

No. 671,975.

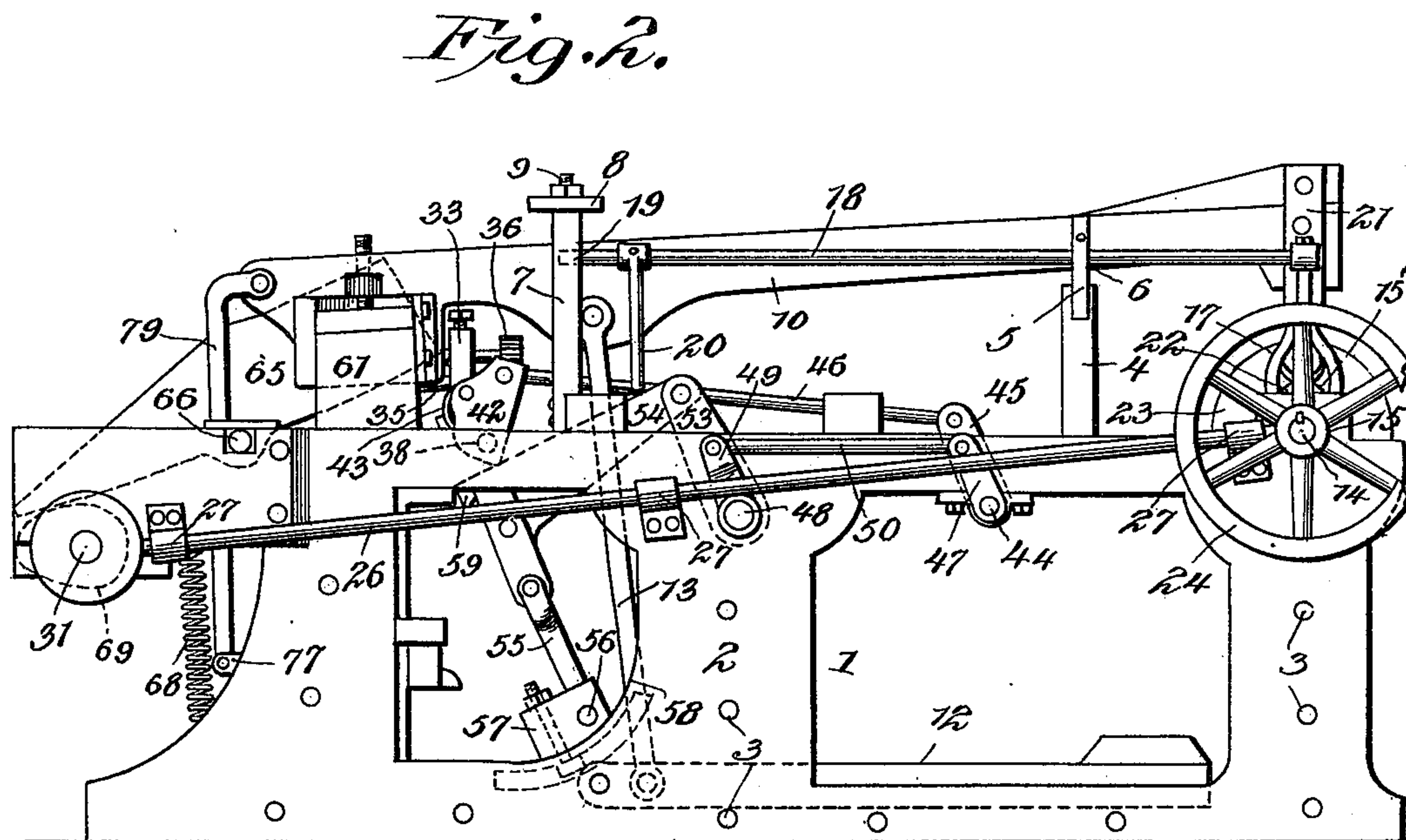
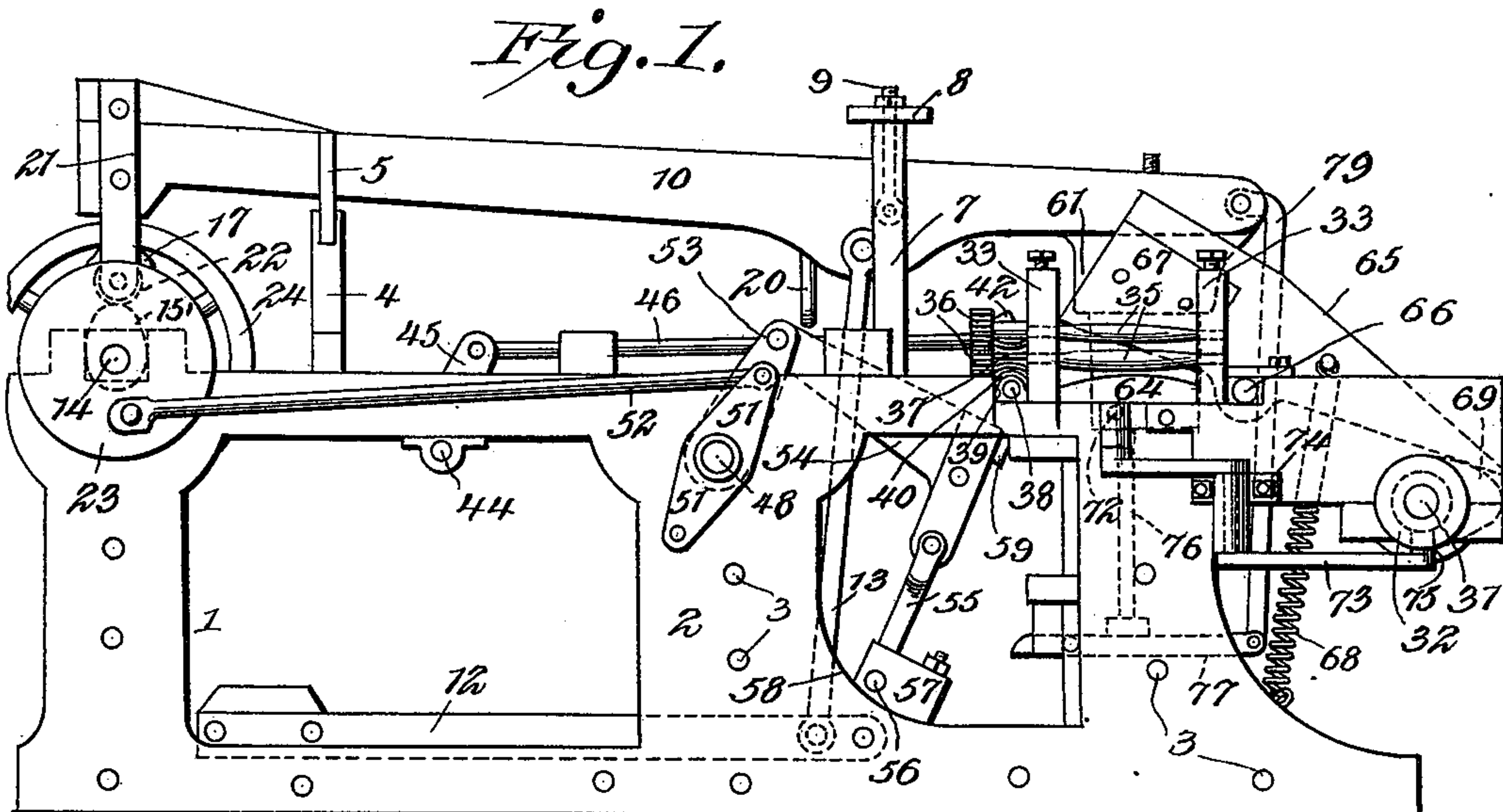
Patented Apr. 16, 1901.

E. PARKER.
MACHINE FOR MAKING SPIKES.

(Application filed Oct. 3, 1900.)

(No Model.)

3 Sheets—Sheet 1.



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3 Sheets—Sheet 2.

Fig. 3.

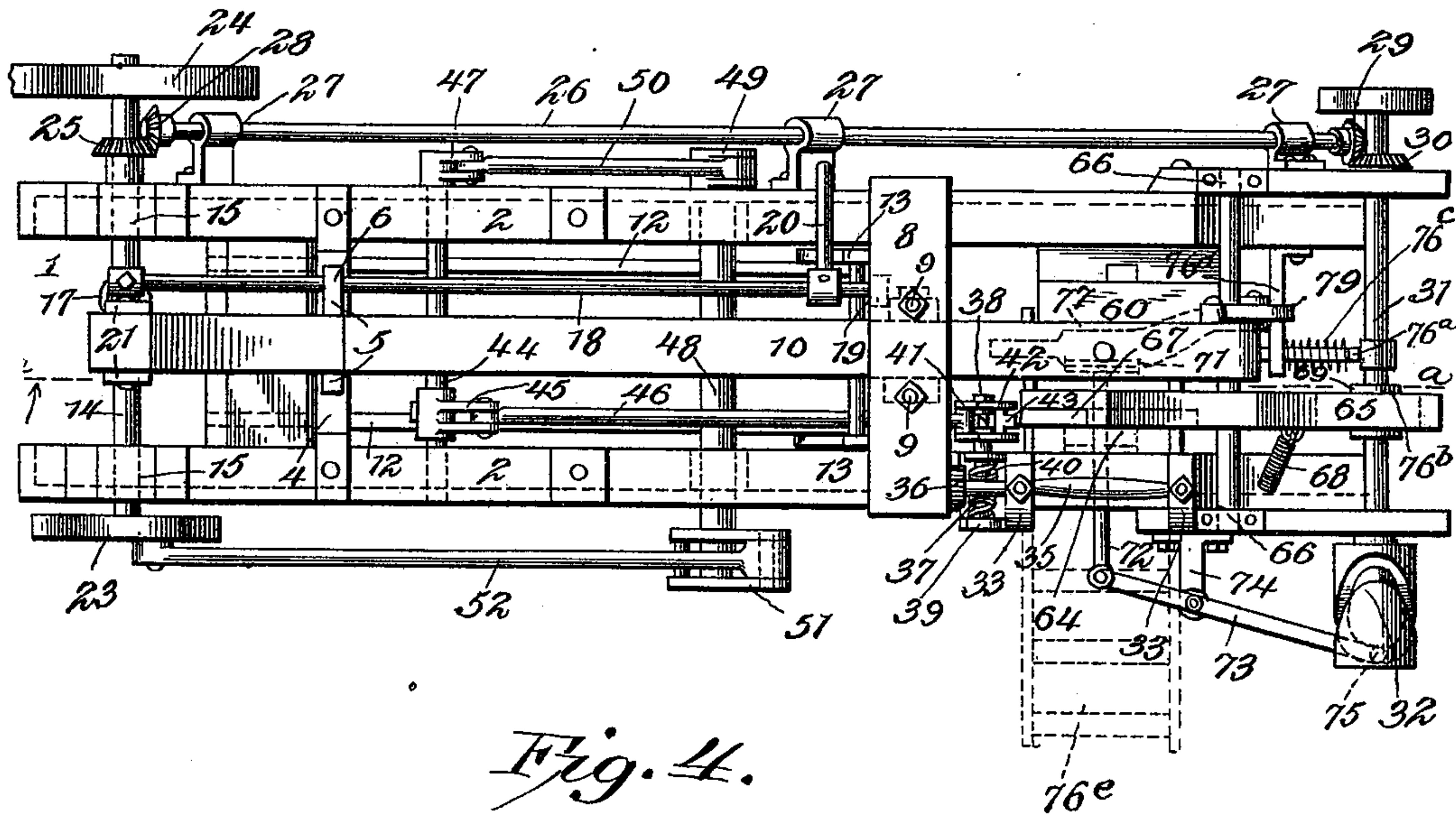


Fig. 4.

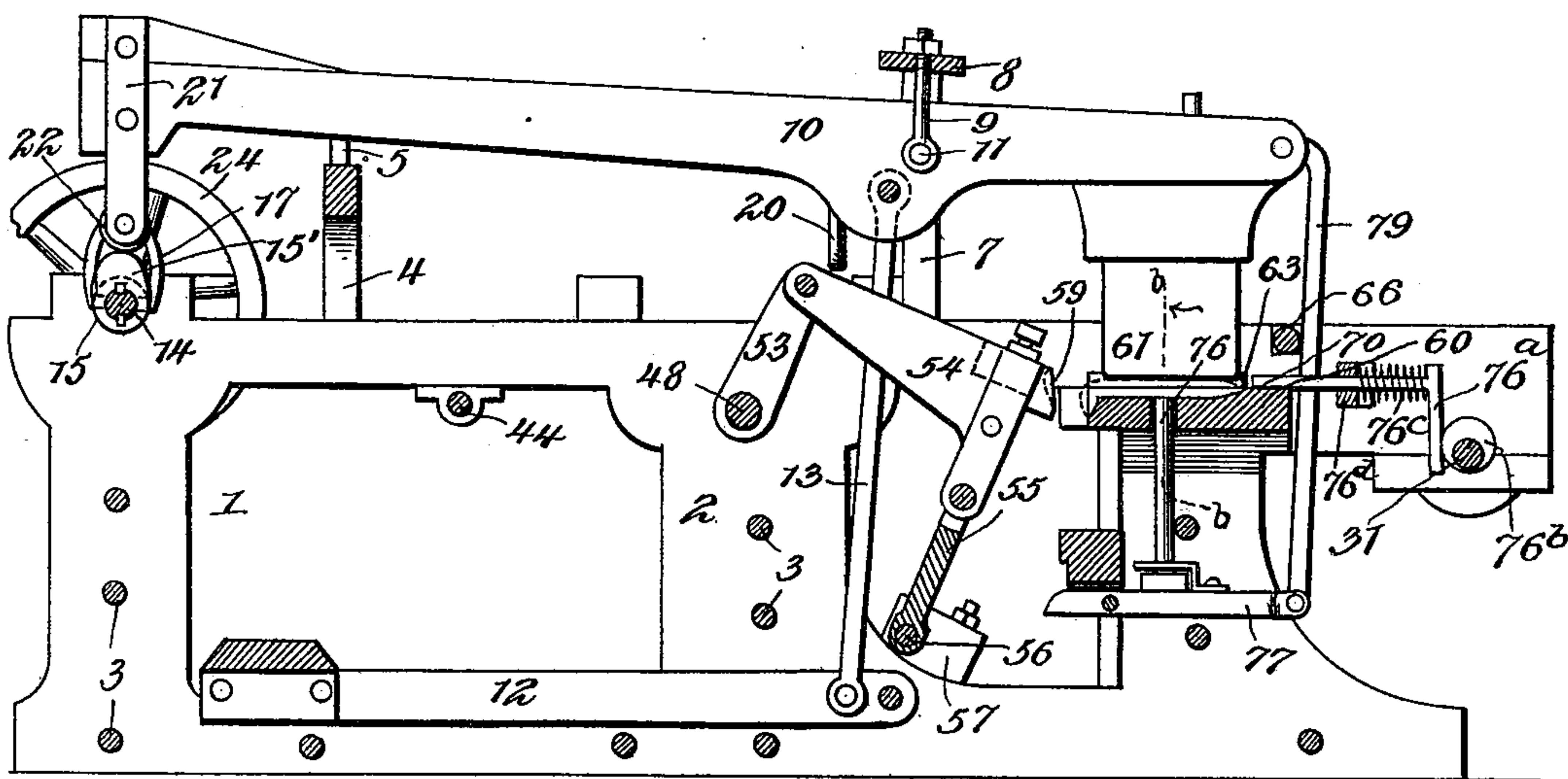
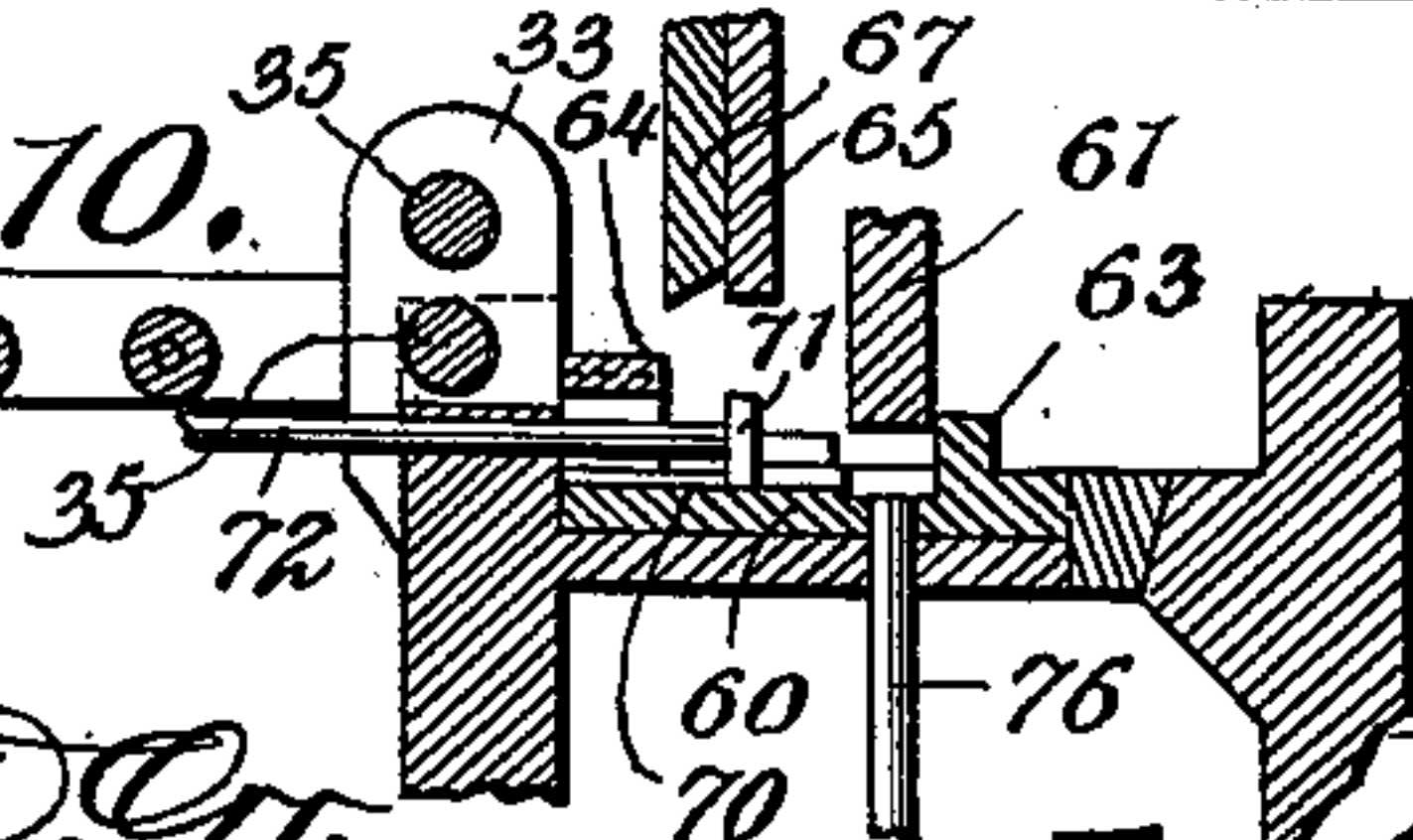


Fig. 10.



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UNITED STATES PATENT OFFICE.

EMANUEL PARKER, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO JOHN H. NORRIS, OF SAME PLACE.

MACHINE FOR MAKING SPIKES.

SPECIFICATION forming part of Letters Patent No. 671,975, dated April 16, 1901.

Application filed October 3, 1900. Serial No. 31,921. (No model.)

To all whom it may concern:

Be it known that I, EMANUEL PARKER, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Machine for Making Spikes, of which the following is a specification.

My invention is an improved machine for making spikes; and it consists in the peculiar construction and combination of devices hereinafter fully set forth, and particularly pointed out in the claims.

One object of my invention is to effect improvements in the means for feeding the blank from which the spikes are cut to the die.

A further object of my invention is to effect improvements in the formation of the blank-bar from which the spikes are cut by the machine, the blank-bar being rolled to form the tapering points of the spikes.

A further object of my invention is to effect improvements in the construction of the die and to combine therewith improved means for feeding the blanks to the die.

A further object of my invention is to effect improvements in the means for ejecting the finished spikes from the die.

In the accompanying drawings, Figure 1 is a side elevation of a spike-making machine embodying my improvements. Fig. 2 is a similar view of the reverse side thereof. Fig. 3 is a top plan view of the same. Fig. 4 is a vertical longitudinal sectional view of the same, taken on a plane indicated by the line *a a* in Fig. 3. Fig. 5 is a detail perspective view of the feed-rolls and their actuating-gears. Fig. 6 is a detail sectional view of the pawl-and-ratchet mechanism for actuating the worm that communicates power to the feed-rolls. Fig. 7 is a detail perspective view of one of the shifting bearings for the lower link of the heading-bar. Fig. 8 is a detail perspective view of the mechanism for throwing the machine into and out of gear. Fig. 9 is a detail perspective view of the feed-plate and the rock-lever for actuating the same. Fig. 10 is a detail transverse sectional view taken on the line *b b* of Fig. 4 and illustrating the construction of the die. Fig. 11 is a detail perspective view of the blank from which the spikes are cut by the machine.

Fig. 12 is a detail elevation of the rolls for forming the blank.

The frame 1 of the machine is of suitable construction and comprises the side members 2, which are connected together at suitable points by cross-bars 3. An arch-bar 4 on the upper sides of the side members connects the same together at a suitable distance from one end of the frame, and said arch-bar is provided on its upper side with a pair of vertical guide-standards 5 and with a bearing 6. A pairs of standards 7 rise vertically from the side members 2 at suitable points, and the upper ends of the said standards are connected together by the cross-plate 8. A pair of hangers 9, which are vertically movable in the said plate 8, depend from the lower side thereof, and between the said hangers is fulcrumed the gripping-lever 10, as at 11. A heavily-weighted lever 12, which is disposed between the side members 2, is connected to the gripping-lever by a pair of links 13. This construction of the gripping-lever and its connections enables the gripping-lever to yield under abnormal circumstances and prevents the machine from breaking up, as would occur otherwise if two blanks or spikes should by any accident get into the gripping-dies at the same time.

A shaft 14 is journaled in suitable bearings 15 on the side members of the frame, at one end thereof. On this shaft is splined a cam 15', which is thus adapted to be shifted laterally on the shaft, and revoluble with the said cam and secured on one side thereof is a grooved collar 16, which is engaged by a shifting-yoke 17, carried by a shifting-shaft 18, that has its bearings at 6 and 19. Said shifting-shaft 18 has a hand-lever 20, by which it may be operated. The gripping-lever is provided at its outer end with a vertically-adjustable yoke-head, 21 which carries an antifriction-roller 22 on the lower side of said lever, which antifriction-roller bears upon the cam 15 when the latter is shifted under the said roller. When thus adjusted and the shaft 14 being rotated, the gripping-lever will be operated, as will be understood; but when the cam 15 is shifted to one side of and becomes disengaged from the roller 22, which may be accomplished by the shifting yoke shaft and

lever hereinbefore described, the shaft 14 may continue to rotate without operating the gripping-lever. Said shaft 14 is provided at one end with a crank-wheel 23 and at the opposite end with a power-pulley 24. A miter gear-wheel 25 is fast on the shaft 14 on the side of the frame opposite the crank-wheel 23. A longitudinally-disposed shaft 26 is mounted in bearings 27 on one side of the frame 1, has a miter gear-wheel 28, which engages the miter gear-wheel 25, and is provided at its opposite ends with the miter gear-wheel 29, which engages a similar wheel 30 on a shaft 31. The said shaft 31 has its bearings in the side members of the frame 1 at the end opposite the shaft 14 and is provided at the end opposite the gear 30 with a cam 32.

On one of the side members of the frame, at an appropriate point, are a pair of vertical standards 33, in which are bearing-blocks 34, which carry the upper and lower feed-rolls 35. The shafts of the said feed-roll are extended at one end and provided with spur-gears 36, which are in engagement with each other, and the shaft of the lower roll is also provided with a worm-gear 37. A shaft 38, which is transversely disposed in one side of the frame and has its bearings as at 39, is provided with a worm 40, which engages the worm-gear 37, and hence is adapted to communicate rotary motion to the feed-rolls when said shaft 38 is caused to revolve. Said shaft 38 is provided near its inner end with a ratchet-wheel 41. A rock-lever 42 is fulcrumed on the said shaft and carries a pawl 43, which is adapted to rotate the shaft 38 by alternately engaging and disengaging the ratchet-wheel as said lever rocks, and thereby communicate step-by-step rotary motion to the shaft 38, and hence to the feed-rolls 35, which are geared to the said shaft. A rock-shaft 44 has its bearings in the side members of the frame and is provided with a rock-arm 45, which is connected to the rock-lever 42 by a pitman 46. Said shaft 44 is further provided at one end with a rock-arm 47.

A rock-shaft 48 has its bearings in the side members of the frame and is provided at one end with a rock-arm 49, which is connected to the rock-arm 47 of rock-shaft 44 by a pitman 50, and said rock-shaft 48 is provided at the end opposite rock-arm 49 with a rock-arm 51, which is connected to the crank-wheel 23 of shaft 14 by a pitman 52. Hence power from the shaft 14 is communicated to the shaft 48, from the latter to the shaft 44 and from said shaft 44 to the lever 42, and the feed-rolls when the machine is in operation are rotated by a step-by-step movement by the means hereinbefore described. The said shaft 48 is provided at its center with a rock-arm 53. A heading-bar 54 is pivotally connected to said rock-arm, and said heading-bar is provided with a link 55, having an axle 56 at its lower end, which axle is supported in bearing-blocks 57, that are adjustable in arcs 58, with which the side members 2 of the frame are provided.

The said heading-bar carries the heading-die 59.

It will be understood from the foregoing that when the machine is in operation the heading-bar will be moved back and forth toward and from the immovable die 60, between which and the gripping-die 61, carried by the gripping-lever, the spike-blanks are held while being headed, and that said heading-die, in coaction with said dies 60 61 will, form the heads of the spikes.

The die 60 is provided on its upper side immediately on one side of the chill or matrix with a flange 63, which forms a stop that prevents the blanks from moving past the chill or matrix.

The feed-rolls 35 are disposed in line with the die 60 and above one end thereof and serve to feed a blank-bar into the machine and dispose the inner end of said blank-bar at each successive step-by-step movement of the feed-rolls on a rigid shearing-jaw 64.

A lever 65 is fulcrumed as at 66 and carries at its inner end a shearing-blade 67, which, in coaction with the rigid shearing-jaw 64, serves to cut off the spike-blanks from the blank-bar. A spring 68, which is attached to the lever 65, normally opens the same from the stationary jaw 64, and said lever 65 is operated by a cam 69 on the shaft 31, and the mechanism is so timed that the feed-rolls feed the blank-bar to the jaws 64 67 immediately prior to the descent of the jaw 67. As each blank for a spike is thus sheared from the inner end of the blank-bar the said spike-blank drops onto a table 70, the upper side of which is in the same plane as the upper side of the die 60, and the spike-blank also is disposed on the inner side of a feed-plate 71, which operates on said table 70. The said feed-plate has an operating-rod 72, which extends outward through an opening in one side of the frame and said rod has its outer end pivotally connected to one end of a lever 73, which is mounted on a bracket, as at 74, and said lever 73 has a stud 75, which operates in the cam-groove in the cam 32. Immediately after the spike-blank is cut from the blank-bar the feed-plate 71 is moved inward by the means described and carries the spike-blank to the chill or matrix of the die 60, into which the spike-blank drops. The gripping-lever is then operated to cause the die 61 to descend onto the spike-blank in the die 60, and while the spike-blank is thus gripped between the dies 60 61 the heading-bar is actuated and the head of the spike formed by the heading-die 59.

A vertically-movable lifting-pin 76 is guided in an opening in the die 60, which opening extends to the center of the chill or matrix of the die. Said lifting-pin is supported and actuated by a lever 77, which is fulcrumed as at 78, and is connected with the gripping-lever by a link 79.

It will be observed by reference to Fig. 4 of the drawings that the lever 77 operates si-

multaneously with the gripping-lever 10 and that when the spike-blank is gripped between the dies 60 61 the upper end of the lifting-pin is immediately under the central portion of the spike-blank. Immediately after the formation of the head of the spike on the ensuing upstroke of the end of the gripping-lever carrying the gripping-die the lever 77, being connected to the said gripping-lever by the link 79, moves upward, thereby causing the lifting-pin 76 to move upward and eject the finished spike from the chill or matrix of the die 60 and dispose the spike at such an angle that it will drop by its own gravity from the said chill or matrix through the end thereof corresponding to the head of the spike. The stop-flange 63 on the die 60 effectually prevents the spike-blanks from being carried past the chill or matrix of the die by the feed-plate 71.

The spikes are cut by my improved machine from a blank-bar *a*, which is rolled by a pair of appropriately-formed rolls *b* and provided on one side with the oppositely-beveled edge *c*, thereby forming the points of the spikes, which are subsequently cut from the blank-bar by the machine.

It will be observed by reference to Fig. 5 of the drawings that the feed-rolls 35 are thickened at their centers and taper toward their ends, and it should be further observed that the upper edge of the rigid shearing-jaw 24 is curved correspondingly to the curvature of the lower feeding-roll. By this construction of the feed-rolls the blank is bent under the shears to give it the proper slope for heading the spikes.

In connection with the lifting-pin 76, which raises the spikes from the chill, I employ a knockout 76^a, which is supported on a bracket 76^d and is operated by a cam 76^b on the shaft 31 and a coacting spring 76^c. This knockout engages the inner ends of the spikes as they are raised by the pin 76 and knocks them longitudinally out of the chill, as will be readily understood, the spring 76^c serving to restore the knockout to its initial position immediately after having ejected a finished spike.

Suitable guides 76^e, disposed appropriately with relation to the feed-rolls 35 and indicated in dotted lines in Fig. 3 of the drawings, serve to support the blank-bar and to guide the same to said rolls.

Having thus described my invention, I claim—

1. In a machine for making spikes, the combination of a die having a flange on one side, a gripping-lever carrying a gripping-die, shears, means to feed a blank bar or plate to

said shears, a reciprocating feed-plate to feed the spike-blank to the matrix or chill of the die, a lever connected to said feed-plate, and a revoluble cam to operate said lever, substantially as described.

2. In a machine for making spikes, the combination of the die, the gripping-lever carrying the gripping-die, the shears, means to feed the blank bar or plate to said shears, the feed-plate to feed the spike-blanks to the matrix or chill of the die, and means to actuate said feed-plate, substantially as described.

3. In a machine for making spikes the combination of a die, a gripping-lever having a gripping-die, means to actuate said gripping-lever, a fixed die, a lifting-pin and means to operate said lifting-pin, a rigid shearing-jaw, a lever having a shearing-jaw coacting therewith, a knockout, a reciprocating feed-plate, and a revoluble shaft having a cam to operate said shearing-jaw lever, a cam to operate said knockout, and a cam to operate said feed-plate, substantially as described.

4. In a machine for making spikes, the combination of a fixed die having a flange on one side thereof, a reciprocating feed-plate on said die, opposite said flange, a gripping-lever having a gripping-die coacting with said fixed die, and means to operate said feed-plate, substantially as described.

5. In a machine for making spikes, the combination of the die, the gripping-lever having the gripping-die, the feed-rolls thickened at their centers and tapered toward their ends, the stationary shearing-jaw having the curved upper edge, and the shearing-lever having the shearing-plate coacting with said stationary jaw, substantially as described.

6. In a machine for making spikes, the combination of a power-shaft, a cam revoluble therewith and laterally movable thereon, a gripping-lever operated by said cam and means to shift said cam into or out of engagement with said gripping-lever, substantially as described.

7. In a machine for making spikes, the combination of a die, a rigid shearing-jaw, a lever carrying a movable shearing-jaw, a shaft and connections to actuate said lever, a cam on said shaft, a feed-plate having a rod and a lever actuated by said cam and connected to said rod, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

EMANUEL PARKER.

Witnesses:

THOMAS PEACOCK,
THOMAS H. HODGKISS.