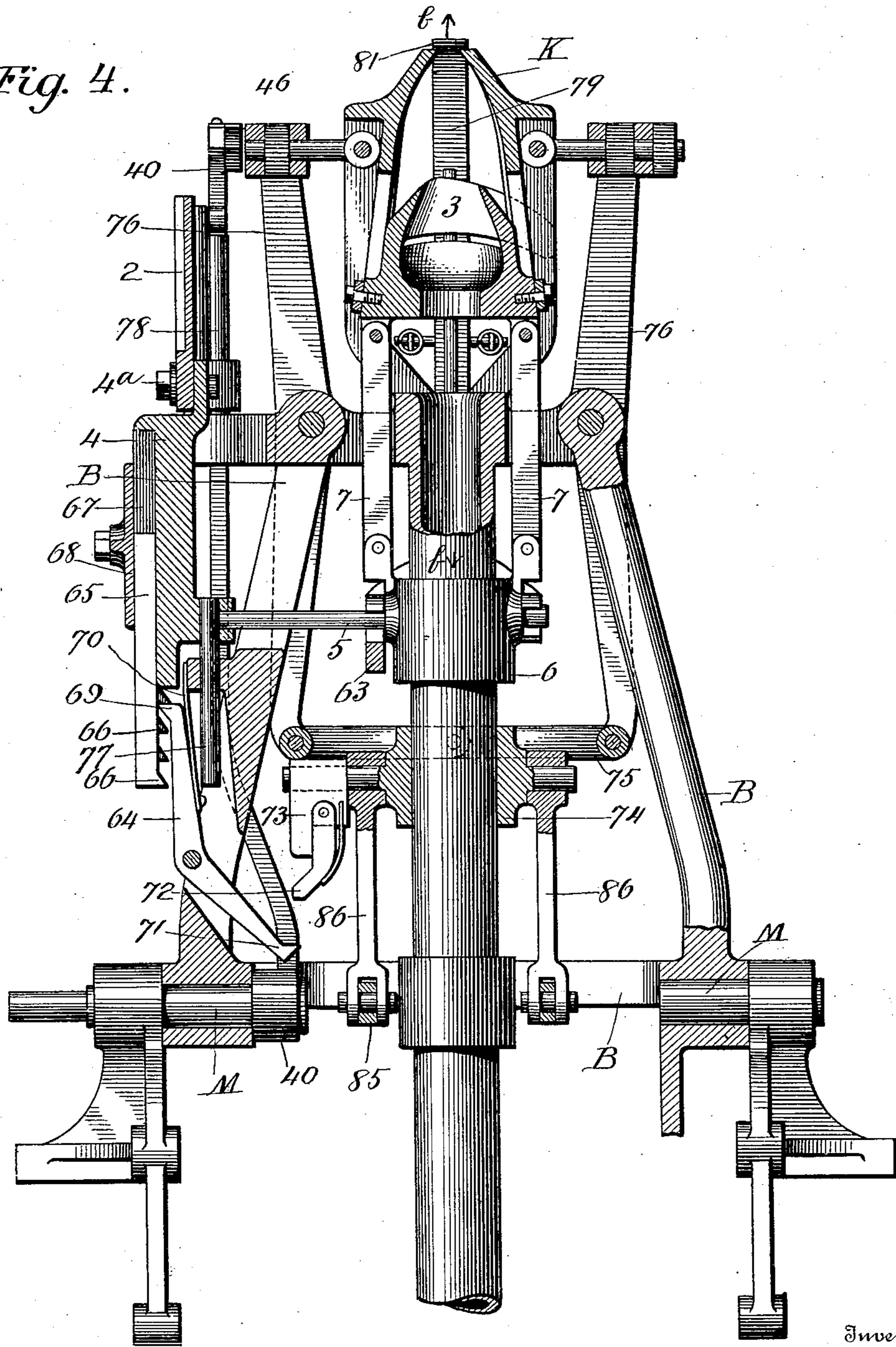
A. E. MILLER.  
BROOM SEWING MACHINE.

(Application filed Feb. 7, 1900.)

(No Model.)

7 Sheets—Sheet 4.

Fig. 4.



Witnesses

J. G. Hinkel

William E. Neff

Inventor

A. E. Miller

By Watson & Watson

Attorneys

**No. 685,162.**

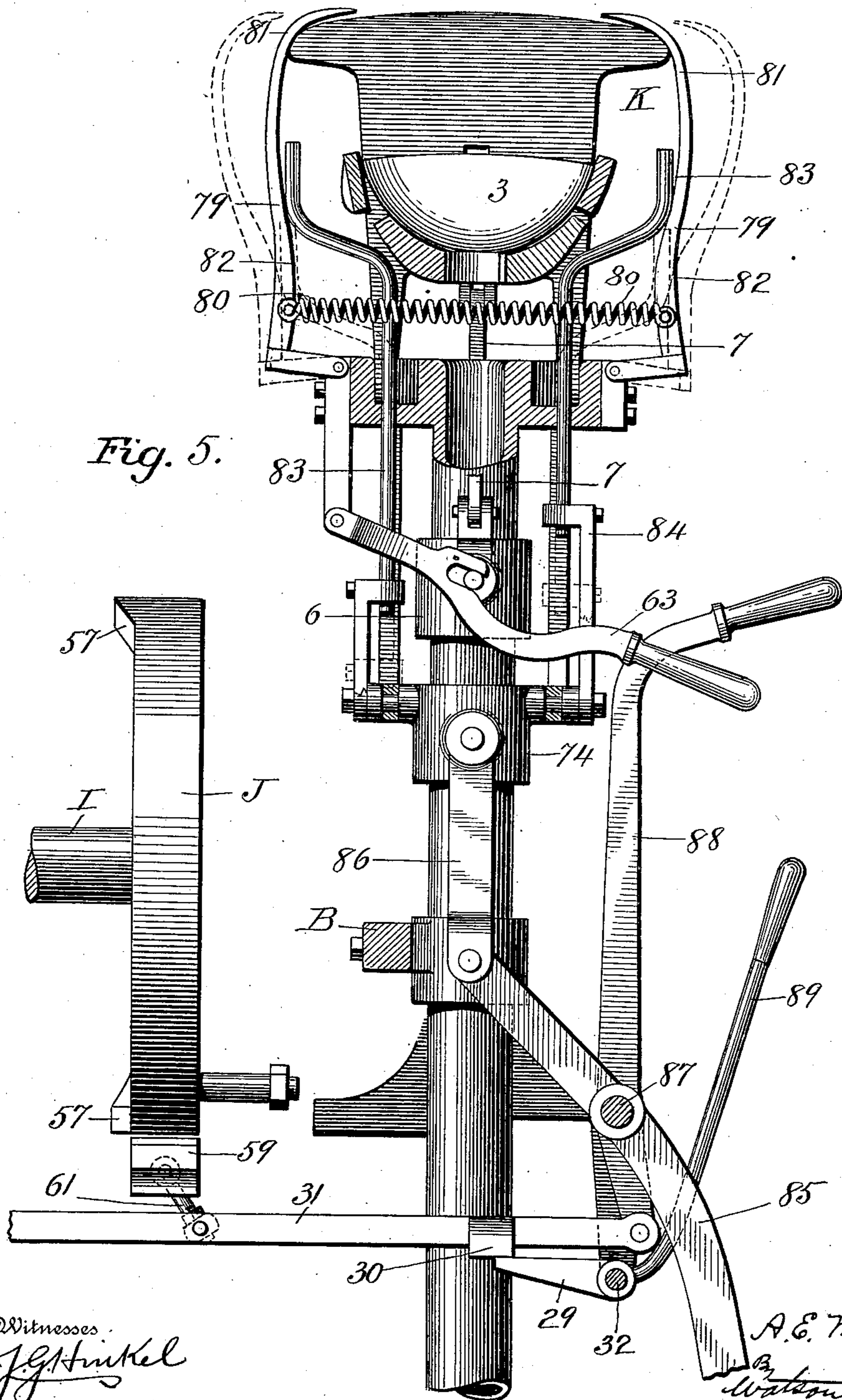
Patented Oct. 22, 1901.

**A. E. MILLER.**  
**BROOM SEWING MACHINE.**

(Application filed Feb. 7, 1900.)

(No Model.)

**7 Sheets—Sheet 5.**



Witnesses  
J. G. Hinkel  
William E. Neff

Inventor  
A. E. Miller  
By Watson & Watson  
Attorneys

No. 685,162.

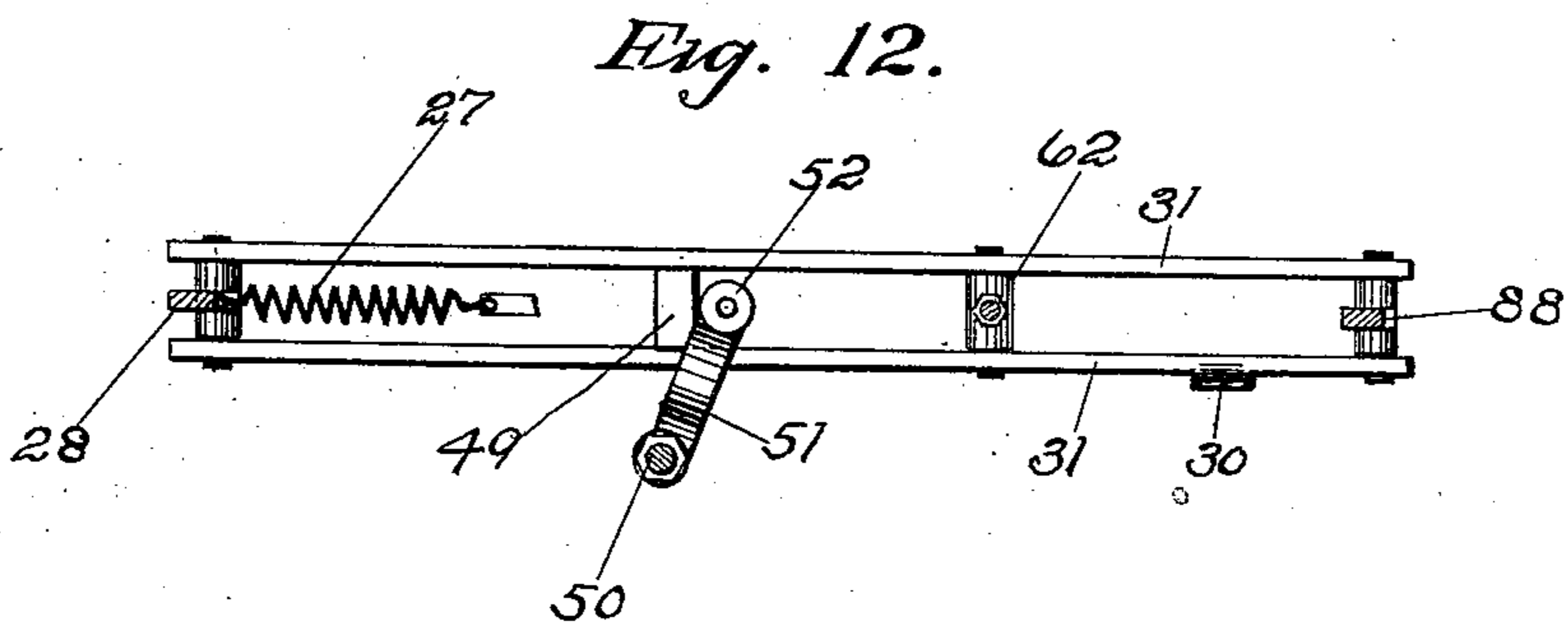
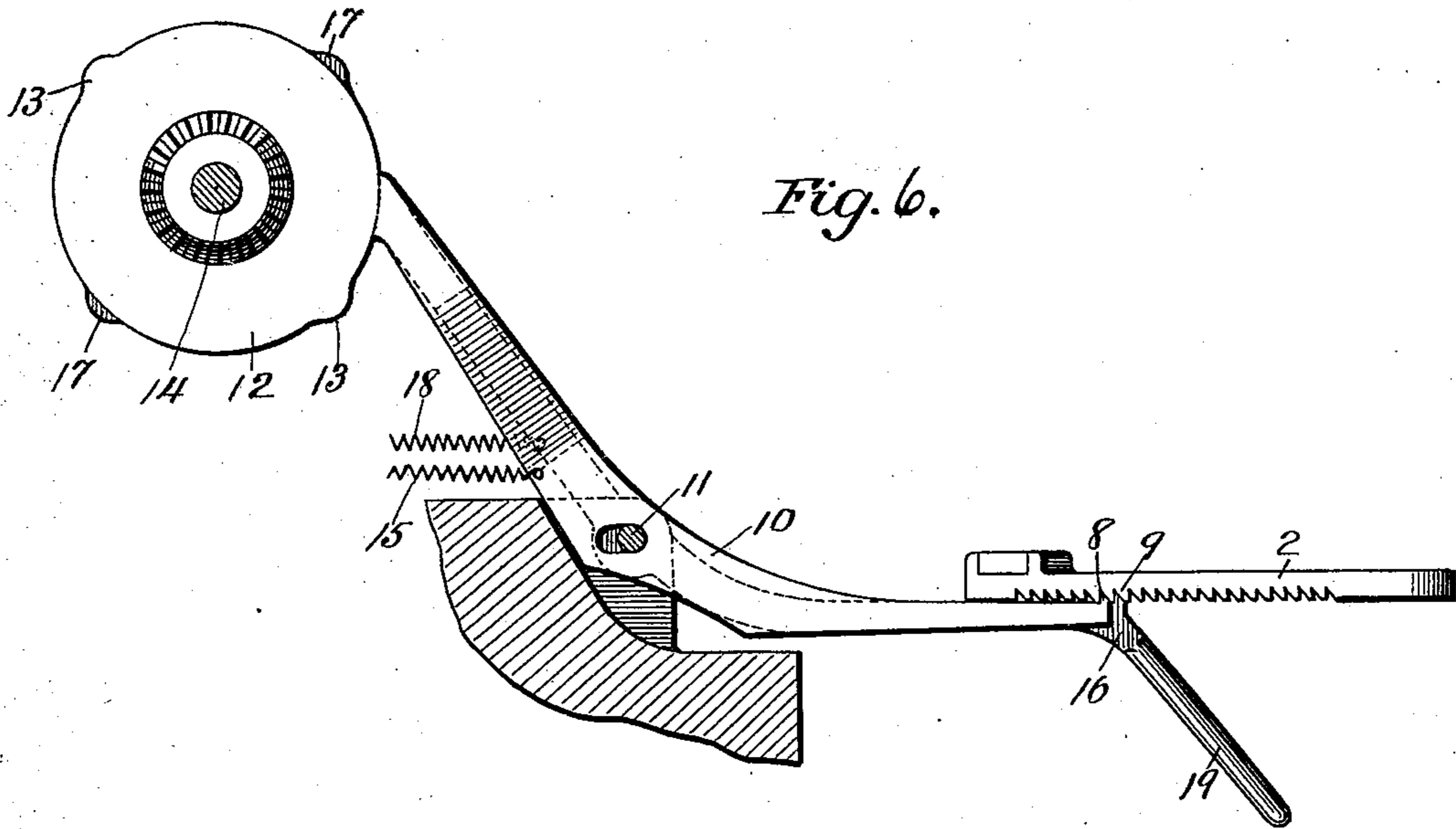
Patented Oct. 22, 1901.

A. E. MILLER.  
BROOM SEWING MACHINE.

(Application filed Feb. 7, 1900.)

(No Model.)

7 Sheets—Sheet 6.



Witnesses  
*J. Hinkel*  
*William E. Steff*

Inventor  
*A. E. Miller*  
*By Watson & Watson*  
Attorneys

No. 685,162.

Patented Oct. 22, 1901.

A. E. MILLER.  
BROOM SEWING MACHINE.

(Application filed Feb. 7, 1900.)

(No Model.)

7 Sheets—Sheet 7.

Fig. 7.

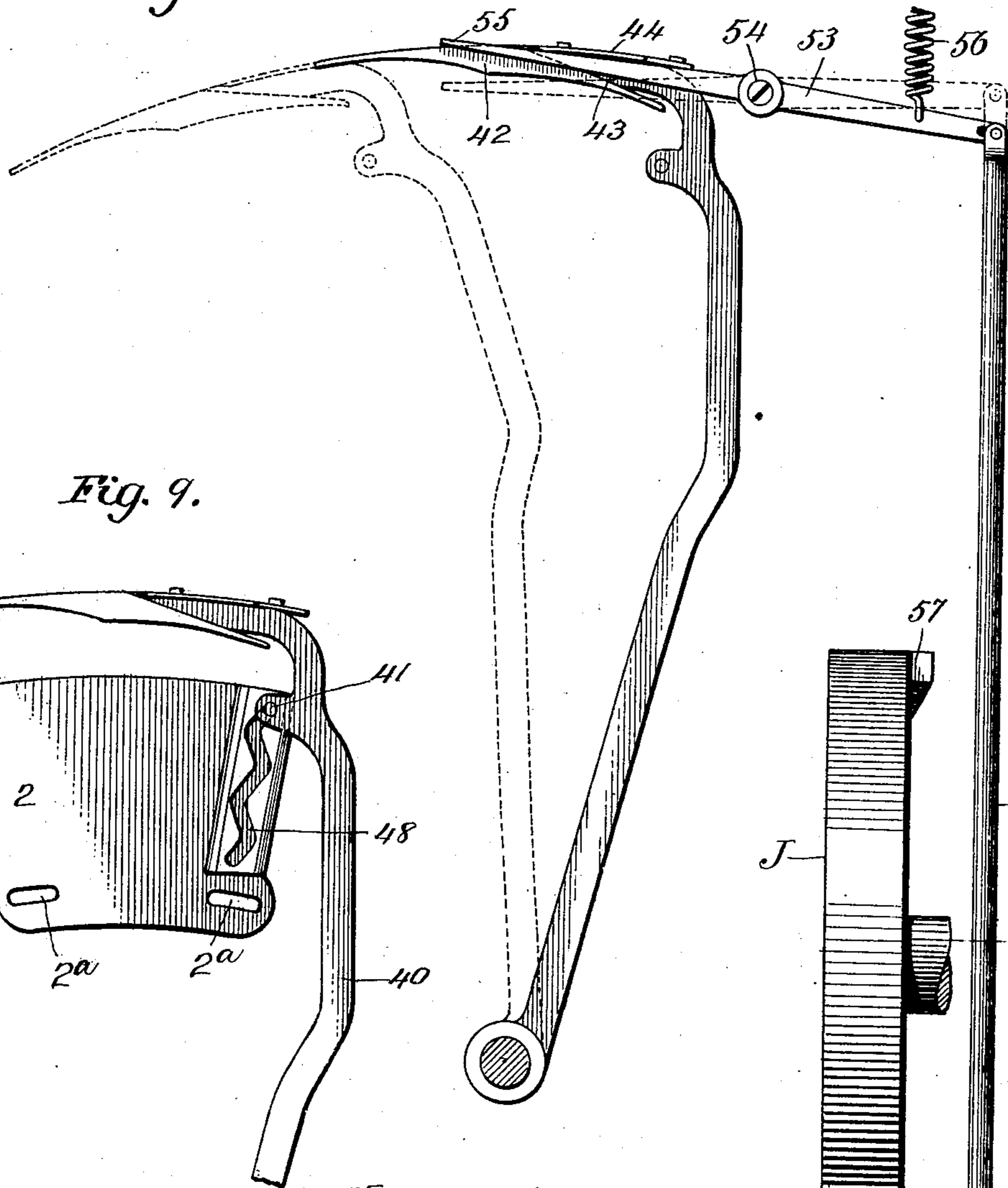


Fig. 9.

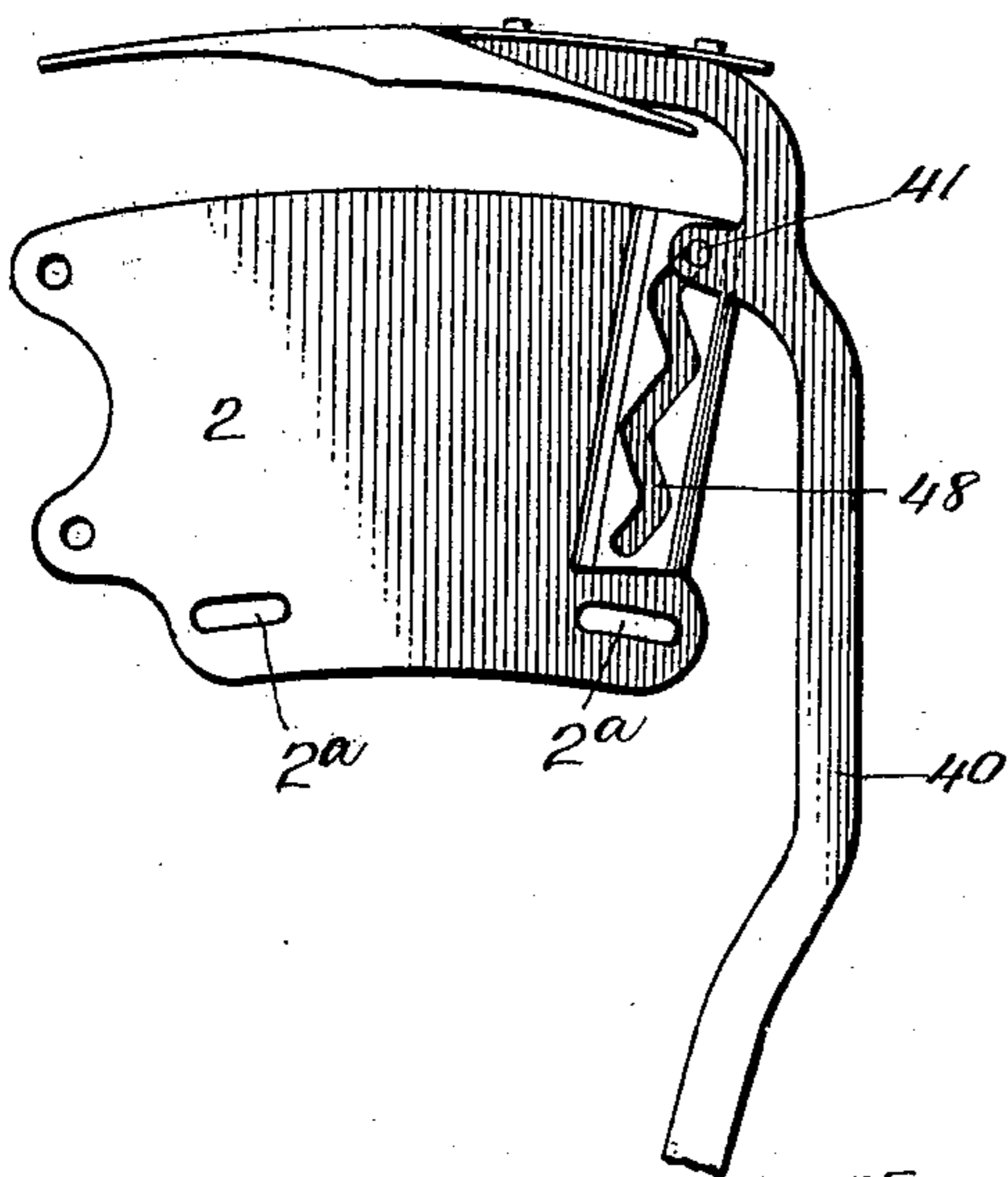
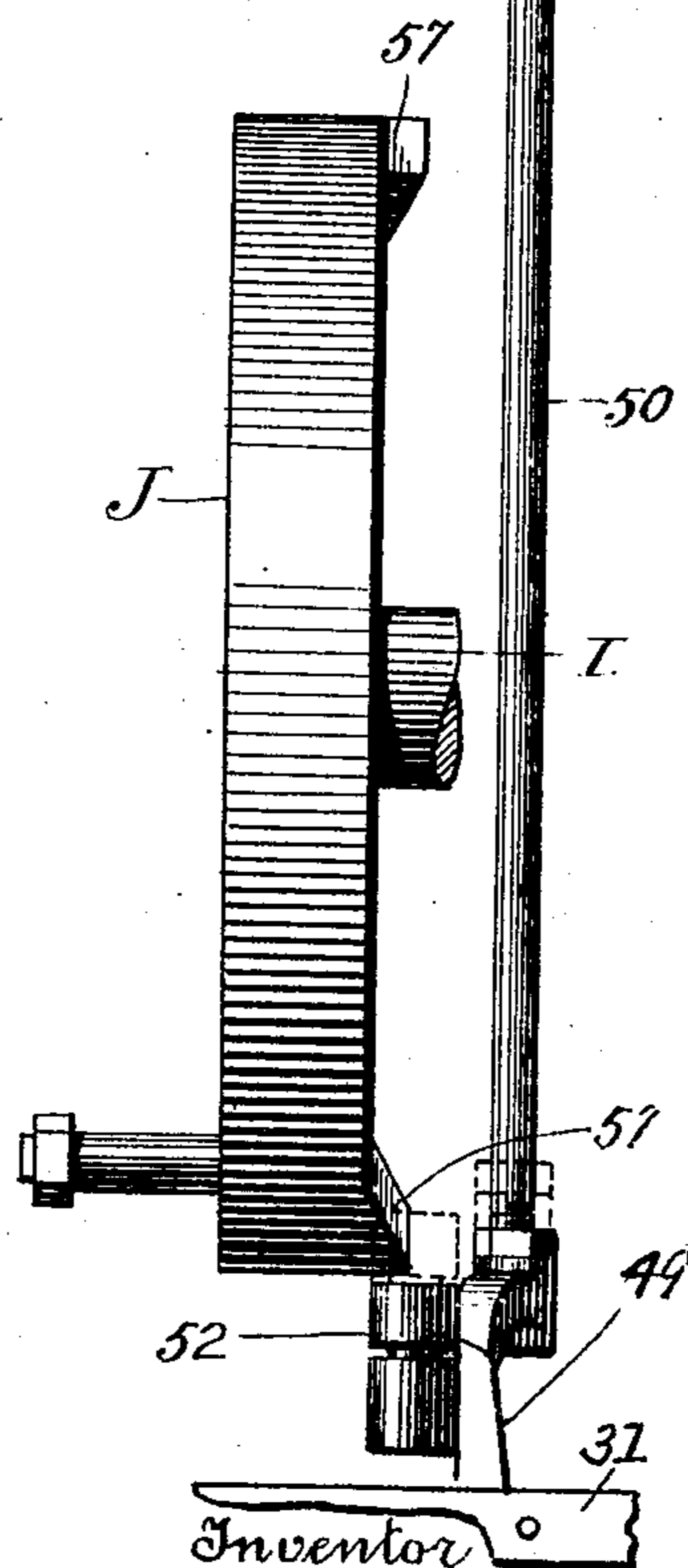
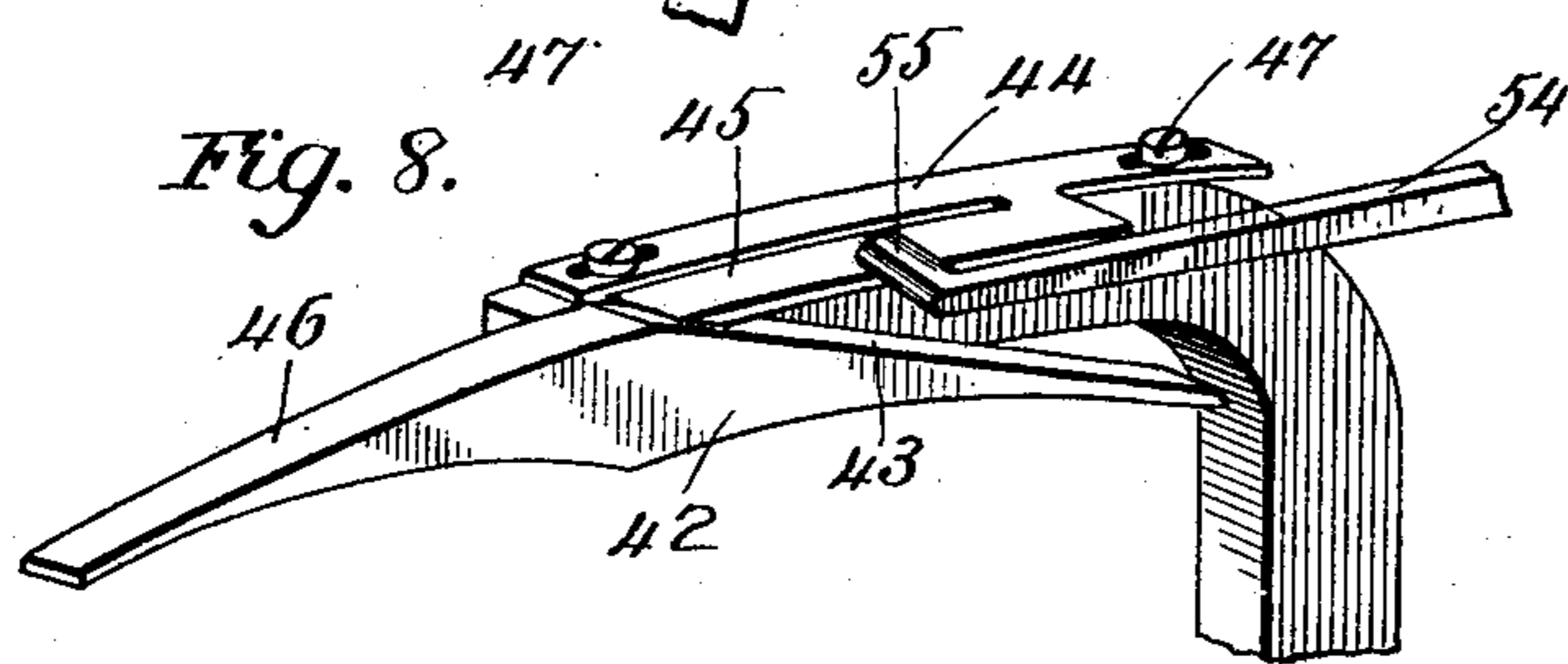


Fig. 8.



Witnesses

J. Hinkel

William E. Steff

Inventor

A. E. Miller

W. Watson & Watson

Attorneys

# UNITED STATES PATENT OFFICE.

ANDREW E. MILLER, OF BALTIMORE, MARYLAND, ASSIGNOR TO HERBERT CASSARD, OF CHICAGO, ILLINOIS.

## BROOM-SEWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 685,162, dated October 22, 1901.

Application filed February 7, 1900. Serial No. 4,369. (No model.)

*To all whom it may concern:*

Be it known that I, ANDREW E. MILLER, a subject of the Queen of Great Britain, residing at the city of Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Broom-Sewing Machines, of which the following is a specification.

The objects of this invention are to improve broom-sewing machines, and particularly the machine for which United States Letters Patent were granted to me on January 31, 1899, No. 618,798.

The present improvements relate to devices for supporting the binder during the operation of sewing the broom, to the feeding mechanism for advancing the broom during the sewing operation, to devices for automatically lowering the broom after each row of stitches to adjust it for the succeeding row of stitches, to means for staggering the stitches in adjacent rows, and to other improvements in details, all of which will be described in the following specification.

In my copending application, Serial No. 4,370, filed February 7, 1900, I have embodied certain features which are illustrated in this case, but not claimed herein.

In the accompanying drawings, Figure 1 is a front view of the machine. Fig. 2 is a side view. Fig. 3 is a side view of the vise and connected mechanism upon an enlarged scale. Fig. 4 is a front view of the vise-frame and vise, partly in section, on the line *a a* of Fig. 3. Fig. 5 is a side view of the vise, partly in section, on the line *b b* of Fig. 4. Fig. 6 is a plan view of the vise-feeding devices. Figs. 7 to 12, inclusive, illustrate details.

The general construction and operation of the broom-sewing machine illustrated in the drawings are described in the patent above mentioned and it will only be necessary in this specification to describe the improvements constituting the present invention.

The principal parts of the machine comprise the main frame A, the swinging vise-frame B, carrying the vise and the vising mechanism, rocking arms C, which reciprocate the needles E upon guides F, a driving-wheel G, and a clutch H for engaging the driving-wheel with the power-shaft I. The arms C are driven

by a crank-pin on a disk J, mounted on the shaft I.

*The vise-feeding mechanism.*—The vise-jaws K are hinged to the vise-frame B and adapted to be closed, as in the prior patent mentioned, by means of a treadle L. The vise-frame is mounted on trunnions M and is provided with a counterweight N. A suitable spring 1 tends to throw the vise forward into the position shown in Fig. 2. To the upper part of the vise-frame is attached a rack 2, having long teeth, which are preferably radial to the axis upon which the vise-frame rocks. The rack 2 is connected to the inner vise-jaws 3 and moves vertically with said jaws. The connection between the jaws and the rack may be made in any suitable manner. As shown in Figs. 3 and 4, the rack is connected to a sliding piece 4 on the outside of the vise-frame, which slide is connected to an arm 5, projecting from the collar 6. The collar 6 is connected with the inner vise-jaws by links 7. The rack 2 is adjustably connected to slide 4 by means of bolts 4<sup>a</sup>, which pass through slots 2<sup>a</sup> in said rack. As shown in Figs. 2, 3, and 6, two pawls 8 and 9 coöperate with the rack 2. The pawl 8 is a moving pawl, being on one arm of a lever 10, which has a pin-and-slot connection 11 with the main frame. The other arm of the lever bears upon a cam-disk 12, having two diametrically opposite projections 13, which operate the pawls twice during each revolution of the vertical shaft 14. The pawl-lever 10 is normally held in the position shown in Fig. 6 by means of a spring 15. Below the pawl-lever 10 is a lever 16, carrying the holding-pawl 9. The lever 16 bears on a cam-disk similar to disk 12 and provided with cam projections 17, which are diametrically opposite and midway between the projections 13. The cam projections 13 and 17 may of course be upon one disk, the projections 13 being in a higher plane than the projections 17. The lever 16 is provided with a spring 18 to hold it normally in engagement with the rack, and also with a handle 19, by means of which the rack may be released when desired. The operation of the pawls 8 and 9 will be evident from an inspection of Fig. 6. When the cam-lever 16 is thrown out of engagement with the rack by

means of the cam projections 17, the rack is thrown forward by the spring 1, connected with the vise-frame. The pawl 8 is carried with the rack, the pin-and-slot connection 11 5 permitting it to move sufficient to carry the rack forward one tooth. The pawl 9 immediately reengages the rack and holds it, and when the shaft 14 makes a quarter-turn the pawl 8 is thrown out of engagement with the 10 rack and immediately drawn back to engage a new tooth by means of the spring 15.

It is necessary in producing perfect work that the stitches in adjacent rows should be staggered, and I have provided devices for 15 locating the stitches of each row half-way between the stitches of the adjacent rows. As shown in Figs. 2 and 3, a shield 20 is adjustably connected to the rack 2 by means of bolts 21, which pass through two series of 20 holes 22 in the shield-plate. The shield has a radial edge 23, which can be made to cover one or more of the teeth at the front edge of the rack to prevent the pawls engaging with said teeth. In the edge 23 are recesses 24, 25 which uncover one additional tooth. It thus follows that when the pawls are opposite the recesses the stitching begins one tooth or step nearer the edge of the broom than when the pawls encounter the radial edge 23. As the 30 pawls permit two teeth to escape for each complete stitch, it follows that the stitches in one line will alternate with those in the adjacent line, thus carrying the staggering uniformly across the broom. On the rear edge 35 of the feed-rack are filling-pieces 25, which may be formed integral with the rack-frame, as shown, or made separate and removably secured thereto, like the guard-plate, and which prevent the pawls from engaging the last tooth 40 26 on alternate lines of stitching. The guard-plate is adjustable to sew seams of different lengths on brooms of different sizes. As the rack-teeth are radial or divergent and the rack is movable radially or transversely with 45 respect to the pawls, it follows that the release of one tooth will permit the vise to move through a shorter arc when the rack is raised than when it is lowered. Hence the stitches in successive rows will increase in length as successive rows will correspondingly in- 50 the rack is dropped, and the lengths of the crease, assuming the same number of teeth to be released by the pawls in the several positions of the rack. If the teeth were parallel, 55 the stitches would be the same length in different rows, and it would be necessary to permit the pawls to engage a greater number of teeth in the successive positions of the rack in order to increase the length of successive 60 rows of stitches.

*Automatic starting mechanism.*—A spring 27, Fig. 2, which is connected to the clutch-lever 28, constantly tends to throw the clutch H into engagement with the drive-wheel G. 65 When the machine is stopped, the clutch is held out of engagement by arm 29, which engages a shoulder 30 on a bar or frame 31, con-

nected with the clutch-lever. The arm 29 is mounted on a shaft 32, upon which is a second arm 33, having a pin 34 in the path of a 70 lever 35, pivoted to a bracket of the main frame at 36. The upper end of the lever 35 has an arm 37, Fig. 2, adapted to be engaged by the adjustable guard-plate 20 when the vise is thrown back into the position to begin 75 a row of stitches. The arm 37 engages the radial edge 23 or one of the recesses 24, depending upon the height to which the rack and the inner vise-frame are adjusted. It therefore follows that the automatic starting of the ma- 80 chine is effected at the proper time to begin any seam on either a large or small broom, respectively, the starting being effected by the same part which regulates the number of stitches—that is, the adjustable guard 20. 85 The starting-lever 35 is held normally in the position shown in Fig. 2 by a spring 38. A suitable buffer 39 is provided to take the shock imparted to the lever by the vise-frame. When the vise-frame is thrown back, the 90 lower end of the starting-lever is thrown forward, thus operating the arm 33 and throwing the pawl 29 out of engagement with the stop 30, thus permitting the spring 27 to operate the clutch and start the machine. 95

*Automatic stopping mechanism.*—Connected with the vise-frame is an arm 40, the lower end of which, as illustrated, is pivotally connected to one of the trunnions M, while the upper end is connected to the rack 2 by a pin 100 41, which engages a zigzag slot 48 in the back of the rack, Fig. 9. On the upper end of the arm 40 is a switch device attached to a horizontal extension 42 of the arm. The extension 42 has an inclined or cam surface 43 and 105 above this surface a plate 44, having a spring-tongue 45, overlying the incline 43 and in line with the upper surface 46 of the forward end of the extension 42. The plate 44 is adjustably connected to the arm 40 by means of 110 screws 47, passing through slotted openings in the plate. The free end of the spring 45 is located close to the upper end of the incline 43, as shown in Figs. 7 and 8. The clutch is thrown out of engagement with the 115 drive-wheel by means of an arm 51, carried by a vertically-movable rod 50. The arm 51 carries a roller 52. The upper end of the rod 50 is connected to a lever 53, pivoted to the frame of the machine at 54, the forward end 120 of which lever has a projection 55, adapted to ride on the incline 43 during the rearward movement of the vise and on the spring-plate 45 during the forward movement of the vise. A spring 56 constantly tends to raise the rod 125 50 to bring the roller 52 on arm 51 into the path of a pair of diametrically opposite cams 57 on the rear of the disk J.

The operation of the stopping devices above described is as follows: As the vise-frame is 130 thrown backward to carry the broom to the sewing mechanism the forward end 55 of lever 53 rides up the incline 43 onto the forward upper surface 46 of the arm 40. The

machine is automatically started, as herein-  
before described, and the vise feeds forward  
step by step until the last stitch is taken in  
the broom. At the proper time for bringing  
5 the stopping devices into action the end of  
the lever 53 drops off of the rear end of the  
spring-plate 45, permitting the spring 56 to  
raise the rod 50 and throw the cam-roll 52  
into the path of the cams 57. The lever-arm  
10 51, which is secured to the shaft, is immedi-  
ately rocked and by its engagement with the  
bracket 49 upon the clutch-operating frame  
31 moves said frame 31 to the rear and dis-  
engages the clutch. A spring 58, Fig. 3,  
15 throws the stop-arm 29 up in front of the stop  
30 and locks the clutch out of engagement.

As the stitches in each line of stitching are  
staggered or alternated with relation to the  
stitches in the adjacent line or lines, it fol-  
20 lows that the last stitch in certain lines will  
be nearer the edge of the broom than the last  
stitch in the alternate lines, and it is there-  
fore desirable to vary the stoppage of the ma-  
chine to correspond with the last stitch in  
25 each seam. This is accomplished by means  
of the zigzag guide-groove 48 in the rear of  
the rack-plate 2, which groove automatically  
adjusts the stop-arm 40 as the rack-plate  
moves down step by step for the successive  
30 rows of stitching, as will be evident from in-  
spection of Fig. 9.

To effect the prompt stoppage of the ma-  
chine, a brake-shoe 59 is located under the  
disk J, being supported and guided by spring  
35 connections 60, Figs. 5, 10, and 11. A short  
toggle-lever 61 connects the frame 31 with the  
brake, the length of the toggle-lever being so  
adjusted that the rearward movement of the  
frame 31 will apply the brake to the disk J.  
40 The frame 31 consists of two bars, and the le-  
ver 61 is adjustably connected to a cross-piece  
62, which is pivotally connected to said bars,  
as shown in Figs. 10 and 11.

*Automatic broom-dropping mechanism.*—  
45 After the last stitch is taken in a line of stitch-  
ing the vise-frame is released from the feed-  
pawls and thrown into its forward position  
by the spring 1. This movement effects the  
automatic opening of the vise K by means  
50 which are fully described in my prior patent  
and need not be herein specified in detail.  
When a new broom is inserted, the inner vise-  
jaws, which constitute the broom-support, are  
raised to their highest position by means of  
55 a forked lever 63, which engages the collar 6,  
connected to the inner vise-jaws by means of  
links 7, Figs. 4 and 5. The inner vise-jaws  
are sustained in the elevated position by a  
pawl-lever 64 and a rack 65, having adjust-  
60 able teeth connected to the slide 4. The rack  
comprises a series of bars having projecting  
teeth 66 at their lower ends, said bars being  
located in a recess 67 in the slide 4 and  
clamped therein by a plate 68 and suitable  
65 bolts. The teeth of the rack are adjustable  
to vary the distance between rows of stitch-  
ing. The pawl-lever 4 has a broad engaging

pawl 69, adapted to engage any one of the teeth  
66, and pressed into engagement with said  
teeth by means of a suitable spring 70. The  
70 lower end 71 of the pawl-lever extends into  
the path of a swinging arm 72, attached to a  
block 73, connected to a collar 74, sliding on  
the tubular shank of the vise-frame. The  
pivoted arm 72 engages and operates the  
75 pawl-lever 64 as the collar 74 descends; but  
it is free to swing back and out of the path  
of the pawl-lever as the collar 74 rises. The  
collar 74 is connected, by means of toggle-  
levers 75 and levers 76, with the jaws of the  
80 vise K, and said collar is lowered to open the  
vise and raised to close it, as described in the  
patent above referred to.

The operation of the broom-lowering de-  
85 vices will be apparent from the above de-  
scription and need only be briefly recapitu-  
lated. When a new broom is inserted in the  
vise, the inner jaws 3 are raised until the  
lowest tooth 66 of the rack 65 rests upon the  
pawl 69. The vise K is then closed and the  
90 first seam sewed. When the vise K is  
opened, the pivoted arm 72 engages the pawl-  
lever momentarily and permits the rack 65  
and its connected parts, including the rack  
2 and the inner vise-jaws 3, to drop one tooth,  
95 the pawl 69 engaging the next to the lowest  
tooth of rack 65. This is repeated for each  
seam, the dropping of the broom being en-  
tirely automatic. The slide 4 and its con-  
nections are guided by means of a rod 77,  
100 which slides in an opening in the frame, and  
a fixed rod 78, which passes through an open-  
ing in the slide.

*Devices for supporting the binder.*—Piv-  
105 oted to the vise-frame are a pair of fingers  
79, which are curved inwardly at their upper  
ends and caused to impinge upon the oppo-  
site ends of the broom by a spring 80. The  
inwardly-turned tips 81 of the fingers 79 are  
located slightly above the edge of the vise-  
110 jaws in order to support the binder at a suffi-  
cient height to permit the needles to pass un-  
der it. The lower portions of the fingers 79  
are inwardly curved, forming cams 82, which  
cams are engaged by vertically-movable rods  
115 83, attached, by means of connecting-pieces  
84, to the collar 74, which operates the vise-  
jaws. When the collar is raised and the vise-  
jaws close, the spring-fingers are freed from  
the rods 83, and they close upon the broom,  
120 as shown in full lines in Fig. 5. When the  
collar is drawn down to open the vise-jaws,  
the rods 83 engage the cam-faces of the fin-  
gers and throw the finger-tips away from the  
broom, as shown in dotted lines in Fig. 5.  
125 The binder-supporting fingers are therefore  
operated automatically. The lower portions  
of the cam-surfaces 82 assume a vertical di-  
rection when the fingers are sufficiently open,  
and the continued downward movement of  
130 the rods 83 after reaching these vertical por-  
tions of the cam-surfaces 82 do not cause  
any further separation of the finger-tips 81.

As shown, the sliding collar 74, which op-

erates the vise-jaws, is connected to a treadle-lever 85 by means of links 86, the treadle-lever being mounted on a shaft 87. Upon the shaft 87 is a hand-lever 88, by means of which the vise may also be operated. On the shaft 32 is another hand-lever 89, by means of which the stop-arm 29 may be thrown out by hand to start the machine.

In the above specification I have described in detail the particular embodiment of the invention which is illustrated in the drawings. It will be evident that the broader features of my invention are not limited to the devices illustrated and described, but may be embodied in many equivalent devices.

Without, therefore, limiting myself to the construction and arrangement of parts illustrated and described, I claim—

1. In a broom-sewing machine, the combination with sewing mechanism and feeding mechanism, of means for automatically starting successive rows of stitching at alternately greater and less distances from one edge of the broom and for automatically stopping said rows at alternately greater and less distances from the opposite edge of the broom.

2. In a broom-sewing machine, the combination with the sewing mechanism, and a movable vise-frame, of a broom-support, and a rack movable longitudinally of said frame, said rack having elongated teeth, and feed-pawls arranged to engage said teeth in the different positions of the rack.

3. In a broom-sewing machine, the combination with the sewing mechanism, of feeding mechanism comprising a rack having elongated teeth and pawls cooperating with successive portions of said teeth to feed for successive rows of stitches, and means for causing the pawls to engage two different teeth of the rack at the beginning of two adjacent rows of stitches whereby the stitches in the rows are staggered.

4. In a broom-sewing machine, the combination with the sewing mechanism, and the vise-frame, of feeding mechanism comprising feed-pawls, a rack adjustable with the broom longitudinally of the vise-frame, and a guard adjustable relatively to the rack and adapted to cover and render inoperative a portion of said rack, for the purpose set forth.

5. In a broom-sewing machine, the combination with the sewing mechanism, of feeding mechanism comprising a rack having elongated teeth and pawls cooperating with successive portions of said teeth to feed for successive rows of stitches, and means for preventing the pawls from engaging portions of the front and rear teeth of the rack, whereby the rows of stitches are staggered.

6. In a broom-sewing machine, the combination with the sewing mechanism, and a movable vise-frame, of feed-pawls, and a rack connected with and movable longitudinally of the vise-frame and provided with radially-arranged teeth, for the purpose set forth.

7. In a broom-sewing machine, the combi-

nation with the sewing mechanism, of a movable vise-frame, an adjustable inner vise for supporting the broom, a rack having radially-arranged teeth, and pawls cooperating with said rack, said rack being connected to the vise-frame and adjustable longitudinally thereof simultaneously with the inner vise, for the purpose set forth.

8. In a broom-sewing machine, the combination with the sewing mechanism, and feed-pawls pivotally connected to the main frame, of a swinging vise-frame, a feed-rack mounted on the vise-frame and having elongated radially-arranged teeth, inner vise-jaws for supporting the broom, and means for simultaneously adjusting said rack and said inner vise-jaws longitudinally of the vise-frame, for the purpose set forth.

9. In a broom-sewing machine, the combination with the sewing mechanism, of a movable vise-frame, the rack adjustably mounted on said vise-frame and having elongated teeth, and the adjustable guard for rendering portions of said rack inoperative, the edge of said guard being staggered whereby certain portions of the guard cover more teeth than other portions thereof, for the purpose set forth.

10. In a broom-sewing machine, the combination with the sewing mechanism, and feed-pawls, of the movable vise-frame, the vertically-adjustable rack thereon, means for adjusting the rack laterally of the vise-frame, and an adjustable guard for the forward portion of said rack.

11. In a broom-sewing machine, the combination with sewing mechanism, of a movable vise-frame, the rack adjustable thereon, feed-pawls, an adjustable guard at the forward edge of the rack having staggered surfaces on its rear edge, and means for preventing the pawls from engaging portions of the rear tooth in the rack whereby the stitches in successive lines are staggered, substantially as described.

12. In a broom-sewing machine, the combination with the sewing mechanism, and a vise-frame movable to and from the sewing mechanism, of automatic starting devices, and means for automatically bringing the starting device into operation at different points in the travel of the vise-frame for different seams for the purpose of beginning the seams at different points and staggering the stitches.

13. In a broom-sewing machine, the combination with the sewing mechanism, a movable vise-frame and broom-holding devices adjustable longitudinally of the frame, of automatic starting mechanism including a device movable with the broom and provided with staggered surfaces, and a member arranged in the path of said device and adapted to be moved thereby when the vise is moved to the sewing mechanism, said member operating to effect the starting of the machine.

14. In a broom-sewing machine, the combi-

nation with the sewing mechanism, a movable vise-frame, and a rack vertically adjustable on said vise-frame, of automatic starting devices, including a device movable with the rack and provided with staggered surfaces, and a member arranged in the path of said device and adapted to be moved thereby when the vise is moved to the sewing mechanism, said member operating to effect the starting of the machine.

15. In a broom-sewing machine, the combination with the sewing mechanism, a movable vise-frame, and a rack, having elongated teeth, vertically adjustable on said vise-frame, of automatic starting devices, including an adjustable guard connected to the rack and provided with staggered surfaces, and a part arranged in the path of said guard and adapted to be moved thereby when the vise is moved to the sewing mechanism, said part operating to effect the starting of the machine.

16. In a broom-sewing machine, the combination with the sewing mechanism, and a movable vise-frame, of vertically-adjustable inner vise-jaws, a vertically-adjustable rack connected to said vise-jaws, a guard for said rack having a staggered rear edge, a starting-lever having a portion extending into the path of the guard, and automatic starting devices adapted to be released by said lever.

17. In a broom-sewing machine, the combination with the sewing mechanism, of a vise movable to and from said mechanism, and means for automatically stopping the machine comprising a vertically-movable rod, a lever connected to said rod, and a switching device connected to the movable vise and adapted to operate said stopping-lever suddenly at the end of each row of stitches, said switching device comprising an inclined surface and a spring-plate cooperating therewith.

18. In a broom-sewing machine, the combination with the sewing mechanism, the vise, and means for feeding the vise to the sewing mechanism, of a switching device connected to said vise comprising an incline and a spring-plate overlying said incline, the lever having a part adapted to ride on the incline during the rearward movement of the vise and on the spring-plate during the forward movement, and the automatic stopping devices adapted to be brought into immediate action as the lever drops from the rear end of the spring-plate, as set forth.

19. In a broom-sewing machine, the combination with the sewing mechanism, the vise, and means for feeding the vise to the sewing mechanism, of automatic stopping mechanism and means for automatically bringing said stopping mechanism into action when the needles are at alternately greater and less distances from the edge of the broom in successive rows of stitches.

20. In a broom-sewing machine, the combination with the sewing mechanism, and the vise, of a feed-rack adjustable relatively

to the vise for different rows of stitches, a zigzag guide on said rack, and automatic stopping devices controlled by said zigzag guide to effect the stopping of the machine at different points in the travel of the vise for different rows of stitches, as set forth.

21. In a broom-sewing machine, the combination with the sewing mechanism, and a vise movable to and from said mechanism, of a vertically-movable broom-support, and automatically-controlled means for feeding said support vertically to bring the broom into position for successive rows of stitches.

22. In a broom-sewing machine, the combination with the sewing mechanism, and a vise movable to and from the sewing mechanism, of inner vise-jaws for supporting the broom, and automatically-controlled means for moving said jaws to bring the broom into position for successive rows of stitches.

23. In a broom-sewing machine, the combination with the sewing mechanism, of a vise movable relatively to said mechanism, devices for supporting a broom in said vise, and means for automatically shifting the broom to bring it into position for successive rows of stitches, said means being automatically controlled by the opening movement of the vise.

24. In a broom-sewing machine, the combination with the sewing mechanism, of a vise movable to and from said mechanism, a movable broom-support within the vise, a rack and pawl for vertically adjusting said broom-support, and an arm in the path of said pawl adapted to operate the same as the vise is opened and closed, whereby the broom is automatically lowered, substantially as described.

25. In a broom-sewing machine, the combination with the sewing mechanism, of a vise movable to and from said mechanism, a broom-support adjustable relatively to said vise, a rack comprising a series of teeth adjustably connected to said support, a pawl adapted to engage said teeth successively, and means for automatically operating the pawl to locate the broom for successive rows of stitches.

26. In a broom-sewing machine, the combination with the sewing mechanism, of a vise movable to and from said sewing mechanism, a movable broom-support within the vise, a rack and pawl for adjusting said broom-support to shift the broom into position for successive rows of stitches, and means for automatically operating said rack and pawl to shift the broom-support when the vise is opened to release the broom.

27. In a broom-sewing machine, the combination with sewing mechanism, a vise, and means for feeding the vise to the sewing mechanism, of an automatic starting device, and adjusting means whereby said device may be brought into action at different positions of the vise to locate the first stitch properly for brooms of different widths.

28. In a broom-sewing machine, the combination with the sewing mechanism, the vise, and means for feeding the vise to the sewing mechanism, of a positive stop for bringing  
5 the vise to rest in position for the first stitch, adjusting means whereby said vise may be stopped in different positions to adapt it to begin sewing on brooms of different widths,  
10 and means for automatically starting the sewing mechanism as the vise is stopped.

29. In a broom-sewing machine, the combination with the sewing mechanism, and a vise having a swinging movement in a vertical plane to and from said sewing mechanism, of  
15 means for feeding the vise step by step relatively to the sewing mechanism, and a positive stop for locating the vise in position for starting the sewing, said stop comprising a stationary part constituting an abutment,  
20 and a part movable with the vise cooperating with said abutment, one of said parts being adjustable to adapt the stop for brooms of different widths.

30. In a broom-sewing machine, the combination with the sewing mechanism, a vise and  
25 means for feeding the vise relatively to said mechanism, of a binder-support comprising a pair of fingers having tips adapted to engage the edges of the broom above the vise,

and means for automatically moving said  
30 fingers toward and away from the broom at proper intervals.

31. In a broom-sewing machine, the combination with the sewing mechanism and a vise  
movable relatively to said mechanism, of a  
35 binder-support consisting of a pair of movable fingers having inturned points, means for opening and closing the vise, and automatic means for simultaneously moving the  
40 fingers away from and toward each other, the fingers being arranged to move inward as the vise is closed and impinge upon the edges of the broom above the vise.

32. In a broom-sewing machine, the combination with the vise, of a binder-support comprising pivoted fingers having inwardly-  
45 turned tips adapted to impinge upon the broom above the vise-jaws, cam-surfaces upon said fingers, and vertically-movable parts arranged to engage said cam-surfaces  
50 and spread the fingers to disengage the broom when the vise is opened.

In testimony whereof I affix my signature in presence of two witnesses.

ANDREW E. MILLER.

Witnesses:

HOWARD D. ADAMS,  
J. HENRY STROHMEYER.