(No Model.) 2 Sheets—Sheet 1.

R. E. BREED.

MACHINE FOR MAKING HOES.

No. 295,903. Patented Apr. 1, 1884.

Fig. 1.

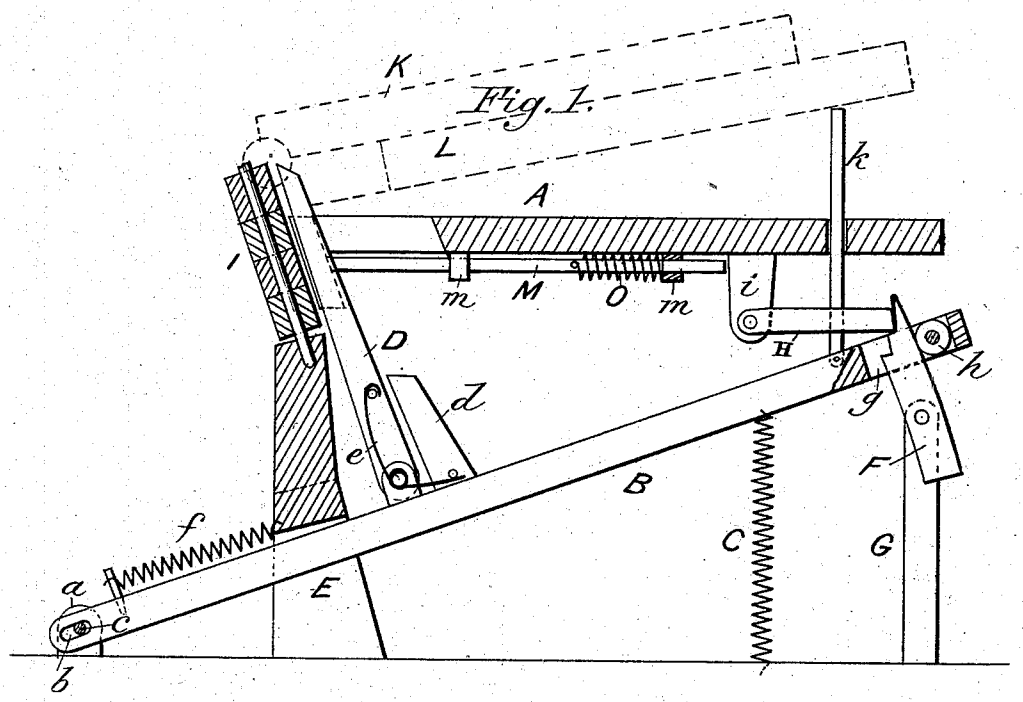
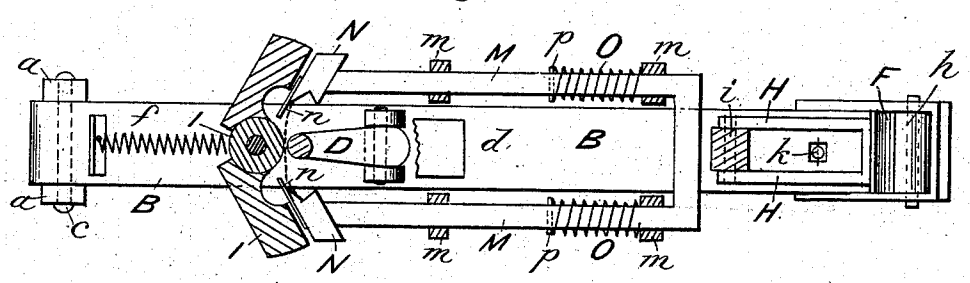


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

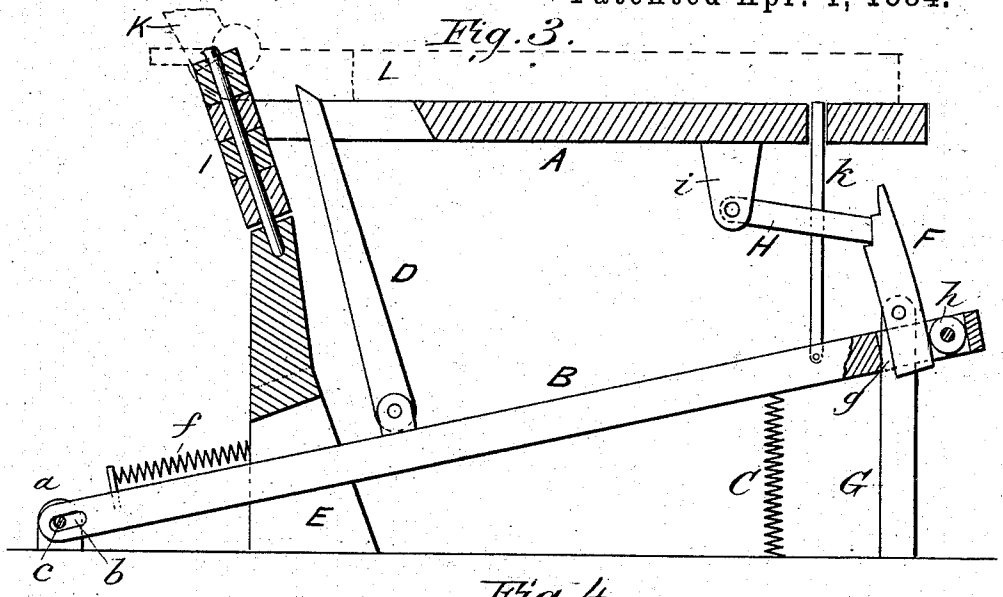


Fig. 4.

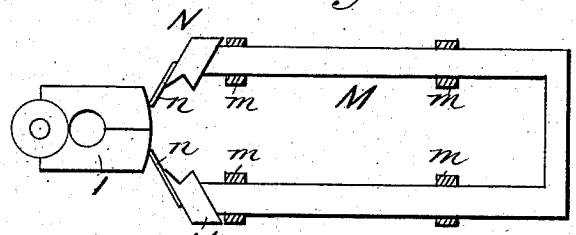


Fig. 5.

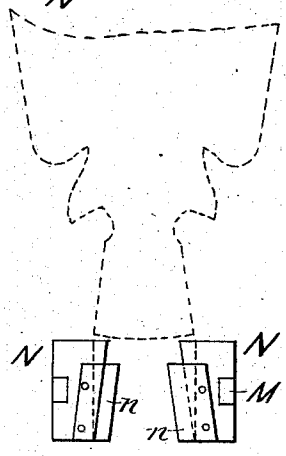
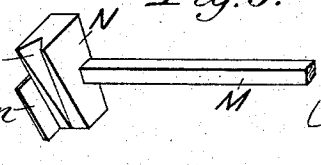


Fig. 6.



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UNITED STATES PATENT OFFICE.

RICHARD E. BREED, OF PITTSBURG, PENNSYLVANIA.

MACHINE FOR MAKING HOES.

SPECIFICATION forming part of Letters Patent No. 295,903, dated April 1, 1884.

Application filed June 13, 1883. (No model.)

To all whom it may concern:

Be it known that I, RICHARD E. BREED, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Machines for Making Hoes; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to improvements in the hoe-machine for which Letters Patent No. 280,287 were granted to me June 26, 1883, the object being to provide effective means for preventing the displacement and consequent malformation of the hoe-blank under the pressure of the forming devices.

In the annexed drawings, illustrating the invention, Figure 1 is a sectional side elevation of a portion of a hoe-machine embodying my improvements, the mandrel being shown in a raised position and thrown back against the folder. Fig. 2 is a sectional plan of Fig. 1. Fig. 3 is a sectional side elevation, showing the mandrel lowered and thrown forward. Fig. 4 shows a plan view of a sliding guide-frame and top view of a folding device. Fig. 5 is an end view of the guide-frame, showing the hoe-blank in dotted lines; and Fig. 6 is a perspective view of one arm of the guide-frame.

Like letters indicate like parts.

A represents the bed-piece or table of the machine.

B is a bar pivoted at *a* by means of an elongated slot, *b*, in the end of said bar, which passes around a pivot or pin, *c*. The bar B is supported near its forward end by a spring, C, and on its upper side it carries a lug or projection, *d*, back of which is pivoted a mandrel, D. The mandrel D is provided with a spring, *e*, by which it is supported in such a manner as to have an elastic movement upon its pivot. The bar B is passed beneath or through a yoke, E, to which it is connected by a spring, *f*. The forward end of the pivoted bar B is slotted at *g*, and carries within said slot a friction-roller, *h*, that bears on the forward surface of a lock, catch, or tumbler, F, that is pivoted to a standard, G. The tumbler F engages with a latch, H, that is pivoted to a lug, *i*, beneath the table. The bar B is provided with a rod, *k*, that passes through an opening in the bed or table A, beneath the slide-frame of the machine.

I is the shank or socket folder.

The trunnion-plate K and the slide-frame L are represented by dotted lines in Figs. 1 and 3.

The construction and functions of these parts have been fully described in my former patent above referred to, and need not be further explained.

At the beginning of the operation of making a hoe, the position of the parts of the machine is as represented in Fig. 3, where the slide-frame L, by resting on the upper end of the rod *k*, depresses the bar B and holds the mandrel away from the face of the folder. After the hoe-blank has been placed in position, with its shank portion resting in the folder back of the mandrel and its blade supported by the trunnion-plate, the slide-frame will be thrown back against said blade. This movement of the slide-frame releases the rod *k* and bar B, and enables the roller *h* to travel upon the curved anterior surface of the tumbler F. The upper rear part of the tumbler F is notched or otherwise fitted to the end of the latch H, so that said latch and tumbler, while in engagement, will hold the bar B against the tension of the spring *f* until the pressure of the bar against the latch raises the latter, either into one of the upper notches of the tumbler or onto the top of the same, when the spring *f* will throw the bar B back into the position shown in Fig. 1, thus carrying the mandrel back into close connection with the folder. This vibratory and sliding movement of the bar B actuates the mandrel D in such a manner as to obviate the liability of displacing the hoe-blank as the mandrel takes its position within the folder. It is obvious that if the bar B were pivoted so as to have simply a vibratory movement, the mandrel would exert such frictional pressure against the lower edge of the folder and the shank end of the blank as to throw the blank out of position. The blank

being now in position, and the mandrel being in its proper place in front of the shank-folder, the trunnion-plate and slide-frame are thrown down upon the table, thereby forming the hoe, the shank-folder being actuated from the trunnion-plate, as described in my said patent, or by any convenient means. The slide-frame in its downward movement strikes the end of the rod *k* and depresses the bar B, whose roller *h* travels down the face of the tumbler F. After the center of said roller passes the point upon which the tumbler is pivoted, it forces in the lower end of the tumbler, thereby throwing its upper end forward, so that the latch H falls into its former position, as shown in Fig. 3. The forward and downward movement of the bar B at the same time compresses the spring *f* for future action and disengages the mandrel from the hoe-socket.

The mandrel D, being pivoted to the bar B, and provided with a spring, *e*, as shown, is enabled to accommodate itself to the socket in its downward movement, and becomes disengaged therefrom without liability of distorting said socket.

Beneath the table A, supported in bearings *m m*, is a guide-frame, M, carrying at the forward end of each arm a head, N, on which is formed or attached a plate, *n*. On each arm of the guide-frame is a spiral spring, *o*, one end of which bears against one of the rear bearings, *m*, while the other end is attached to said arm, or bears against a pin, *p*, that is passed through the same.

Instead of arranging the springs O as shown, they may be arranged in any other convenient manner, the object being to hold the heads N of the guide-frame close against the face of the folder. The form of the head N is shown in Figs. 5 and 6. A tapering groove, *s*, is formed in the inner or opposing face of each head, which is beveled to correspond with the inclined sides of the shank portion of the hoe-blank, while the bottoms of the grooves are parallel, as shown by dotted lines in Fig. 5. The shank portion of the hoe-blank is inserted into the grooved faces of these heads N N, and is passed down until it reaches the lower ends of the grooves *s s*, or until the wide end of the shank passes fully into the shallow end of each groove, when the blank will fall back, so that its shank can rest against the knuckles of the folder, with its edges supported by the guide-plates *n n* on the grooved heads of the guide-frame. When the trunnion-plate K and slide-frame L are thrown down upon the table, the blade of the blank held between them is folded over at an angle with the shank or socket portion of the hoe, which is folded around the mandrel D by the socket-folder I, that is actuated by any convenient means. As the folder I closes, the guide-frame M is gradually pushed forward or toward the front end of the machine against the pressure of the springs O O, which hold the heads N N firmly against the folder during the movements of the parts. The shank portion of the blank being held back centrally against the knuckles of the folder by the mandrel D, its edges, which lie on the guide-plates *n n*, will be drawn evenly forward by the latter, and caused to approach the mandrel uniformly from each side and out of the way of the folder until the latter expels the heads N N of the guide-frame and closes firmly around said shank, so as to impart thereto a form corresponding to that of said mandrel and of the inner face of said folder. The shank portion of the blank is thus under the control of the sliding guide-frame until all liability of malformation is passed. After the shank or socket of the hoe is thus fully formed, the mandrel D is disengaged therefrom by the pressure of the slide-frame L on the rod *k* acting through the pivoted bar B, as before described.

The completed hoe may be removed from the machine by throwing back the trunnion-plate K, which at the same time actuates appropriate mechanism, as described in my former patent, for opening the folder I, so that the hoe can be taken out and a new blank inserted. As the folder I is thus opened, the sliding guide-frame M, under the pressure of its springs, moves into its former position, with its heads N N resting against the inner face of said folder for further operation.

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

1. The combination, with the slotted bar B, pivoted by means of an elongated slot, *b*, engaging pin *c*, of the tumbler F, latch H, and spring *f*, whereby a vibratory and sliding movement may be imparted to said bar, substantially as described.

2. The combination, with the bar B, pivoted by means of an elongated slot, *b*, and having a slotted end, *g*, carrying a roller, *h*, of the pivoted tumbler F, latch H, and spring *f*, whereby said bar is capable of a vibratory and sliding movement, substantially as described.

3. The combination, with the folder G, of a mandrel, D, pivoted to a bar, B, having a vibratory and sliding movement, substantially as described.

4. The combination of the vibratory and sliding bar B, the mandrel D, pivoted thereto, the folder I, and the guide-frame M, having grooved heads N N, substantially as described.

5. The combination, with the folder I and mandrel D, of the spring-actuated guide-frame M, having grooved heads N N, provided with guide-plates *n n*, substantially as described.

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

RICHARD E. BREED.

Witnesses:
A. R. BROWN,
PHILIP MAURO.