

(No Model.)

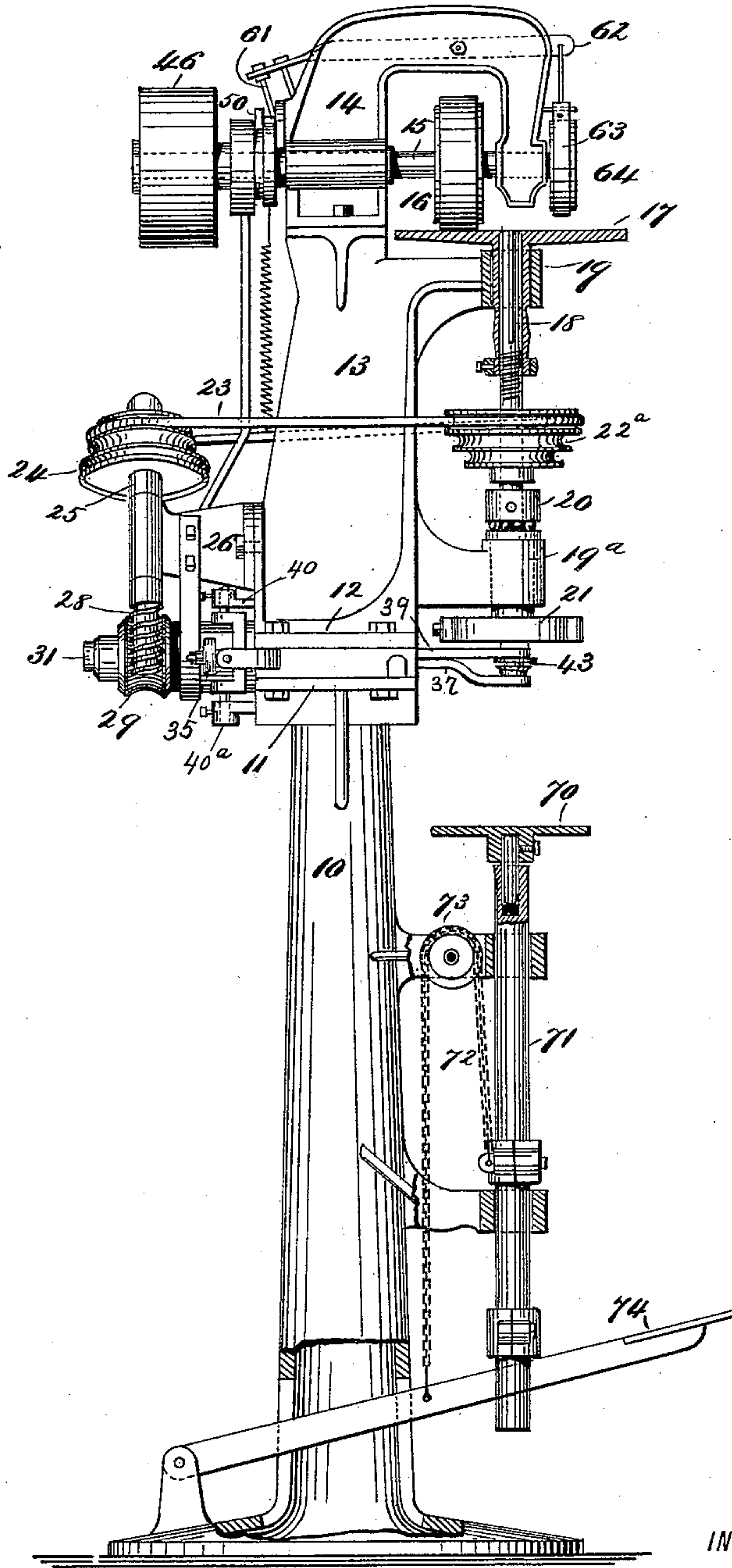
8 Sheets—Sheet 1.

B. ADRIANCE.
CAN HEADING MACHINE.

No. 472,284.

Patented Apr. 5, 1892.

Fig. 1



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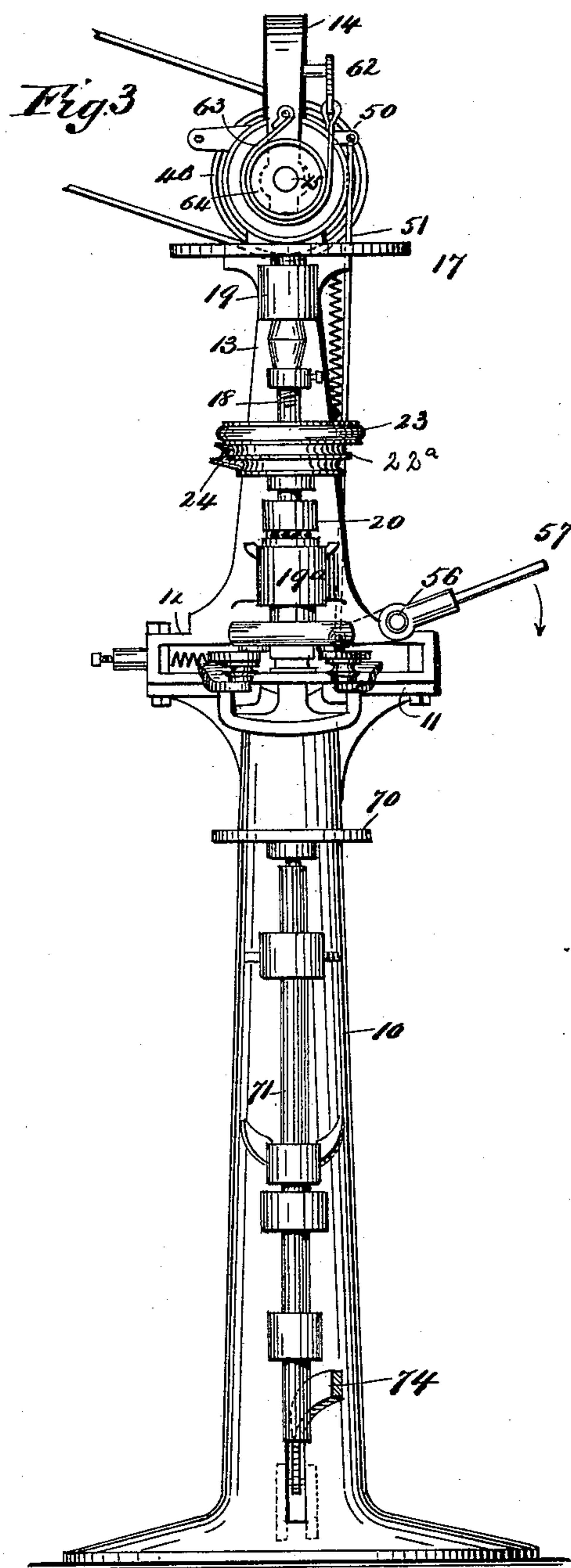
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B. ADRIANCE.
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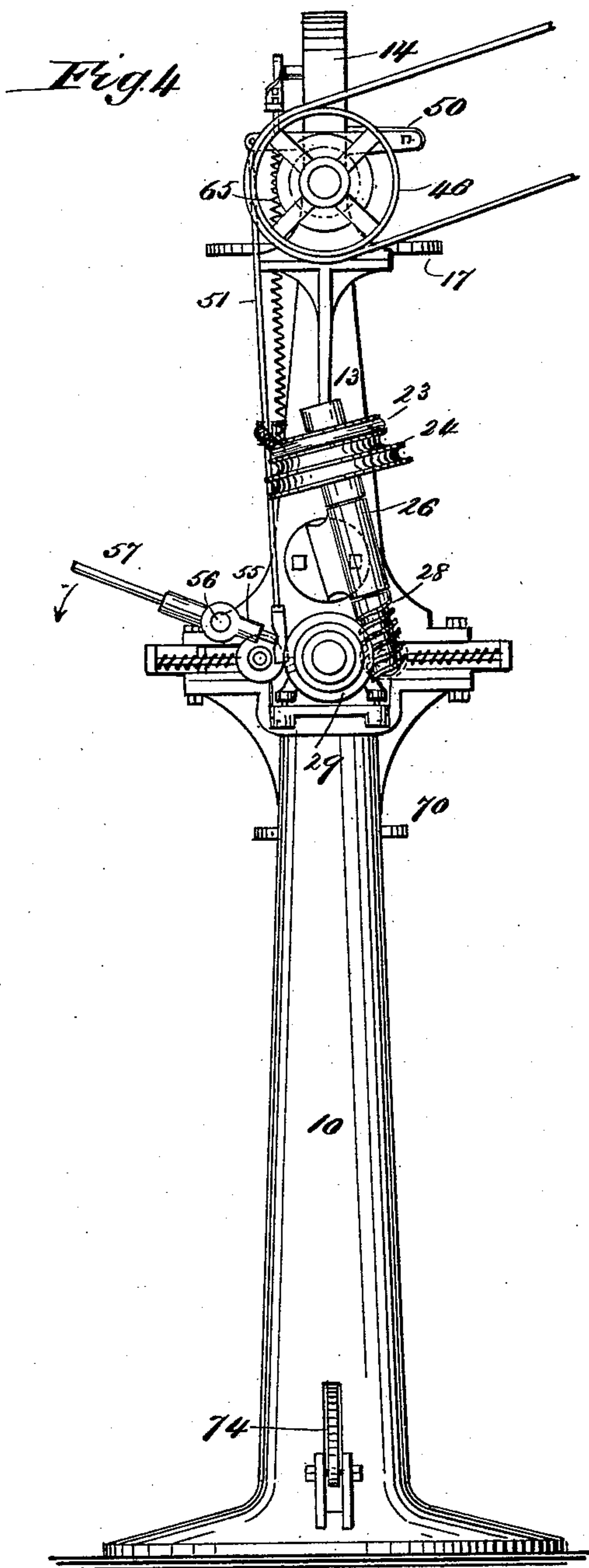
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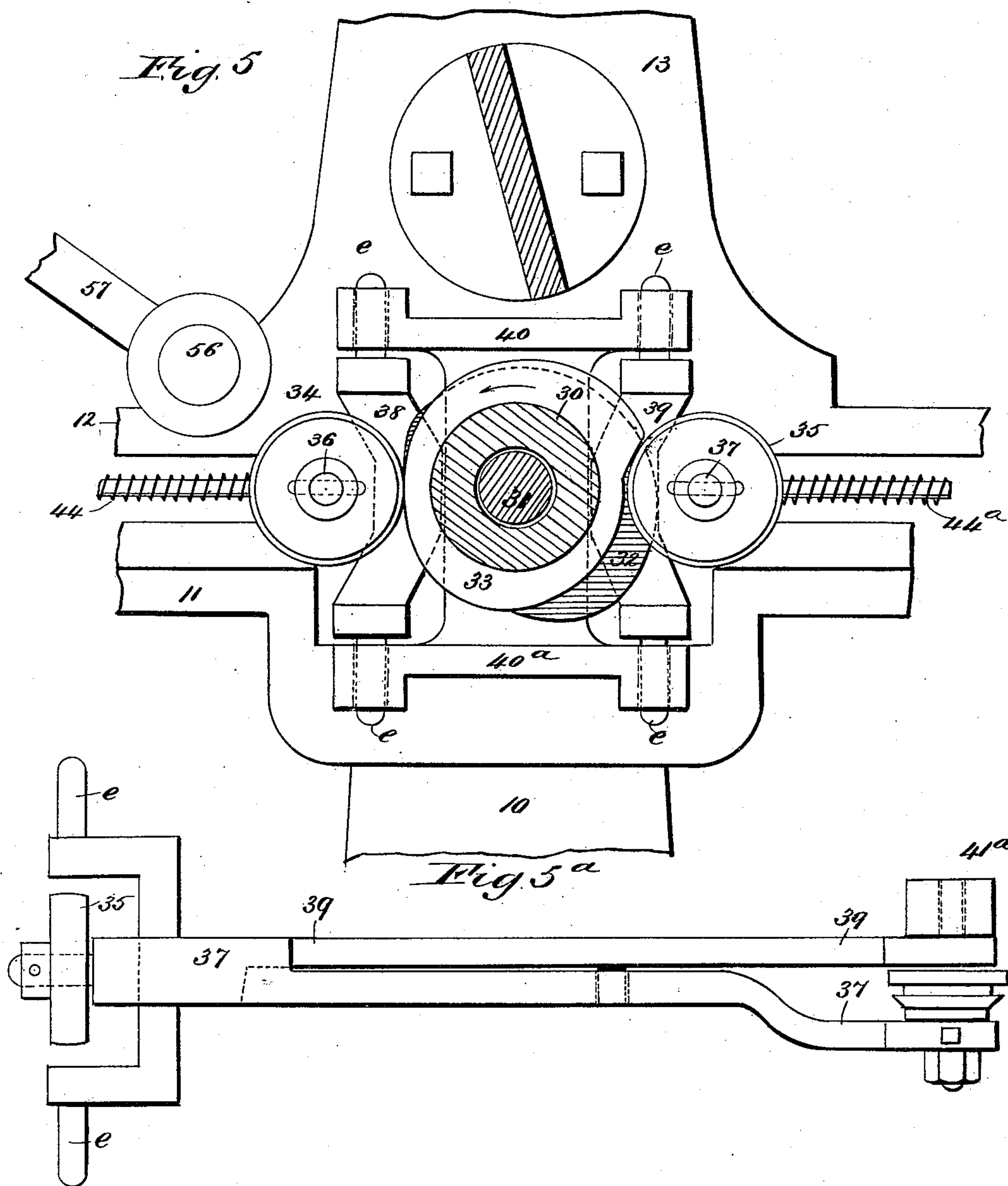
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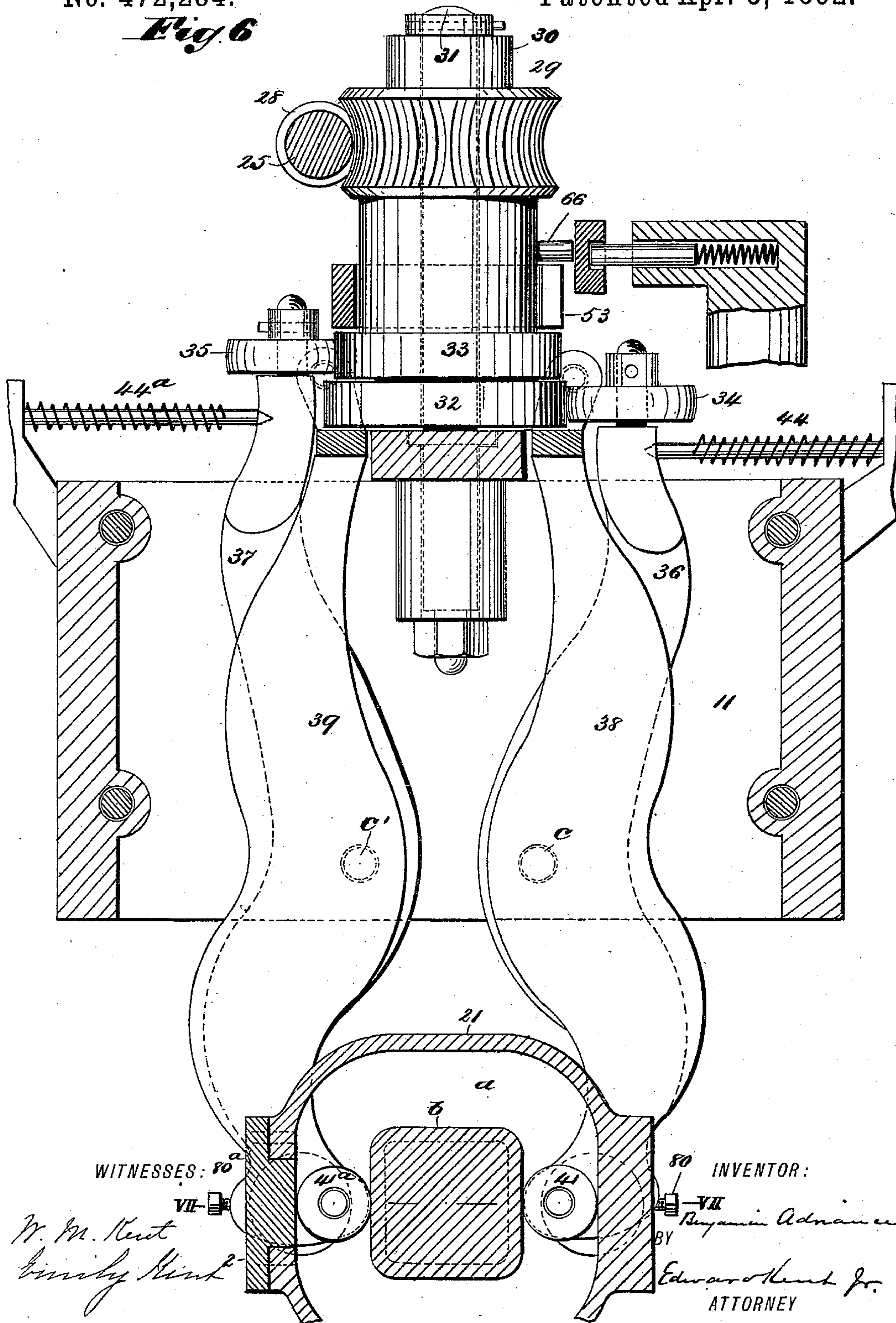
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Fig 6



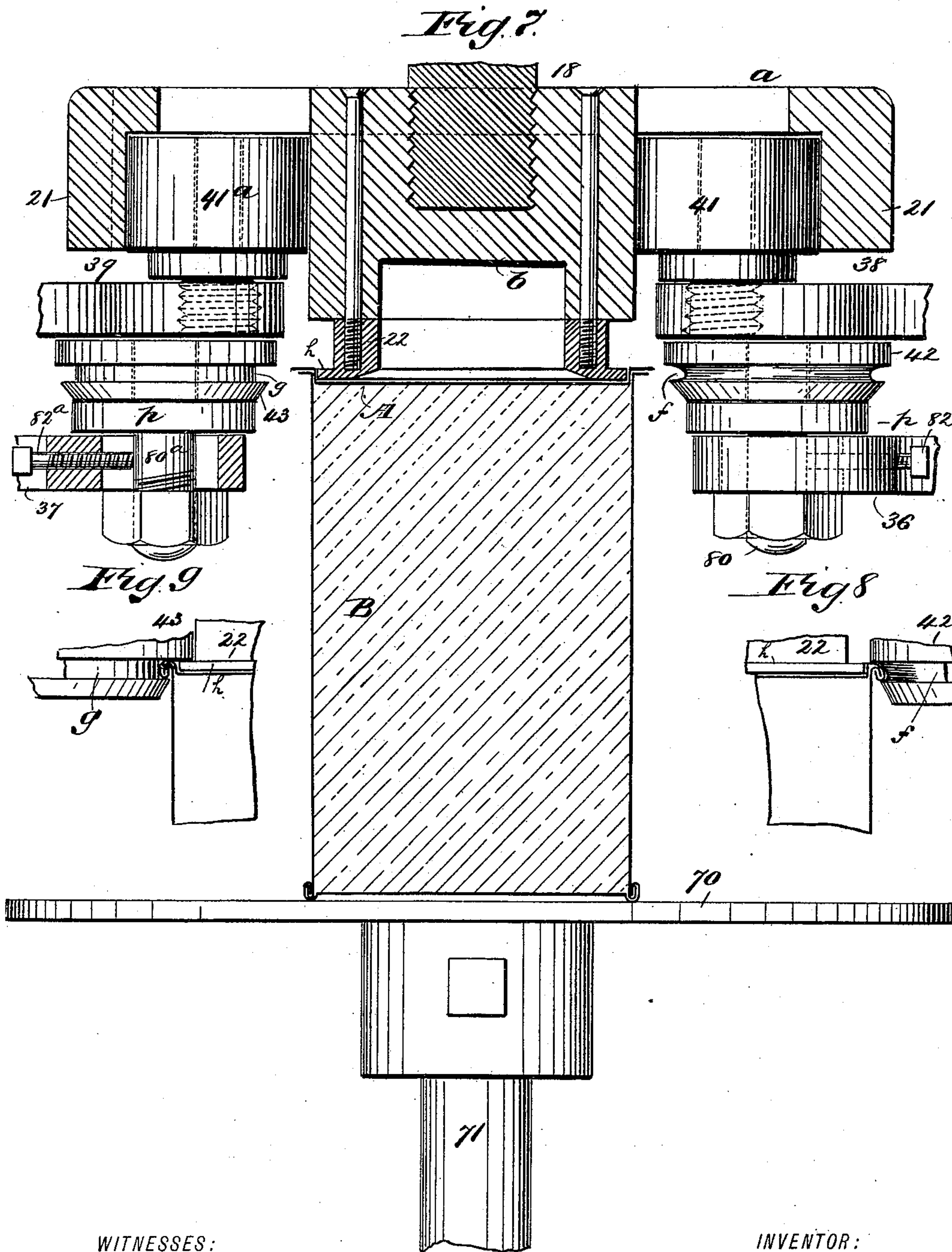
(No Model.)

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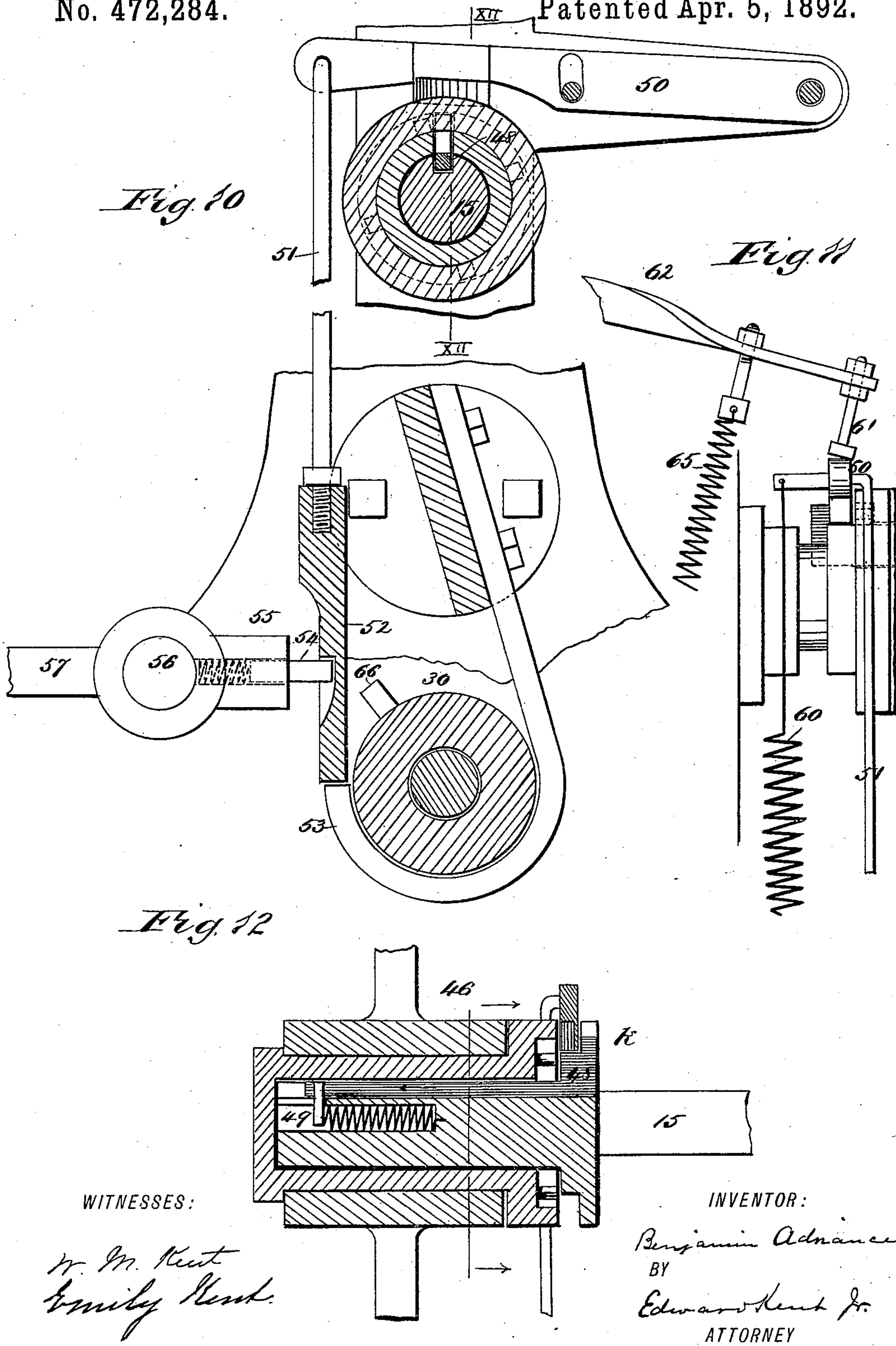
(No Model.)

8 Sheets—Sheet 7.

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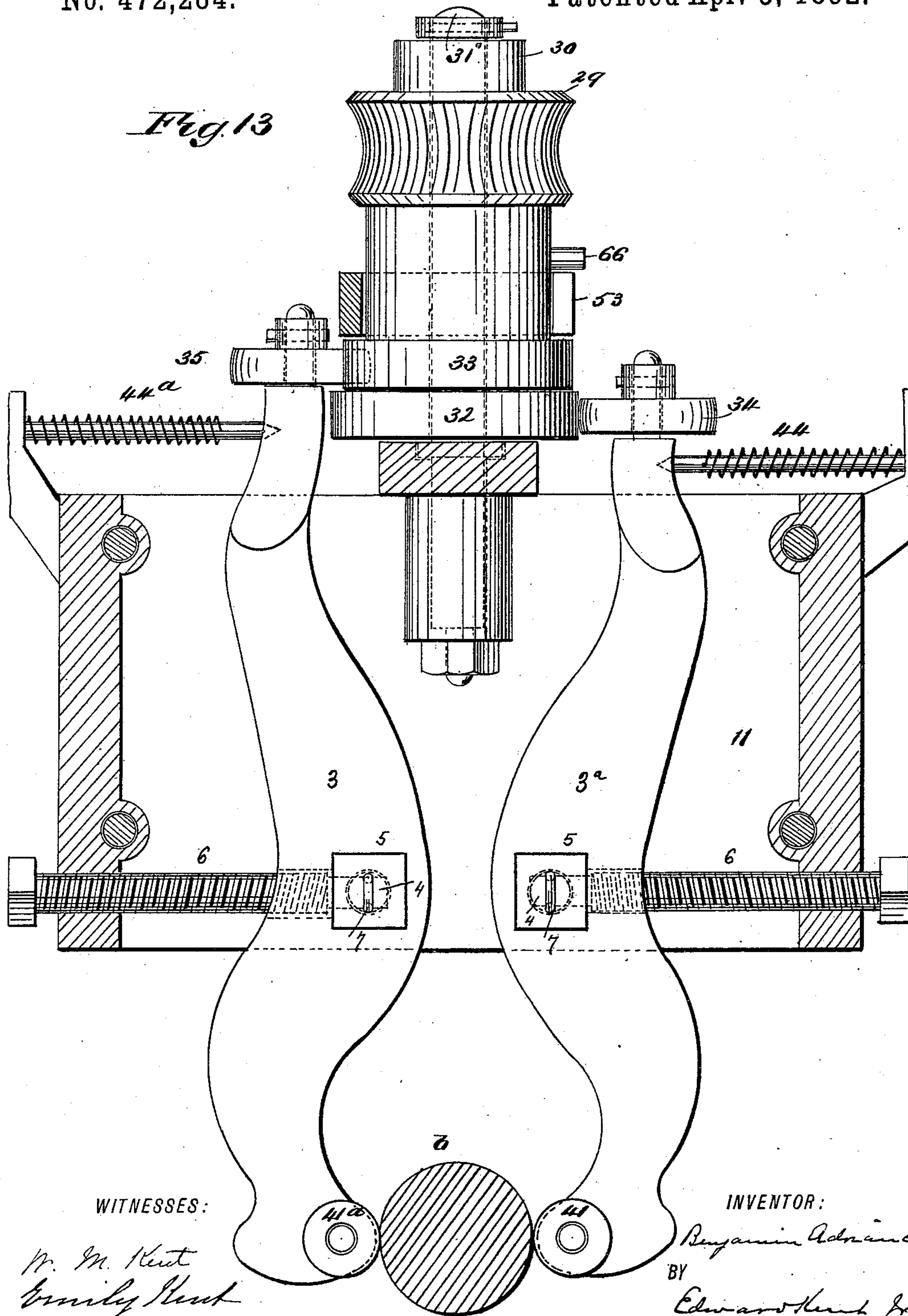
(No Model.)

8 Sheets—Sheet 8.

B. ADRIANCE.
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UNITED STATES PATENT OFFICE.

BENJAMIN ADRIANCE, OF BROOKLYN, NEW YORK, ASSIGNOR TO THE
MERSEREAU MANUFACTURING COMPANY, OF SAME PLACE.

CAN-HEADING MACHINE.

SPECIFICATION forming part of Letters Patent No. 472,284, dated April 5, 1892.

Application filed July 11, 1890. Serial No. 358,397. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN ADRIANCE, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Can-Heading Machines; 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.

This invention relates to can-heading machines of the class usually called "double-seamers," the main object being to increase the capacity of such machines without detracting from the quality of the work produced; and to the end named the invention consists, essentially, of a chuck, forming and locking rollers arranged in connection therewith, and roller-controlling cams which, through the medium of proper connections, act to move the rollers toward and from the chuck.

In addition to the object of invention above referred to many other objects are sought for and obtained by means of the novel constructions, arrangements, and combinations of elements hereinafter described, and specifically pointed out in the claims.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar reference figures and letters indicate corresponding parts in all the views.

Figure 1 is a view of the left-hand side of the machine, parts being shown in section and parts being broken away. Fig. 2 is a view of the right-hand side of the machine. Fig. 3 is a view of the front of the machine, the treadle being broken away. Fig. 4 is a view of the rear of the machine. Fig. 5 is an enlarged cross-sectional view on line V V of Fig. 2. Fig. 5^a is a side view of the locking-roller and its connections. Fig. 6 is an enlarged sectional plan view on line VI VI of Fig. 2. Fig. 7 is a cross-sectional view on line VII VII of Fig. 6, full size. Fig. 8 is a view of a portion of the forming-roller and chuck, the parts being shown in their working position and as they appear just after the seam has been formed. Fig. 9 is a similar view of a portion of the locking-roller and chuck.

Fig. 10 is an enlarged sectional view of a portion of the clutch-operating mechanism, the view being taken on line X X of Fig. 2. Fig. 11 is an enlarged side view of a portion of the clutch-operating mechanism. Fig. 12 is a central sectional view of the clutch, taken on line XII XII of Fig. 10. Fig. 13 is a diagrammatical view of a modified form of machine arranged to seam round-bodied cans. Fig. 14 is a sectional view on line XIV XIV of Fig. 13.

The drawings above referred to illustrate my preferred construction; but I desire it to be distinctly understood that I have therein shown but one of the many forms of machine which might be employed to carry my invention into practice.

In the specific construction shown, 10 represents the machine standard or pedestal, such standard being formed with a table-like top 11, to which there is bolted or otherwise secured the base 12 of the machine-head 13, the table 11 and base 12 forming a partial housing for certain portions of the machine, as will be presently explained.

To the head 13 I bolt a bracket 14, that is provided with bearings adapted to receive and support the main driving-shaft 15, which shaft carries a friction-pulley 16, that bears upon a horizontal disk 17, mounted on a vertical shaft 18, that is journaled in bearings held by arms 19 and 19^a, such arms extending forward from the machine-head. An anti-friction bearing 20 is by preference provided to support the weight of the shaft 18 and the parts carried thereby.

To the lower end of the shaft 18 there is secured a chuck head or block 21, that is formed with a guiding-groove *a*, the chuck 22 being bolted or otherwise secured to the central section *b* of the block. The peripheral face of the central section *b*, such face forming the inner defining-wall of the groove *a*, corresponds in form to the peripheral face of the chuck-flange, but in practice is made to extend slightly beyond the chuck-flange, so as to register with the outer edge of the completed seam, this construction being adopted in order that aberration may be reduced to a minimum.

In addition to the parts above referred to

the shaft 18 carries a pulley 22^a, preferably a conical pulley, as shown, and about this pulley there is passed a belt 23, that runs upon a pulley 24, carried by a diagonally-mounted shaft 25, that is supported by a bracket 26 at the rear of the machine.

At the lower end of the shaft 25 I form a worm 28, and such worm engages a gear 29, formed on or carried by a sleeve 30, that is loosely mounted on a stud 31. The sleeve 30 is provided with two cams 32 and 33, against which cams there are held rollers 34 and 35, such rollers being carried, respectively, by levers 36 and 37, that are fulcrumed at the points *c c'* on levers 38 and 39, that are in turn fulcrumed at the rear of the machine. (See Figs. 5 and 6.)

In practice I greatly prefer to provide the levers last referred to with bifurcated rear ends, each arm of the bifurcated sections being formed with a pivot-pin *e*, as shown, said pins being arranged to ride in bearings formed in brackets 40 and 40^a, that extend to the rear from the machine-head.

The forward ends of the levers 38 and 39 carry anti-friction rollers 41 and 41^a, which ride in the groove *a* of the chuck-head 21, and the forward ends of the levers 36 and 37 carry, respectively, a forming-roller 42 and a locking-roller 43, the forming-roller, as is usual in this class of machines, having a concave groove *f* in its peripheral face and the locking-roller having the ordinary groove *g* of proper form and size to receive the formed seam and the flange *h* of the chuck 22. The rollers 34 and 35 are held up against the faces of their cams by springs 44 and 44^a, that are preferably arranged as shown in the drawings.

From the above description it will be understood that if the shaft 15 be revolved a corresponding motion will be imparted to the shaft 18, which carries the chuck and grooved chuck-head, and that the motion of the shaft 18 will, through the medium of the mesne connections, be imparted to the sleeve 30 and the parts carried thereby.

In a machine designed to head square or irregular bodied cans it is desirable that the chuck and the feeding-cams be brought to rest at each complete operation—that is, after a head has been applied and the retaining-seam formed—and to the end named I have provided for the stopping of the machine at each complete revolution of the sleeve 30.

To stop the machine as just set forth, it is necessary that the shaft 15 be provided with a loose pulley and that a clutch be provided which will be automatically operated at each revolution of the sleeve 30. Most any form of clutch could be used in connection with the shaft 15 and its driving-pulley; but in practice I have found the clutch shown in Figs. 10 and 12 to be particularly well adapted to the work in hand.

In the construction shown the driving-pulley 46 is loosely mounted on the shaft 15 and the pulley-hub; or, as shown, a sleeve which

carries the hub is formed with one or more seats that are protected from wear by plugs 47. Within the sleeve the shaft 15 is channeled, and in the channel there is mounted a key 48, in connection with which I arrange a spring 49, that acts to throw the key, as indicated by the arrow shown in Fig. 12—that is, into engagement with one of the key-seats of the pulley 46; but if the key is carried against the tension of its spring to the position in which it is shown in Fig. 12 the pulley will be free to revolve on its shaft. To bring about the movement of the key just referred to, I provide a latch 50, which has an inclined face *i*, and I form the key 48 with a projection *k*, the parts being so arranged that if the latch-face *i* be thrown into the path of the key projection *k* the key will be moved outward against the tension of its spring and free from its seat in the pulley-hub.

To the end of the latch 50 I connect a rod 51, which carries a foot 52, that normally rests on a stop 53, the foot being held against the peripheral face of the sleeve 30 by a spring-pressed pin 54, that extends outward from a lever carried by a shaft 56, such shaft being mounted at the right of the machine and being provided at its forward end with an arm or handle 57, which is within reach of the operator. There is also connected to the end of the latch 50 a spring 60, which tends to throw the latch downward, while upon the latch there rests a foot 61, carried by a lever 62, said lever being pivotally connected to the bracket 14. A brake-strap 63, which passes about a friction-disk 64, carried by the shaft 15, is connected at one end to the bracket 14 and at the other to the forward end of the lever 62, whereby when the rear end of the lever 62 is drawn down by its spring 65 the strap 63 will be brought to bear upon the disk 64 and the forward motion of the machine will be checked, this movement being brought about when the foot 52 is forced from its seat by a pin 66, that is carried by the sleeve 30.

To start the machine, the lever 57 is moved, as indicated by the arrows shown in Figs. 3 and 4, which movement of the lever raises the latch 50 and throws off the brake-strap 63.

Directly beneath the chuck I mount a table 70, said table being carried by a rod 71, upon which it is free to turn, and to the rod 71 I connect a chain 72, that passes upward and over a sheave 73 and then downward to a treadle 74, so that if the treadle be depressed the rod 71 and with it the table 70 will be raised.

In operating the machine above described the can-head A is applied to the can-body B, and the parts are then adjusted to the chuck, as shown in Fig. 7, in which position they are held by the table 70, such table having been raised by depressing the treadle 74. Immediately after the raising of the table 70 to a proper position to support the can the operator throws the lever 57 to start the ma-

chine, and then as the sleeve 30 is moved forward the cam 32 will act to carry the forming-roller 42 up to its working position from the position in which the roller is shown in Fig. 7. After the seam has been formed the cam 32 permits the spring 44 to act to move the roller 42 away from the chuck, and just at this time the cam 33 acts to carry the locking-roller up to its work, and this cam is so shaped that immediately upon the locking of the seam the spring 44^a is free to act to carry the roller 43 to the position in which it is shown in Fig. 7—that is, away from the chuck and to a position such as will permit the operator to remove the headed can and put in another piece of work.

To bring about the operation just described, a full revolution of the sleeve 30 is required, and just as this revolution is completed the projection 66 bears upon the foot 52 and forces such foot from its seat, whereupon the machine is brought to rest, as hereinbefore set forth.

From the above description of the machine it will be seen that the operating parts are so balanced that the machine may be run at an exceedingly high speed.

There is a detail of construction illustrated in the drawings which I consider valuable, but which I have not as yet described. The construction referred to relates to the mounting of the rollers 42 and 43, said rollers being carried by studs 80 and 80^a, that ride in transverse slots *o*, formed near the ends of the levers 36 and 37. The studs 80 and 80^a are provided with collars *p*, that rest upon the upper faces of the levers, and upon these collars the rollers rest, being held against vertical displacement by the levers 38 and 39, such levers overlapping the rollers. The lower ends of the studs are threaded and are engaged by binding-nuts 81 and 81^a. When the rollers 42 and 43 are at work, they are subjected to considerable strain, and to avoid all danger of "side-thrust" I provide threaded stops 82 and 82^a, that are arranged as shown. By mounting the rollers 42 and 43 as above described I am able at all times to adjust them to a nicety, irrespective of wear and tear.

The machine hereinbefore described may be used to head round or square bodied cans or can-bodies of most any form and size, the only requirement being that the groove in the chuck-head shall correspond in form with the proper chuck for the work to be done, so that for cans of different size or form different chuck-heads and chucks have to be provided, and consequently it is desirable that the chuck-head be arranged so that it can readily be removed. To the end above set forth I form an opening at one side of the guiding-groove *a*, such opening being normally closed by a panel 2, that is bolted to the main body of the chuck-head, and I form the chuck-head with a threaded socket adapted to receive the threaded end of the shaft 18.

When it is desired to change the chuck,

the panel 2 is removed and the rollers 41 and 41^a are passed out through the opening normally closed thereby, after which the chuck-head may be turned off from its connection with the shaft.

In Fig. 13 I illustrate a modified construction that is adapted to the heading of round-bodied cans only. In this case a single pair of levers 3 and 3^a is employed, anti-friction rollers which bear upon the cams 32 and 33 being carried by the rear ends of the levers, while the forming and locking rollers are carried by the forward ends of the levers. The levers are fulcrumed on studs 4, carried by blocks 5, such blocks being chambered to receive the ends of adjusting-screws 6, that are held to place by pins or keys 7, that ride in grooves formed in the peripheral faces of the screw ends. In this way I provide for the proper adjustment of the forming and locking rollers irrespective of the size of the can-body.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with a chuck and a means for revolving the same, of a forming-roller, pivotally-mounted roller-supports, and revoluble cams which bear upon the roller-supports.

2. The combination, with a chuck and a means for revolving the same, of a forming-roller and a locking-roller, levers which support the rollers, a means for guiding the rollers when in their working positions, and revoluble cams arranged in connection with the levers and timed to move the levers alternately, whereby the rollers are alternately thrown into and out of their working positions.

3. The combination, with a chuck and a means for revolving the same, of a pattern-cam carried thereby, a forming-roller, a locking-roller, roller-supports which are controlled by the pattern-cam, cams for automatically moving said rollers into operative position, and a mechanism for automatically stopping the parts at each complete movement of the last-referred-to cams.

4. The combination, with a pattern-cam-carrying chuck and a means for revolving the same, of pivotally-mounted arms or levers, connections between such levers and the pattern-cam, a forming-roller and a locking-roller, roller-supports carried by the levers, and cams which act upon the roller-supports to move them into operative position.

5. The combination, with a pattern-cam-carrying chuck and a means for revolving the same, of pivotally-mounted arms or levers, connections between such levers and the pattern-cam, a forming-roller and a locking-roller, supports for said rollers, that are pivotally connected to the before-named levers, and cams which act upon the roller-supports.

6. The combination, with a pattern-cam-carrying chuck and a means for revolving the

same, of revoluble cams 32 and 33, a forming-roller and a locking-roller, swinging supports on which the forming and locking rollers are mounted, and connecting mechanisms where-
 5 by the pattern-cam and the cams 32 and 33 impart movements to the forming and locking rollers.

7. The combination, with a chuck and chuck-head formed with a guiding-groove and a
 10 means for revolving the parts, of a forming-roller and a locking-roller arranged in connection with the chuck, levers which support the rollers, revoluble cams arranged in connection with the levers, and other levers that are
 15 guided by the chuck-head groove and to which the roller-carrying levers are pivoted.

8. The combination, with a chuck and chuck-head formed with a guiding-groove and a
 20 means for revolving the parts, of a forming-roller and a locking-roller arranged in connection with the chuck, levers which support the rollers, revoluble cams arranged in connection with the levers, another set of levers that are guided by the chuck-head groove and to
 25 which the roller-carrying levers are pivoted, and a means for stopping the machine at each revolution of the roller-controlling cams.

9. The combination, with a chuck and a
 30 chuck-head formed with a guiding-groove and a means for revolving the parts, of a forming-roller and a locking-roller arranged in connection with the chuck, levers which support the rollers, revoluble cams arranged in connection with the levers, another set of levers to
 35 which the roller-carrying levers are pivoted, and a means for automatically stopping the machine at each revolution of the roller-controlling cams.

10. The combination, with a chuck and a
 40 chuck-head formed with a guiding-groove and a means for revolving the parts, of a forming-roller and a locking-roller arranged in connection with the chuck, levers which support the rollers, revoluble cams arranged in connection with the levers, another set of levers to
 45 which the roller-carrying levers are pivoted, a driving-shaft, a driving-pulley mounted thereon, a clutch arranged in connection with the shaft and pulley, a clutch-operating at-
 50 tachment, a friction-disk carried by the driving-shaft, a strap arranged in connection therewith, a lever to which the strap is connected, a spring connected to the lever, and a connection between the lever and the clutch-operat-
 55 ing attachment.

11. The combination, with a chuck and a
 60 chuck-head formed with a guiding-groove and a means for driving the parts, of a forming-roller and a locking-roller arranged in connection with the chuck, levers which support the rollers, revoluble cams arranged in connection with the levers, another set of levers to

which the roller-carrying levers are pivoted, a driving-shaft, a driving-pulley mounted
 65 thereon, a clutch arranged in connection with the shaft and pulley, a latch, a friction-disk, a strap arranged in connection with the friction-disk, a lever to which one end of the strap is connected, a foot carried by the lever and arranged to rest on the latch, a spring con-
 70 nected to the strap-lever, a rod connected to the latch, a foot carried by the rod, a stop on which said foot rests, a projection arranged to revolve with the cams and to bear upon the rod-foot, and a spring-pressed pin controlled
 75 by the starting-lever and arranged to engage the rod-foot.

12. In a can-heading machine, the combination, with a chuck and a chuck-head formed
 80 with a guiding-groove and a means for driving the parts, of a pair of revoluble cams that are driven from the chuck-shaft, levers which carry rollers that bear upon the cams, springs arranged in connection with the levers, forming
 85 and locking rollers carried by the levers, guiding-levers to which the first-named levers are pivotally connected, and anti-friction rollers carried by the guiding-levers and arranged to ride in the guiding-groove of the
 90 chuck-head.

13. The combination, with a chuck and a
 95 means for revolving the same, of a forming-roller and a locking-roller arranged in conjunction with the chuck, independent levers on which the rollers are carried, said levers
 100 being mounted to move in horizontal planes, and cams arranged in connection with the levers.

14. In a can-heading machine, the combination, with a chuck-head formed with a guid-
 105 ing-groove, a chuck carried by the central section of the chuck-head, and a means for revolving the parts, of guiding-levers formed with bifurcated rear ends, pivot-pins carried by the arms of bifurcated lever ends, bearings in which the pins rest, anti-friction rollers carried by the forward ends of the levers
 110 and arranged to enter the guiding-groove of the chuck-head, feeding-cams and a means for revolving the same, levers that are pivotally connected to the guiding-levers, anti-friction rollers carried by the last-referred-to levers, such rollers being arranged to bear upon the cams, springs arranged in connection with the last-referred-to levers, a forming-roller
 115 carried by one of the levers, and a locking-roller carried by the other lever.

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

BENJAMIN ADRIANCE.

Witnesses:

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