

C. GROTNES.
BARREL HEADING-UP MACHINE,
APPLICATION FILED NOV. 13, 1909.

994,153.

Patented June 6, 1911.

3 SHEETS—SHEET 1.

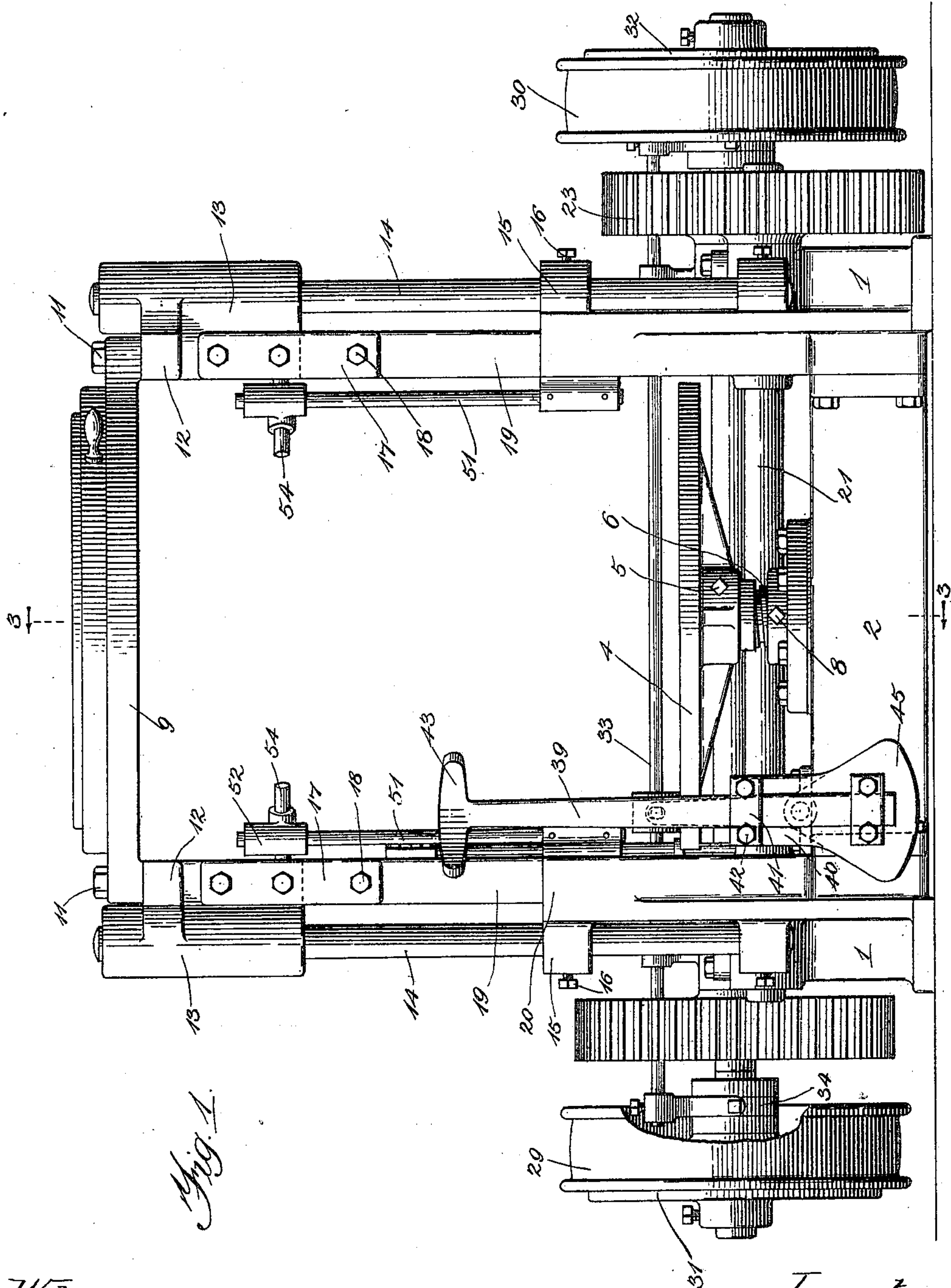


Fig. 1.

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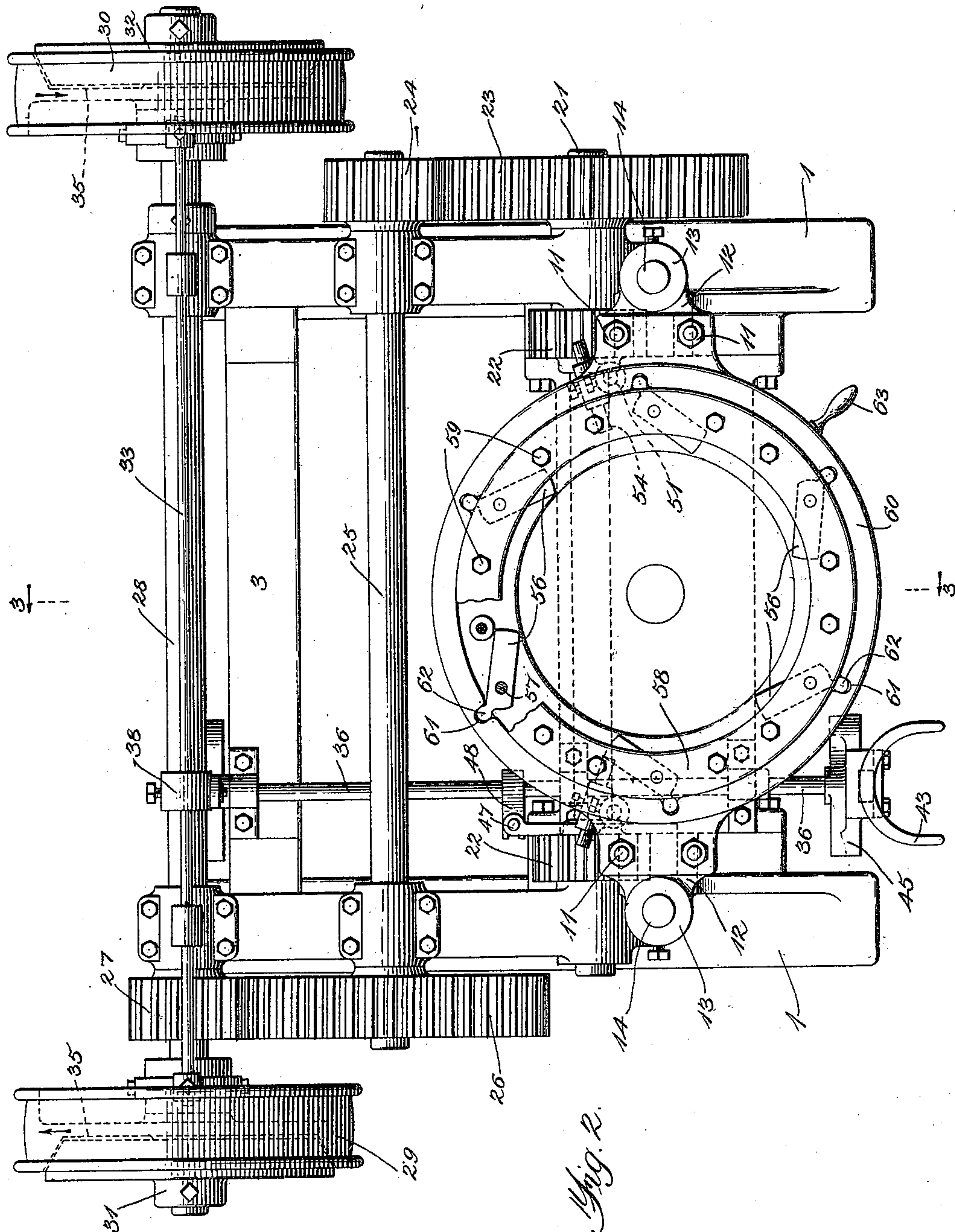
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3 SHEETS-SHEET 2.



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3 SHEETS—SHEET 3.

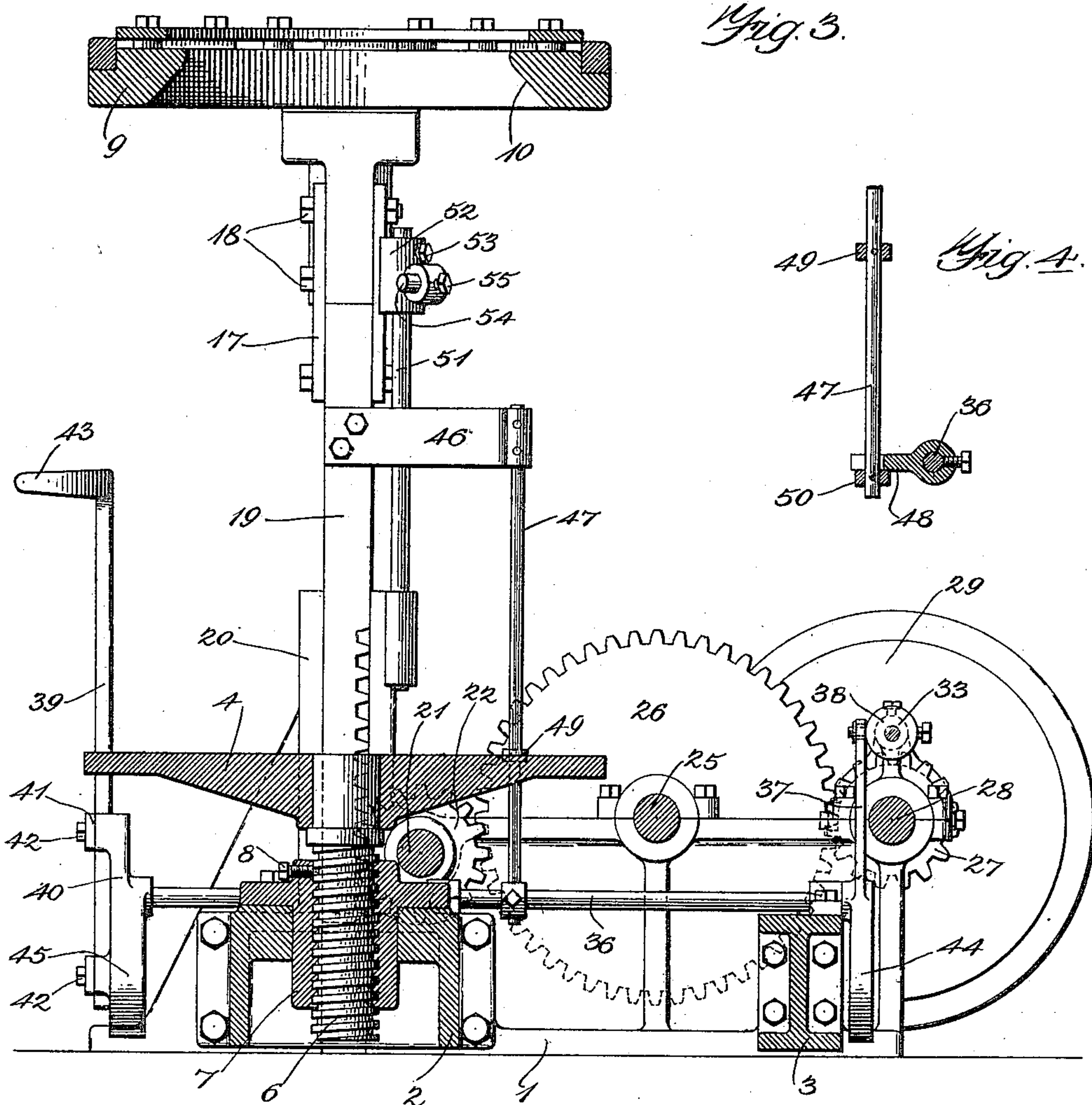


Fig. 3.

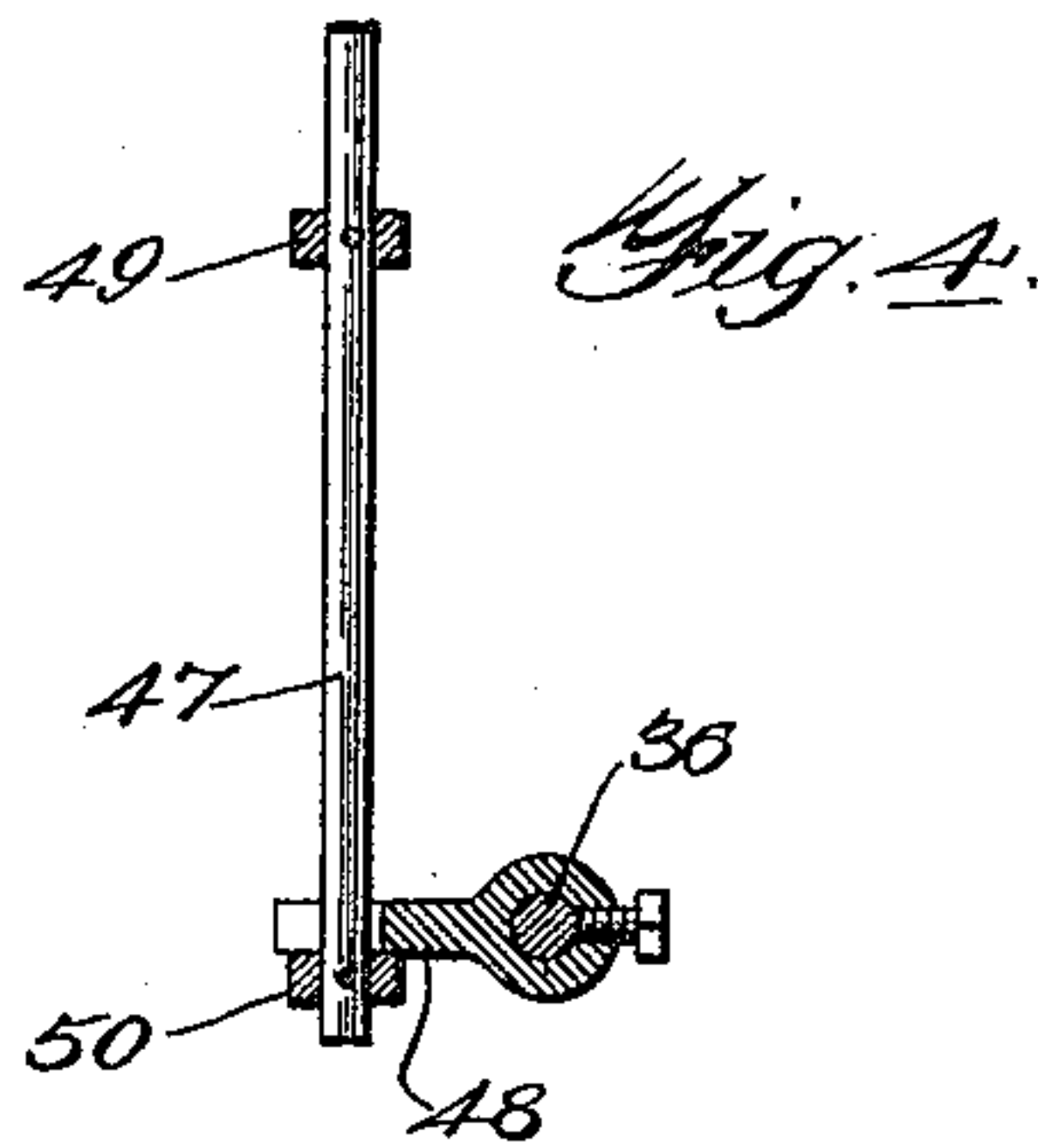


Fig. 4.

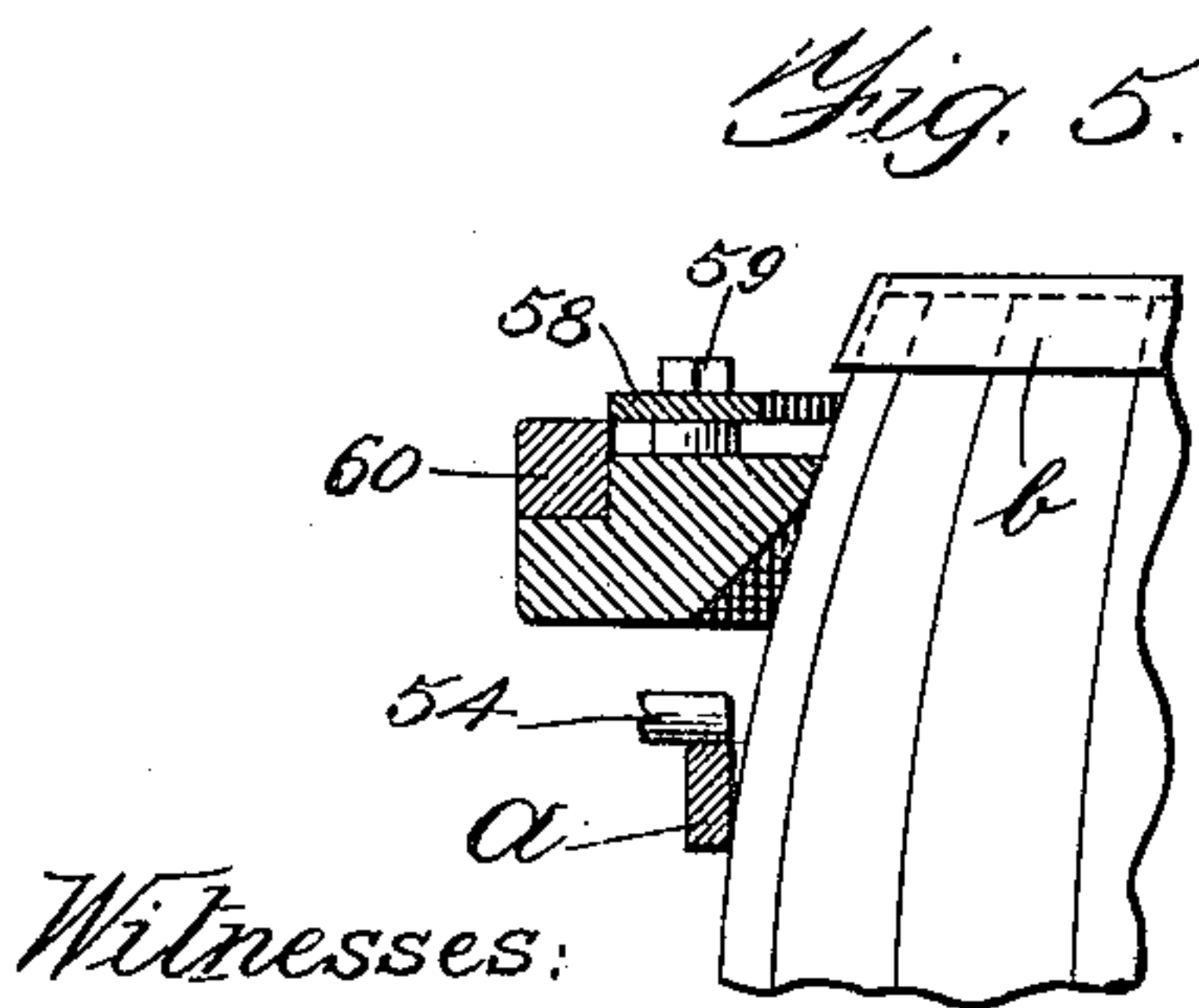


Fig. 5.

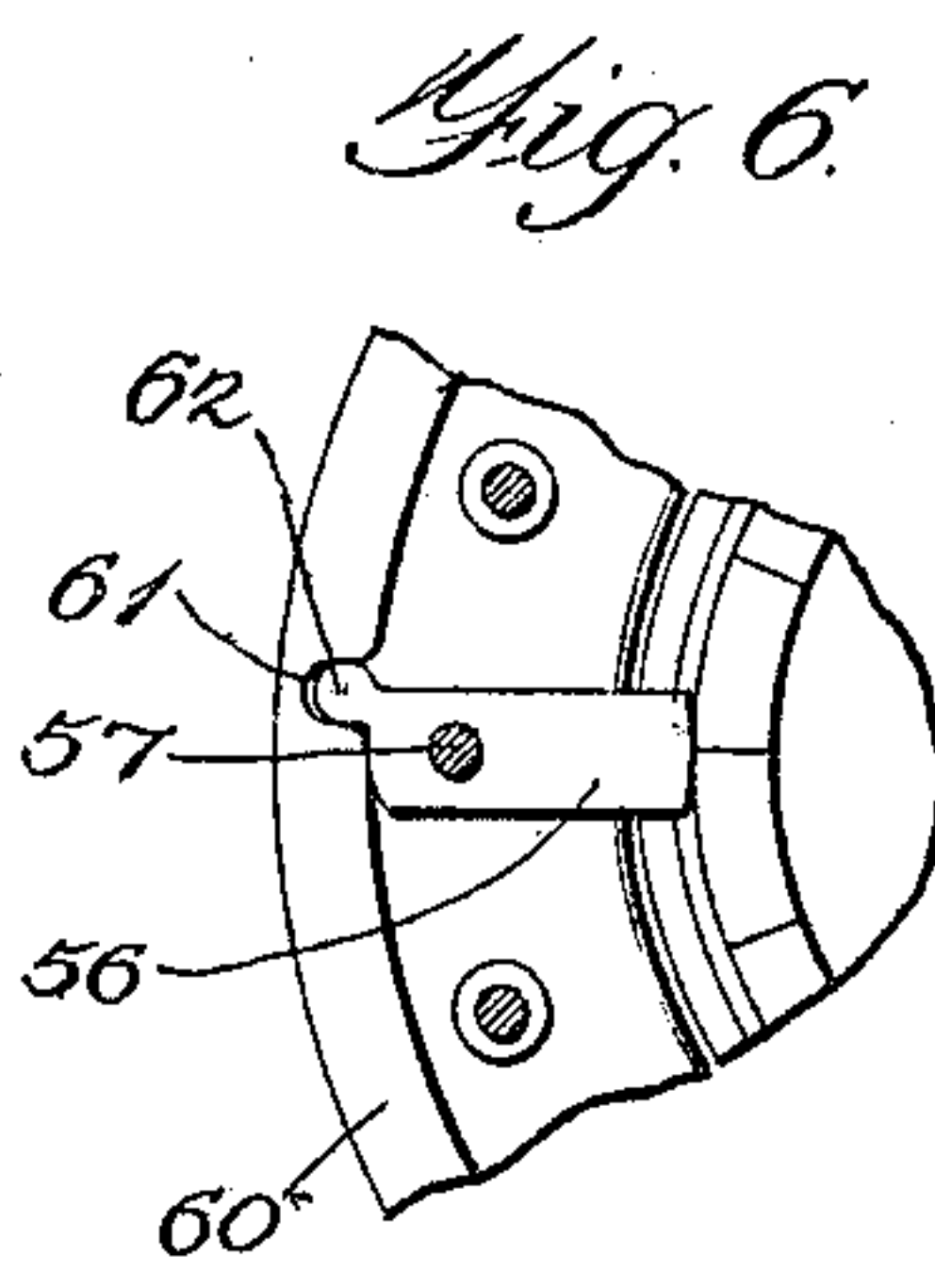


Fig. 6.

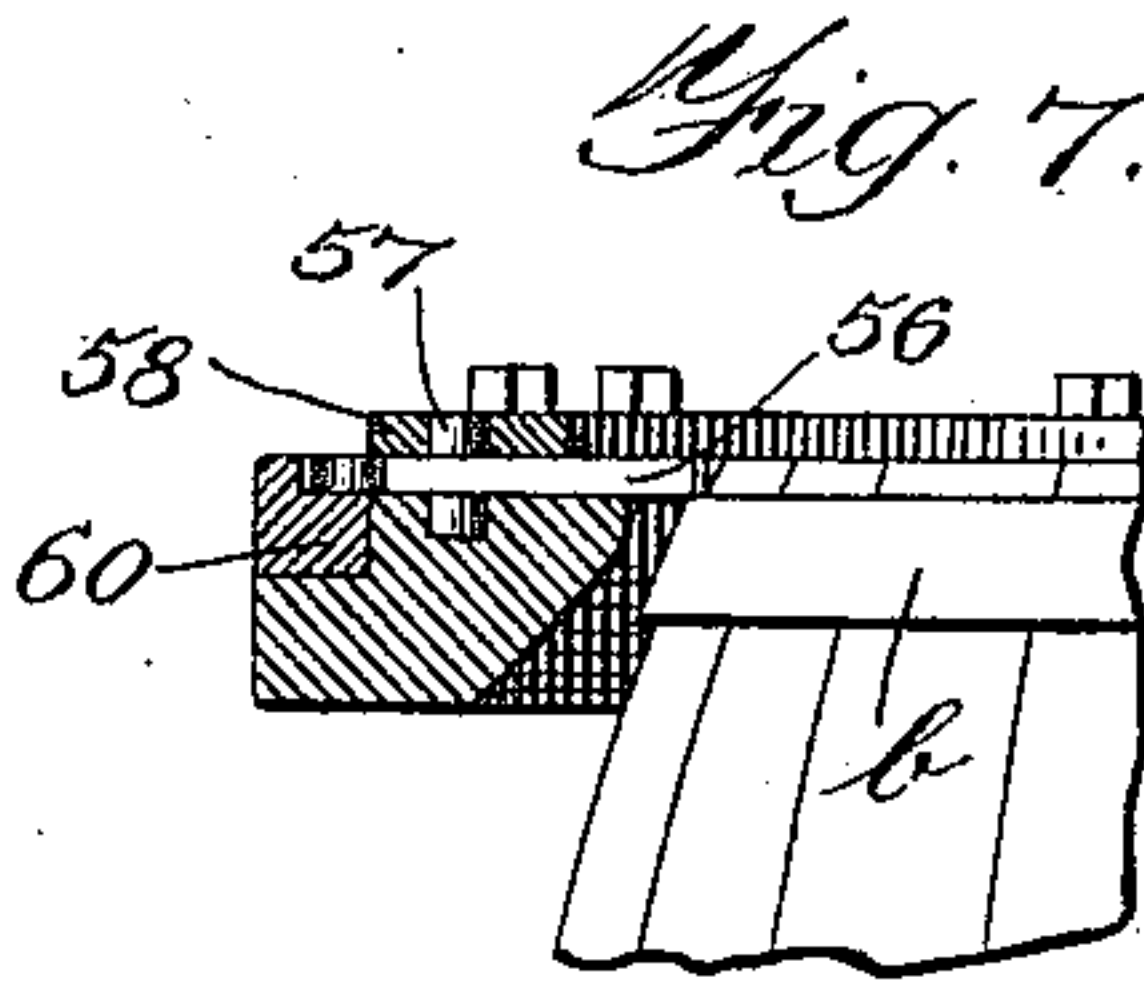


Fig. 7.

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UNITED STATES PATENT OFFICE.

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BARREL-HEADING-UP MACHINE.

994,153.

Specification of Letters Patent.

Patented June 6, 1911.

Application filed November 13, 1909. Serial No. 527,932.

To all whom it may concern:

Be it known that I, CHARLES GROTNES, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Barrel-Heading-Up Machines, of which the following is a specification.

Barrel heading-up machines as heretofore constructed have been large and heavy and the parts thereof have been so arranged that it was necessary to form an opening in the floor and support the machine with a portion thereof below the floor level, a special foundation generally being required. The travel of the head also has been considerable. The means for moving the head heretofore employed has been a vertical screw shaft supported upon a step bearing. The speed obtainable with the screw shaft has necessarily been relatively low, and the wear upon the step bearing has been very great owing to the great weight of the driving head and cross head supported by said shaft.

My invention contemplates a barrel heading-up machine which is very compact and relatively small, much lighter than those of the prior art, one which can be installed upon any ordinary floor without cutting an opening therethrough, and wherein the head not only has a shorter travel but also moves at a higher speed than in the machines heretofore produced.

The invention also relates to other improvements in apparatus of this class hereinafter set forth.

In the accompanying drawings, Figure 1 is a front elevation of a barrel heading-up machine embodying the features of my invention. Fig. 2 is a top plan view of the machine. Fig. 3 is a section on line 3-3 of Figs. 1 and 2. Fig. 4 is a detail illustrating a means for stopping the machine when the head has reached either limit of its movement. Figs. 5, 6 and 7 are views illustrating the operation of the machine, Fig. 5 showing the barrel staves as having been gathered together and the end hoop placed thereover. Figs. 6 and 7 illustrate the operation of driving the end hoop.

The frame of the machine comprises two side members 1 and the cross beams 2 and 3. A barrel-supporting platen 4 is fixed by means of a set screw 5 upon the upper end of a screw 6, which screw is mounted within a screw-threaded bushing 7 fixed within an

opening in the cross beam 2. The screw 6 may be held from rotation after the platen has been adjusted to the desired height by means of a locking screw 8.

A head 9 in the form of a ring having a wedging or tapered inner peripheral surface 10 is removably secured by means of screws 11 to castings 12. Each of said castings comprises a sleeve 13 which is slidable upon a guide rod 14 rigidly attached to each of the side frame members 1. The lower end of each of said rods extends through two perforated lugs 15 on one of the side frame members 1 and is secured against movement therein by set screws 16.

Fixed to each of the castings 12 by means herein shown as plates 17 and bolts 18 is a rack bar 19 which is vertically slidable within a guide 20 formed upon each side frame member 1. A horizontal shaft 21 mounted in bearings in the side frame members has fixed thereto pinions 22 meshing with the rack bars 19. Upon one end of the shaft 21 is a spur gear wheel 23 which meshes with a pinion 24 upon one end of the shaft 25 carried in bearings upon the side frame members. On the opposite end of the shaft 25 is rigidly mounted a spur gear wheel 26 which meshes with a pinion 27 fixed upon the drive shaft 28 carried in bearings upon the side members. Two drive pulleys 29 and 30 are in this instance rotatably and slidably mounted upon the ends of the drive shaft 28 and are arranged to be driven in opposite directions by belts (not shown). The drive pulleys 29 and 30 are arranged to be alternately coupled to the drive shaft 28 by means of friction clutch members 31 and 32 fixed upon the drive shaft, said pulleys being slidable into and out of clutch connection with said clutch members by means of a rod 33, the ends of said rod being secured to rings 34 which lie in grooves in the hubs of the pulleys. The rod 33 is arranged to be slid to place the clutch face 35 of either of the drive pulleys 29 and 30 in operative relation to its clutch member and to place both of said drive pulleys in the intermediate or idle position by means herein shown as comprising a rock shaft 36 having fixed to its rear end an arm 37 which is operatively connected to a collar 38 fixed upon the rod 33. Upon the forward end of the rock shaft 36 is adjustably fixed an operating lever 39. As herein shown, a casting 40 is fixed to the rock shaft, and the lever 39 is clamped to

said casting by means of clips 41 and screws 42, whereby the height of said lever may be adjusted to suit the convenience of the workman. Preferably the upper end of the lever 5 is provided with a yoke 43 which is arranged at a suitable height to embrace the operator's leg at or near the knee, so that the operator may tilt said lever by the movement of his body and have the full use of both hands. 10 Preferably means is provided to maintain the lever 39 normally in upright position, that is to say, in position to place the clutch members 31 and 32 in their intermediate or idle position. I have herein shown counter- 15 weights 44 and 45 formed upon the lower end of the arm 37 and the casting 40, respectively.

In order that the machine may be automatically stopped at the upper and lower 20 limits of travel of the head, I attach to one of the rack bars 19 an arm 46 to which is fixed a vertical rod 47, said rod extending through the forked end of an arm 48 fixed upon the rock shaft 36 (Fig. 4). Collars 25 49 and 50 fixed upon the rod 47 at opposite sides of the forked arm 48 are arranged to engage and rock said arm as the head reaches the limits of its movement and thereby stop the travel of the head. In the present embodiment, the leverage afforded by the 30 gearing is such that the head will remain in the position it occupies when the machine stops, but if desired, any suitable brake device may be employed to frictionally prevent 35 gravitating movement of the head when the clutches are in their intermediate position.

A vertical rod 51 is rigidly fixed to each side of the frame of the machine rearwardly of a line drawn through the axis of a barrel 40 placed in operative position upon the platen 4. A sleeve 52 is vertically slidable upon each of said rods and may be fixed in position by means of a set screw 53. Each of said sleeves supports a horizontal and longitudinally adjustable bar 54 which projects 45 toward the barrel and may be fixed in adjusted position by means of a set screw 55. As will be seen from Figs. 2 and 3, the bars 54 are rearwardly of the space occupied by 50 a barrel placed upon the platen or, in other words, said bars are rearwardly of the center of a barrel placed in operative position upon the platen, and consequently offer no obstruction to the placing of barrels upon 55 the platen or their removal therefrom. Said bars are arranged at a suitable height to engage the ring α (Fig. 5) which is placed upon the assembled staves before said staves reach the machine herein shown.

60 Hoop-engaging members 56 are pivotally mounted upon the upper side of the head 9; said members having pivots 57 (Fig. 7) which lie within openings formed in said head and in a ring 58 overlying said head 65 and secured thereto by means of bolts 59.

The members 56 are arranged to be swung into and out of position to engage a hoop by means of a ring 60 mounted upon the head 9 for limited rotation, said ring having recesses 61 therein into which extend 70 projections 62 formed upon the rear end of each of said hoop-engaging members. The ring 60 may be oscillated to swing the members 56 into and out of operative position by means of a handle 63. 75

Assuming the head 9 to be in the elevated position and the machine to be raised as shown in Fig. 3, the operation is as follows: The barrel body is placed upon the platen 4 by the operator and pushed rearwardly until 80 it stops against the bars 54, the forward ends of said bars overlying the stave-retaining ring α hereinbefore referred to. The operator then takes a barrel head and holds it in proper relation to the upper ends of the 85 staves and sets the machine in operation by throwing the pulley 32 into clutch with the driveshaft. As the head 9 descends over the staves it compresses them around the barrel head, the downward movement of the 90 head 9 being automatically stopped at the proper point by the engagement of the collar 49 with the forked arm 48. The operator now takes a hoop b and places it upon the ends of the gathered staves and again 95 places the machine in operation by throwing in clutch the pulley 29. As the head 9 rises the barrel is prevented by the bars 54 from rising with the head on account of the friction between said head and barrel. When the 100 head has cleared the barrel the operator rotates the ring 60 in the direction to throw the hoop-engaging members into the position shown in Fig. 7 and reverses the direction of movement of the head. In the descent 105 of the head the hoop-engaging members 56 strike the upper edge of the hoop b and drive said hoop into the position it is shown to occupy in Fig. 7. The operator reverses the movement of the head when the 110 hoop has been driven home. The machine then comes to rest in the position illustrated in Fig. 3. The operator now inverts the barrel and heads up the other end in the manner just described. 115

If it be desired to operate upon barrels of a larger or smaller size than that for which the head 9 is suited, said head may be removed from the castings 12 by removing the 120 screws 11, and a head of the proper size substituted.

It will be seen that the operation of the machine is very simple and rapid. The machine is much simpler than those of the prior 125 art and may be installed on an ordinary floor, the height of the platen above the base being such that it is unnecessary to place the base of the machine below the floor level. The gear drive, as distinguished from a screw-shaft drive, permits of more rapid 130

operation and obviates the use of a step bearing.

I claim as my invention:

1. In a barrel heading-up machine of the low type, in combination, a low frame comprising two elongated side members extending from front to rear; two cross beams connecting the forward and rear ends of said side members; a platen mounted in the forward one of said cross beams; head-guiding means extending upwardly from the forward portions of said side members; a head slidably mounted on said guiding means above said platen; a drive shaft rotatably mounted on said side members rearwardly of the platen; and connections between said drive shaft and said head for sliding said head.

2. In a barrel heading-up machine of the low type, in combination, a low frame comprising two elongated side members extending from front to rear; two cross beams connecting the forward and rear ends of said side members; a platen mounted in the forward one of said cross beams; guideways in said side members at the ends of said forward cross beam; a rack bar slidably mounted in each of said guideways; a shaft mounted on said side members rearwardly of the platen; pinions on said shaft meshing with said rack bars; and means upon the rear ends of said side members for rotating said pinions.

3. In a barrel heading-up machine, in combination, a frame; a platen mounted in said frame; two members slidably mounted in said frame at opposite sides of said platen; means for sliding said members toward and away from said platen; a relatively light ring-shaped head resting upon and supported by the upper ends of said members; and fastening means removably securing the head to said slidable members, said head being removable so that a head of another size may be substituted when it is desired to operate on another size of barrels, said head resting on said slidable members when the fastening members are removed.

4. In a barrel heading-up machine of the low type, in combination, a low frame adapted to be set upon a floor, said frame being of greater length, from front to rear, than height; a platen mounted in said frame at the forward side thereof, vertical rods fixed in said frame at opposite sides of said platen; members slidably mounted on said vertical rods; a head secured to and resting upon said members; rack bars vertically slidable in said frame and having their upper ends fixed to said members; pinions rotatably mounted in said frame and meshing with said rack bars; and means upon the rear end of said frame for rotating said pinions.

5. In a barrel heading-up machine of the

low type, in combination, a substantial horizontal base frame supporting vertical guide standards; bars guided in said standards, their lower portions rack-toothed and a head supported at their upper ends; a stationary platen at the forward side of the frame; a drive shaft at the rear side of the frame; connections between said shaft and said bars for moving the head; means for driving said shaft; clutch means for connecting and disconnecting said shaft and driving means; a horizontal rock shaft extending from front to rear in the frame and having an arm arranged to operate said clutch means; and means moving with said head and arranged to rock said shaft at the ends of the travel of said head.

6. A barrel heading machine comprising a substantial horizontal base frame supporting vertical guide standards, bars guided in said standards, their lower portions rack-toothed and a head supported at their upper ends, a driving shaft, transmitting gearing and a platen all mounted on said base frame, said gearing including a shaft with pinions engaging said rack bars, substantially as described.

7. In a barrel heading-up machine of the low type, in combination, a frame; a platen carried by the forward portion of said frame; a head slidable toward and away from said platen; a drive shaft journaled in the rear portion of said frame; connections between said drive shaft and said head for sliding said head; two pulleys mounted on said drive shaft to rotate in opposite directions; two clutch members non-rotatable on said shaft; a rod for bringing said clutch members and said pulleys into clutch connection; a horizontal rock shaft journaled in and extending from front to rear in said frame; an arm fixed on the rear end of said shaft and connected with said rod; a lever adjustably secured to the forward end of said rock shaft; and counterweights attached to the lower end of said arm and said lever.

8. A head for barrel heading-up machines comprising an annular member having a flaring inner periphery, a plurality of hoop-engaging members pivoted on said annular member, a ring rotatable on said annular member, said ring having recesses therein, and projections on said hoop-engaging members lying in said recesses.

9. In a barrel heading-up machine, in combination, a frame; a platen carried by said frame; a head slidable in said frame toward and away from said platen; rods secured to said frame at opposite sides of said platen; sleeves adjustably fixed on said rods; and transverse bars located at the rear side of the barrel and adjustably secured to said sleeves for horizontal movement, said bars serving as stops in positioning the barrel on

said platen and holding the barrel against movement when said head is being withdrawn therefrom.

10. In a barrel heading-up machine, in
5 combination, a frame; a platen carried by
said frame; a head vertically slidable in
said frame toward and away from said
platen; and two members mounted on said
frame at opposite sides of said platen and
10 rearwardly of the center of said platen,
said members being adjustable vertically
and horizontally with respect to said frame,
said members serving as stops for the barrel
when the barrel is being positioned on said
15 platen, and said members engaging and

holding the barrel when said head is being withdrawn from the barrel.

11. In barrel heading-up and similar machines, an annular head, a plurality of hoop-engaging members pivoted on said head intermediate their ends, and a ring rotatable on said head and engaging the outer ends of said members for swinging the latter, the inner ends of said members being movable by said ring into and out of position to project
25 beyond the inner periphery of said head.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
