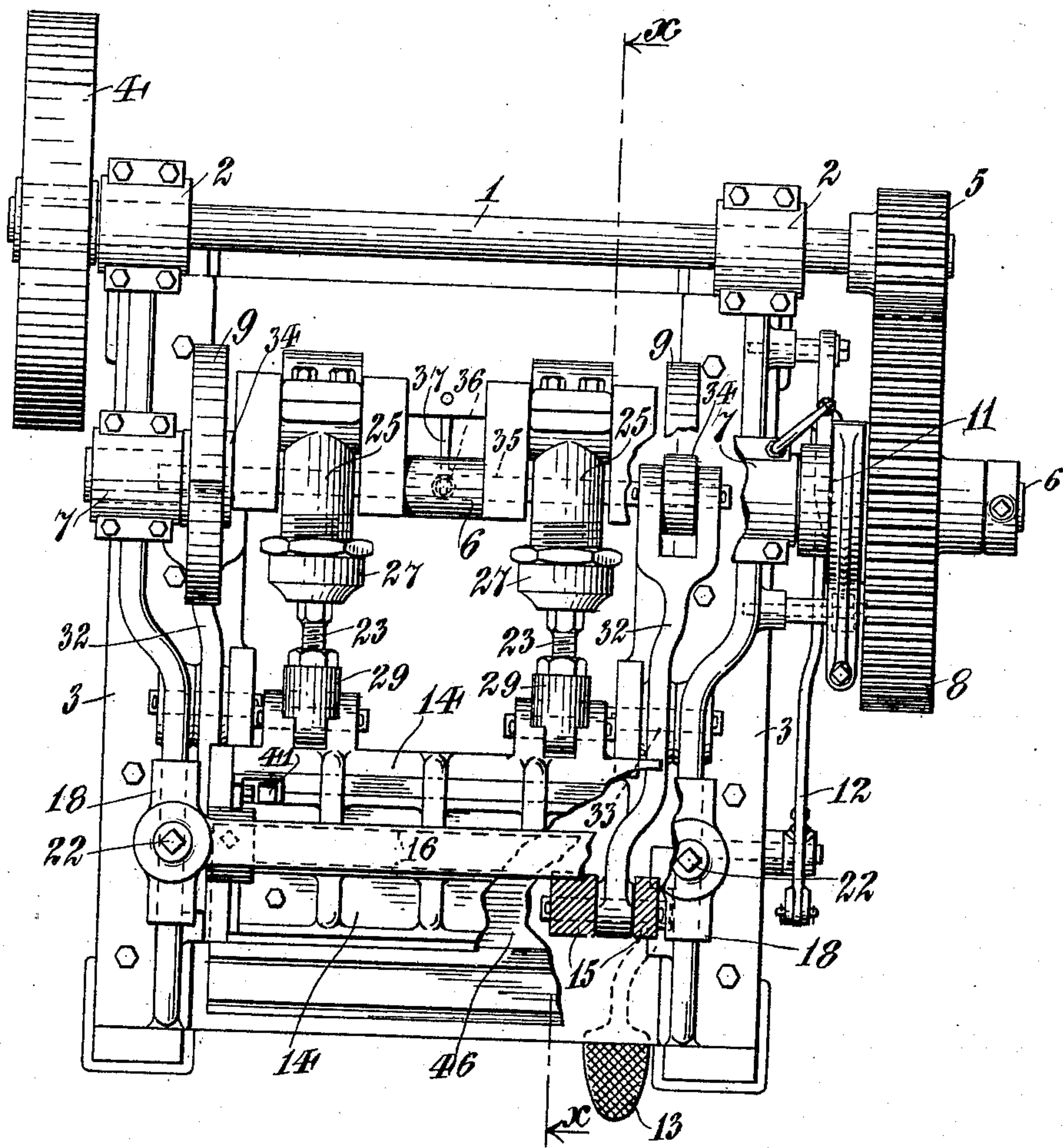


994,941.

M. W. LEWIS.  
WIRE STRAIGHTENING MACHINE.  
APPLICATION FILED OCT. 20, 1909.

Patented June 13, 1911.  
5 SHEETS—SHEET 1.

Fig. 1.



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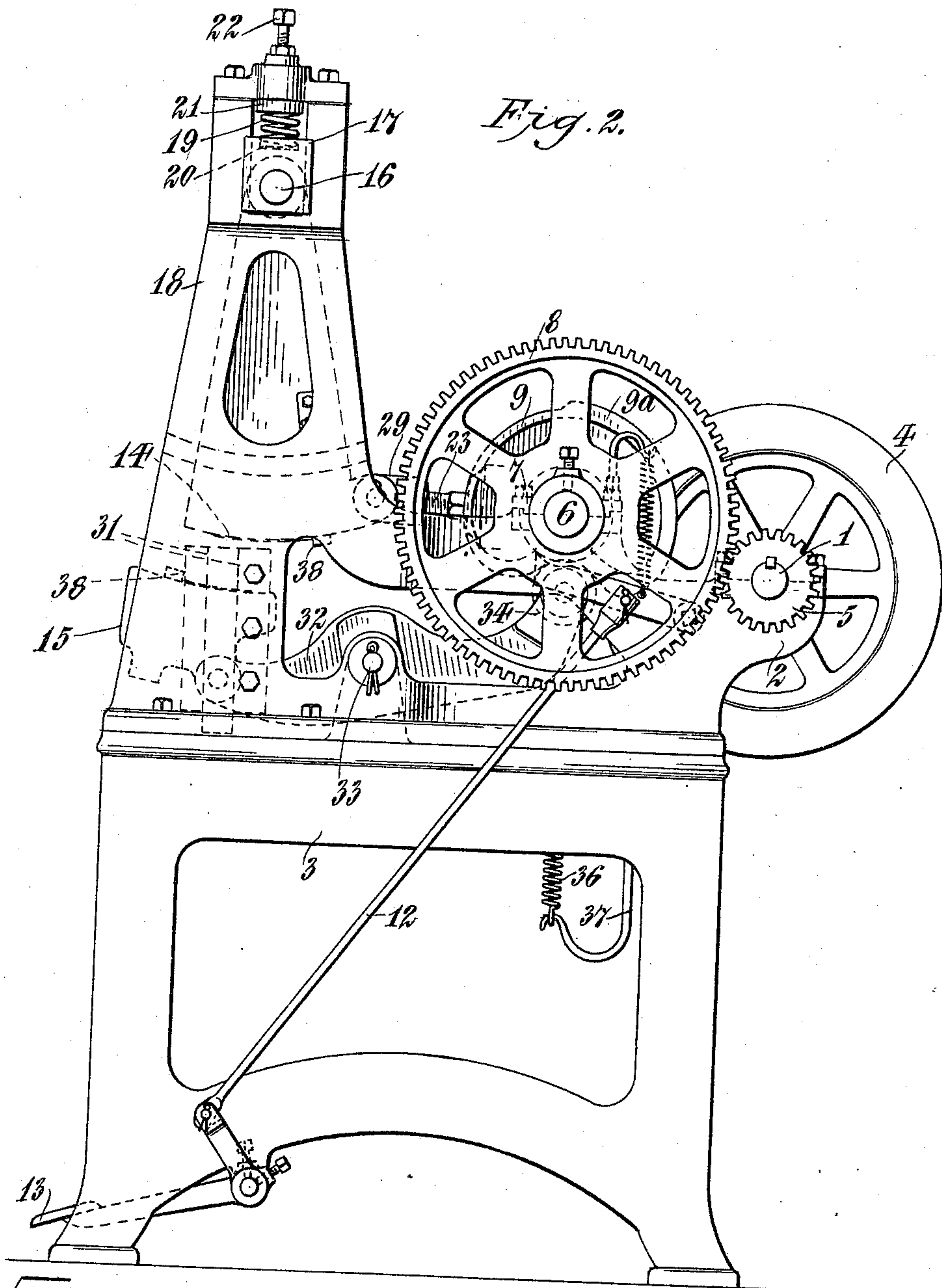
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5 SHEETS—SHEET 2.



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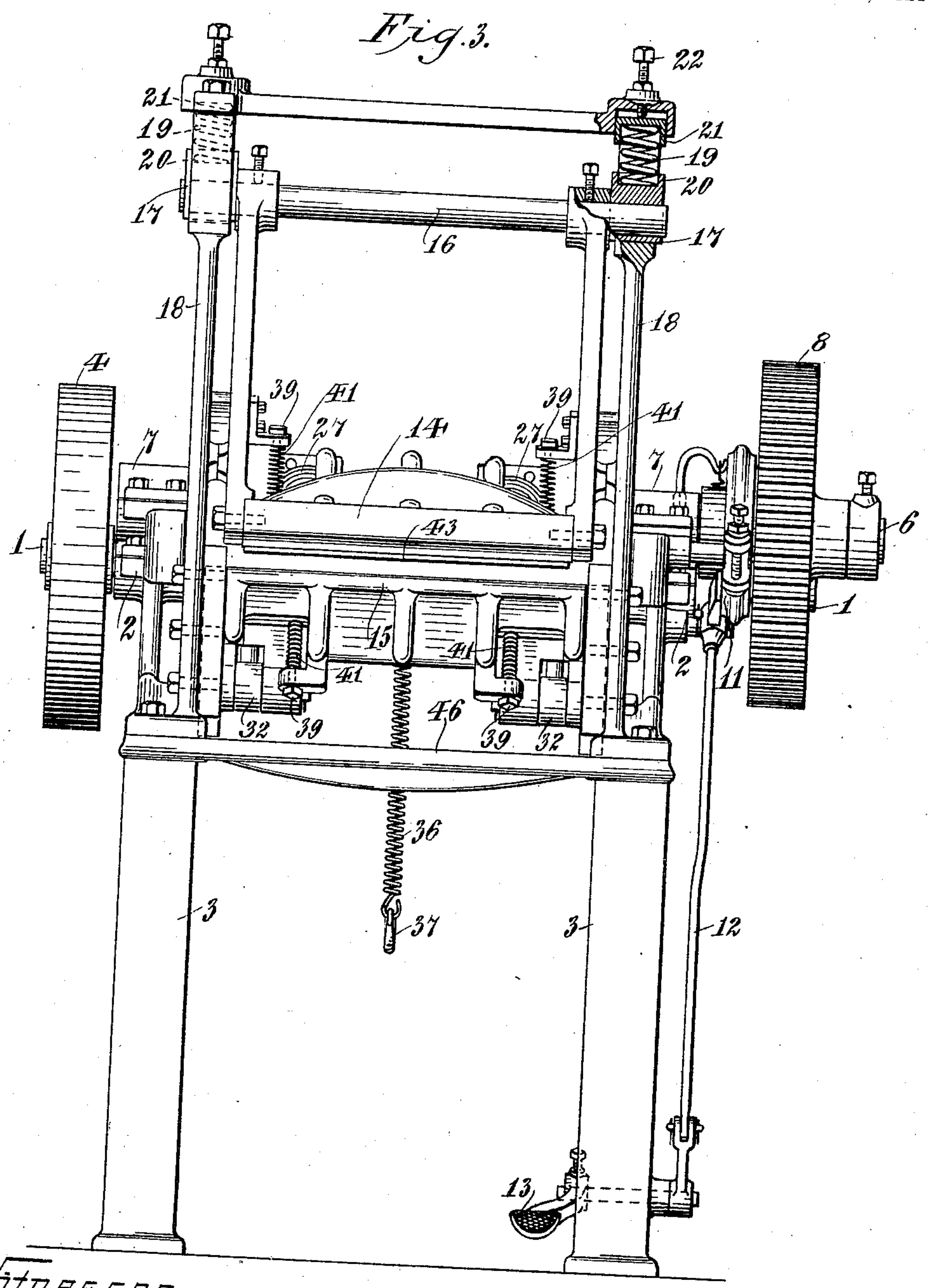
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5 SHEETS—SHEET 3.



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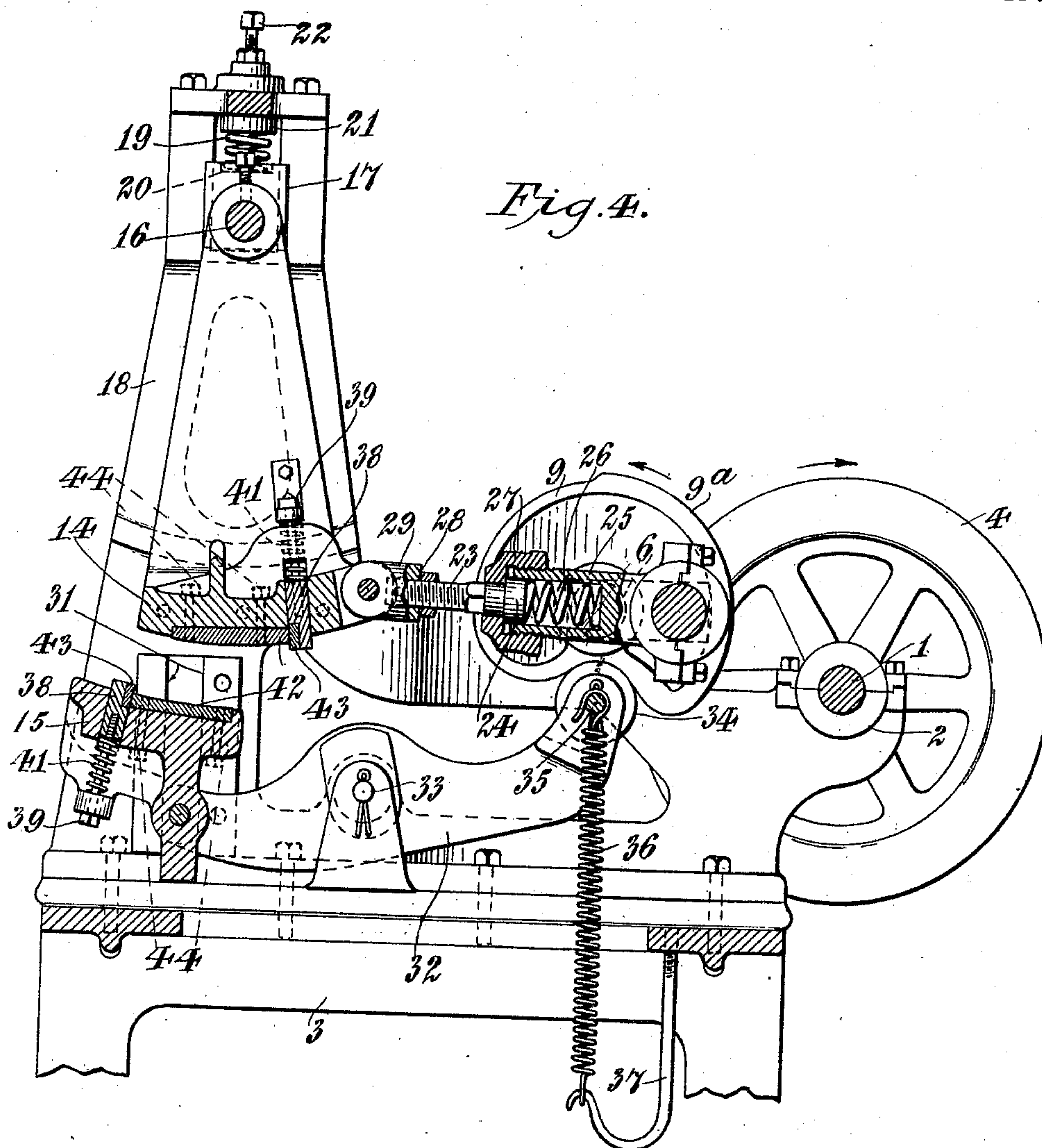


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5 SHEETS—SHEET 4.



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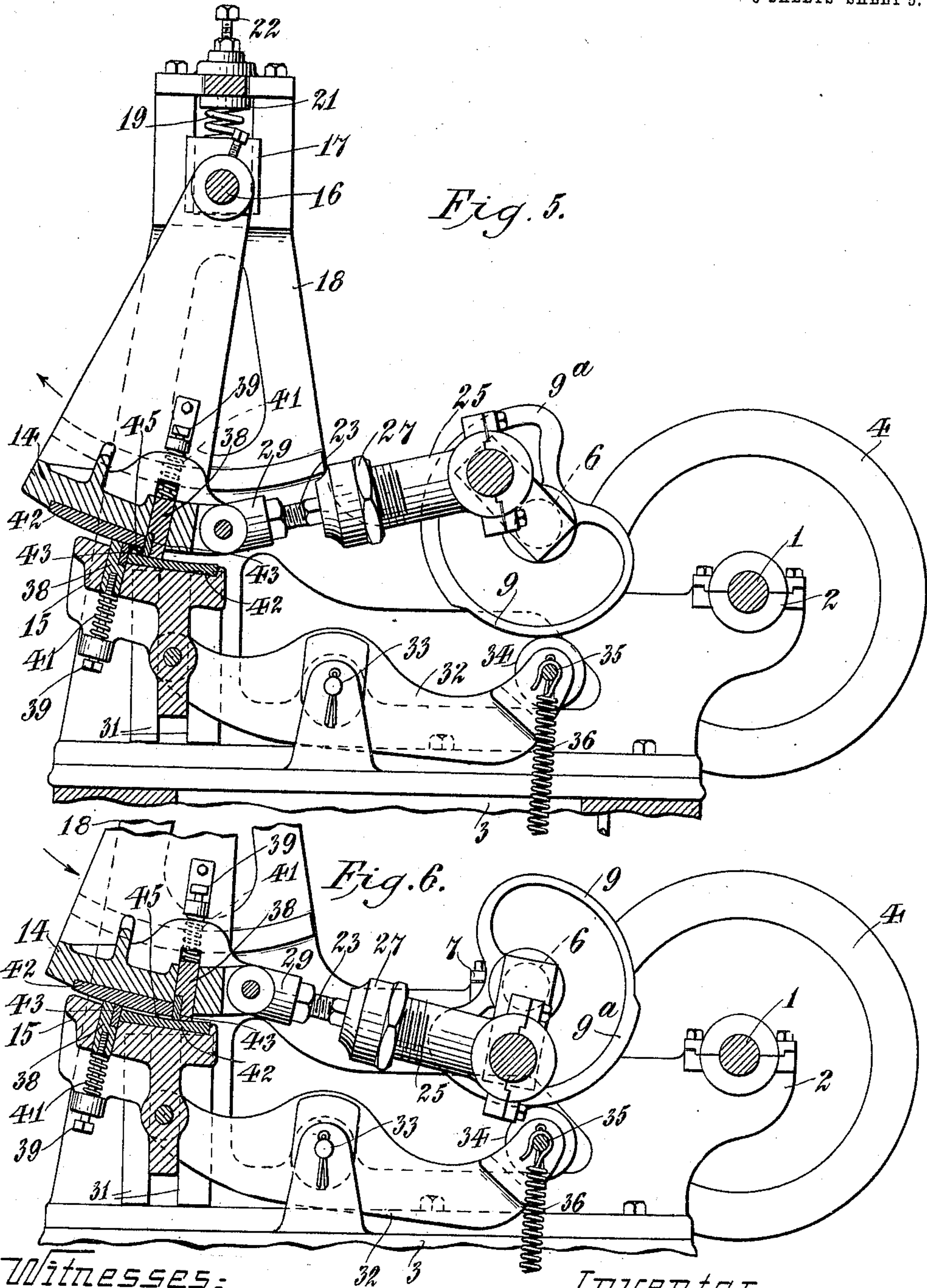
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5 SHEETS—SHEET 5.



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# UNITED STATES PATENT OFFICE.

MARVIN W. LEWIS, OF CLEVELAND, OHIO.

## WIRE-STRAIGHTENING MACHINE.

Specification of Letters Patent. Patented June 13, 1911.

994,941.

Application filed October 20, 1909. Serial No. 523,718.

*To all whom it may concern:*

Be it known that I, MARVIN W. LEWIS, a citizen of the United States, residing in the city of Cleveland, in the county of Cuyahoga, in the State of Ohio, have invented certain new and useful Improvements in Wire-Straightening Machines, of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

The object of the invention is to produce a machine which shall automatically straighten metal articles, such as wire, particularly core wires, and which will receive and straighten wire or other articles having varying diameters without changing or adjusting the machine.

The further objects of the invention will be set forth in the description of one form of mechanism embodying the invention, which consists in the new and novel features of construction and combinations of parts hereinafter set forth and claimed.

In the accompanying drawings—Figure 1 is a plan view of the machine, broken away in part to more clearly disclose the clutch mechanism. Fig. 2 represents an end elevation of the machine. Fig. 3 represents a front elevation of the machine. Figs. 4, 5, and 6 are detail views taken on the line  $x-x$  of Fig. 1, showing the different positions of the straightening jaws.

The main or driving shaft 1 of the machine is mounted in suitable bearings 2 in the frame 3 and is provided at one end with a driving pulley 4 and at its other end with a driving gear 5. A crank shaft 6 is mounted in suitable bearings 7 approximately parallel with the driving shaft and is driven through a gear 8 meshing with said gear 5. One or more cams 9 is or are loosely mounted on the crank shaft 6 and rotated through a clutch 11 on the crank shaft and movable thereon by any suitable means, as a clutch lever 12 connected with a foot treadle 13. The cam is provided with a supplementary swell 9<sup>a</sup> throughout a portion of its circumference. The straightening jaws provide a swinging jaw 14 and a sliding jaw 15 adapted to cooperate with each other. The swinging jaw 14 is secured to a shaft 16 mounted in journal boxes 17 movable in the frames 18 preferably formed integrally with the frame or housing of the machine. Helical springs 19 are seated between caps 20 on the journal boxes 17 and caps 21 provided on the frame or housing. The tension of

the set springs may be adjusted by any suitable means as set screws 22.

The swinging jaw 14 is reciprocated by the crank shaft 6 through a yielding two-part connecting rod 23, which comprises a plunger 24 movable in the barrel or trunk 25. A helical spring 26 is seated within the part 25 and engages the end of the plunger to yieldingly force the same outward. The part 25 is threaded exteriorly to receive the cap 27 which holds the plunger against displacement. The tension of said spring is adjusted in any suitable manner, as by threading the exterior of the plunger to engage in a tapped recess 28 provided in a head 29 secured directly to the swinging jaw.

The sliding jaw 15 is movable on guides 31 and is raised or lowered by tilting levers 32 pivoted, as at 33, to the frame of the machine. The free ends of said levers are provided with rollers 34 which are mounted on a rod or shaft 35 and engage the cams 9. One end of a spring 36 is secured to said levers, preferably by the rod 35, and to a bracket 37 on the frame to counterbalance the weight of the jaw.

Both jaws are provided with adjustable lips 38, arranged near the opposite edges of the respective jaws. Each of said lips is secured to a bolt 39 and is normally forced outward by yielding means, as a spring 41, so that it will project beyond the surface of the jaw. Preferably the face of each jaw is provided with a shoe 42 of suitable material to resist wear. Shoes 43 may also be provided on the wearing faces of the adjustable lips. Said shoes may be held in place by any suitable means as the screws 44.

In the operation of the machine the wire 45, or other article to be straightened, is placed upon the lower jaw and the clutch is thrown in to actuate the cams 9. The rotation of the cams immediately forces the sliding jaw 15 upward so that the wire will contact with the face of the swinging jaw and thereby be straightened in one direction. The upper jaw swings outward and the adjustable lips 38 straighten the wire in the other direction. When the swinging jaw has reached the end of its forward stroke or just as it begins its return stroke, the extra swells 9<sup>a</sup> of the cams engage with the rollers 34, thus exerting additional pressure upon the wire, and as the swinging jaw travels on its return stroke the wire is rolled over and over under pressure until the swinging jaw reaches or approximately reaches the end of



its return stroke, whereby the wire drops over the edge of the lower jaw into a suitable receptacle 46 provided to receive it. The lower jaw moves upward to its maximum height against the weight of the upper jaw in addition to the tension of the springs 19 and the wire is straightened between the lips 38 under the tension of the springs 26.

By this construction wires of varying diameters can be straightened perfectly without readjusting or changing the machine since the springs or other yielding means provide sufficient movement to accommodate different sizes of wire. There are no small dies liable to breakage or subjected to extreme wear and the machine is entirely automatic in its operation.

Although I have set forth one form of mechanism embodying my invention it is obvious that various changes within the skill of the mechanic may be made therein without departing from the spirit of the invention provided the means set forth in the following claims be employed.

I claim as my invention:

1. In a wire straightening machine, the combination of cooperating jaws movable in planes substantially at right angles to each other, means for positively reciprocating one of said jaws, and means for swinging the other jaw simultaneously.

2. In a wire straightening machine, the combination of cooperating jaws movable in planes substantially at right angles to each other, means for sliding one of said jaws toward and away from the other jaw, a driving mechanism, and a yielding connection between said driving mechanism and one of said jaws.

3. In a wire straightening machine, the combination of cooperating jaws having independent movements with relation to each other, movable bearings for one of said jaws, and means yieldingly holding said bearings in place.

4. In a wire straightening machine, the combination of cooperating jaws having independent movements with relation to each other, movable bearings for one of said jaws, and yielding means for rocking said jaw with relation to the other jaw.

5. In a wire straightening machine, the combination of a swinging jaw, a reciprocating jaw cooperating therewith, a lever for moving said jaw toward and away from the swinging jaw, and means for varying the pressure of said jaws while the same are in contact.

6. In a wire straightening machine, the combination of a swinging jaw, a reciprocating jaw engaging with said swinging jaw, a lever pivoted to said reciprocating jaw to

raise and lower the same, and a cam operatively connected with said lever, said cam being provided with an additional swell throughout a portion of its circumference to raise said lever and reciprocating jaw while the same is in contact with the swinging jaw.

7. In a wire straightening machine, the combination of a swinging jaw and a cooperating jaw, a lever pivoted to said cooperating jaw to raise and lower the same, a cam engaging said lever to operate said jaw, and means to counteract the weight of said jaw on the lever.

8. In a wire straightening machine, the combination of cooperating jaws pivoted to move in planes substantially at right angles to each other, each of said jaws comprising a yielding lip adapted to seat against the opposite jaw and hold the wire against displacement.

9. In a wire straightening machine, the combination with a swinging jaw, of a cooperating jaw movable with relation thereto, and means on one of said jaws yieldingly engaging the other jaw to prevent displacement of the wire while said jaws are in contact with each other.

10. In a wire straightening machine, the combination with a movable jaw, of a cooperating jaw pivoted to swing in an arc approximately at right angles to said jaw, and means for rocking said jaw comprising a two-part connecting rod and a tension member between said parts.

11. In a wire straightening machine, the combination with a swinging jaw pivoted in movable bearings, a driving shaft, and yielding means between said driving shaft and jaw for rocking the same, of a cooperating jaw movable toward and away from said swinging jaw, and a cam on said driving shaft operatively connected with said cooperating jaw.

12. In a wire straightening machine, the combination with a swinging jaw, movable bearings for said jaw, a driving shaft, and a yielding connection between said shaft and jaw for rocking the same, of a cooperating jaw movable in a vertical plane at substantially right angles to the arc of said swinging jaw, means for moving said cooperating jaw toward and away from the swinging jaw, and movable devices on each of said jaws to engage the other jaw and hold the wire against displacement while the same is being straightened.

This specification signed and witnessed this 8th day of October, A. D., 1909.

MARVIN W. LEWIS.

Signed in the presence of—

M. J. ALBON,  
G. R. COLLAR.