

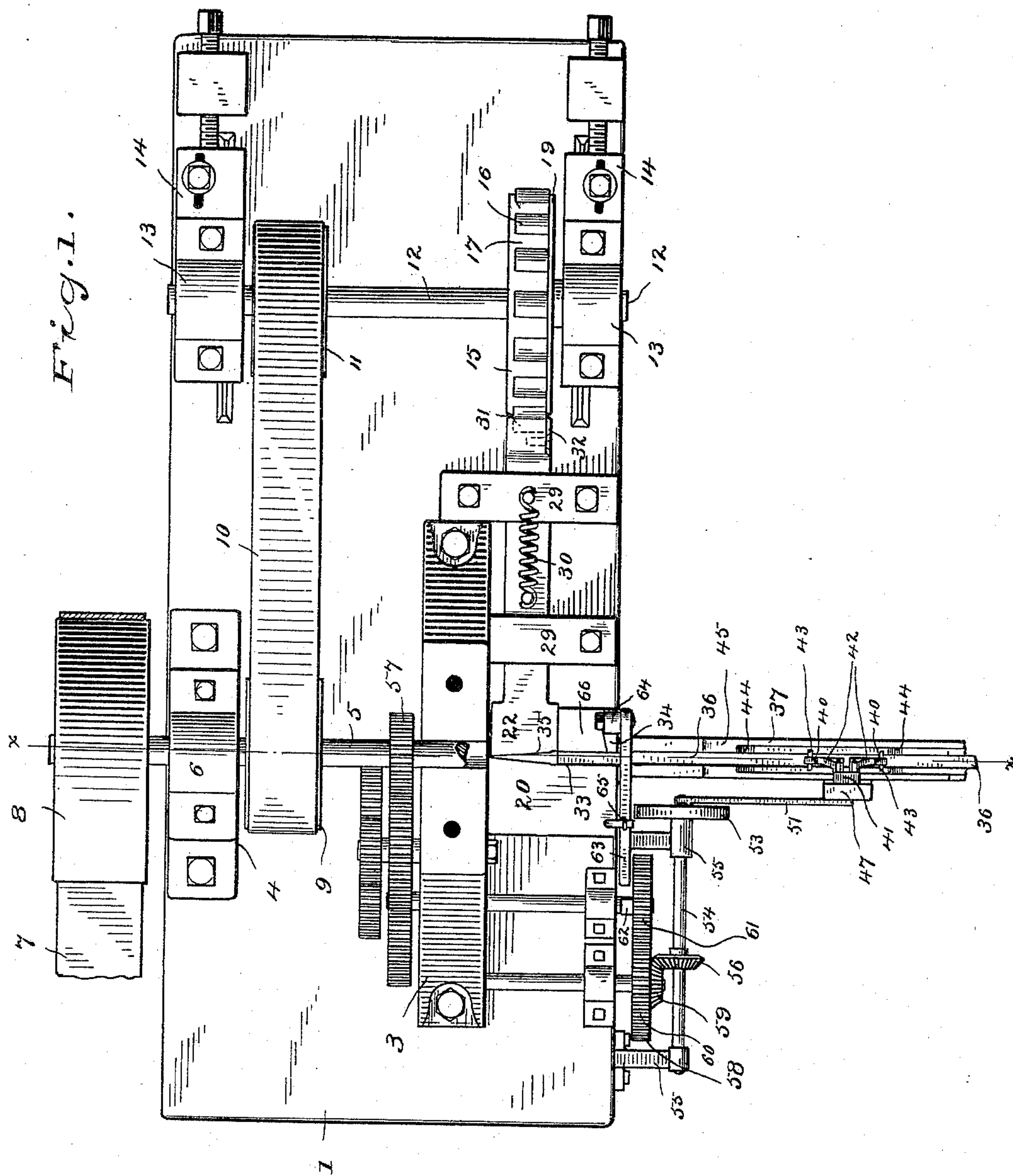
(No Model.)

C. H. YARINGTON.
HORSESHOE NAIL MACHINE.

3 Sheets—Sheet 1.

No. 495,606.

Patented Apr. 18, 1893.



WITNESSES

H. F. Lundy
Pearl M. Reynolds

INVENTOR

Charles H. Yarrington
By A. M. Wooster atty.

(No Model.)

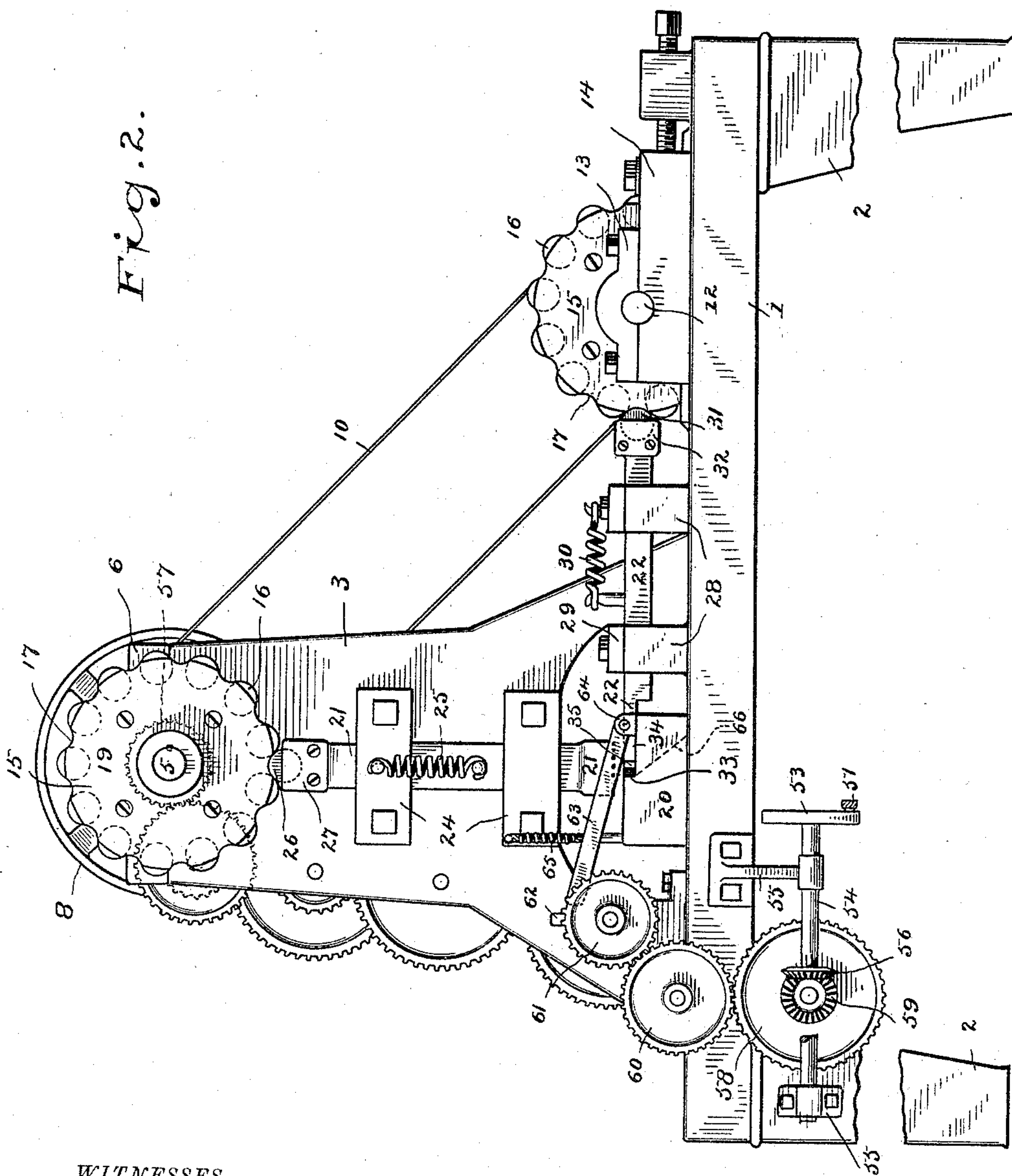
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Fig. 2.



WITNESSES

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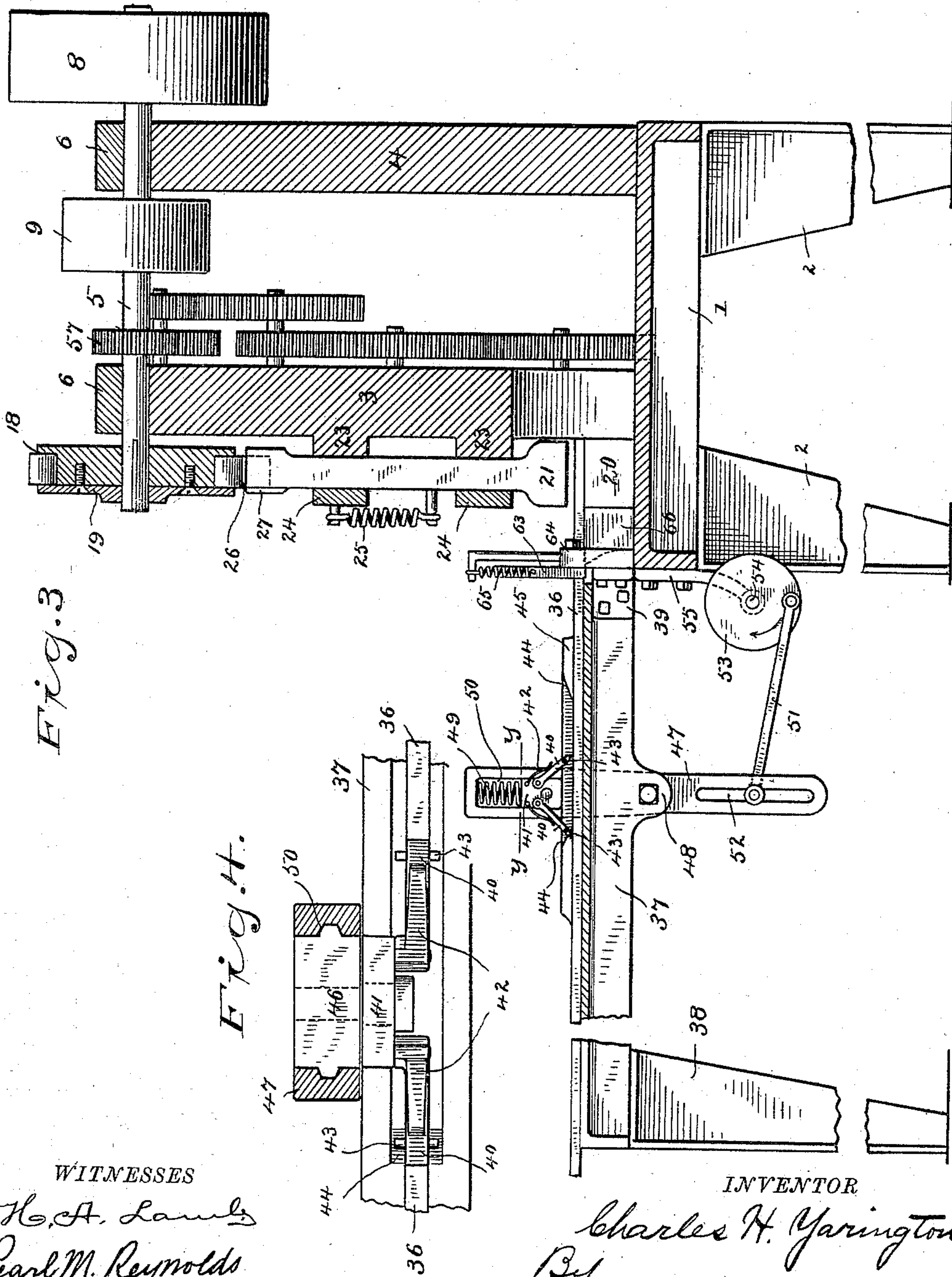
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UNITED STATES PATENT OFFICE.

CHARLES H. YARINGTON, OF TORRINGTON, ASSIGNOR TO THE FOWLER
NAIL COMPANY, OF SEYMOUR, CONNECTICUT.

HORSESHOE-NAIL MACHINE.

SPECIFICATION forming part of Letters Patent No. 495,606, dated April 18, 1893.

Application filed November 5, 1892. Serial No. 451,096. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. YARINGTON, a citizen of the United States, residing at Torrington, in the county of Litchfield and State of Connecticut, have invented certain new and useful Improvements in Horseshoe-Nail 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.

My invention has for its object the production of a horse shoe nail machine which shall be simple and compact in construction, strong and durable, capable of working at a very high rate of speed, and practically impossible to get out of repair.

With these ends in view I have devised the novel construction which I will now describe referring by numbers to the accompanying drawings forming part of this specification in which,

Figure 1 is a plan view of the machine complete; Fig. 2 a side elevation thereof, the feeding mechanism being removed; Fig. 3 a transverse section, the general line of the section being indicated by X X in Fig. 1, and Fig. 4 is a section on an enlarged scale on the line y y in Fig. 3 looking down.

1 denotes the bed of the machine which rests upon heavy legs 2.

3 and 4 are heavy front and back cheek pieces which are bolted rigidly to the bed and extend upward therefrom.

5 denotes the main shaft which is journaled in boxes 6 at the tops of the cheek pieces. Power is applied to this shaft to drive the entire machine by means of a belt 7 running over a pulley 8 on the shaft. Between the cheek pieces on shaft 5 is another belt pulley 9 over which a belt 10 extends to a pulley 11 on a shaft 12 which is journaled in boxes 13 upon blocks 14 which may be cast integral with the bed plate or rigidly secured thereto.

Shafts 5 and 12 both carry disks 15, said disks being provided in their peripheries with rollers 16, and between the rollers with depressions 17. The rollers may be fixed in the disks in any suitable manner. I preferably however

construct the disks substantially as set forth in my patent No. 483,091, dated September 20,

1892, the disks being provided in their peripheries with sockets 18 comprising more than a half circle so that the sockets themselves retain the rollers in position, side plates 19 which are secured to the disks acting to hold the rollers against lateral displacement.

20 denotes the anvil, 21 a vertically operating hammer and 22 a horizontally operating hammer. Hammer 21 reciprocates in ways formed in projections 23 cast upon cheek pieces 3, the hammer being held in place by heavy plates 24 bolted to the projections.

25 is a strong spring one end of which is connected to the hammer the other to one of the plates, the action of which is to hold the hammer at the raised position. At the upper end of the hammer shank is a roller 26 which lies in a socket comprising more than a half circle and is held in place by a plate 27 in the same manner that the rollers are held in the peripheries of the disks. Hammer 22 reciprocates in ways formed in projections 28 which are cast upon or rigidly secured to the bed the hammer being held in place by heavy plates 29 bolted to the projections.

30 denotes a strong spring one end of which is connected to the hammer the other to one of the plates and which acts to hold the hammer in the retracted position. At the outer end of the hammer shank is a roller 31 held in a socket comprising more than a half circle by a plate 32, in the same manner that the rollers are held in the other hammer shank, and in the disks. The action of springs 25 and 30 is to hold the rollers in the hammer shanks in contact with the disks, that is to say the rollers at the ends of the hammer shanks will rest in depressions 17 between the rollers in the peripheries of the disks. It follows that rotation of the disks through the engagement of the rollers in the peripheries thereof with the rollers at the ends of the hammer shanks will cause the blows of the hammer to be delivered with great rapidity. In practice I have found it practicable to speed the disks high enough so that the hammers will deliver about eight thousand blows per minute. It will be noticed in the drawings that the top of the anvil is cut away upon one side so as to leave a wall 33 and a depressed surface 34 over which hammer 22

moves, the under side of the operative end of the hammer being shown as cut away leaving the shank heavier than the operative portion of the hammer, said operative portion sliding
 5 over the depressed surface of the anvil. It will be noticed in Fig. 1 that wall 33 of the anvil inclines inward and that the inner face of hammer 22 inclines inward likewise as at 35. These two inclines may be given any re-
 10 quired shape that it is desired to reproduce in the nail. The operative position of hammer 21 will be clearly understood from Figs. 2 and 3.

36 denotes the strip of metal from which
 15 the nails are formed. This strip is fed to the hammers in a guide 37 the inner end of which is rigidly bolted to the anvil or bed by means of angle pieces 39 which are bolted to the guide and to the anvil or bed, the outer end
 20 being supported by a leg 38. The strip of metal is fed forward and withdrawn from the hammers by means of dogs or pawls 40 pivoted to a block 41. The pawls are held in op-
 25 erative position by means of springs 42 and are provided with lugs 43 which engage in-
 30 clines 44 at the ends of ways in side pieces 45 which are secured to the opposite sides of the guide. Block 41 is pivoted to a slide 46 which slides in a recess 50 in an oscillating lever 47. This lever is pivoted to a boss 48 formed upon the under side of the guide.

49 is a spring which bears upon the top of the slide and against the end of the recess and acts to force the slide downward and to
 35 retain the block in engagement with the top of the side piece upon which it bears. Lever 47 is oscillated by means of a connecting rod 51 one end of which is pivoted in a slot 52 in the lever, the other end being pivoted to a
 40 disk 53 upon a shaft 54 journaled in brackets 55 at the side of the bed and provided with a bevel gear 56. The oscillation of lever 47 may be regulated by adjusting the con-
 45 necting rod in slot 52. Motion is imparted to shaft 54 by means of a train of gearing which receives motion from a pinion 57 on shaft 5, the last gear in the train which I have desig-
 50 nated as 58 carrying with it a bevel gear 59 which meshes with bevel gear 56 and imparts rotation to shaft 54 and the disk. Gear 58 receives motion from a gear 60 which in turn receives motion from a gear 61, the lat-
 55 ter gear being provided with a lug 62 the ac-
 60 tion of which is to operate the cutter.

It will of course be understood that any suitable form of cutter may be used, and that my invention is not limited to this special form of cutter to which no claim of novelty is made but which will be briefly described in
 60 order to complete the full description of the operation of the machine.

63 denotes the cutter which is pivoted to a lug 64 extending upward from the anvil. A spring 65 acts to hold the cutter in the raised
 65 position. At each revolution of gear 61 the free end of the cutter is engaged by lug 62 and carried downward against the power of the

spring until it is released by the lug when it is drawn to its normal position again by the spring.

Turning now to Figs. 3 and 4 I will describe the operation of the feeding mechanism in connection with said figures. Fig. 3 shows what I term the starting position for each nail, that is to say the oscillating lever is shown in
 75 the position it occupies just after the hammered nail has been severed from the strip by the cutter, the end of the strip being at the cutter. At this instant, disk 53 rotating in the direction indicated by the arrow, the lower
 80 end of oscillating lever 47 will be moving toward the left, the upper end moving toward the right. The point of the right feed dog is pressed against the strip by the spring caus-
 85 ing the dog to engage the strip and carry it forward as the upper end of the oscillating lever moves toward the right. This move-
 90 ment continues until the end of the strip has been passed in between the anvil and hammer 22, the end of the strip being subjected at the same time to the blows of hammer 21. At the instant the point of the strip shall have reached the rear end of the horizontal
 95 hammer and anvil, lugs 43 on the right feed dog will commence to ride up the right in-
 100 clines 44 on the side pieces, which will disengage the dog from the strip. An instant later the upper end of the oscillating lever will have reached the extreme of its movement toward the right and will commence to move
 105 in the opposite direction. This will cause the point of the left feed dog to engage the strip and will draw it backward out from between the hammer and the operative face of
 110 the anvil. At the instant that the head end of the hammer portion of the strip shall have reached the cutter as it is drawn backward, the cutter will operate and sever the ham-
 115 mered nail from the strip. At the same instant the lugs 43 upon the left feed dog will ride up the left inclines 44 which will release said dog from engagement with the strip. An instant later the movement of the oscillating lever in the opposite direction will commence, the operation being repeated as before. It
 120 will be noticed from the position of the right and left inclines 44 relatively to the oscillating lever that the forward movement of the strip is greater than the backward movement. This is properly proportioned in building the
 125 machine and the movements are so timed that at just the instant the portion of the strip that has not been hammered passes under the cutter the cutter will descend and sever the ham-
 130 mered portion. This hammered portion, *i. e.*, the nail, drops out of the machine at incline 66. As soon as the hammered nail has been severed the cutter is raised again as already described and the strip is fed forward as before.

It will of course be understood that the details of construction may be varied to an almost unlimited extent without departing from the principle of my invention.

I claim—

1. In combination with an anvil, a hammer 22, horizontally movable in guides or ways, an operating disk therefor having alternately arranged projections and depressions in its periphery, a hammer 21, vertically movable in guides or ways and an operating disk above the same having alternately arranged projections and depressions in its periphery, substantially as described.

2. The combination with an anvil having a depressed surface and a wall 33, a horizontally moving hammer having an inclined face 35, said wall and said face being shaped to produce a pointed nail, a vertically movable hammer acting in connection with said anvil and said horizontal hammer, and springs for holding said hammers at the retracted position, of an independent disk for each hammer having rollers in their peripheries, and between said rollers depressions which are engaged by the rear ends of the hammers, said rollers acting to force the hammers forward causing them to strike a succession of blows.

3. In combination with the anvil and the hammers, of strip feeding and withdrawing mechanism consisting of pivoted pawls 40, a vertically movable slide 46, carrying the same,

and an oscillating lever 47, carrying the said slide, substantially as described.

4. The combination with the anvil and the horizontal and vertical hammers, of feeding mechanism consisting of an oscillating lever carrying spring actuated dogs provided with pairs of lugs 43, and inclines engaged by said pairs of lugs to lift said dogs respectively at the end of the feeding and withdrawing movements.

5. The combination with the anvil and the hammers, of guide 37, side pieces having inclines 44 on opposite sides of the guide, oscillating lever 47 having recess 50, block 41, spring actuated dogs 40 pivoted to the block and having lugs 43 which engage the inclines to disengage the dogs, slide 46 to which the block is pivoted and which lies in the recess in the lever, and a spring engaging the slide to force the latter downward and hold the block in engagement with the side piece.

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

CHARLES H. YARINGTON.

Witnesses:

PATRICK O'DONNELL,
F. W. HUBBARD.