

(No Model.)

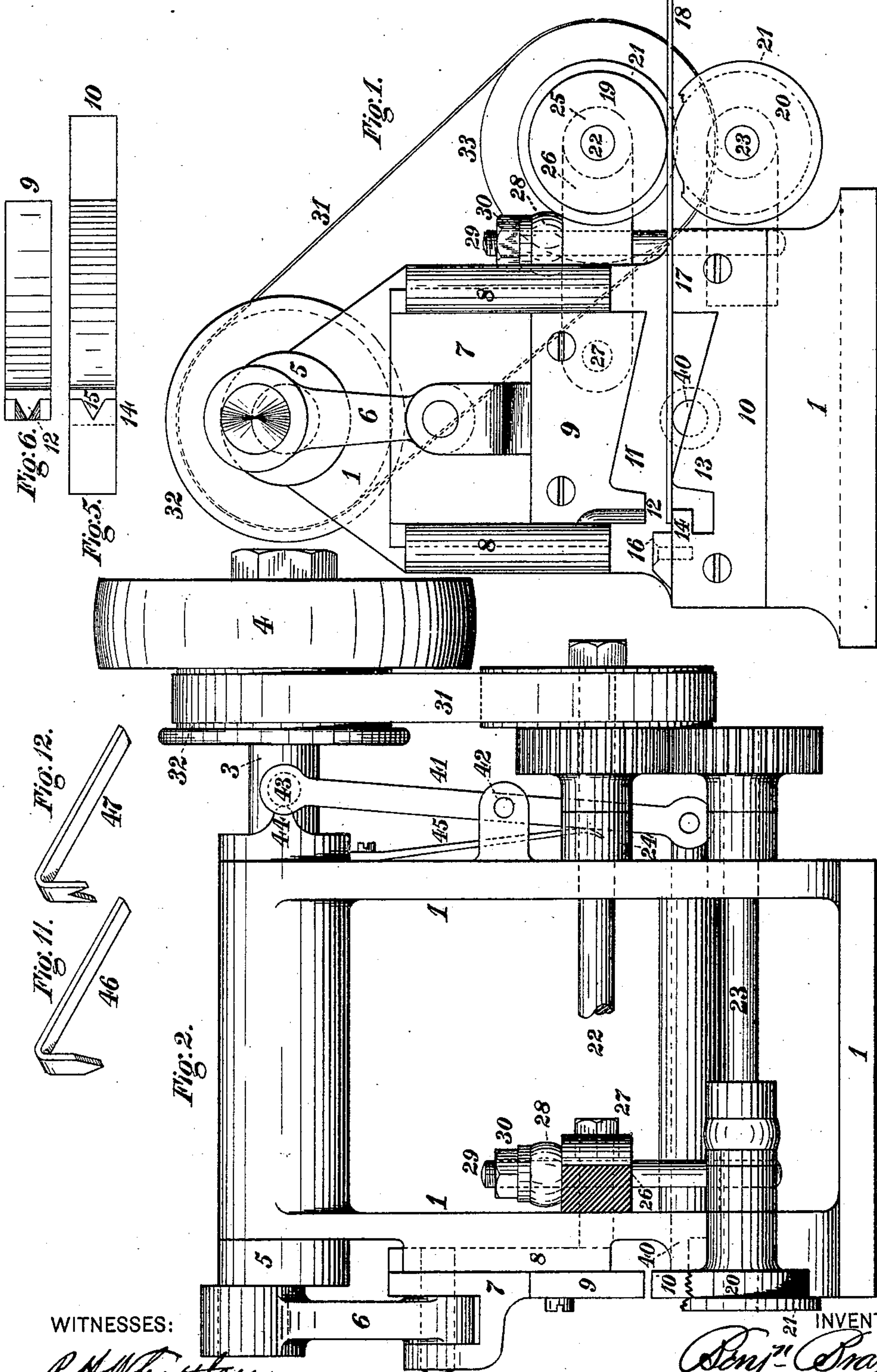
2 Sheets—Sheet 1.

B. BRAZELLE.

MACHINE FOR MAKING HOOK HEADED NAILS.

No. 300,758.

Patented June 24, 1884.



WITNESSES:

*R. H. Whittier*  
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INVENTOR

*B. Brazelle*  
*by J. Mendenhall*  
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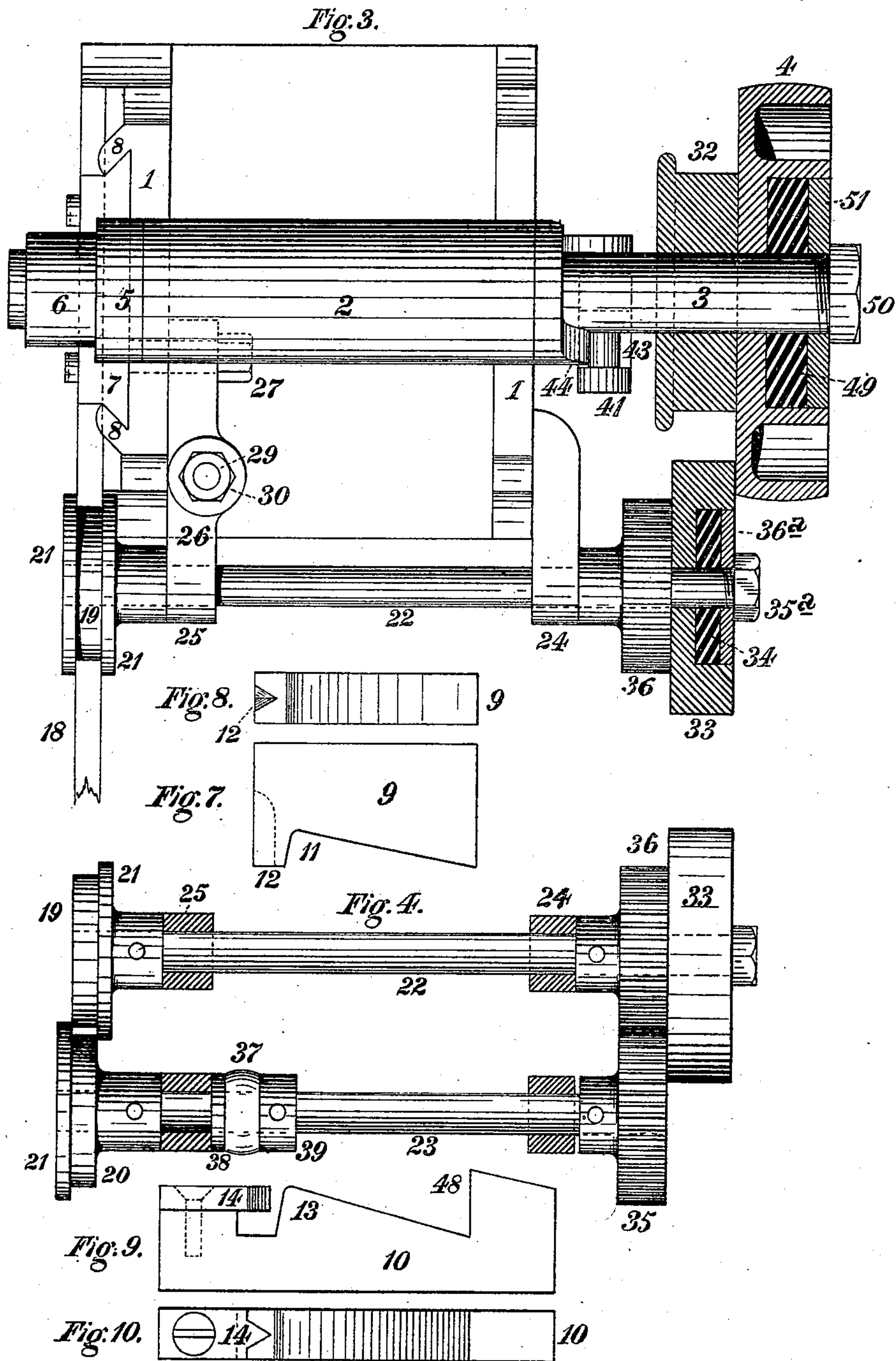
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*R. A. Whittlessey*  
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# UNITED STATES PATENT OFFICE.

BENJAMIN BRAZELLE, OF ST. LOUIS, MISSOURI.

## MACHINE FOR MAKING HOOK-HEADED NAILS.

SPECIFICATION forming part of Letters Patent No. 300,758, dated June 24, 1884.

Application filed December 26, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, BENJAMIN BRAZELLE, of St. Louis, in the county of St. Louis and State of Missouri, have invented certain new and useful Improvements in Machines for Making Hook-Headed Nails, of which improvements the following is a specification.

The object of my invention is to provide a machine of simple, durable, and inexpensive construction for the manufacture of nails or keepers for metallic hoops of kegs, barrels, &c., of the class formed of a metallic strip, bent and provided with either a single or a double point at one of its ends. Nails of such description—an instance of which may be found in the patent of Joseph J. Heim, No. 273,076, dated February 27, 1883—have operated satisfactorily in practice in retaining metallic hoops in position on kegs and other vessels, and by my invention may be produced with such economy, rapidity, and accuracy as to enable the demand therefor to be supplied with promptness, and at fair and reasonable prices. The improvements by which I attain such end are hereinafter fully set forth.

In the accompanying drawings, Figure 1 is a front view, in elevation, of a nail-machine embodying my invention; Fig. 2, an end view, in elevation, of the same as seen from the right, and with part of the feed mechanism broken away; Fig. 3, a plan or top view, partly in section, of the same; Fig. 4, a view in elevation of the feed-rolls and their driving mechanism, as seen from the right of Fig. 1; Fig. 5, a plan or top view of the fixed die as adapted for the manufacture of single-pointed nails; Fig. 6, a bottom view of the corresponding movable die; Fig. 7, a side view of a movable die adapted for the manufacture of double-pointed nails; Fig. 8, a bottom view of the same; Fig. 9, a side view of the corresponding fixed die; Fig. 10, a plan or top view of the same; Fig. 11, a view in perspective of a single-pointed nail as formed by the machine, and Fig. 12 a similar view of a double-pointed nail.

In the practice of my invention I provide a stout frame, 1, in the upper portion of which is formed a bearing, 2, for a driving-shaft, 3, which is rotated by the application of power from any suitable prime mover to a pulley, 4, upon one of its ends. A crank or eccentric,

5, upon the opposite end of the driving-shaft, is coupled by a connecting-rod, 6, to a cross-head, 7, which is fitted to move vertically in guides 8 on one side of the frame, and has secured to its lower side a movable die, 9, by which the nails are bent, pointed, and cut from the blank, as presently to be described. A fixed die, 10, is secured to the frame below and in line with the movable die. An angular recess, 11, corresponding in the form and dimensions of its sides with the outer longitudinal outline of the nail to be cut, and having a cutting-edge at the outer end of its longer side, is formed in the lower side of the movable die 9, adjacent to which recess and next its shorter side a punch, 12, having (where single-pointed nails are to be made) an angular or V-shaped face, is also formed on the die 9, as shown in Figs. 1 and 6. A projection or former, 13, the sides of which are parallel to those of the recess 11, is formed upon the upper side of the fixed die, and a tongue, 14, having an angular or V-shaped recess, 15, the sides of which are in line with those of the face of the punch 12, is also formed on or secured to the fixed die. (See Figs. 10 and 5.) A stop, 16, is secured to the top of the tongue 14, with the plane of its face in line with the point of the recess 15 of the tongue 14. The opposite end of the fixed die 10 is faced off to form a bed or track, 17, which is in or about in line horizontally with the top of the tongue 14.

The strip or blank 18, from which the nails are to be made, is fed along the bed 17 up to and against the stop 16, by and between a pair of feed-rolls, 19 20, the faces of which correspond, substantially, in width with the blank, and are provided on opposite sides, respectively, with flanges 21. The upper feed-roll, 19, is secured upon a shaft, 22, which is fitted to rotate in bearings 24 25, one of which, 24, is fixed to the frame 1, and the other, 25, formed on one end of an arm or bar, 26, the opposite end of which is pivoted by a bolt, 27, to the frame. A limited degree of vertical movement is thereby permitted to the adjacent end of the feed-roll shaft, to accommodate variations in thickness of the blank 18, the face of the feed-roll 19 being pressed thereto by a spring, 28, in this case of rubber, which is compressed against the bar 26 by a bolt, 29,



and nut 30. Rotation is imparted to the feed-roll shaft 22 by a belt, 31, passing around a pulley, 32, fixed upon the driving-shaft 3, and around a pulley, 33, on the feed-roll shaft 22, and the lower feed-roll shaft, 23, is driven by a spur-gear, 35, upon one of its ends, which engages a similar gear, 36, on the shaft 22. The pulley 33 is fitted loosely upon the shaft 22, and drives the same by the friction induced thereon by a spring, 34, which is compressed within a recess in the pulley 33 by a nut, 35<sup>a</sup>, engaging a thread on the end of the shaft 22, and bearing against a washer, 36<sup>a</sup>, which fits against the spring 34. When, in the movement of the blank 18 by the feed-rolls, its end is brought against the stop 16, the induced resistance overcomes the frictional contact due to the spring 34, and the further movement of the feed-rolls is arrested during the cutting and punching of the nail.

In order to admit of end movement of the lower feed-roll, 20, to accommodate lateral variations in the blank 18, either as to width or alignment, a spring, 37, is fitted upon the feed-roll shaft 23, between a fixed collar, 39, thereon and a loose washer, 38, adjoining one of its bearings. Lateral pressure upon the flange 21, caused by inequalities in the blank, will force the lower feed-roll, 20, outwardly for a sufficient distance to admit of the passage of the obstructing portion of the blank, and the spring 37, being coincidentally compressed, will thereafter return the shaft 23 and pulley 20 to normal position. The finished nails are discharged as formed from the former 13 by the end of a discharge-rod, 40, which is reciprocated transversely to the former 13 by a double-armed lever, 41, pivoted by a pin, 42, to the frame 1, and coupled at its lower end to the discharge-rod 40. The upper end of the lever 41 carries a pin or roller, 43, which is pressed up to the face of a cam, 44, on the driving-shaft 3 by a spring, 45, bearing against the lower arm of the lever 41, the cam 44 thus acting to move the end of the discharge-rod 40 toward and from the face of the former 13 at each revolution of the driving-shaft.

The fixed and movable dies 10 and 9, before described, are adapted to form a single-pointed nail, 46, as shown in Fig. 11, and for the production of the double-pointed nail 47 (shown in Fig. 12) they are modified, as illustrated in Figs. 7 to 10, inclusive. In such case the punch 12 of the movable die 9, in lieu of having an angular or V-shaped face, as before described, is formed with a correspondingly-shaped recess, and a corresponding angular face is formed upon the tongue 14 of the fixed die 10. The fixed and movable dies are also reversed in position upon the machine—that is to say, their ends having the punch and tongue, respectively, are placed nearest the feed-rolls 19 and 20. The upper surface of the tongue 14 then occupies the position and performs the function of the track 17 in the former case, and a stop, 48, is formed at the op-

posite end of the former 13, as the equivalent of the stop 16 before employed, the operation of the several members being similar to that performed in cutting and bending a single-pointed nail.

In order to obviate risk of breakage of the machine in case it should become choked, as might occur from failure to discharge the nails under the continued feed of the blank, the driving-pulley 4 is fitted loosely upon the driving-shaft 3, and is adapted to rotate the same by frictional contact, as in the case of the feed-roll pulley 33, before described. A spring, 49, is compressed within a recess on the pulley 4, by a nut, 50, engaging a thread on the driving-shaft, and bearing on a washer, 51, fitting against the spring 49, which is compressed so as to induce only sufficient friction to cut and punch a single thickness of the blank. Upon the choking of the dies the pulley 4 will slip upon the shaft and the rotation of the machine will be arrested without damage to the parts.

In operation, the blank 18 is led from a suitable reel, upon which it is coiled, to and between the feed-rolls 19 and 20, and the spring 28 is screwed down sufficiently to effect the proper feed of the blank to the dies. When the end of the blank abuts against the stop 16, (or 48, as the case may be,) the feed is stopped by the pulley 33 slipping on the feed-shaft 22, and by the descent of the movable die 9 a nail is cut and bent to the desired form. By the movement of the discharge-rod 40, the finished nail is pushed off the former 13, the feed-rolls resume their rotation, and the blank is moved forward for another operation.

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

1. In a nail-machine, a cutting and bending die, 9, substantially as set forth—to wit, having an angular recess, 11, in its face corresponding in form with the desired outer longitudinal outline of the nail to be cut, with a cutting-edge located at one end of said recess, and a cutting and bending punch, 12, located at the other end thereof.

2. In a nail-machine, the combination, substantially as set forth, of a movable cutting and bending die, 9, having an angular recess, 11, and cutting edge and punch, 12, as described, and a counterpart fixed die, 10, having a corresponding former, 13, and tongue 14.

3. In a nail-machine, the combination, substantially as set forth, of a pair of cutting and bending dies, a pair of feed-rolls, each having a flange on one side, the flanged side of one roll being opposite the plain side of the other, and a spring on the shaft of one of said feed-rolls, the tension of which acts to return said feed-roll to normal position upon the relief of pressure, tending to move said feed-roll in a plane parallel to its axis.

4. In a nail-machine, the combination of a pair of cutting and bending dies, a fixed stop, a pair of feed-roll shafts, each having fixed thereon a feed-roll and a gear which meshes



with a corresponding gear on the opposite shaft, a driving-pulley mounted loosely on one of the feed-roll shafts, and having an annular recess in one of its sides, a spring fitting in said recess, and a nut engaging a thread on the shaft of said pulley, and adapted to compress the spring within the recess, substantially as and for the purpose set forth.

5. In a nail-machine, the combination, substantially as set forth, of a pair of cutting and bending dies, a feed-roll mounted in bearings fixed to the frame of the machine, a feed-roll mounted in a bearing on an arm pivoted to the frame, a spring-bearing upon said pivoted arm, and an adjusting-screw and nut for varying the tension of the spring upon said arm.

6. In a nail-machine, the combination of a driving-shaft, a driving-pulley fitting freely thereon and maintained in frictional contact therewith by a spring compressed by a nut engaging a thread thereon, a cutting and bending die having an angular recess and cutting-edge and punch, as described, a connecting-

rod, coupling said die to a crank or eccentric on the driving-shaft, a counterpart fixed cutting and bending die having a former and tongue corresponding with the recess of the movable die, a fixed stop in line with one of the cutting-edges of the movable die, a pair of feed-rolls, each having a flange on one side, the flanged side of one roll being opposite the plain side of the other, said feed-rolls being rotated by a belt from the driving-shaft passing around a loose pulley, which is held in frictional contact with one of the feed-roll shafts by a spring compressed by a nut thereon, a discharge-rod adapted to reciprocate toward and from the dies, and a lever coupled to said discharge-rod and actuated by a cam upon the driving-shaft, these members being combined for joint operation, substantially as and for the purposes set forth.

BENJAMIN BRAZELLE.

Witnesses:

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E. CHRISTIE.