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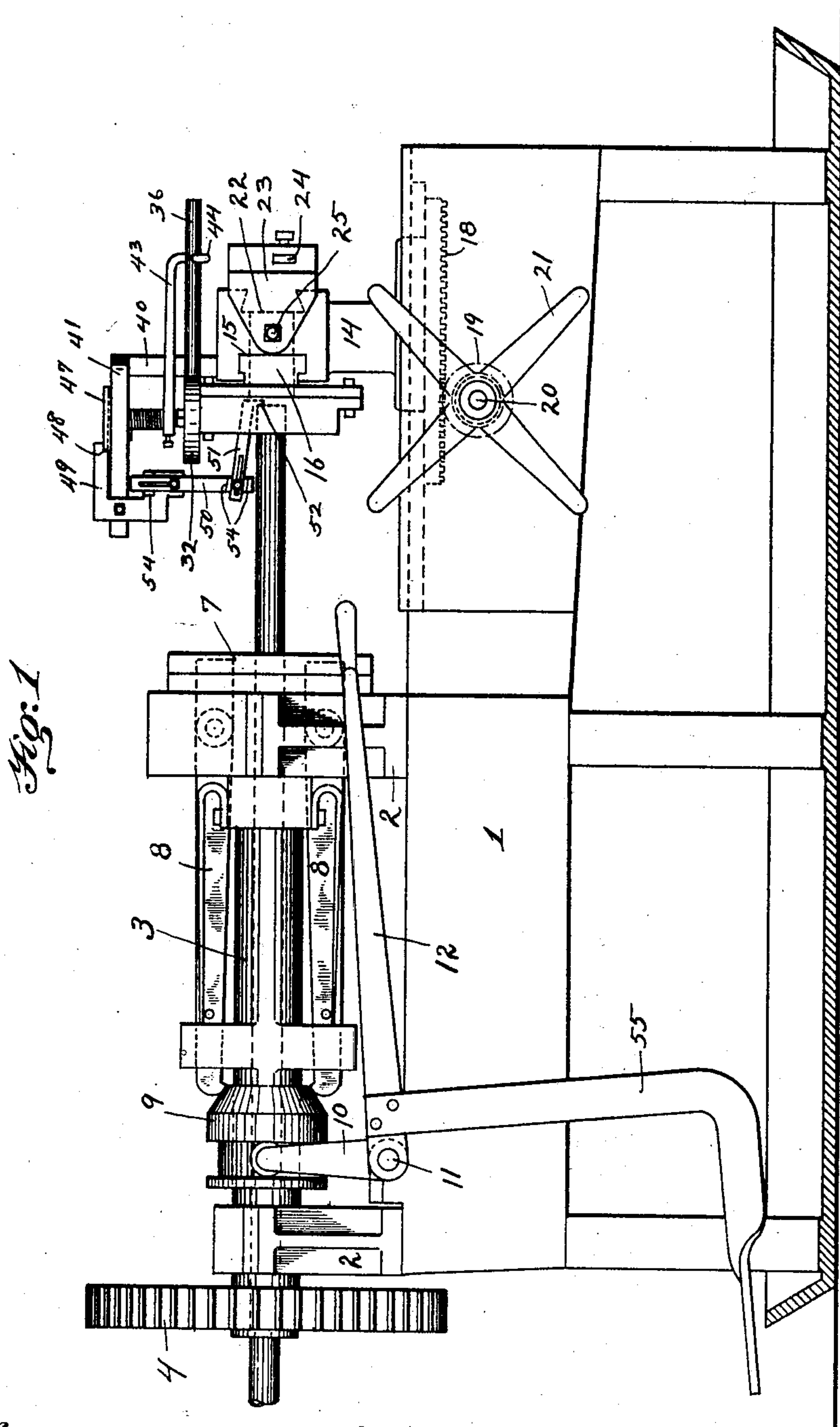
PATENTED OCT. 4, 1904.

H. E. BOYD.  
THREADING MECHANISM.

APPLICATION FILED MAR. 25, 1903.

NO MODEL.

4 SHEETS—SHEET 1.



*Witnesses.*

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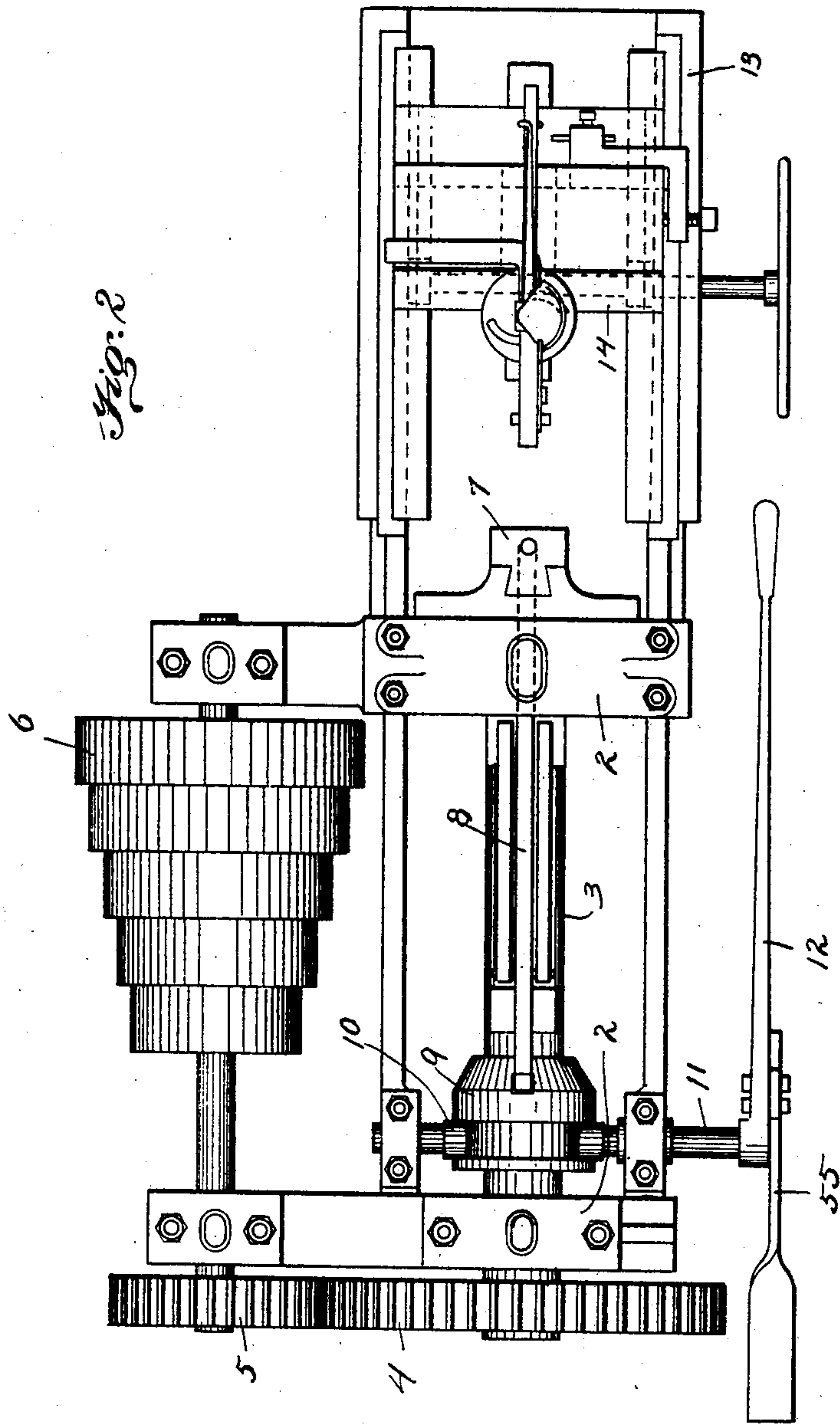
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4 SHEETS—SHEET 2.



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4 SHEETS—SHEET 3.

Fig. 4

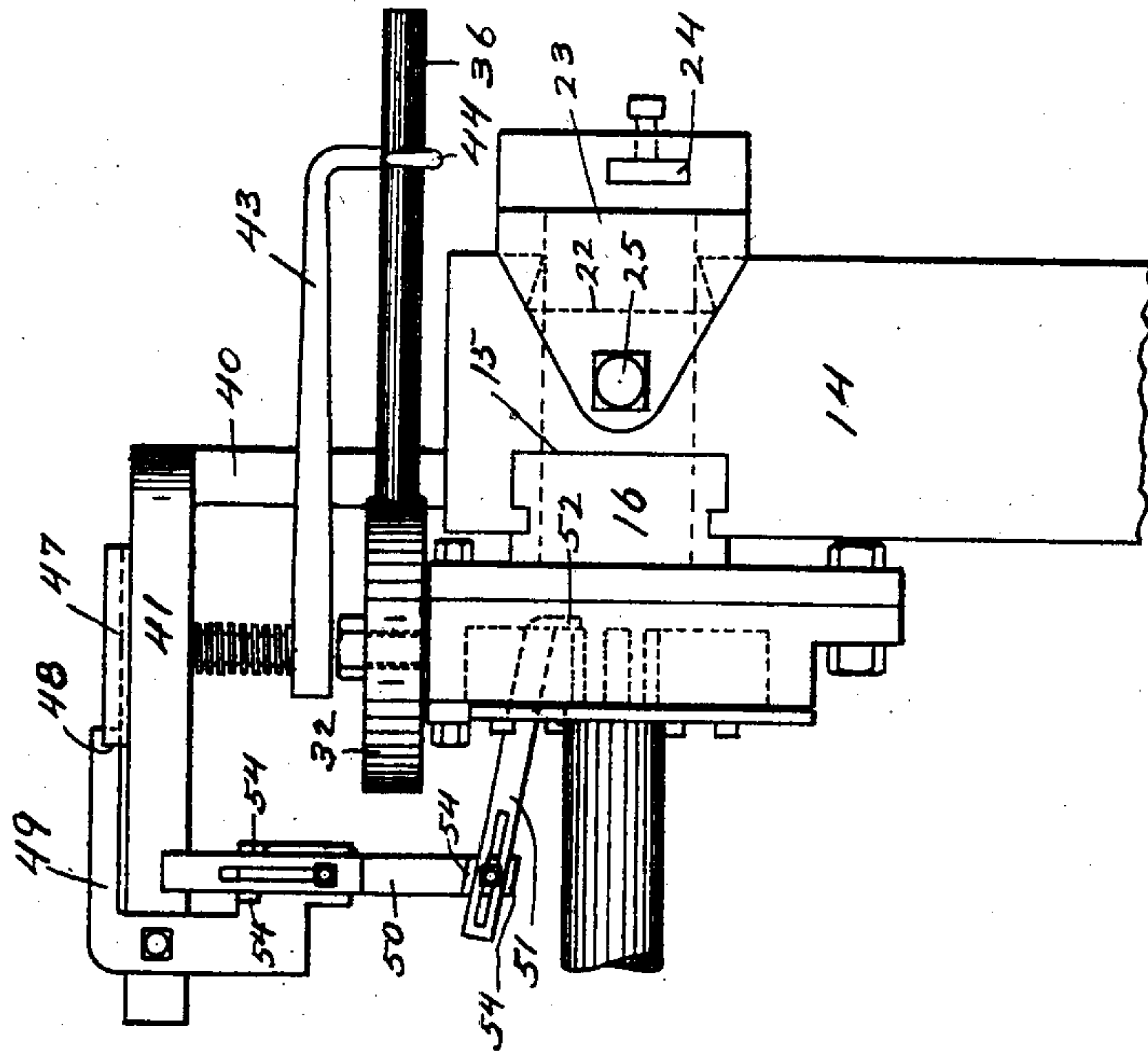
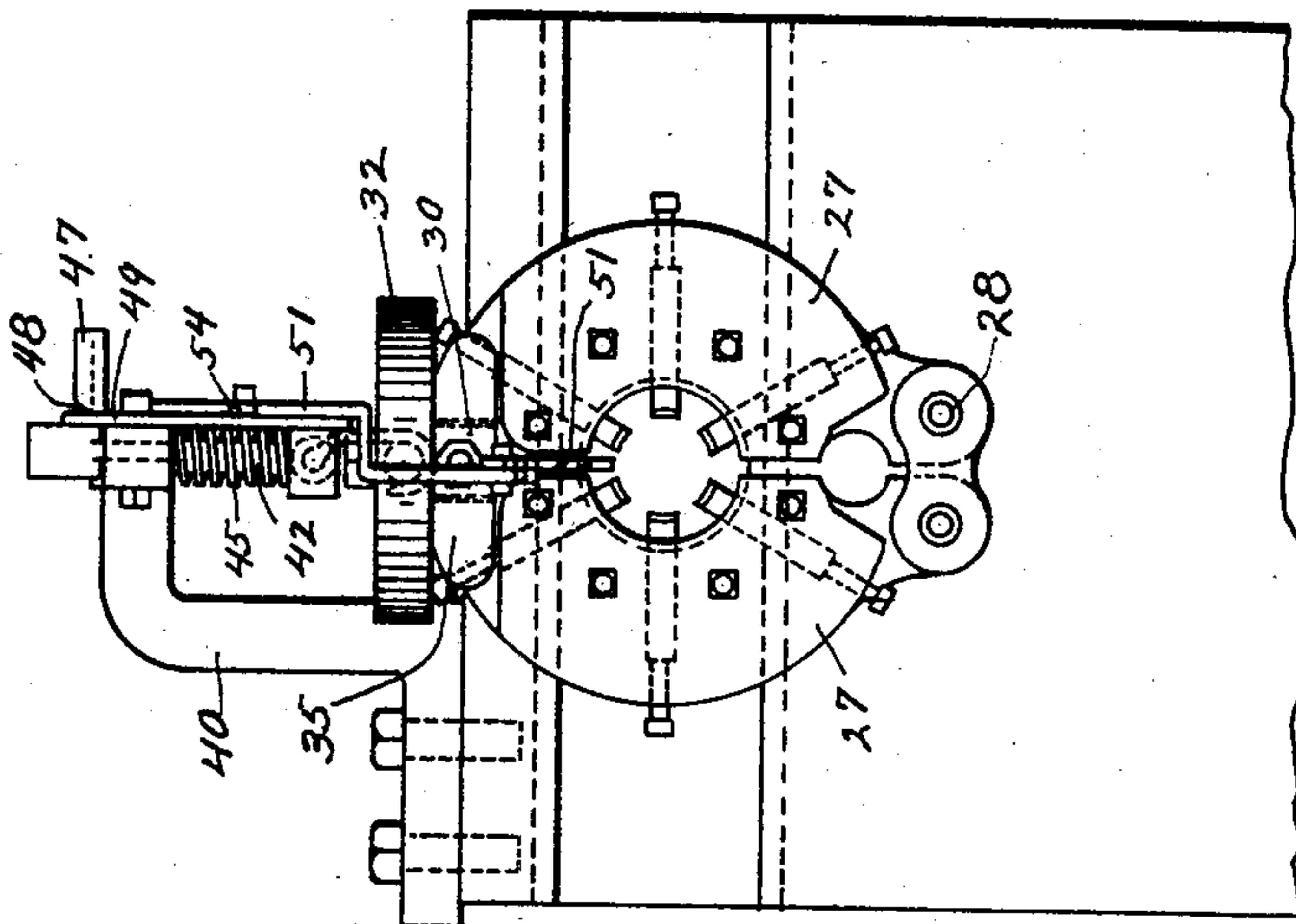


Fig. 3



Witnesses.

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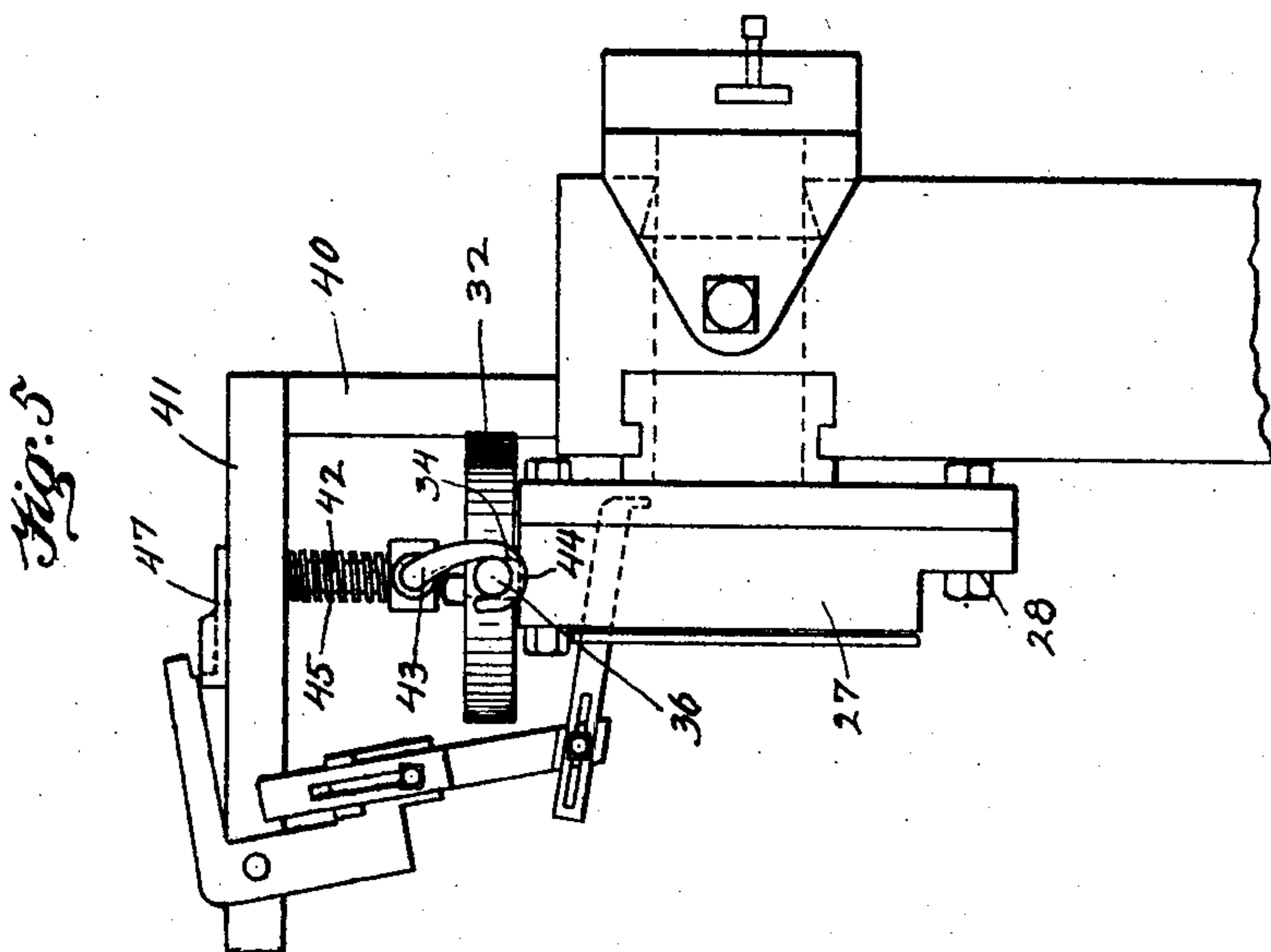
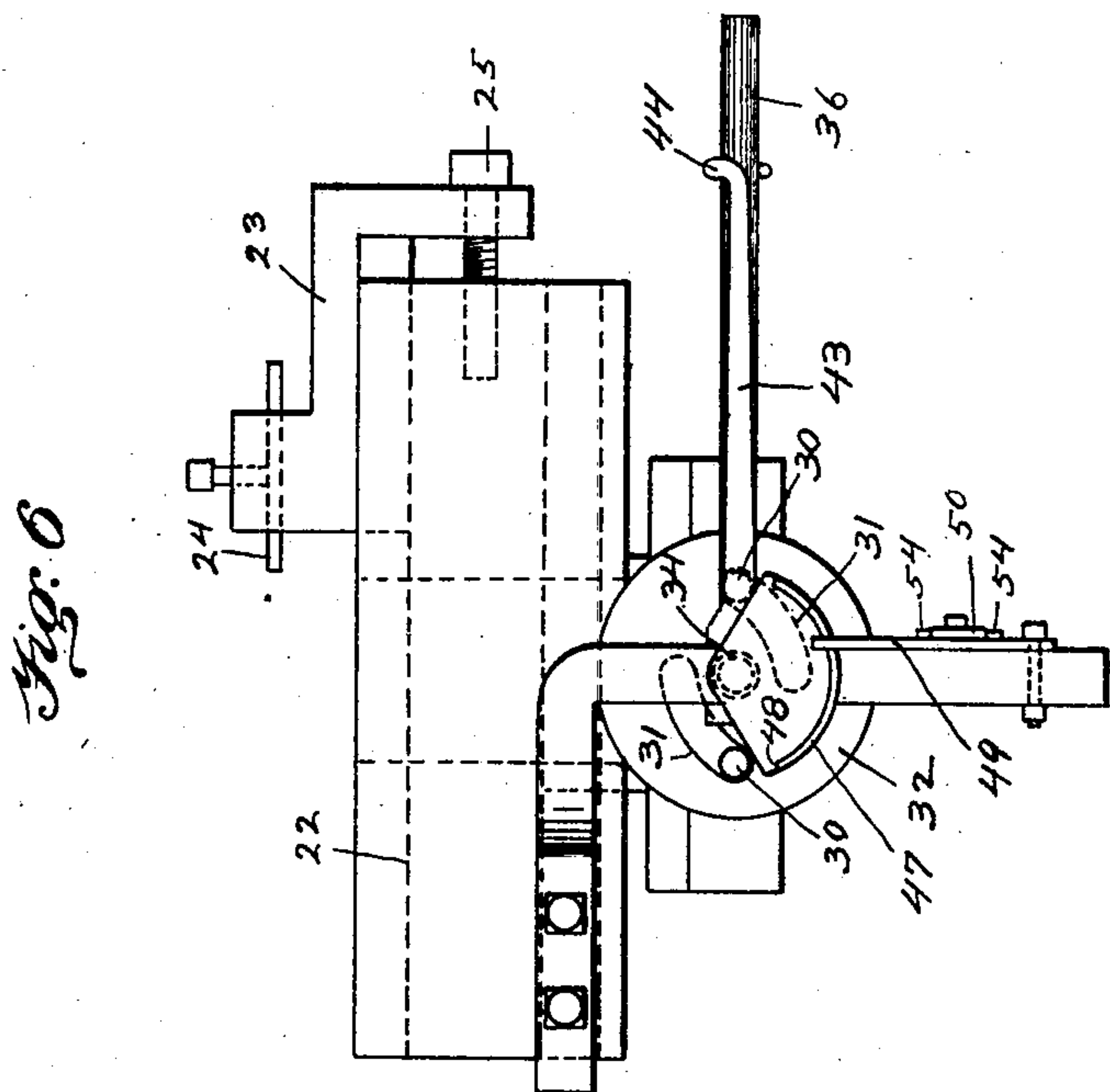
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NO MODEL.

4 SHEETS—SHEET 4.



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# UNITED STATES PATENT OFFICE.

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## THREADING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 771,528, dated October 4, 1904.

Application filed March 25, 1903. Serial No. 149,494. (No model.)

*To all whom it may concern:*

Be it known that I, HARRY E. BOYD, a resident of Wheeling, in the county of Ohio and State of West Virginia, have invented a new and useful Improvement in Threading Mechanism; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to threading-machines, and more especially to machines for cutting threads on pipes and rods.

The object of my invention is to provide means for automatically opening the dies when the desired length of thread has been cut, thus insuring uniformity in the threads on all the pipes or rods.

Ordinary pipe-threading machines are provided with a rotating chuck or gripping device for holding and rotating the pipes. The dies are stationary and are usually mounted in two segmental holders which are pivoted to a base-block and at their upper ends are provided with projections which are engaged by cam-grooves in a rotary disk having a handle or lever by which the dies are opened and closed. The chuck or gripping device is provided with suitable means for opening and closing the same, and this means is usually operated by a lever which projects toward the dies, so as to be within reach of the attendant.

In the operation of these machines the dies are closed, and a pipe or rod is clamped in the chuck and then fed to the dies. The threading continues until the operator is of the opinion that a sufficient length of thread has been cut. He then throws the cam-lever to open the dies and operates the lever for opening the chuck and must then walk to the rear of the machine in order to pull out the pipe or rod and introduce a new one. He must then walk to the front of the machine, operate the chuck-lever to grip the pipe, and then the cam-lever to close the dies. This not only takes considerable time, but also results in a considerable variation in the length of threads cut on the pipe. The latter object frequently necessitates either the rethreading of the pipe in case the threaded portion is

too short or the cutting off of the end of the pipe in case the threaded portion is too long.

The object of my invention is to overcome these defects in pipe and rod threading machines and to provide a machine wherein the dies are opened automatically, thus securing uniformity in the length of the threads and also permitting the workman to take his position at the back of the machine as soon as the threading commences, so that he can remove the threaded pipe and insert a new one without loss of time.

To this end my invention consists, generally stated, in suitable means which acts constantly to open the dies and providing a lock for such means and a trip projecting into the path of the pipe, which trip will be engaged by the end of the pipe and moved thereby when the desired length of thread has been cut to release the lock and permit the dies to be automatically opened.

The invention also consists in providing a rearward extension on the chuck-operating lever, so that the attendant can open the chuck from the rear of the machine, thus saving the time necessary to walk from the front to the rear in order to remove the threaded pipe and insert another.

The invention also consists in certain details of construction hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side view of a pipe-threading machine, showing my invention applied thereto. Fig. 2 is a plan view of the same. Fig. 3 is a front elevation of the dies and die-opening means, showing the dies closed. Fig. 4 is a side elevation of the same, showing the dies closed. Fig. 5 is a similar view showing the dies open; and Fig. 6 is a plan view of the die-operating means, showing it in the position when the dies are open.

The threading-machine may be of the usual or any preferred construction, that shown in the drawings being an old and well-known type of machine and comprising a frame 1, on one end of which are suitable bearings 2 for the chuck-spindle 3. This spindle is hollow



from end to end to permit of the insertion of the pipe or rod therethrough and may be rotated by any suitable mechanism, that shown in the drawings comprising a gear 4, fast on the spindle 3 and meshing with a gear 5 on the main pulley 6. Connected to the chuck-spindle are suitable jaws or gripping devices 7, which move radially, as is common, one such jaw or chuck being located on either side of the opening through the spindle. To these jaws are connected the levers 8, and sliding on the spindle, between the rear end of said levers, is a cone 9, which is provided with a groove for receiving the fork-arms 10, secured to a rock-shaft 11, mounted in the frame 1, and which has connected thereto a forwardly-projecting lever 12 for moving the cone 9 to open and close the jaws 7. The other end of the frame 1 is provided with ways 13, on which is mounted the carriage 14. The latter is provided with a transverse horizontal way 15, in which moves the head or block 16, which carries the threading-dies. The carriage 14 is movable toward and from the gripping-dies 7 by any suitable mechanism, that shown in the drawings comprising a rack 18, secured to the carriage and engaged by a pinion 19 on a short shaft 20, journaled in the frame, and provided on its outer end with the operating-wheel 21. The carriage 14 is provided with a longitudinal opening therethrough, and the die-carrying head 16 is mounted on the forward side of said carriage and may be adjusted transversely thereon by any suitable means. (Not shown.) On the rear side of the carriage 14 is a way 22, in which is mounted a head 23, carrying a cutting-off tool 24, said head being adjustable transversely of the carriage by any suitable means, such as the threaded bolt 25.

All of the parts so far described are or may be of the usual or any preferred construction, and the type of machine shown in the drawings has been selected for purposes of illustration merely, and the details of such machine may be varied within wide limits without departing from my invention. The dies mounted on the head 16 also may be of a variety of forms, it only being necessary that they be so constructed that they can be closed and opened to engage the same with the pipe and disengage the same therefrom. The particular dies shown in the drawings are of a well-known type, and as they serve to illustrate my invention equally as well as others I will describe the invention in connection therewith. These dies comprise a pair of segmental holders 27, hinged at their lower ends, as at 28, to the head 16 and each carrying one or more thread-cutting teeth 29, which project radially toward the pipe or rod to be threaded. The upper ends of these segmental holders 27 are provided with studs or projections 30, which project into cam-slots 31, formed in a disk 32.

The latter is journaled on a stud 34, projecting upwardly from the block 35, which is secured to the head 16 and lies between the upper ends of the holders 27. The disk 32 is provided with a suitable operating handle or lever 36. The cam-slots 31 in the disk are so shaped and arranged that by moving the handle 36 through a quarter-rotation from the position shown in Figs. 5 and 6 to that shown in Figs. 3 and 4 the dies will be closed, and by moving the handle back to the former position the dies will be opened, both the closing and opening movements being positive. These dies and their operating mechanism are old, and my invention consists, primarily, in means for automatically opening the dies, and said means preferably is formed as an attachment separate from the machine, so that it can be applied to any existing machine, although this is not absolutely necessary. In the drawings I have shown it as an attachment for the machine, and it comprises a suitable frame or standard 40 to be bolted or otherwise secured to the carriage 14 and having an upper horizontal portion 41, in which is journaled a vertical spindle 42. The latter is provided at its lower end with an arm 43, which has a suitable operative connection with the cam-lever 36—such, for instance, as having a hook 44 engaging said lever. A helical spring 45 surrounds the spindle 42 and has one end connected to the frame 41 and its opposite end connected to the spindle or its arm 43, so that when said spring is under torsional strain it tends to rotate the spindle and the arm 43. The arrangement is such that when the arm 43 is in the position indicated in Figs. 3 and 4—that is, with the dies closed—such spring will be under torsional strain, and consequently will have a tendency through the arm 43 to rotate the cam-disk 32 to open the dies. In order to prevent the spring from acting during the threading operation, a suitable lock is provided for holding the spring inoperative, this lock comprising a small disk 47, attached to the upper end of the spindle 42 and provided with a shoulder 48, which is engaged by one end of a locking-lever 49. The latter is pivoted on the arm 41 and has a downwardly-projecting portion, to which is attached an adjustable tripping device which normally lies in the path of movement of the pipe in such position that when the desired length of thread has been cut it will be moved by the pipe and disengage the locking-lever 49 from the shoulder 48 on the disk 47, thus permitting the spring 45 to become active and rotate the cam-disk 32 to open the dies. To adapt the device to various sizes of pipes and to various lengths of threads to be cut thereon, the trip is made both horizontally and vertically adjustable. To this end it comprises an arm 50, which is vertically adjustable on the locking-lever 49, as shown, and to



the lower end of which is connected the tripping-arm 51, so as to be horizontally adjustable and having at its outer or rear end a finger 52, which projects into the path of the pipe or rod being threaded. The adjustment of the arms 51 and 52 may be secured in any suitable way, such as the slot-and-bolt construction shown. Suitable shoulders 54 are provided both on the locking-lever 49 and the arm 50 for engaging the arms 50 and 51, respectively, and preventing them from rotating with reference to their securing-bolts. The adjustment shown adapts the device to any-sized pipe and to any length of threads to be cut thereon. The tripping-arm 51 is shown as a flat bar projecting in between the die-holders 27 to the rear side thereof, so that the finger 52 will be in position to be engaged by the end of the pipe when the desired length of thread has been cut. With this automatic tripping device it is not necessary for the attendant to remain at the dies until the desired length of thread is cut; but as soon as the threading begins he can at once take his position at the rear of the machine, so as to be ready to remove the threaded pipe as soon as finished and replace it by an unthreaded one. In order that he will be able to open the chucks or gripping-jaws 7 when in this position, I connect to the chuck-operating lever 12 a rearward extension 55, which preferably is in the form of a treadle, as shown, having its end 56 in such position that the attendant when standing at the rear of the machine can step upon the same, and thus open the chucks.

The operation of the machine described is as follows: We will assume that a pipe has been gripped in the chucks and has its forward end projecting into the dies, which are cutting threads thereon. This will continue until the end of the pipe comes into contact with the tripping-finger 52, when the further forward movement of the pipe will pull on the tripping-arms, thus moving the locking-latch 49 out of engagement with the shoulder 48 and permitting the spring 45, which is under tension, to rotate the cam 32 to open the dies. This requires no attention on the part of the attendant, and consequently he can have taken his position at the rear of the machine, and as soon as the dies are opened he will step on the treadle 56, thus opening the gripping-jaws 7. He can at once remove the threaded pipe and replace it by an unthreaded one. Then he will walk forward and operate the lever 12 to close the gripping-jaws 7, and next he will move the cam-lever 36 around to close the dies, this movement putting the spring 45 under tension and permitting the lock 49 to drop behind the shoulder 48, thus holding the parts in this position. He will then bring the dies into engagement with the end of the pipe, and the rotation of the latter will cause the dies to cut the thread. The

operator can then immediately take his position at the rear of the machine, for as soon as the desired length is cut on the pipe the lock will be tripped and the dies automatically opened.

My attachment will not interfere with the ordinary operation of cutting into the pipe at the middle or elsewhere, as the dies can be left open and the pipe run through the same and cut in the middle or cut off by the cutting-off tool 24, as is now the practice, thus enabling any length of pipe to be cut.

It will be seen that a considerable saving of time is effected, thus increasing the output of the machine, all of the time necessary with prior machines for the operator to walk from the dies after opening the same by hand to the rear of the machine in order to remove the pipe being saved. Furthermore, the device will be cut the same length of thread on each and every piece of pipe, thus giving uniformity in the product and doing away with the necessity of cutting off pipes having too long threads or rethreading pipes having threads that are too short.

The device is adjustable to any size of pipe and to any desired number of threads thereon, and it can be used for cutting any desired length of pipe, as the pipe can be run through the dies and cut into at its middle or cut off by the tool 24. The device when constructed as an attachment, as shown, is applicable to any existing machine and can be used in connection with any machine having a stationary die and using a lever on its equivalent for opening and closing the same.

While in the above description I have more especially described the machine for threading pipes, I wish it understood that it is not limited thereto, as it is equally as well adapted for threading rods or similar articles.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a threading-machine, the combination with a rotating chuck, of stationary separable dies, a cam for opening and closing said dies, means tending normally to rotate said cam to open the dies, a lock arranged to hold said rotating means against action, and means projecting into the path of the article being threaded for releasing said lock.

2. In a threading-machine, the combination with a rotating chuck, of stationary separable dies, means tending normally to open said dies, a lock arranged to hold said opening means against action, and a vertically and horizontally adjustable tripping-arm connected to said lock and projecting into the path of the article being threaded.

3. In a threading-machine, the combination with a rotating chuck, of stationary separable dies, opening means therefor, a spindle connected to said opening means, a spring on said spindle and arranged to normally rotate the



same to open the dies, a projection on the spindle, a lock arranged to engage said projection, and means projecting into the path of the article being threaded for releasing said lock.

4. In a threading-machine, the combination with a rotating chuck, of stationary separable dies, a rotary cam for opening and closing said dies, a spindle having operative connection with said cam, a spring connected to said spindle and arranged to normally rotate the cam to open the dies, a shoulder or projection on said spindle, a lock engaging said shoulder, and means connected to said lock and projecting into the path of the article being threaded.

5. In a threading-machine, the combination with a rotating chuck, of stationary separable dies, a single lever, connections between the same and all of the dies and arranged to open and close the same, a spring arranged to act on said lever and normally move the same to open the dies, a lock for restraining the action of said spring, and means projecting into the path of the article being threaded and arranged to release said lock.

6. In a threading-machine, the combination with a rotating chuck, of stationary separable dies, a lever for opening and closing said dies, a rotary spindle having an arm connected to said lever, a spring acting on said spindle and acting normally to move the lever to open the dies, a lock engaging said spindle and arranged to hold the same against the action of said spring, and means projecting into the path of the article being threaded and arranged to trip said lock.

7. In a threading-machine, the combination with a rotating chuck, of stationary dies, a pair of hinged holders for said dies, studs on the ends of said holders, a cam engaging said studs to open and close the same, a spring acting on said cam and arranged to normally open said dies, a lock for holding said spring inactive, and a trip projecting into the path of the article being threaded and arranged to disengage said lock.

8. An attachment for threading-machines provided with separable dies and rotatable die-opening means, said attachment comprising a frame, a spindle mounted therein, means for connecting said spindle to the die-opening means, a spring arranged to rotate said spindle, a lock for said spindle, and a tripping-arm connected to said lock.

9. An attachment for threading-machines provided with separable dies and a lever for

opening the same, comprising a frame, a spindle journaled therein, an arm connected to said spindle for engaging with the die-opening lever, a spring arranged to rotate said spindle, a lock for said spindle, and a tripping-arm connected to said lock.

10. An attachment for threading-machines provided with separable dies and die-opening means, comprising a frame, a spindle journaled therein and provided with means for attachment to the die-opening means, a spring acting on said spindle, a projection on said spindle, a locking-lever for engaging said projection, a vertical arm adjustably secured to said locking-lever, and a horizontally-adjustable tripping-arm connected to said vertical arm.

11. In a machine for threading pipes, rods and the like, the combination with the stationary dies, of automatic opening means therefor, a rotating chuck having a central opening extending through the same for the passage of the pipe or rod, means for opening and closing said chuck, a lever connected to said opening means and projecting toward the front of the machine, and a treadle connected to said lever and projecting toward the rear of the machine.

12. In a machine for threading pipes, rods and the like, the combination with stationary separable dies, means for automatically opening said dies when the desired length of thread has been cut, a rotating chuck having a central opening extending through the same for the passage of the pipe or rod, means for opening and closing said chuck, and an operating-lever for said means projecting toward the rear of the machine.

13. In a machine for threading pipes, rods and the like, the combination with stationary separable dies, of opening means therefor, a trip projecting into the path of the article being threaded and arranged to render said opening means active, a rotating chuck having a central opening extending therethrough for the passage of the pipe or rod, a lever for opening and closing said chuck and having its handle located adjacent to the threading-dies, and a treadle connected to said lever and projecting toward the rear of the machine.

In testimony whereof I, the said HARRY E. BOYD, have hereunto set my hand.

HARRY E. BOYD.

Witnesses:

MARION CHALFONT,  
ROBERT S. TAYLOR.