(No Model.) 2 Sheets—Sheet 1.

J. H. THOMPSON.

NAIL MAKING MACHINE.

No. 445,722. Patented Feb. 3, 1891.

Fig. 1

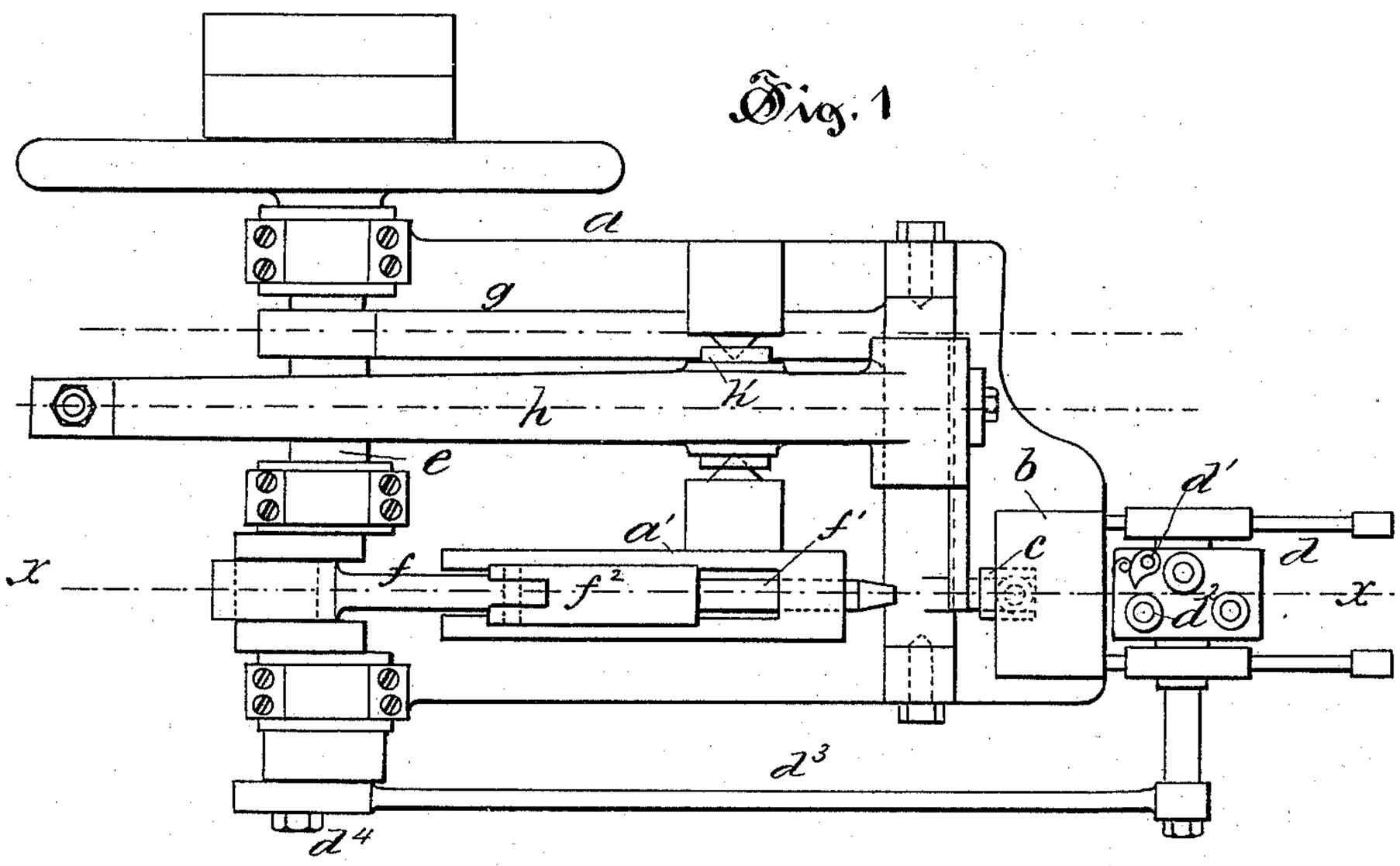
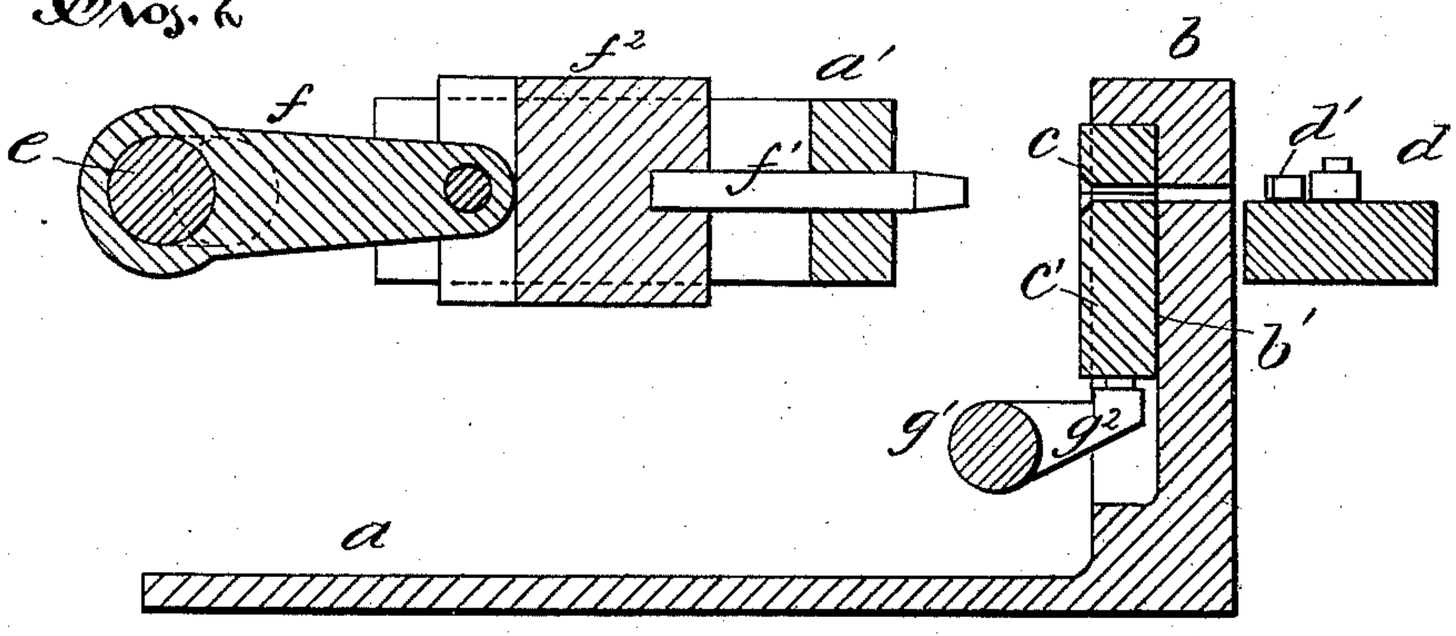


Fig. 2



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 5

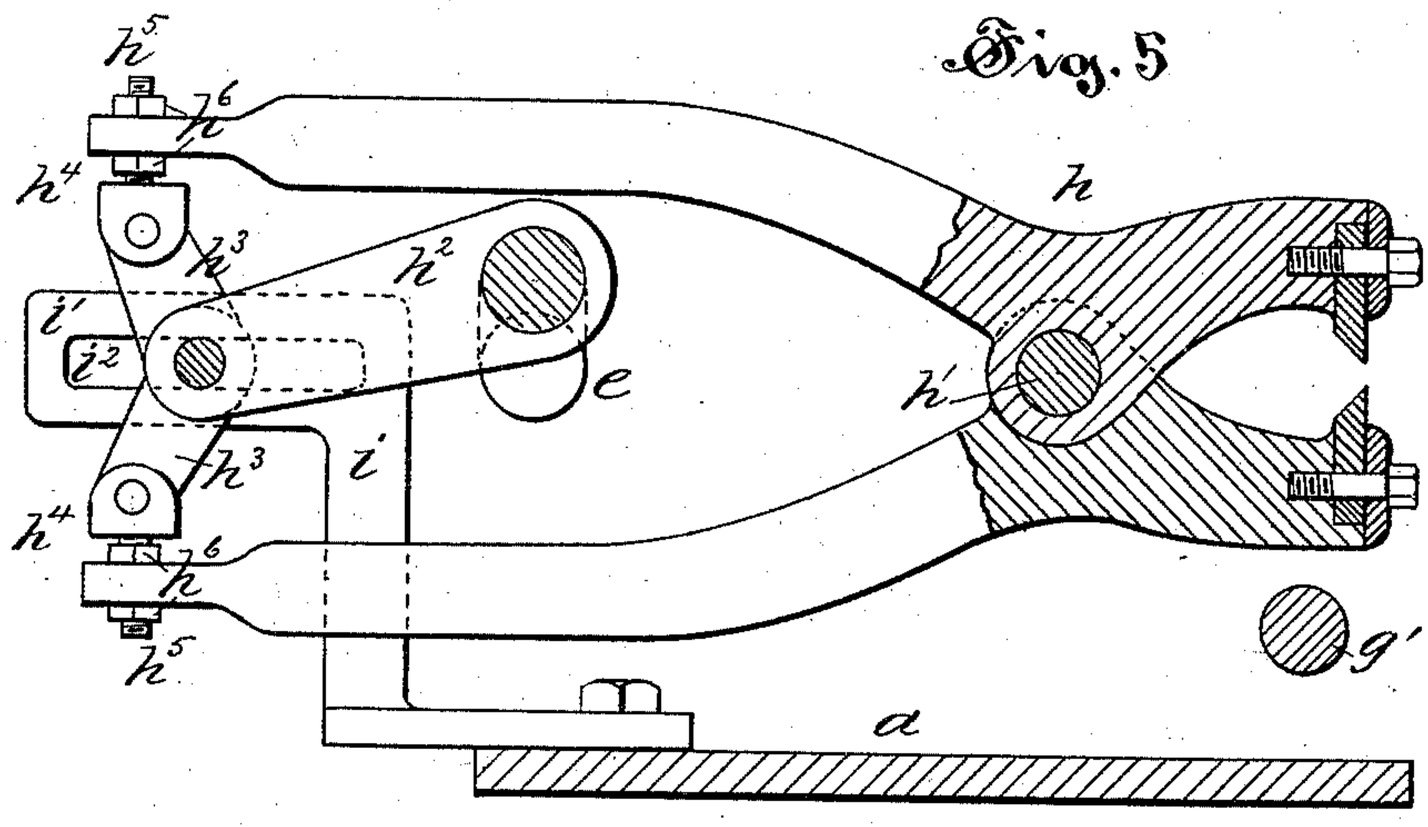


Fig. 6

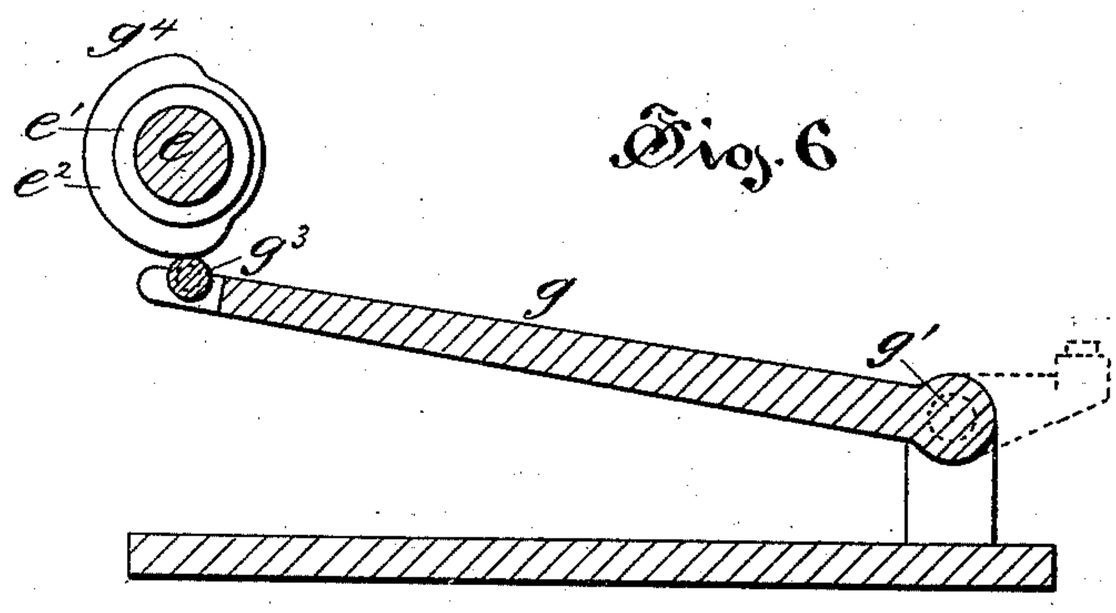


Fig. 3

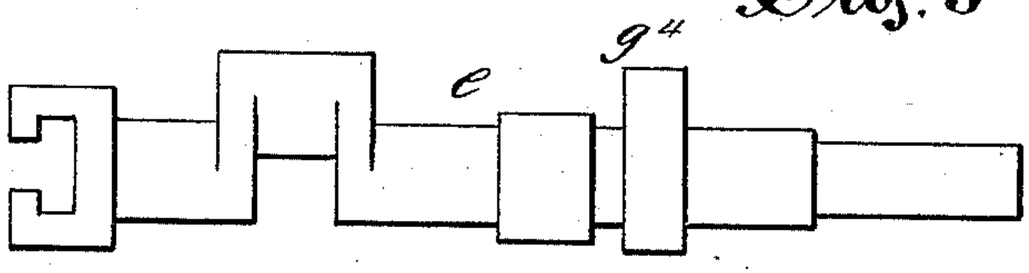
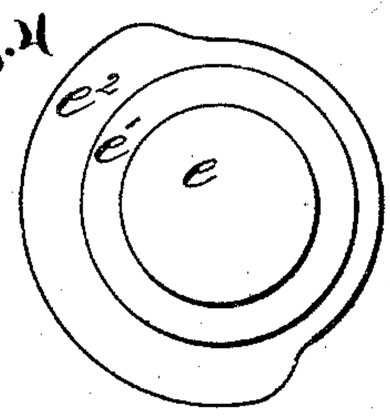


Fig. 4



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UNITED STATES PATENT OFFICE.

JOHN H. THOMPSON, OF COLLINSVILLE, CONNECTICUT.

NAIL-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 445,722, dated February 3, 1891.

Application filed July 30, 1889. Serial No. 319,234. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. THOMPSON, of Collinsville, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Nail-Making Machinery, of which the following is a full, clear, and exact description, whereby any one skilled in the art can make and use the same.

The object of my invention is to provide a machine in which wire nails may be made; and my invention relates to certain devices for operating, feeding, and cutting-off mechanisms.

My improvement consists in certain details of the cutting-off mechanism and in the peculiarly-constructed driving-cams, as more particularly hereinafter described, and pointed out in the claims.

Referring to the drawings, Figure 1 is a top or plan view of a machine embodying my invention. Fig. 2 is a view in vertical section on plane *x x* of Fig. 1. Fig. 3 is a detail plan view of the driving-shaft on enlarged scale. Fig. 4 is a detail view, in cross-section, of the shaft and the driving-cam, illustrating the construction of the latter. Fig. 5 is a detail view, in vertical section, of the machine, showing the method of operating the cutting-off device. Fig. 6 is a detail in section of the tilting-lever and its connections.

In the accompanying drawings, the letter *a* denotes the frame of the machine as a whole; *b*, the head of the machine, having the die-socket *b'*, in which are located the sectional dies *c c'*. The die *c* is fixed and the die *c'* is movable vertically, the parting-plane between the dies passing centrally through the socket in which a nail is headed. In line with the socket in the die and the opening through the die-block is located a wire-feed *d*, the pawl *d'* co-operating with a roll *d''* to prevent a length of wire from slipping while the reciprocating feed-block moves toward the dies. This wire-clamp opens to allow the feed device to move away from the die, and in its return motion again clamps the wire, so as to feed it toward the machine a distance determined by the throw of the feed device. A connecting-rod d^3 joins the feed device to the crank-pin d^4, that is on a cam-shaft *e*. This cam-shaft *e* is mounted in suitable bearings across the back of the machine, and is connected by a pitman *f* with the reciprocating plunger *f'*, that is borne on the end of the slide *f''*, that is supported on a fixed portion of the machine rising from the bed *a'*. This plunger is located directly in line of the axis of the die-sockets, and the head of the plunger is adapted to strike the end of the wire in such position as to upset it and form the head of a nail, the wire being held firmly between the dies by the die-clamping mechanism. The latter consists of a tilting lever *g*, mounted on a rock-shaft *g'* and having an arm *g''*, on which the die-block *c'* is supported. The outer end of the lever *g* bears a roller g^3, that is in operative contact with the face of a cam g^4, that is secured on the shaft *e*. After a head has been formed on the end of the wire it is fed forward by the movement of the wire-feed, and a suitable length for a nail is cut from the wire by means of the cutting device *h*, that consists of a pair of lever-arms connected by the pivot *h'*, that is mounted in fixed bearings on the frame. The outer ends of the lever-arms are united to a pitman *h''* by means of the links h^3, the inner end of the pitman being connected to a crank on the shaft *e*. By the rotation of the shaft the cutter-levers are opened and closed, the circular movement of the crank being transmitted through the pitman and links to the cutter-levers, that are made to open and close. These cutter-levers are located at one side of the line of the plunger, a wire-feed and the cutters proper being extended laterally from the levers a sufficient distance to enable them to grasp and cut the wire. A collar *e'* is formed on the shaft *e*, as by turning, and on the outside of this a renewable working-surface is formed by securing to the collar a cam-ring *e''*. This cam-ring is made, preferably, of steel, and is firmly secured to the collar either by shrinking, driving, or securing it, as by means of a key. When the working-surface of such a cam-ring has become worn, the machine can be repaired by removing the ring and replacing it by a new cam-ring of proper dimensions and shape, that is then secured to the collar in the manner already described. When the cutters are in proper adjustment for operating they are set so as to strike the wire in a plane at right angles to the plane of the axis of the latter; but if by the wearing of any of the driving mechanism of the cutter-levers

the cutters have to be moved forward in order to meet, the cutter is set at an angle with the axis of the wire, and such a location of the cutter is objectionable, for the reason that good work cannot be done. In order to remove the necessity of such an adjustment of the cutters, I provide each of the links h^3 with an adjustable device h^4, that consists of a bolt h^5, pivotally connected to the links and extending through a socket in the lever-arm, with a clamp-nut h^6 arranged on each side of the socket-piece and serving as a means of lengthening or shortening the link. By means of this device the throw or travel of the lever-arms may be kept always in the same relative position without regard to the wear on the pivots.

A bracket i is secured to the frame of the machine and has a horizontal portion i', with a slot i'', in which the ends of the pivot that unites the pitman and the links are located. This guide prevents the cutter-levers from tilting on their pivot-bearings.

I claim as my invention—

1. In combination with the die-blocks, the wire-feed device, the heading device, and the cutter-levers located at one side of the line of feed of the wire and having the laterally-extending cutting-edges, the driving-shaft e, the pitman, and the links connecting the pitman with the cutter-levers, all substantially as described.

2. In combination with the driving mechanism, the cutter-levers mounted on a pivot-bearing, the driving-shaft, the pitman connecting the shaft and the links of the toggle, and the links connecting the pitman and the toggle-levers, said links having provision for lengthwise adjustment, all substantially as described.

3. In combination with the toggle-levers mounted on pivot-bearings, the driving-shaft, the pitman connecting the driving-shaft with the toggle levers or links, the toggle-levers connecting the pitman and the cutter-levers, and the guide that supports the toggle-levers in a fixed plane, all substantially as described.

4. In a nail-making machine, in combination with the wire-feed device, the fixed die-block, the reciprocating die-block, the die-closing lever g, with one end in operative contact with the reciprocating die-block and the other in operative contact with a cam on the cam-shaft, and the cam composed of a removable cam-ring e, made of steel and shrunk upon the shaft, and the cam-shaft, all substantially as described.

5. In a nail-making machine, in combination with the wire-feed, the clamping and head-forming dies, the reciprocating plunger operatively connected to the rotating cam-shaft, the die-closing lever with one end in operative connection with the movable part of the head-forming dies and the other with a cam borne on the cam-shaft, and the cam-shaft bearing the operating-cam composed of a renewable cam-ring of hardened steel secured to the shaft by being shrunk thereon, all substantially as described.

JOHN H. THOMPSON.

Witnesses:
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