M. Burnett

Horseshoe-Nail Machine.

No. 8,006. Patented Apr. 1, 1851.

Fig. 1.

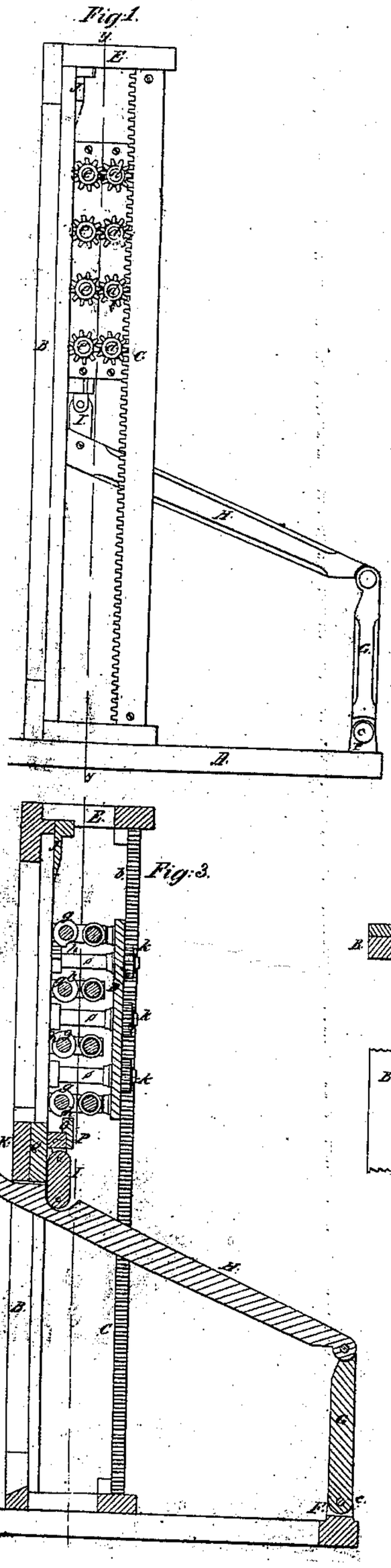


Fig. 2.

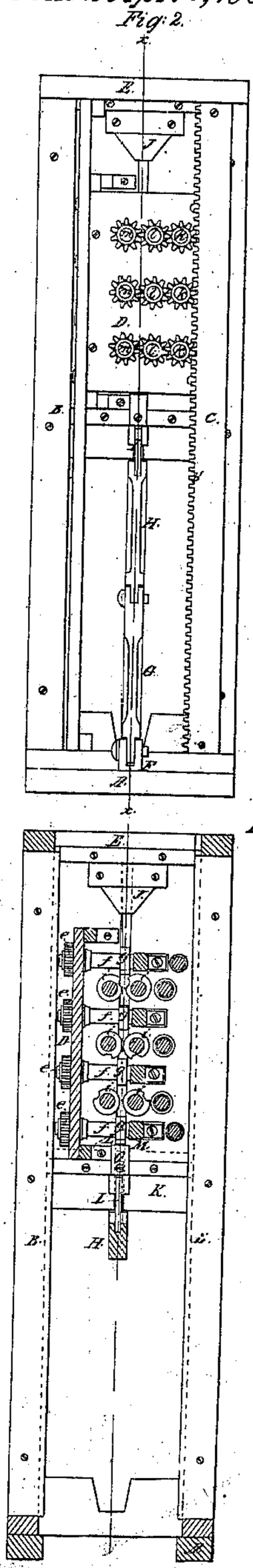


Fig 4

Fig. 3.

Fig. 5.

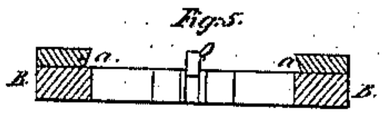
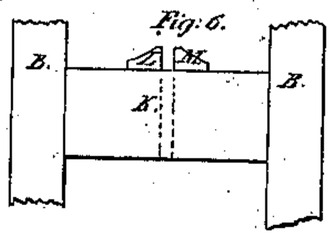


Fig. 6.



UNITED STATES PATENT OFFICE.

MARSHALL BURNETT, OF BOSTON, MASSACHUSETTS.

HORSESHOE-NAIL MACHINE.

Specification of Letters Patent No. 8,006, dated April 1, 1851.

To all whom it may concern:

Be it known that I, MARSHALL BURNETT, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Machines for Making Horseshoe-Nails; and I do hereby declare the following to be a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part thereof, in which—

Figure 1 is a side view, showing the rack and spur-wheels which give motion to the cams that form the front of the nail. Fig. 2, a view from the rear of the machine, showing the rack and spur-wheels, which operate the cams that form the sides of the nail. Fig. 3, represents a section through the red line *x*, *x*, of Fig. 2. Fig. 4, represents a section through the red line *y*, *y*, of Fig. 1, and Figs. 5 and 6, details of parts of the machine not distinctly seen in the other figures.

Similar letters in the several figures represent the same parts.

The nature of my invention consists in arranging a series of cams in a sliding frame, said cams being operated by spur wheels placed on the same shaft with them, and the said spur wheels receiving their motion, and being guided in their movements in forming and drawing out the nails by stationary racks which are formed on the upright frame of the machine, so that said sliding frame of cams, will in being brought down by the lever or pitman which moves it, form the head, front, and sides of the nail, the fourth side receiving its proper shape by being pressed by the action of the cams against a "former" placed on the rear of a feeding bar, and when the nail is finished it is cut from the nail rod by a knife or cutter arranged upon the upper part of the said sliding frame of cams, and drops through a slot in the front of the machine into a box or other receptacle arranged for that purpose.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

On a frame A, I arrange the four uprights B, B and C, C, two of which uprights B B, have angular grooves *a*, *a*, Fig. 5, cut in them for the sliding frame of cams D, to move and be guided in; the other uprights C C, have a rack *b*, formed in their edges next the spur wheels which they are intended to operate (each upright operating by means of its rack a separate set of spur wheels). The four uprights are fastened in place by a cap piece E, to which they are firmly secured. On the rear cross piece of the frame, is placed a standard F, to which is hinged or jointed the connecting arm G, by means of the pin *c*, upon which it moves. To the top of the connecting arm G, is jointed or hinged the lever H, which may extend to the front of the machine, for the convenience of the operator. To said lever H, is secured by a joint near one of its ends the connecting bar I, the other end being attached by a similar joint to the sliding frame of cams, so that by pressing on the lever either by the hand or foot, the sliding frame of cams is brought down, the joints and connections between the said sliding frame and standard F, preventing the said frame from catching or jamming in the grooves.

On one of the sides of the machine, are arranged the spur wheels *d*, which mesh into the rack *b*, and which when the sliding frame is moved up and down by the lever, receive a rotary motion, and communicate the same to the spur wheels *e*, which are fastened upon the ends of the shafts *f*, and upon the other ends of said shafts are arranged the cams *g*, which form the front of the nail, said cams having recesses *h*, cut in their peripheries for forming the head of the nail, and the peripheries of said cams are so formed as to give the proper taper to the nail, that is to say, after the recess in the cam has formed a part of the head, the periphery of the cam gradually approximate the "former" against which the nail rests, and draws down the nail until at the lower end of the former it comes down to a point. Immediately following the cams, *g*, which forms the front of the nail, and alternating with them, are the cams *i*, for pressing and drawing down the sides of the nail, and which will be hereafter described.

On the rear of the sliding frame of cams D, Fig. 2, are arranged the series of spur wheels *k*, which mash into the rack *b'*, on the upright *c*, and which spur wheels *k*, when the frame is moved up and down receive and communicate a rotary motion to

the spur wheels *l*, which in their turn communicate motion to another set of spur wheels *m*. The spur wheels *l*, *m*, are fastened to one end of the shafts *o*, which shafts have their journals resting in the sliding frame; to the other ends of said shafts, are arranged the series of cams *i*, set opposite to, and rotating toward each other, said cams having recesses in their peripheries for forming the projections on the sides of the nail at top, and which, together with the projection on the front, left by the recesses in the cams *g*, form the head of the nail. The peripheries of the cams *i*, approach each other as the frame descends, drawing the nail to a point on its sides. The shape of the nail, its length, and the size of the head, may all be regulated by the form of the cams, their size, and the recesses left or made in the peripheries thereof.

On top of the sliding frame above the cams, and projecting downward, is a cutter J, which cutter after the cams have completed the nail, cuts it off from the nail rod, when it drops through the slot in the front of the sliding frame, into a box or other receptacle placed there for that purpose.

Extending across, and framed or otherwise secured to the uprights B, B, so that its top will come just below the sliding frame D, when at its utmost height, is the feeding bar K, Fig. 6 on which are arranged jaws or guides and supports L, M, also seen by dotted lines in Fig. 4, between which jaws, the nail rod when heated is inserted and firmly held. The length of the nail rod inserted or from which the nail is to be formed is regulated by a gage O, attached to a ledge P, projecting from the under side of the bar K, and which may be made adjustable if necessary. On the back of the cross bar K, is placed the "former" Q, Fig. 5, also seen in dotted lines in Fig. 4, against which the portion of the nail rod inserted is bent down and pressed, by the first of the series of cams *g*, as the frame is drawn down, and against which "former" the nail rests until operated upon by the whole series of cams in succession and until finished, and cut off from the nail rod by the cutter J, as heretofore described.

The machine is here represented as adapted for being worked by hand, but may be driven by any other power, by attaching a pitman to the sliding frame for moving it up and down, or it may be drawn down by any other arrangement of machinery, and forced back by a spring, weight and pulley, or any other device—the nail being formed by the downward motion of the sliding frame, the only power required for raising it up, would be such, as would be sufficient to raise the frame.

The operation is as follows: The nail rod being heated, is inserted between the jaws on the feeding bar until it reaches the gage plate, when the frame is drawn down and it is caught by the first of the series of cams which form the front of the nail, and is bent down by it at right angles to the said nail-rod, and forced against the "former," the series of cams both on the front and sides of the rod catching alternately on the front and sides of the rod, and drawing it down to the desired shape, the recesses in the cams forming the head, and the "former" against which it rests shaping the fourth side, until the cams have all passed over it, when the cutter cuts off the nail, and it drops as before described into the receptacle placed for that purpose. The stationary rack causes the spur wheels, and the cams driven by them, to always retain the same position at starting, and bringing the series down in proper position for forming the head and the body of the nail.

Having thus fully described my invention what I claim therein as new and desire to secure by Letters Patent, is,

Making a horse-shoe nail by means of a stationary former and a series of traveling and rotating cams arranged and operating substantially as herein described and fully shown.

MARSHALL BURNETT.

Witnesses:

A. B. STOUGHTON,

T. C. DONN.