

No. 685,477.

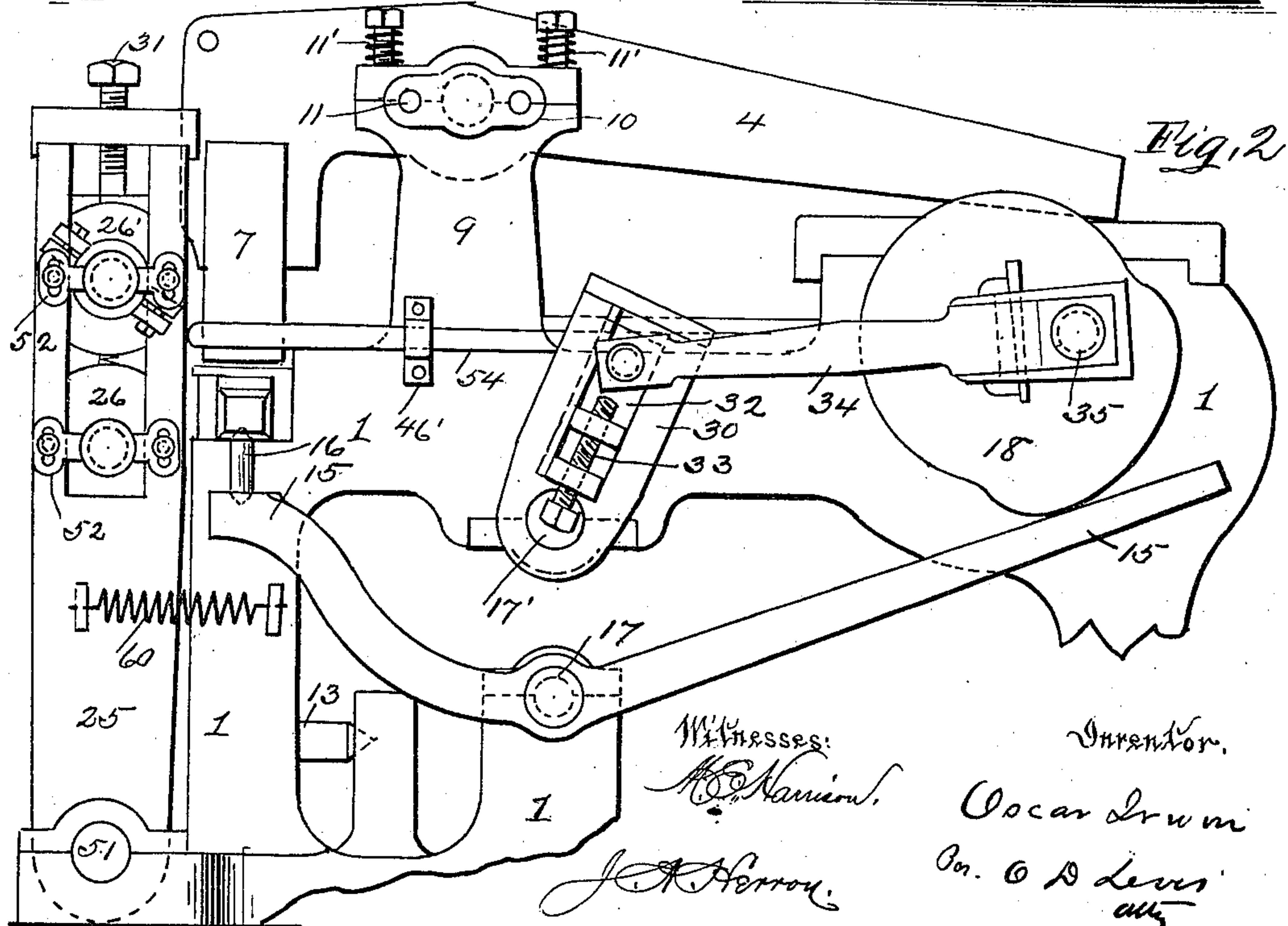
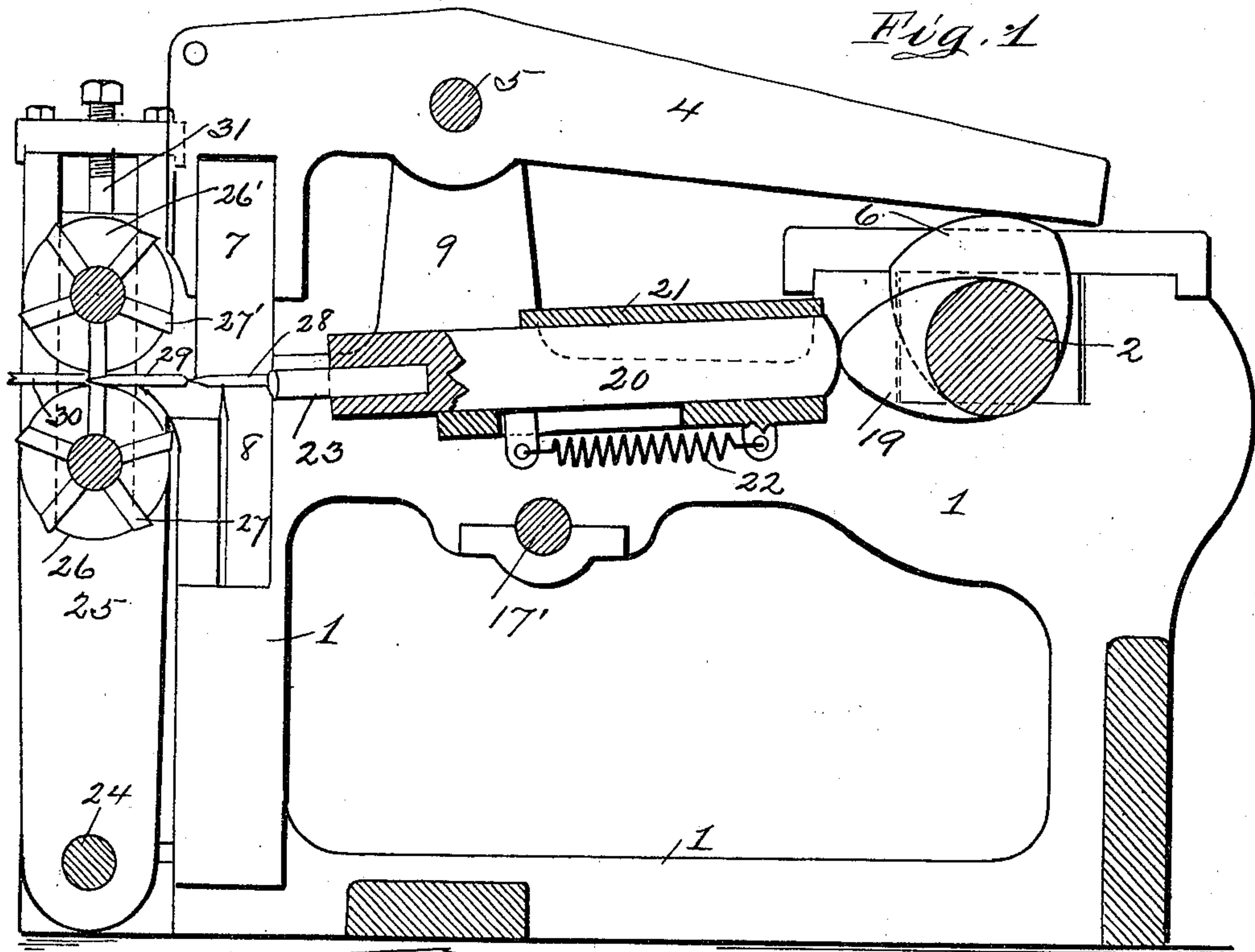
Patented Oct. 29, 1901.

O. IRWIN.
SPIKE MAKING MACHINE.

(Application filed Aug. 28, 1900.)

(No Model.)

2 Sheets—Sheet 1.



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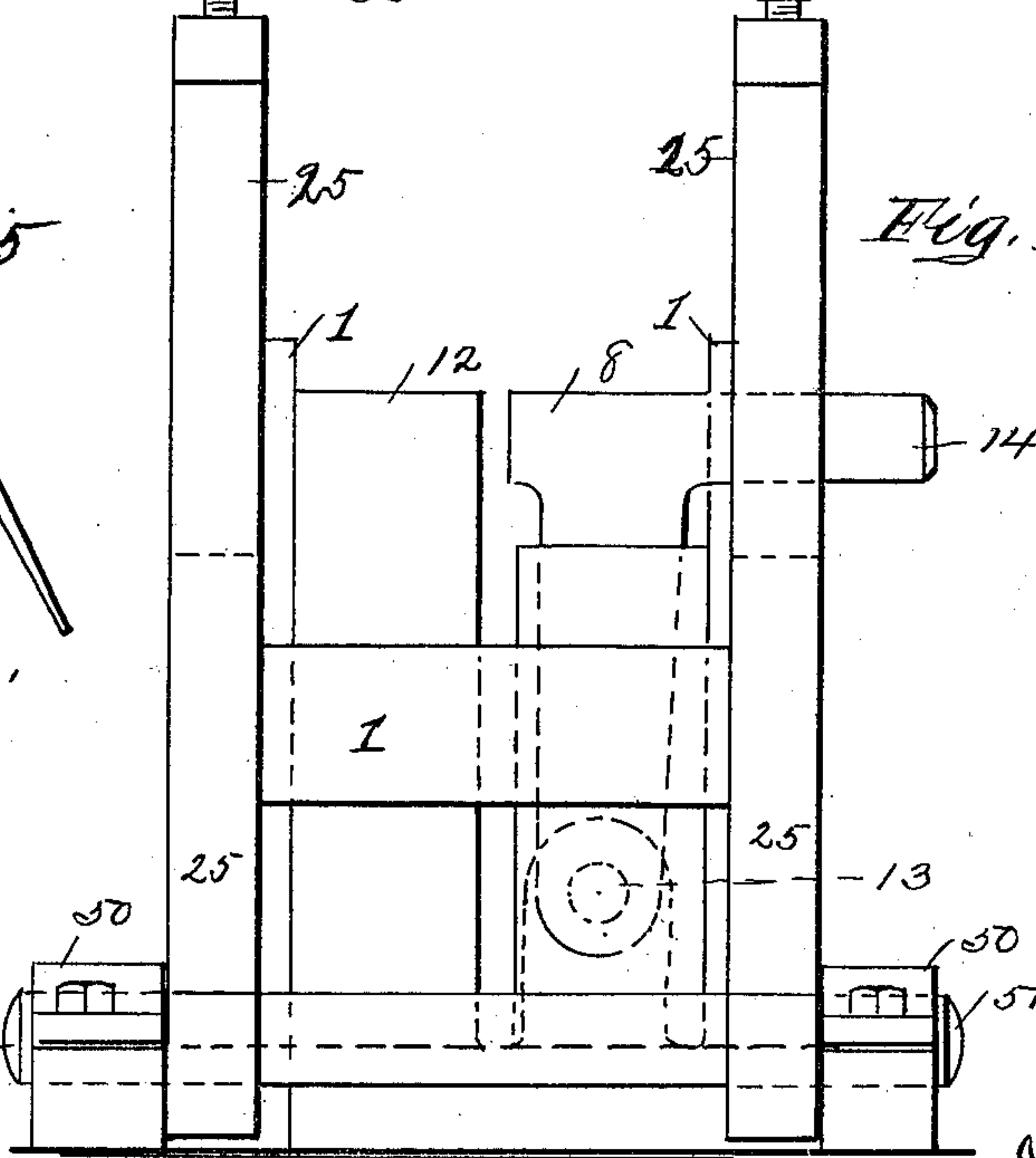
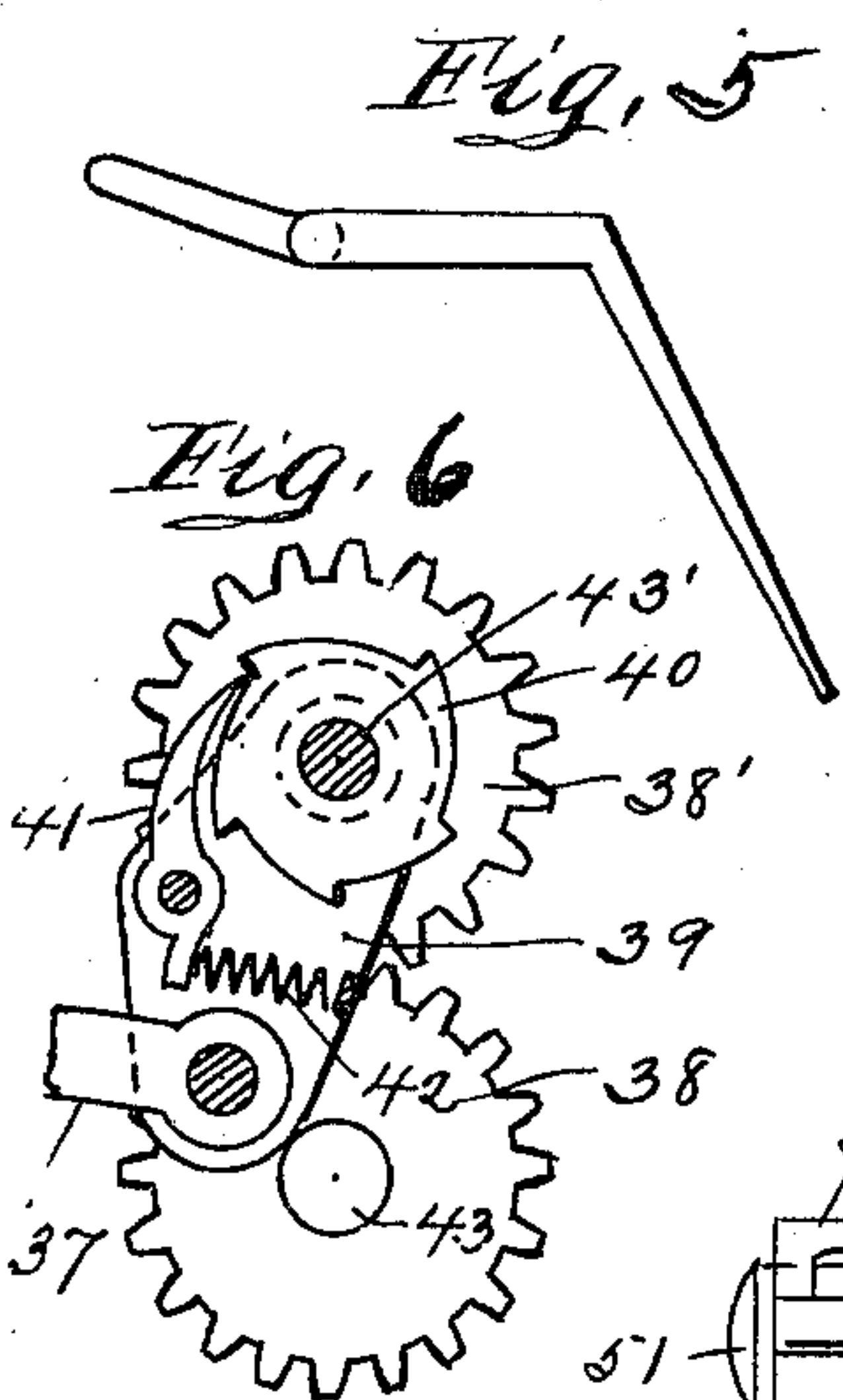
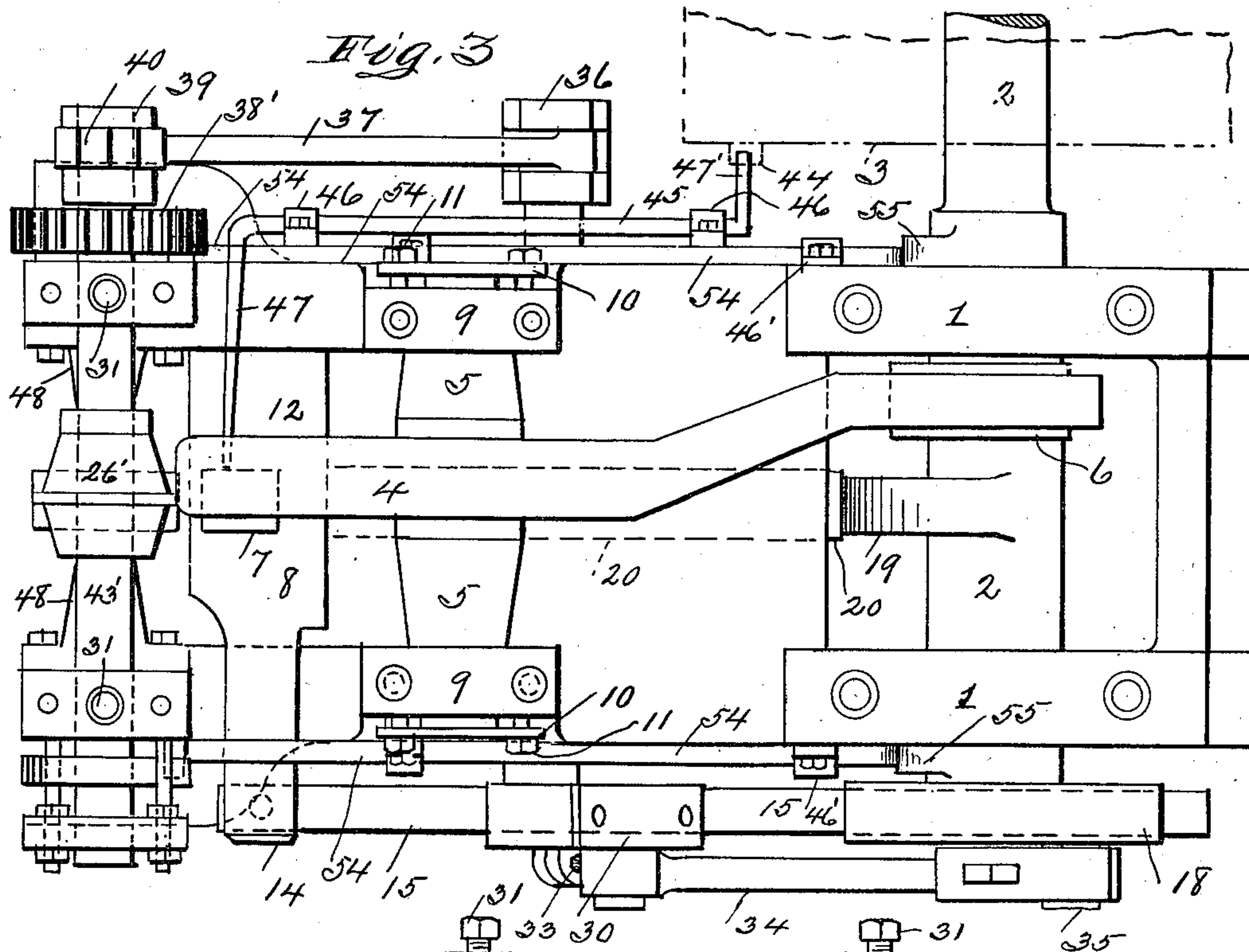
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WITNESSES:

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UNITED STATES PATENT OFFICE.

OSCAR IRWIN, OF PITTSBURG, PENNSYLVANIA.

SPIKE-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 685,477, dated October 29, 1901.

Application filed August 28, 1900. Serial No. 28,312. (No model.)

To all whom it may concern:

Be it known that I, OSCAR IRWIN, a citizen of the United States of America, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Spike-Making Machines; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to an improved machine for making railway and other large spikes; and it consists in the certain details of construction and combination of parts, as will be fully described hereinafter.

In the accompanying drawings, Figure 1 is a central side sectional elevation of my improved spike-making machine, the same being constructed and arranged in accordance with my invention. Fig. 2 is a side elevation of the same, a portion of the frame of which is broken away. Fig. 3 is a plan view of the machine. Fig. 4 is an end view of a portion of the machine, showing the separator-frame and the side grip. Fig. 5 is an end view of the "kicker" or device for knocking out the finished spike from its position between the gripping-dies. Fig. 6 is a detailed view of a portion of the feeding mechanism, the outer plate of the supporting-frame being removed in order to better show the pawl and ratchet.

To construct a machine for making railway and other large spikes in accordance with my invention, I provide a frame 1, of a suitable size and form of construction, and mount therein a drive-shaft 2, having a fly-wheel 3 and connected to a means for giving the said shaft a rotatable movement. Formed upon this drive-shaft 2 is a cam 6, adapted to operate a clamping-lever 4, the same being mounted upon a shaft 5 in bearings 9 and provided with the ordinary means or adjustment-plates 10, arranged at each end of the shaft, and with springs 11' to relieve the lever 4 should a "double spike" enter between the clamping-dies. Arranged in the forward end of the lever 4 is a removable clamping-die 7, which, in connection with a stationary die 12 and moving die 8, will hold the spike 28 while the same is being "headed." This moving die 8 is mounted upon a shaft 13, arranged

in bearings at the base of the frame 1, and the said die formed with an outwardly-projecting portion 14, which extends a short distance beyond the side of the frame. Pivoted to a shaft 17 at one side of the frame 1 and operated by a cam 18, attached to the drive-shaft 2, is a lever 15, which is connected by a toggle-pin 16 to the outwardly-extending arm 14 of the moving die 8 in a manner that will operate the said moving die 8 toward and away from the stationary die 12 to aid the die 7 in clamping the spike while forming the head of the same.

The head of the spike is formed by the heading-die, which consists of a stout bar 20, capable of a limited forward movement in suitable guideways 21 by means of a cam 19 formed on the drive-shaft 2, and the said bar 20 being fitted with a heading-die 23 at its forward end and the die and bar recovered or brought back by a suitable spring 22, one end of which is connected to the guideways 21 and the other to the bar 20.

Mounted upon a shaft 51, arranged in bearings at the foot of the frame 1, is an oscillating frame 25, having a slight movement toward and away from the machine by means of mechanism hereinafter described. Arranged in this oscillating frame 25 are disks 26 and 26', each of which is provided with a series of radial cutters or knives 27 and 27', the one knife registering with the other and formed to shear through the bar 30, from which the spikes are formed, and at the same time press a chisel-point upon the same. These disks 26 and 26' are mounted on shafts 43 and 43', the upper shaft of which is arranged in sliding bearings, which are held in position by set-screws 31. Each of these shafts 43 43' is fitted with a gear-wheel 38 38', the one meshing with the other in order that the cutters may revolve in unison, and connected to the upper shaft 43' is a crank 39, a ratchet 40, and spring-actuated pawl 41. This crank 39 is connected by means of a rod 37 to a crank 36, secured to a shaft 17', arranged across the frame. Attached to the other end of this last-mentioned shaft 17' is a slotted crank 30, in which a sliding block 32 is arranged, and the position of the said block regulated by means of a screw 33 in a manner that the said sliding block 32 may be

moved toward or away from the shaft 17' for the purpose of adjustment to regulate the throw of the crank 39, connected to shaft of the disks in which the cutters are mounted. This sliding block 32 is connected by a pitman 34 to the disk 18, forming a part of the cam for operating the lower clamping-lever 15. The object of this last-described mechanism is to rotate the disks 26 and 26' a limited distance at each revolution of the drive-shaft 2, the said distance being regulated by the position of the sliding block. This movement of the disks feeds the bar 30 forward the length of one spike.

The knives 27 and 27' not being able to entirely shear or separate the bar 30 will leave a thin web joining the said bar with the spike 28, as shown in Fig. 1 of the drawings. Therefore it is necessary to provide a means for separating the two. This means consists of two bars 54, arranged in bearings or slides 46', the ends of which bear against the oscillating frame 25 and against small cams 55, formed in the drive-shaft 2 in a manner that at each revolution of the said shaft the bars will move forward, pushing the oscillating frame 25 and tearing or separating the spike from the bar. The oscillating frame 25 is recovered or brought back to position by a spring 60. (See Fig. 2 of the drawings.)

To knock the finished spike 28 from between the gripping-dies, a rod or bar is arranged in bearings at one side of the frame 1, the said rod 45 having a portion 47' bent at an angle adapted to contact with a projection 44 on the fly-wheel of the machine and the other end 47 bent inwardly to a position over the spike 28.

At each revolution of the fly-wheel the end 47' of the bar 45 is moved upward, thereby moving the inner end 47 down, moving the spike free of the gripping-dies and permitting the same to fall beneath the machine.

In operation the bar 30, from which the spikes are to be formed, is fed between the disks 26 26', the said disks being rotated a distance corresponding with the length of the spike by means of the connected mechanism with the drive-shaft 2. This motion is derived from the disk 18, connected to the adjusting-crank 30, and by means of its shaft 17' motion is given to the crank 36 on the opposite side of the machine and from this crank 36 by the connecting-bar 37 to the crank 39, giving the same a back-and-forward or oscillating movement. This movement of the last-mentioned crank 39, together with the pawl 41 and ratchet-wheel 40, moves the bar 30 a predetermined distance into the machine and at the same time the cutters 27 and 27', operating to form the point of the said spike. The bar 30, not being entirely separated from the piece 29, will shove the same forward upon the next action of the ratchet-wheel 40, placing the said piece between the gripping-dies 8 and 12. These dies 8 and 12, together with the top die, will hold the blank 26 firmly,

while the heading-die 23 forms the head of the spike 28 by its forward movement. The spike now being formed, the cams 55 move the two bars 54 forward, slightly turning the oscillating frame 25 upon its shaft, thereby separating the finished spike 28 from the blank 29 following. At this time the gripping-dies 8, 12, and 7 open and the kicker 47 operates to throw the spike free from the gripper-dies.

Various slight modifications and changes may be made in the details of construction without departing from the spirit of the invention. Therefore I do not confine myself to the exact construction shown and described.

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

1. In combination with a machine for the purpose described, of a frame mounted on a shaft, means for holding the frame in its normal position, shafts mounted in the said frame and carrying cutters, intermeshing gear-wheels mounted on said shafts, a crank carried by one of said shafts, a ratchet-wheel also carried thereby, a spring-pressed pawl mounted on said crank adapted to engage said ratchet-wheel, and means for rotating the cranks.

2. In combination with a machine for the purpose described, of a frame, a drive-shaft mounted therein, a shaft mounted in suitable bearings in said frame, a stationary die fastened to said frame, a movable die mounted on said shaft, means actuated by the drive-shaft for giving said die a forward and backward movement, a second shaft mounted in said frame, a third movable die mounted thereon also actuated by the drive-shaft, and means for permitting said shaft to have an upward movement.

3. In a device of the character described, a frame, a drive-shaft secured therein, a second shaft mounted in said frame, a frame secured to said shaft, shafts carried by said frame, intermeshing gear-wheels carried by said shafts, cutter-disks with registering radial blades carried by said shafts, a crank-wheel and ratchet carried by one of said shafts, a spring-pawl mounted on the crank and adapted to engage the ratchet-wheel, a third shaft mounted in said first-named frame, a crank carried thereby, a rod connecting said crank and the first-named crank, a slotted crank mounted on the opposite side of said third-named shaft, a sliding block carried therein, a pitman-rod secured to said sliding block, a cam mounted on the drive-shaft and connected therewith, and means for regulating said sliding block, substantially as described.

4. In a device of the character described, a main frame, a drive-shaft secured therein, a second shaft secured therein, an oscillating frame carried by said second-named shaft, means for holding said frame in its normal position, rods secured in bearings in said main frame adapted to engage the oscillating frame, said means actuated by the drive-shaft

for giving said rods a forward movement, substantially as described.

5. In combination with a machine for the purpose described, of a main frame, a drive-shaft secured in suitable bearings therein, a second shaft also mounted in said frame, a stationary die secured in said frame, a third shaft mounted in said frame and carrying a movable die, said die having an outwardly-extending arm, a lever carried by said second-named shaft, a toggle-pin forming a movable connection between the said arm of the movable die and one end of the said lever, and a cam carried by the drive-shaft for imparting motion to said lever, substantially as described.

6. In a device of the character described, a main frame having a drive-shaft secured therein, a fly-wheel carried thereby, a shaft mounted therein and carrying an oscillating frame, a spring connecting said frame and the main frame, a pair of shafts mounted in the upper part of said oscillating frame, cutter-disks carrying radially-extending knives adapted to register with each other secured to said shafts, intermeshing gear-wheels also carried by said shafts, a crank carrying a spring-pawl mounted on the upper shaft, a ratchet-wheel carried thereby and adapted to be engaged by said spring-pawl, a third shaft secured in brackets in said main frame, a crank carried by said shaft, an arm connected with said crank and with the said first-named crank, a slotted crank carrying a movable block regulated by a screw mounted on the opposite end of said shaft, a cam carried by the drive-shaft, a pitman-rod connecting said cam and the said movable block, a fourth shaft mounted in the main frame and parallel therewith, a stationary die also mounted therein, a movable die with an outwardly-extending arm mounted on said shaft, a fifth shaft mounted in suitable brackets transverse to the main frame and carrying an L-shaped

lever at an intermediate point, a toggle-pin connecting said arm of the movable die with one end of the lever, said lever being actuated by the first-named cam on the drive-shaft, a pair of brackets carrying a shaft mounted on said main frame, said brackets having a removable upper portion fitting over the said shaft, bolts holding the two parts together, springs on said bolts for keeping the two parts normally together and permitting the said shaft to have an upward movement, an L-shaped lever mounted on said shaft at an intermediate point, said lever having a recessed portion in which is carried a removable die, a second cam on the drive-shaft for actuating said lever, suitable guideways secured to the main frame and carrying a bar provided with a recess in the front portion slidable therein, a heading-die mounted in said recess, a downwardly-projecting lug on said bar, a lug on said guideways, a spring connecting said lugs for retracting the bar, a third cam on the drive-shaft for actuating said bar, suitable brackets mounted on each side of the main frame, a rod slidably mounted in each bracket, the forward end of which is engaged by the oscillating frame, a fourth and fifth cam mounted on the drive-shaft, which engage the rear ends of the bars respectively, a Z-shaped rod mounted in suitable brackets on one side of the main frame, one arm of which is adapted to knock the finished spike from between the clamping-dies when the other arm is actuated by a lug on the fly-wheel provided therefor, substantially as described.

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

OSCAR IRWIN.

Witnesses:

W. A. SHAFFER,

JOHN GROETZINGER.