

No. 710,117.

Patented Sept. 30, 1902.

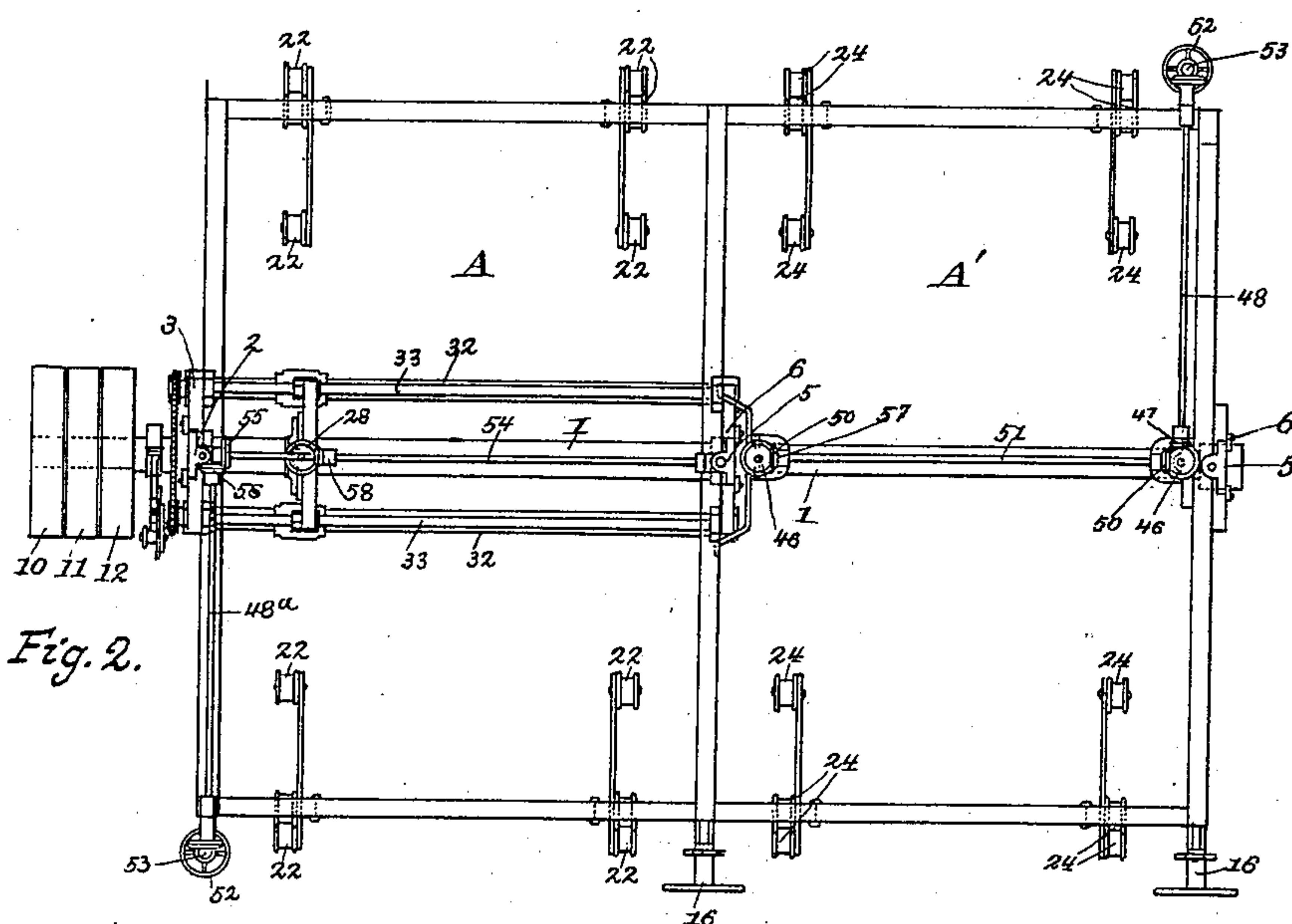
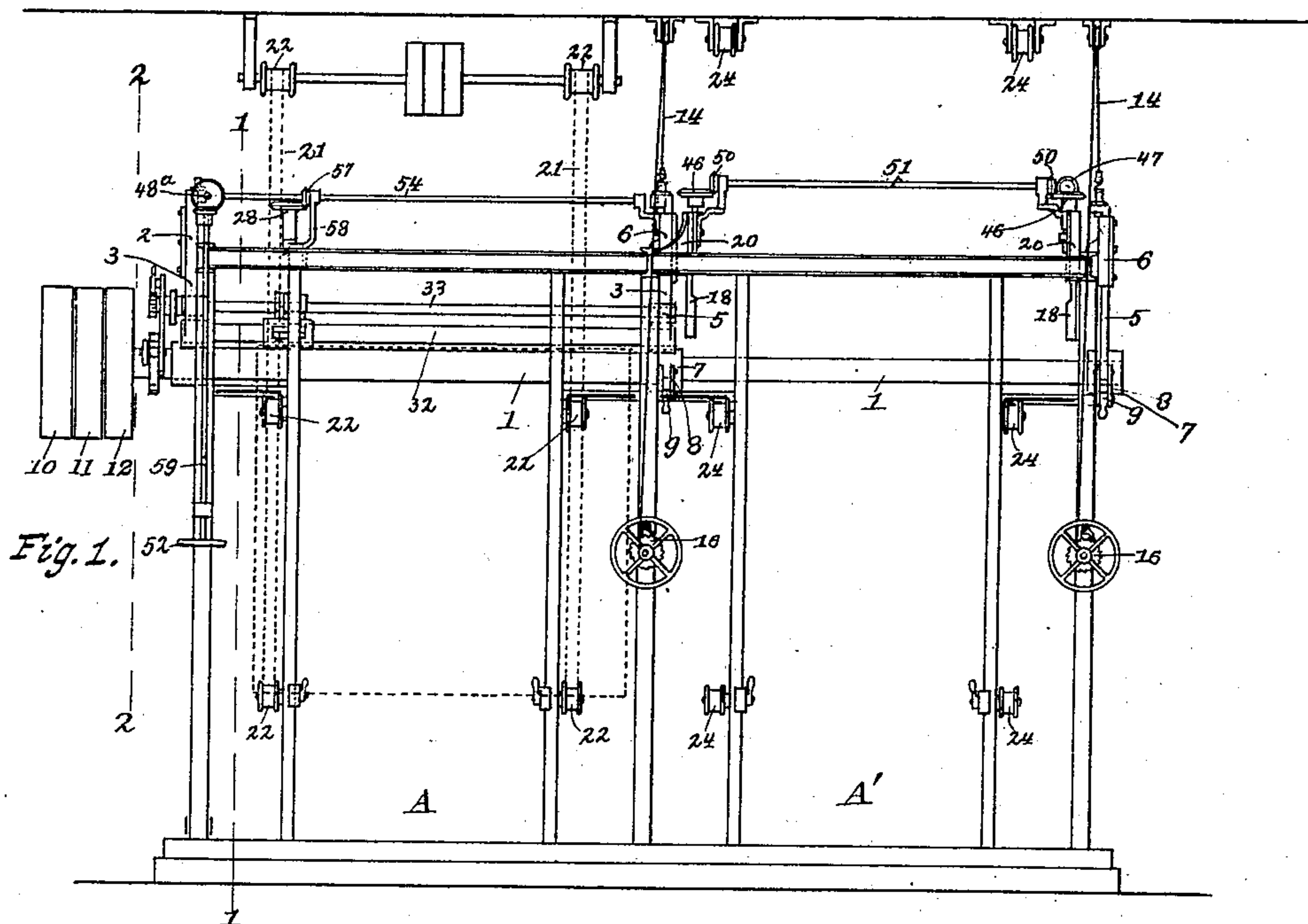
M. M. PARKER.

MACHINE FOR ROLLING SHEET METAL CYLINDERS.

(Application filed Jan. 31, 1901.)

(No Model.)

4 Sheets—Sheet 1.



Witnesses,

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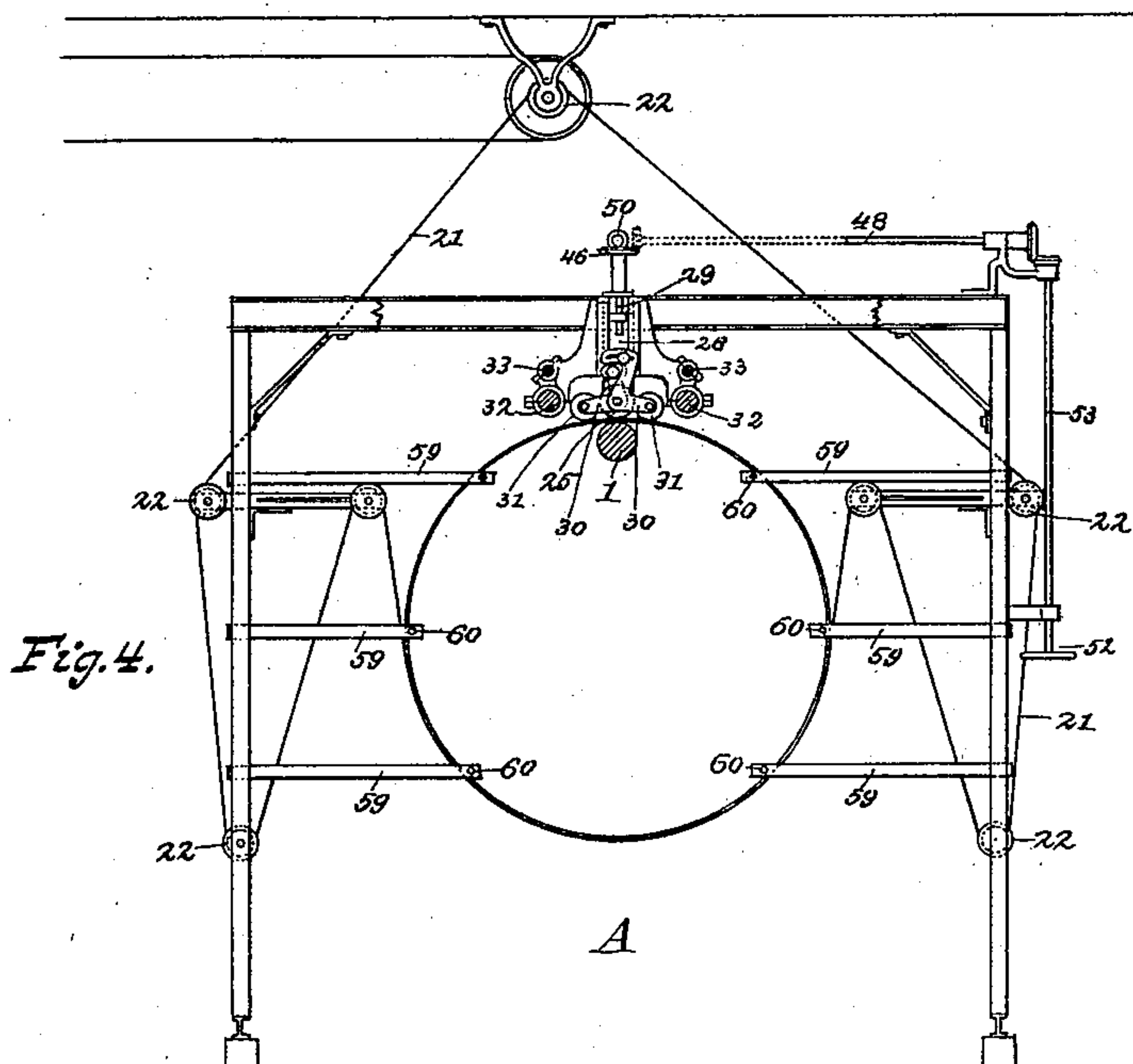
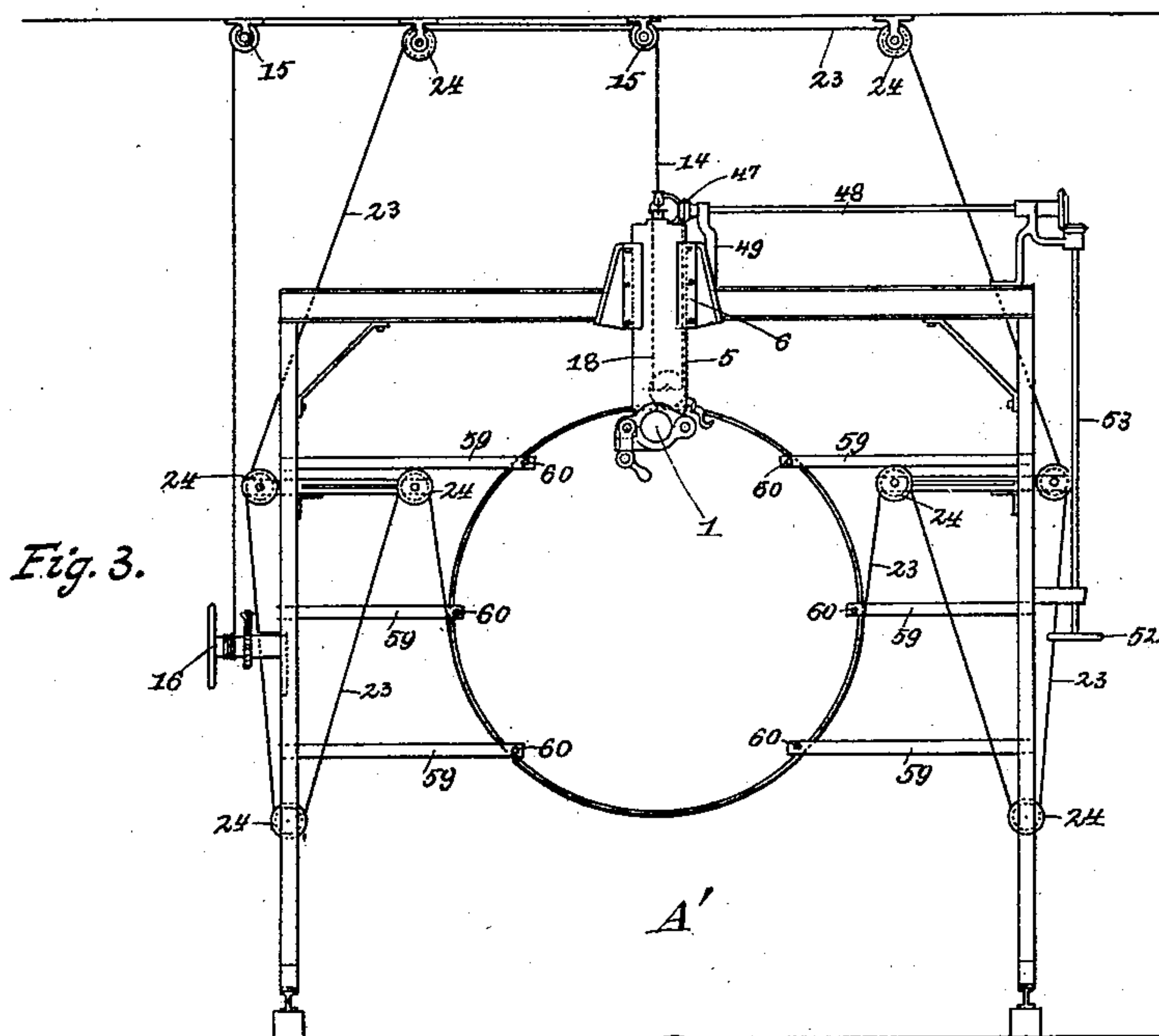
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(No Model.)

4 Sheets—Sheet 2.



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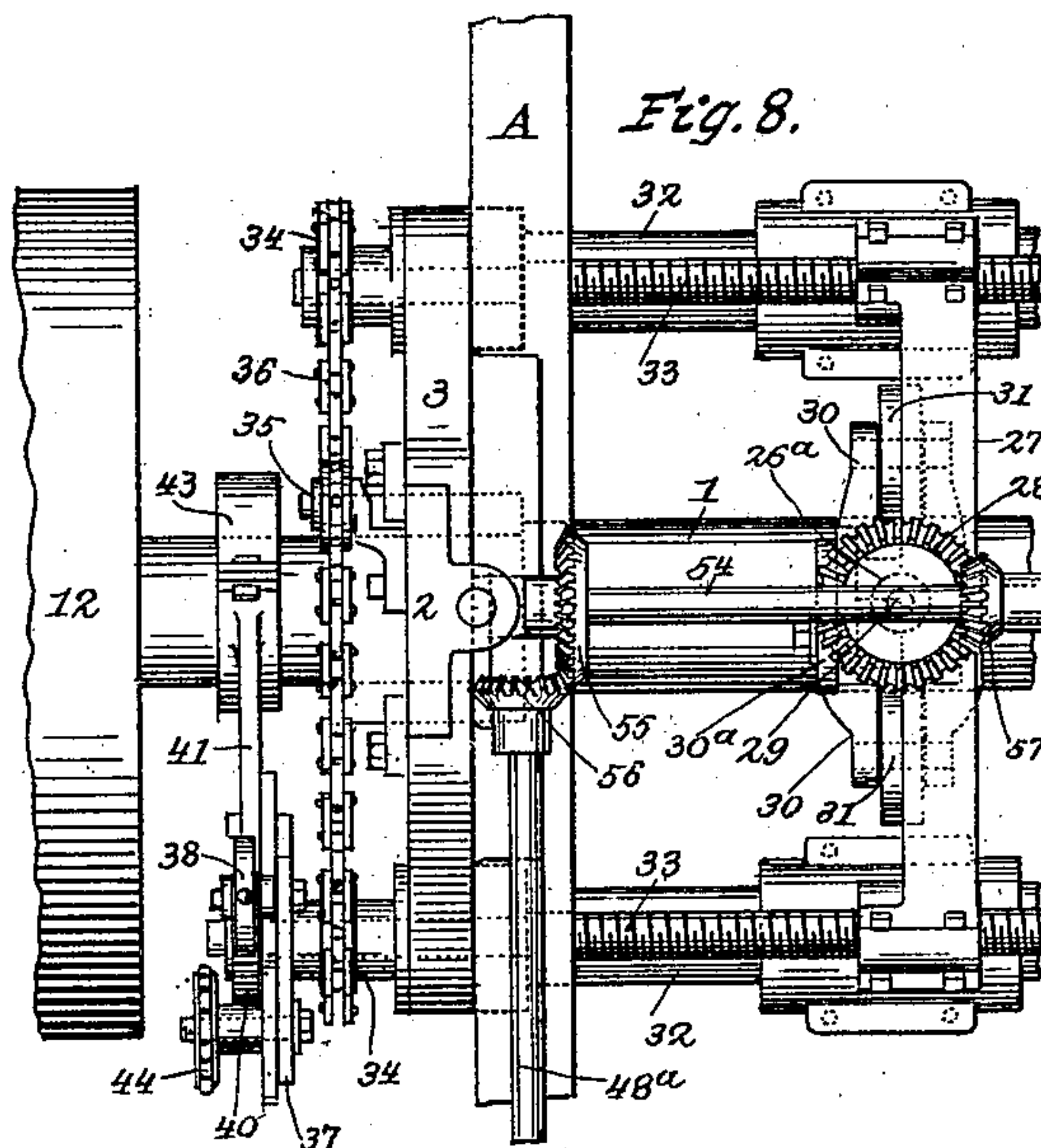
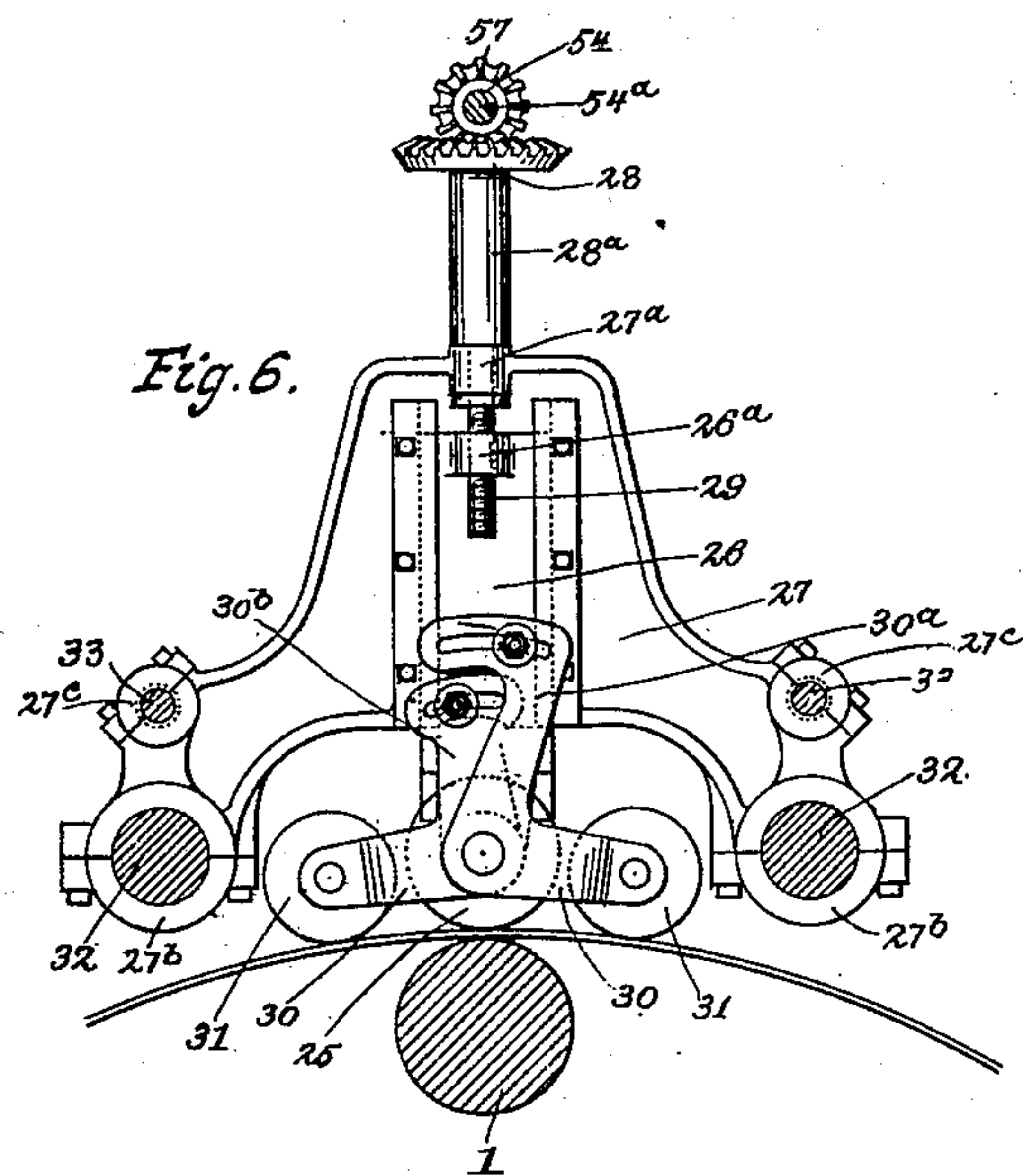
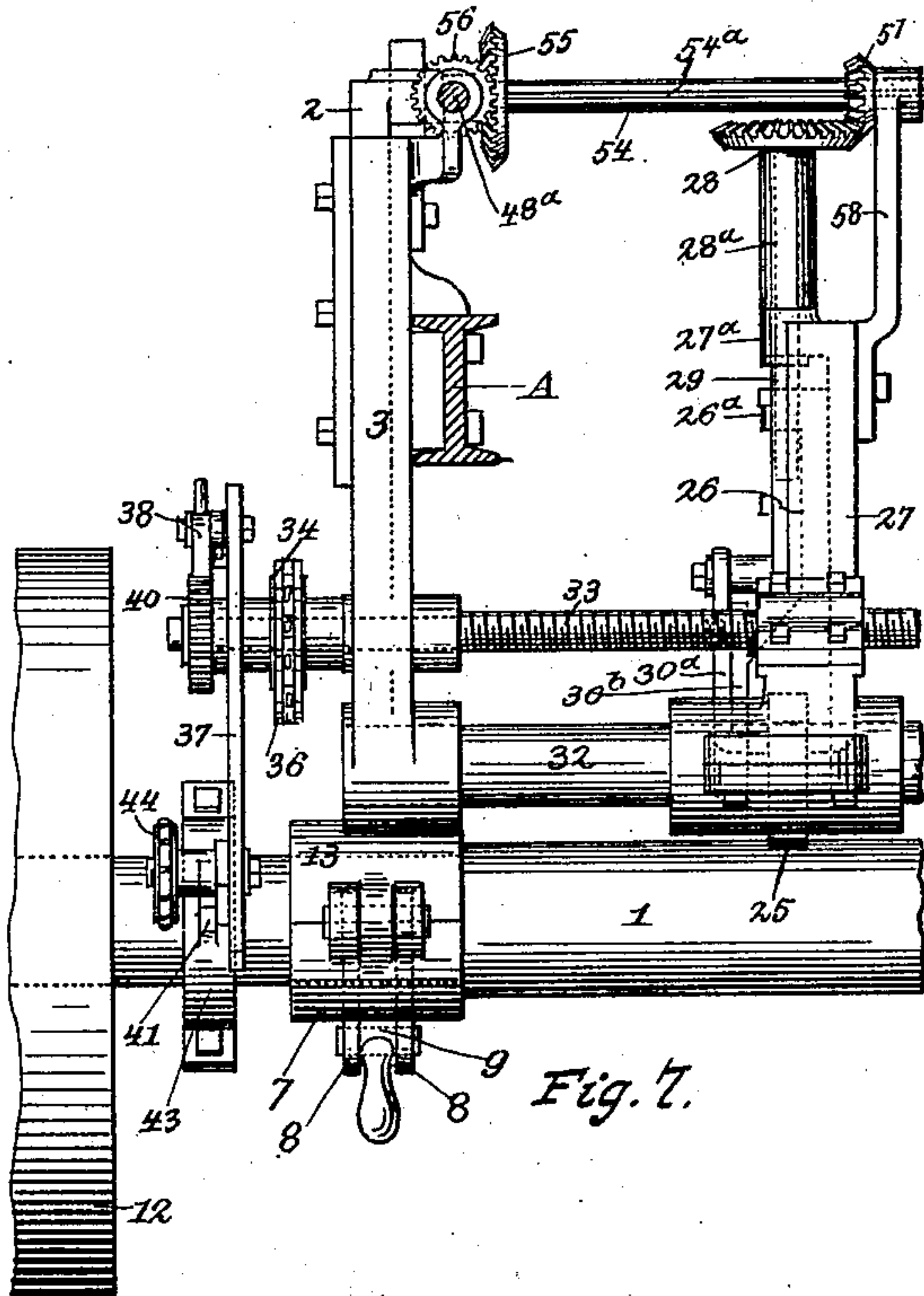
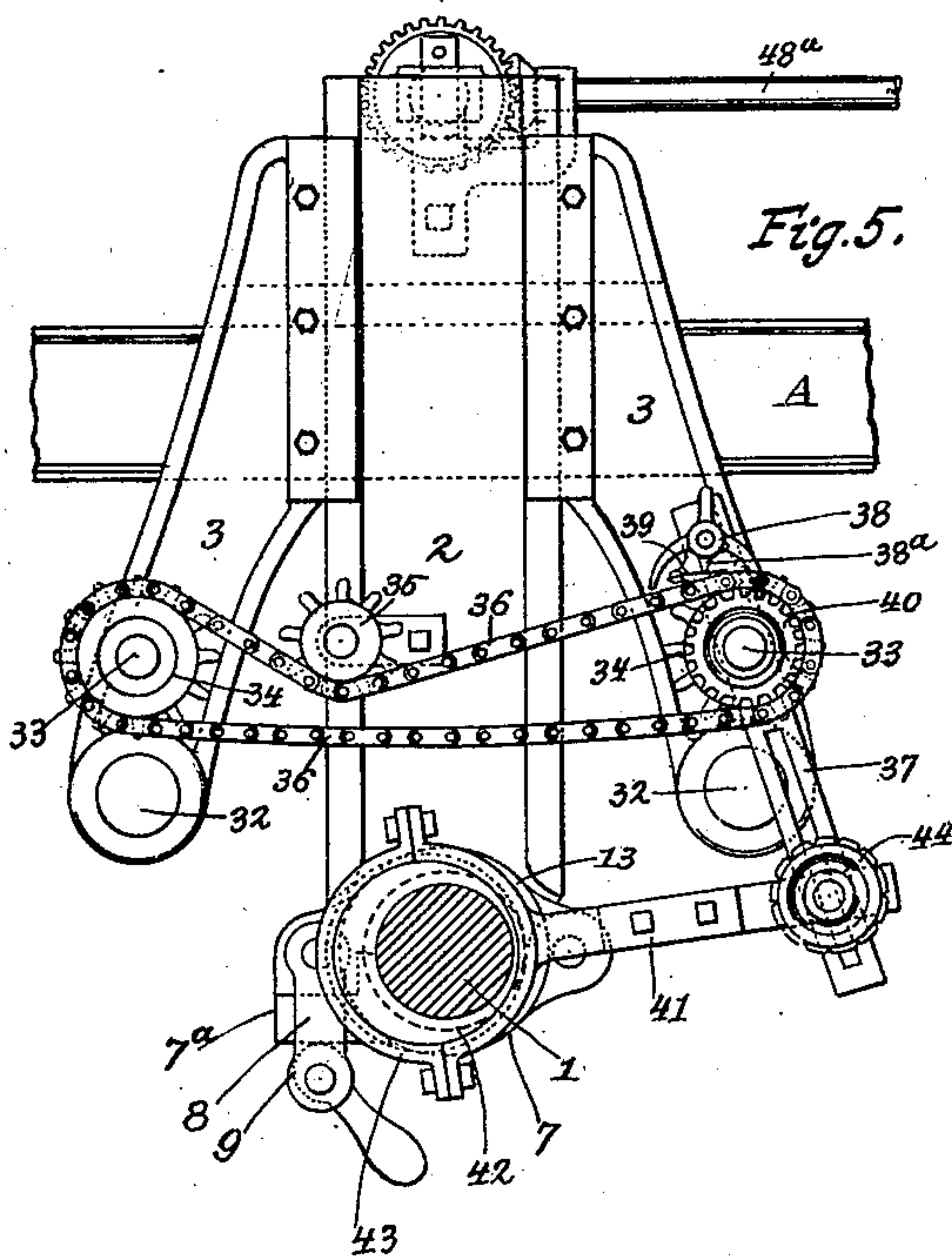
M. M. PARKER.

MACHINE FOR ROLLING SHEET METAL CYLINDERS.

(Application filed Jan. 31, 1901.)

(No Model.)

4 Sheets—Sheet 3.



Witnesses.

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No. 710,117.

Patented Sept. 30, 1902.

M. M. PARKER.

MACHINE FOR ROLLING SHEET METAL CYLINDERS.

(Application filed Jan. 31, 1901.)

(No Model.)

4 Sheets—Sheet 4.

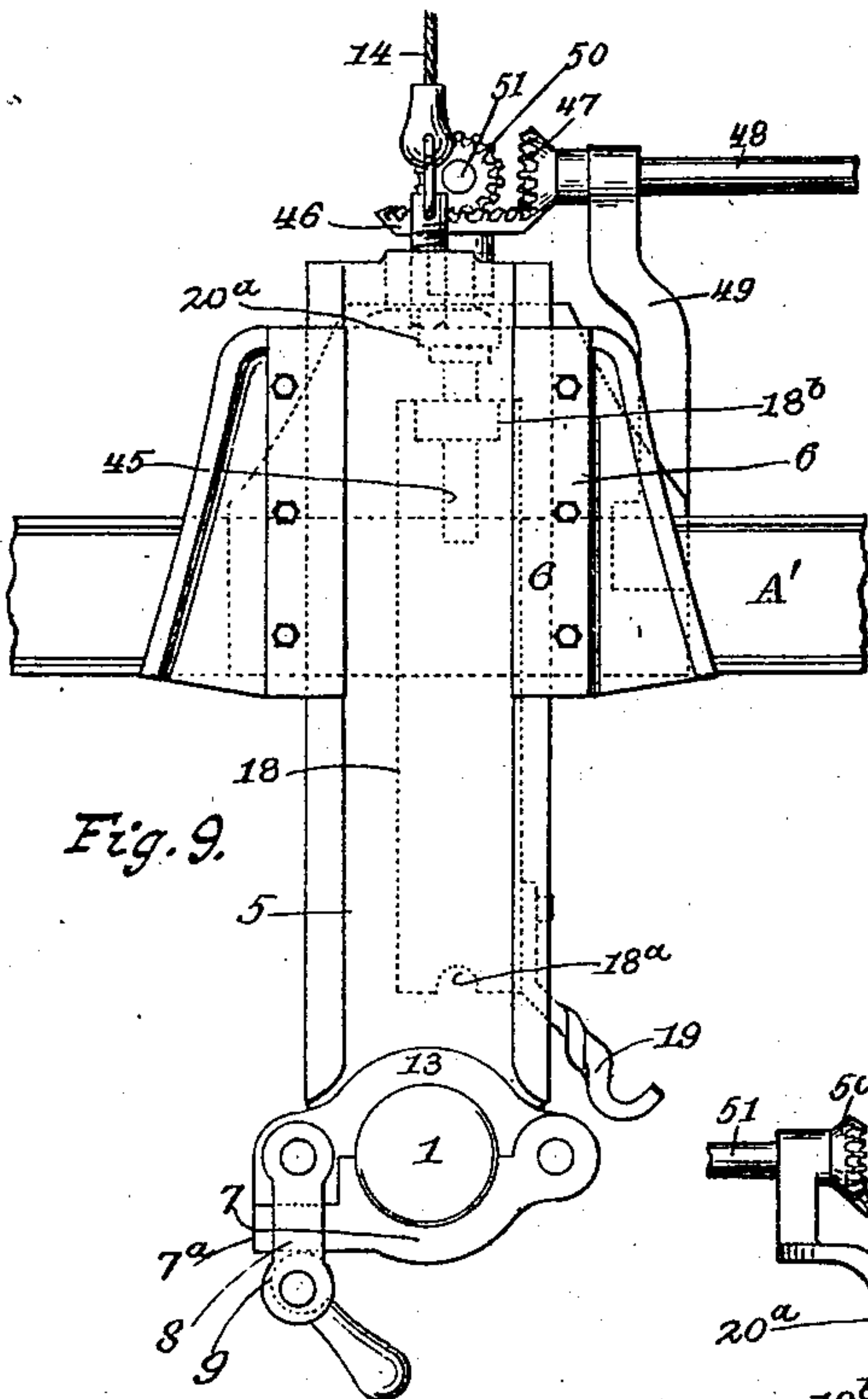


Fig. 9.

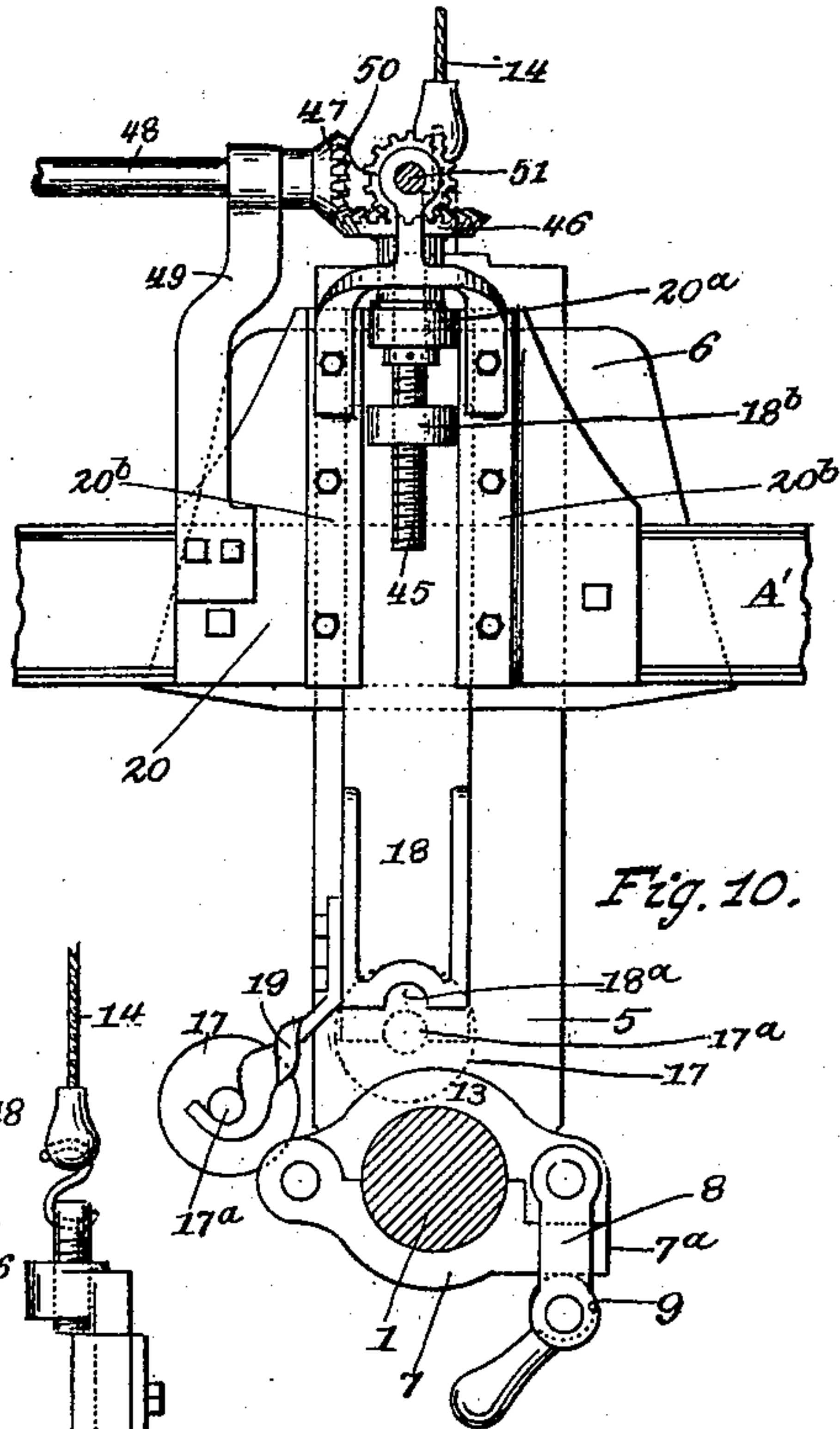


Fig. 10.

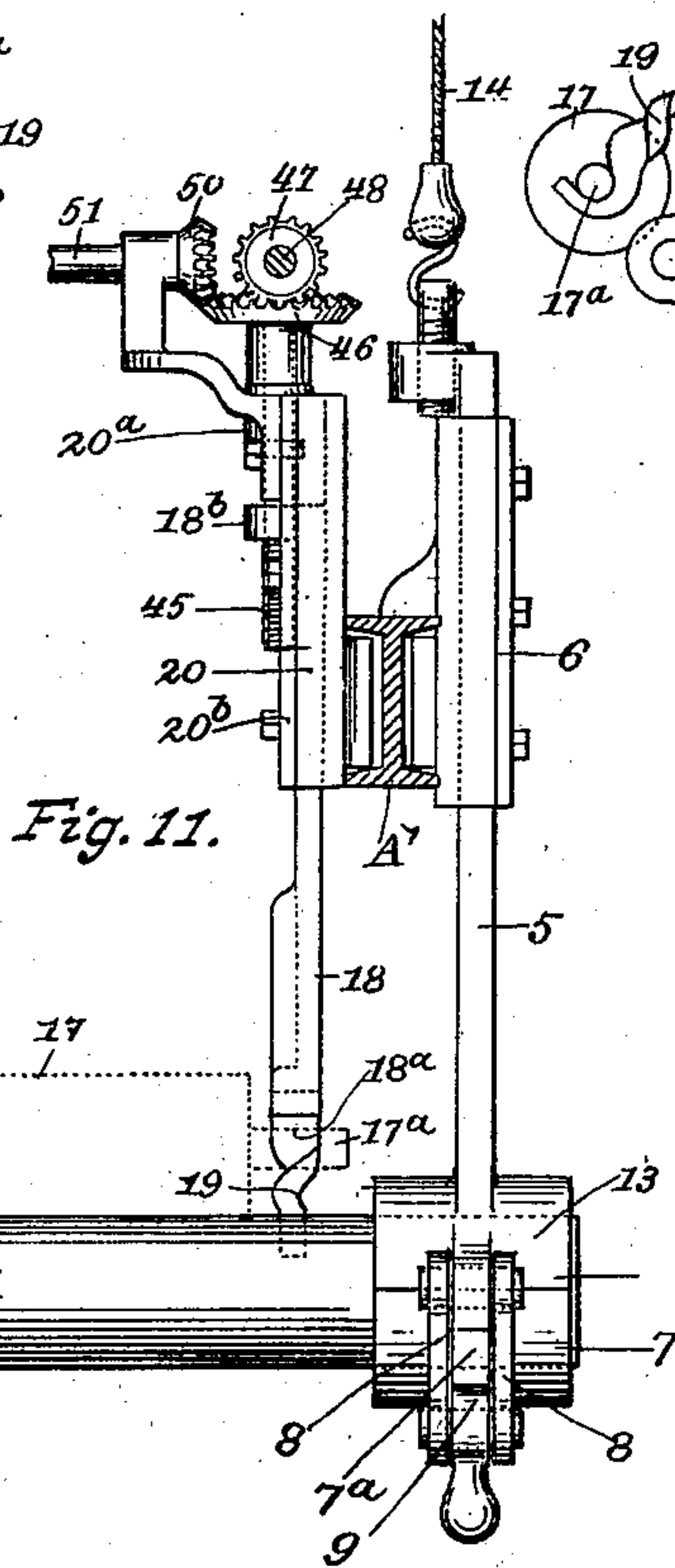


Fig. 11.

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UNITED STATES PATENT OFFICE.

MAJOR M. PARKER, OF COHOES, NEW YORK, ASSIGNOR TO DAVID S. JOHNSTON, OF COHOES, NEW YORK.

MACHINE FOR ROLLING SHEET-METAL CYLINDERS.

SPECIFICATION forming part of Letters Patent No. 710,117, dated September 30, 1902.

Application filed January 31, 1901. Serial No. 45,524. (No model.)

To all whom it may concern:

Be it known that I, MAJOR M. PARKER, a citizen of the United States, residing at Cohoes, in the county of Albany and State of New York, have invented certain new and useful Improvements in Machines for Rolling Sheet-Metal Cylinders; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has for its object to provide means for accurately rolling, hardening, and finishing cylinders formed of sheet metal. Such objects I accomplish by the means illustrated in the accompanying drawings, in which—

Figure 1 represents in side elevation the general construction of a machine embodying my invention. Fig. 2 is a plan view of the same. Fig. 3 is an end elevation of the same. Fig. 4 represents a vertical transverse section taken on line 1 1 of Fig. 1. Fig. 5 is a front elevation showing details of construction, taken on line 2 2 of Fig. 1. Fig. 6 represents in front elevation details of construction, taken on line 1 1 of Fig. 1. Fig. 7 represents in side elevation, partly in section, details of construction forming part of the forward end of machine, as shown in Fig. 1. Fig. 8 represents a plan view of the parts shown in Fig. 7. Fig. 9 represents a rear elevation of details of construction forming part of rear end of machine as shown in Fig. 3. Fig. 10 represents a front elevation of the parts shown in Fig. 9 with an auxiliary roller attached. Fig. 11 represents in side elevation the parts shown in Fig. 10.

As illustrated in the drawings, the main frame of the machine is composed of two sections A and A', similar to each other in general construction. A mandrel 1 extends lengthwise of both sections of the main frame, and its forward end is supported in a hanger 2, which is secured to a bracket 3, which bracket is attached to the section A of the main frame. Such mandrel is supported on its rear end by means of a hanger 5, which is adjustable vertically in ways 6, which ways are secured to the section A' of the main frame, as shown in Figs. 3 and 9. Such mandrel is sup-

ported about midway of its length by a hanger 5, substantially similar in construction to the hanger 5 already described, supporting the rear end of such mandrel. Such hanger supporting the central portion of such mandrel is also vertically adjustable in slides 6, similar to those engaging the hanger 5 shown in Figs. 3 and 9. The hangers 5, which support such mandrel at its central and rear-end portions, are provided with bearings 13, formed on or attached to the lower end of such hangers, and such hangers are also provided with a hinged cap 7, having a lug 7^a, adapted to engage links 8, pivoted at their upper ends to such hangers and provided on their lower ends with a cam 9, by means of which said cap 7 may be secured tightly in position, so as to support such mandrel or be released when desired. The hanger 2, which supports the forward end of such mandrel 1, is also provided with a bearing 13, hinged cap 7, connecting-links 8, and cam 9, similar in construction to those already described.

The forward end of the mandrel 1 is provided with driving-pulleys 10 11 12, the outer pulleys being secured rigidly to said mandrel and the central pulley supported loosely on such mandrel. By such means the mandrel may be driven from right to left or from left to right, as desired, or permitted to remain stationary by adjusting the driving-belt onto the central pulley. It is not essential, however, that two tight pulleys should be secured to the mandrel 1 in order to accomplish such result, and instead of such construction a single tight pulley may be secured to such mandrel in connection with a loose pulley, and the movement of the mandrel may be reversed by means of the ratchet-wheel 40 and pawl 38, hereinafter described. The cylinder to be rolled and finished is placed upon the mandrel by releasing the cap 7, hinged to the rear hanger 5, and raising the hanger 5 upward in the ways 6 by means of a cord 14, secured to said hanger 5, which cord passes over pulleys 15, secured above and around a windlass 16, attached to the section A' of the frame or in any other suitable manner. While the hanger 5, supporting the rear end of the mandrel 1, is raised, the mandrel is supported and held in even alinement by means of the central

hanger 5 and the forward end hanger 2. After such cylinder has been placed upon the rear end of the mandrel the cord 14, supporting the hanger 5, is released, and the bearing 13 on the lower end of such hanger is again brought in contact with the rear end of the mandrel, and the cap 7 secured in position by the means already described. When such cylinder is in position on the rear half of the mandrel within section A' of the main frame, the greater inequalities or irregularities on the surface of the cylinder may be removed by means of an auxiliary roller 17, preferably made of wood, which is provided with axial pins or a rod 17^a, supported when in operation in bearings 18^a, formed on the lower end of the hangers 18, which hangers are adjustable vertically in ways 20^b, attached to brackets 20, secured to the central portion and rear end of the main frame, as shown in Figs. 1 and 10. The hangers 18 are provided with a threaded boss 18^b, which engages a screw 45, journaled in a boss 20^a attached to said bracket 20. The upper end of the screw 45 is provided with a beveled gear 46, which engages a correspondingly-beveled gear 47, attached to a shaft 48, provided on its outer end with a beveled gear, which in turn engages a beveled gear secured to the vertical shaft 53, provided with a handle 52, as shown in Fig. 3. By means of such construction the handle 52 when turned rotates the shafts 53 and 48 and the beveled gear 46 and raises or lowers the hanger 18, and thereby adjusts the roller 17 to the thickness of the metal composing the cylinder and regulates the pressure applied by said roller to the surface of such cylinder. A horizontal shaft 51, provided on each end with a beveled gear 50, connects the said beveled gear 46, secured to the rear hanger 18, with a corresponding gear 46, engaging a similar hanger 18, located at the central portion of the machine, as shown in Fig. 1, and raises or lowers said hangers simultaneously. By such means both hangers 18, supporting the ends of the auxiliary roller 17, are operated evenly by a movement of the handle 52, attached to the shaft 53. After the roller 17 has been properly adjusted on the outer surface of the cylinder the cylinder is rotated by the mandrel 1 with the aid of the pressure applied on the outer surface of such cylinder by the roller 17. Such rotary movement of the cylinder may be further aided and the cylinder held steadily in position by means of endless belts 23, which pass over pulleys 24, secured above the machine and on the sides of the section A' of the main frame, and then upward over pulleys located within said frame and around the lower half of such cylinder. Such belts are preferably arranged in pairs passing over two sets of pulleys arranged as shown in Fig. 1. These pulleys may be made adjustable to compensate for cylinders of different diameters by mounting the lower pulleys on slides of any suitable construction and mounting the pulleys located within the frame on

bars provided with longitudinal slots, as shown in Fig. 3. If desired, bars 59 may be secured to the main frame at their outer ends and provided on their inner ends with rods 60, extending lengthwise of the inner surface of such cylinder, so as to aid in holding the cylinder in position while rotating. Such bars 59 may be provided on their outer ends with slots whereby such bars may be adjusted longitudinally on the main frame, so as to conform to cylinders of different diameters and be removed from such cylinder when desired. After the greater irregularities have been removed from the outer surface of the cylinder the hangers 18, supporting the roller 17, are raised in the manner already described and the roller 17 removed. Such roller may, if desired, be placed upon hooks or supports 19, attached to the hangers 18 for convenience, or it may be removed to any other desired place. The rods 60 are then removed, the bars 59 moved outward away from the cylinder, and the cylinder is released from the endless belts 23. The cap 7, attached to the central hanger 5, is then released from engagement with the central portion of the mandrel 1 and the central hanger 5 raised by means of the central windlass 16 and cord 14. After such cap has been released from the central portion of such mandrel and the hanger 5 raised the cylinder may be moved along the mandrel onto that portion located within section A of the main frame. The central hanger 5 is then lowered onto the mandrel and the cap 7 secured in place. While such central support of the mandrel is released the mandrel is held in perfect alignment by means of the hanger 2, supporting the forward end, and the hanger 5, supporting the rear end, of such mandrel. When the cylinder is in position on the mandrel within section A of the main frame, endless belts 21 are preferably applied to the lower outer surface of such cylinder and passed over pulleys 22, the upper pulley of which is secured to a counter-shaft above the machine. Such belts aid in rotating such cylinder and at the same time hold the cylinder steadily in position. Bars 59, similar in construction to those of section A' of the main frame, may be extended outward from the frame and be provided with slots or other equivalent devices, whereby they may be adjusted longitudinally and adapted to be used with cylinders of different diameters. The inner ends of these bars are provided with rods 60, which bear against the inner surface of the cylinder and hold the cylinder in position. A carriage 27 is supported on longitudinal rods 32, which rods at their forward end are secured to the hanging bracket 3 and at their rear end to a similar bracket secured to the central portion of the main frame. Such rods serve as ways and permit a sliding movement of such carriage. The lower portions of such carriage are preferably provided with bearings having detachable caps 27^b secured thereto, as shown in

Fig. 6 of the drawings. Threaded shafts 33 also engage said carriage by means of a threaded bearing-box 27^c. The forward ends of such threaded shafts 33 are supported in the lower end of the bracket located at the forward end of the machine and a similar bracket located at the central portion of the main frame. The forward end of such threaded rods are also provided with sprocket-wheels 34, which engage an endless chain 36, whereby a movement of one of said threaded rods 33 is transmitted to the opposite rod. A tightening sprocket-wheel 35 is secured to the hanger 2 and engages the upper edge of the endless belt 36.

The forward end of the mandrel 1 is provided with an eccentric 42, which engages an eccentric-strap 43, connected with an arm 41, which is adjustably secured at its outer end to a lever 37, which lever is mounted on one of the threaded rods 33 and provided with a slot engaging a bolt having a hand-wheel connected therewith. The threaded shaft 33, supporting the slotted lever 37, is provided with a ratchet-wheel 40, which engages a pawl 38, pivoted to the lever 37, so that each revolution of the mandrel moves outward or inward the lower end of the slotted lever 37 by means of the eccentric 43 and connecting-rod 41, and the pawl 38, attached to said lever, turns the ratchet-wheel 40 and the threaded shaft 33, upon which it is mounted, and thereby moves the carriage 27 on the ways 32. The movement of the threaded shaft 33, supporting the lever 37, is transmitted to the opposite threaded shaft by means of the endless chain 36. The lower end of the slotted lever 37 is moved outward or inward to the extent desired by adjusting the eccentric-rod 41 on the slotted arm 37. The extent of movement of the lower end of the lever 37 determines the degree of movement of the threaded screws 33, produced by the pawl 38 and ratchet-wheel 40, which in turn determines the extent of movement of the carriage 27. The pawl 38 is provided on its underside with a stud, which bears against a spring 39 and holds the desired end of such pawl in engagement with the ratchet-wheel. By reversing the pawl so that its opposite end engages the ratchet-wheel the movement of the screws 33 is reversed. The traveling carriage 27 is provided with a sliding hanger 26, which is provided on its upper end with a threaded boss 26^a, engaging a shaft 29, threaded on its lower end and journaled in the boss 27^a of the traveling carriage 27. The upper end of said shaft 29 is provided with a beveled gear 28, which gear engages a correspondingly-beveled gear 57, journaled on a bracket 58, and having a sliding engagement with a shaft 54, provided with a feather 54^a, corresponding with a groove formed in the eye of the gear 57. The shaft 54 is provided on its forward end with a beveled gear 55, engaging a correspondingly-beveled gear 56, secured to the transverse shaft 48^a, which shaft on its

outer end is also provided with a beveled gear, which engages a corresponding gear secured to the upper end of the vertical shaft 59, which shaft is operated by means of a handle 52, by means of which a rotary motion is transmitted through the shaft 59, the shaft 48^a, and the shaft 54, which rotates the gears 57 and 28 and the threaded shaft 29 and raises and lowers the hanger 26 as desired to provide for the varying thickness of the metal composing the cylinder and the desired pressure to be applied to such cylinder. The lower end of such sliding hanger 26 is provided with a disk 25, which is adapted to bear against a cylinder placed upon said mandrel. Bell-crank levers 30 are also pivoted to the lower end of such sliding hanger 26 and on their outer ends are provided with disks 31. One of said bell-crank levers is provided on its upper end 30^a with a slotted head, which engages a bolt secured to said sliding hanger, as shown in Fig. 6. The upper end 30^b of the other lever is also provided with a slotted head, which also engages a bolt secured to said sliding hanger. By means of such construction the outer lower ends of such levers and the disks 31 secured thereto may be adjusted to conform to the periphery of cylinders having different diameters. The disks 31 are so arranged as to lie with the disk 25 in the circular line of the cylinder or the circular line of a cylinder of slightly smaller diameter.

When the device is in operation and the traveling carriage 27 is caused to move lengthwise of the mandrel 1 by means of the threaded shafts 33 and the ratchet-wheel 40, lever 37, and connecting eccentric arm 41, the disk 25 is moved along such mandrel 1, and when the cylinders are composed of soft metal, such as copper, such disk compresses and hardens the copper and smooths the outer surface of the cylinder and removes all irregularities from such surface. After the cylinder has been rolled smooth and hardened the cap 7, attached to the central hanger 5 of the machine, is loosened and such hanger is raised, which permits said cylinder to be moved along the mandrel 1 to that part located within the section A' of the main frame. The sliding hanger is then lowered, so as to come in contact with the mandrel 1, and the cap is secured in place by means of the links 8 and cam 9, as before described, which then supports the central portion of the shaft. The end hanger 5 may then be released from engagement with the rear end of said mandrel in the same manner and the cylinder removed from the mandrel and a new cylinder applied thereto.

In the construction shown herein the hanger 2, which supports the forward end of the shaft, need not be made adjustable vertically like hangers 5, which support the central and end portion of such mandrel, and while I have shown herein the lower end of such hanger 2 provided with a bearing and cap similar to

the hangers 5 any other desired construction may be used in connection with such forward hanger 2 without departing from my invention.

5 I do not desire to be limited to the specific construction of the several parts shown and described herein; but I desire to include within the scope of my invention such other elements as have similar capabilities.

10 What I claim is—

1. The combination with a mandrel of a hanging bracket supporting the forward end thereof, hanging brackets provided with detachable caps supporting the central portion 15 and rear of said mandrel, a carriage movable lengthwise of said mandrel and having a vertically-adjustable hanger provided with a planishing-disk, ways arranged parallel with said mandrel and on opposite sides thereof, 20 threaded shafts arranged on opposite sides of said mandrel and parallel therewith, adapted to move said carriage, and mechanism for operating said threaded shafts, substantially as shown and described.

2. The combination with a mandrel, of a hanging bracket supporting the forward end thereof, detachable brackets supporting the central portion and rear end of said mandrel, ways extending parallel with said mandrel, 30 a carriage mounted on said ways and provided with a vertically-adjustable bracket having a planishing-wheel pivoted thereto, threaded shafts engaging said carriage, mechanism connecting said threaded shafts adapted 35 to turn said shafts in unison, an eccentric mounted on said mandrel, and adjustable mechanism connecting said eccentric and one of said threaded shafts, substantially as shown and described.

3. The combination with a mandrel, hangers supporting said mandrel, ways extending lengthwise of said mandrel on opposite sides thereof, threaded shafts arranged on opposite sides of said mandrel and parallel there- 45 with, a carriage mounted on said threaded shafts and ways, an auxiliary roller, vertically-adjustable hangers provided with bearings for said roller, threaded shafts engaging said hangers each provided at its upper end 50 with a beveled gear, a longitudinal shaft provided on each end with a beveled gear engaging the gears on said shafts, and means for operating said hangers, substantially as shown and described.

4. The combination with a mandrel, of a hanger supporting the forward end thereof, detachable hangers supporting the central portion and rear end of said mandrel, an auxiliary roller adapted to bear against the rear 60 half of said mandrel, endless belts mounted upon pulleys and adapted to aid in supporting and rotating a cylinder of sheet metal placed upon said mandrel and operated upon by said roller, substantially as shown and de- 65 scribed.

5. The combination with a main frame, of a mandrel, detachable hangers supporting

the rear end and central portion of such mandrel, a roller adapted to bear against the rear half of said mandrel, transverse bars at- 70 tached at their outer ends to said main frame and provided on their inner ends with rods extending parallel to said mandrel, substantially as shown and described.

6. The combination with a main frame, of 75 a mandrel, endless belts adapted to bear against the lower half of a cylinder supported on said mandrel, pulleys attached to said main frame and to a counter-shaft adapted to support said pulleys, substantially as shown 80 and described.

7. The combination with a main frame, of a mandrel, ways arranged on opposite sides of and parallel with said mandrel, threaded 85 shafts extending parallel with said mandrel and ways, sprocket-wheels attached to the forward end of said shafts, an endless chain engaging said sprocket-wheels, an eccentric mounted upon such mandrel, a lever secured 90 to one of said threaded shafts and adjustably connected with said eccentric, a ratchet-wheel mounted upon one of said threaded shafts, a pawl mounted upon said lever and adapted to engage with said ratchet-wheel 95 and operate said threaded shafts, substantially as shown and described.

8. The combination with a mandrel, of ways arranged parallel with said mandrel and on opposite sides thereof, hangers supporting 100 the central portion and ends of said mandrel, threaded shafts arranged on opposite sides of and parallel with said mandrel, a traveling carriage movable on said ways and having a threaded engagement with said shaft, and mechanism for operating said threaded 105 shafts, substantially as shown and described.

9. The combination with a mandrel, of ways arranged parallel with said mandrel and on opposite sides thereof, threaded shafts extend- 110 ing parallel with said ways, a carriage movable lengthwise of said ways and having a threaded connection with said shafts, a vertically-adjustable hanger mounted on said carriage, a shaft provided on its lower end 115 with a threaded engagement with said bracket, and on its upper end with a beveled gear, a horizontal shaft provided with a feather, a beveled gear having a sliding engagement on said shaft, and mechanism for operating said horizontal shaft, substantially as shown and 120 described.

10. The combination with a main frame, of a mandrel, vertical hangers supporting the central portion and ends of said mandrel, ways 125 arranged parallel therewith and on the opposite sides of said mandrel, threaded shafts extending parallel with said ways, a traveling carriage movable along said ways and provided with a threaded engagement with said shafts, a vertically-adjustable hanger mount- 130 ed on said carriage and provided on its lower end with a pivoted disk, substantially as shown and described.

11. The combination with a main frame, of

a mandrel, ways extending parallel with said mandrel on opposite sides thereof, threaded shafts extending parallel with said ways, a carriage movable on said ways and provided
5 with a threaded engagement with said shafts, a vertically-adjustable hanger mounted on said carriage, levers pivoted to the lower end of said hanger and provided on their outer ends with pivoted disks and adjustably se-
10 cured at their upper ends to said hanger, substantially as shown and described.

12. The combination with a main frame, of a mandrel, ways extending lengthwise of said mandrel on both sides thereof and parallel
15 therewith, threaded shafts arranged on both sides of and parallel with said mandrel, a traveling carriage movable on said ways and

having a threaded engagement with said shafts, a vertically-adjustable hanger mounted on said carriage, a vertical shaft having a
20 threaded engagement at its lower end with said hanger and provided on its upper end with a beveled gear journaled on a bracket secured to said carriage, a shaft provided with
25 a feather engaging said journaled gear and mechanism adapted to operate said feathered shaft, substantially as shown and described.

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

MAJOR M. PARKER.

Witnesses:

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