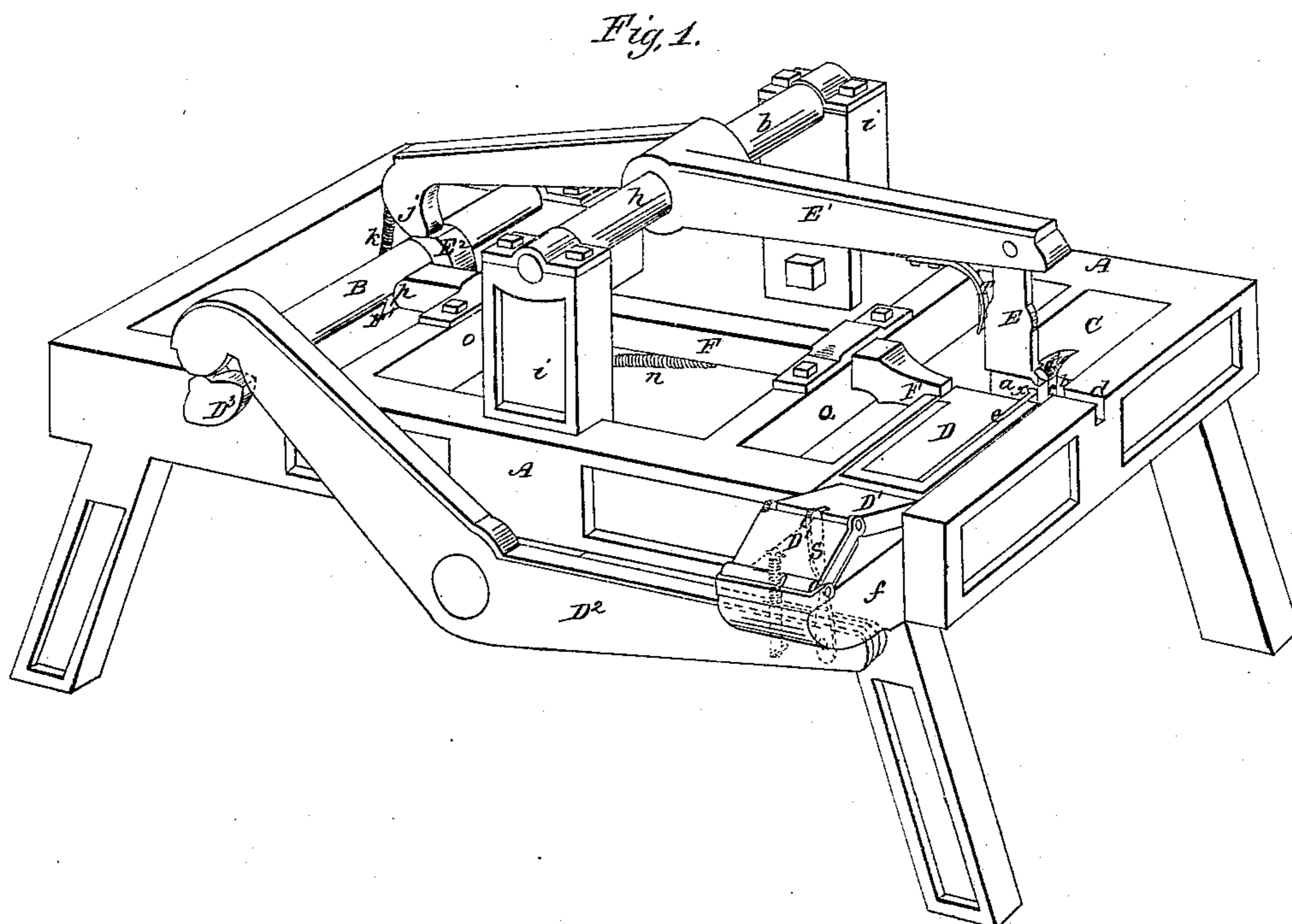
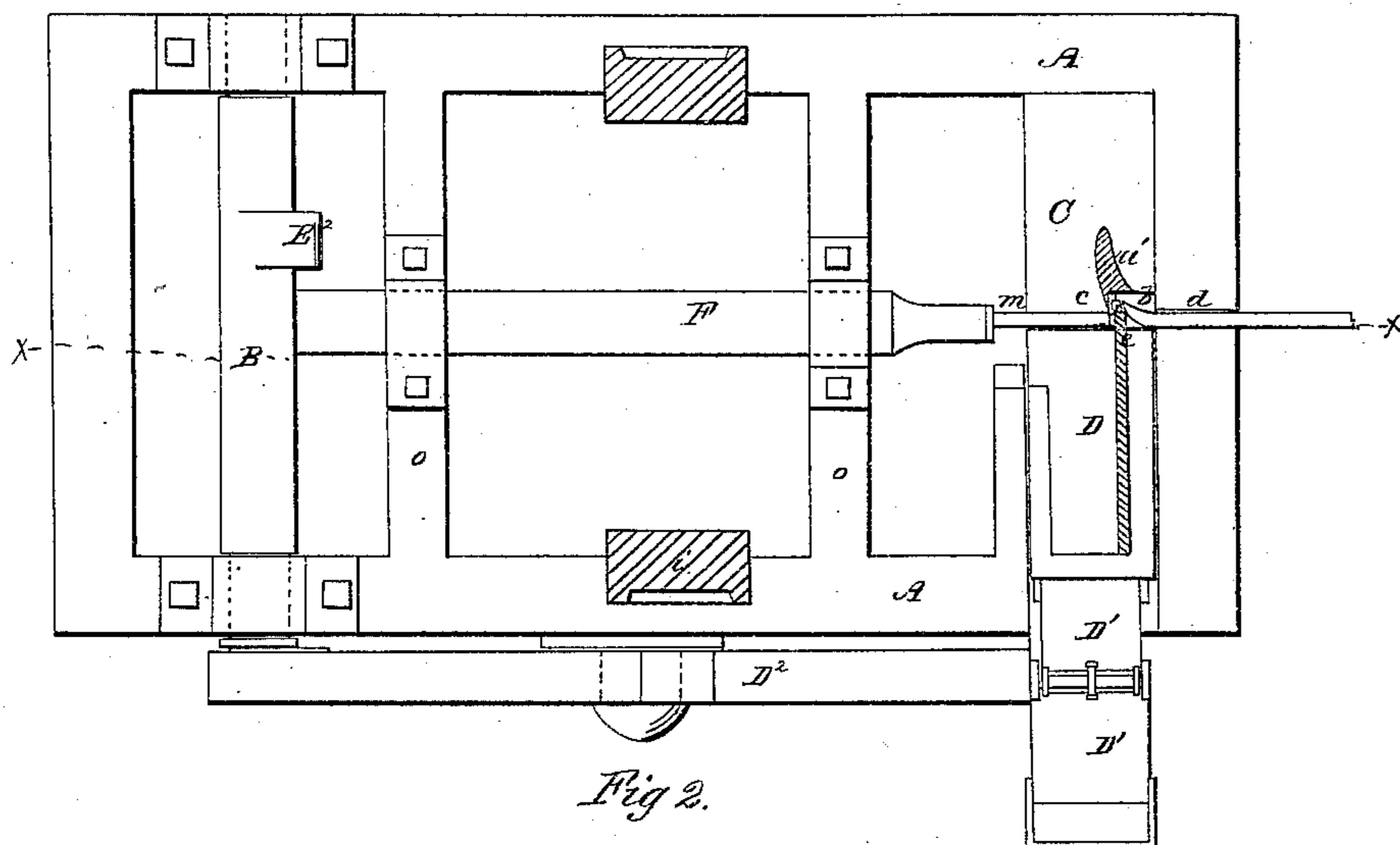


P. F. Trayster.

Making Spikes.

N^o 9, 474.

Patented Dec. 14, 1852



Sheet 2, 2 Sheets.

P. P. Trauser.

Making Spikes.

N^o 9,474.

Patented Dec. 14, 1852.

Fig 4.

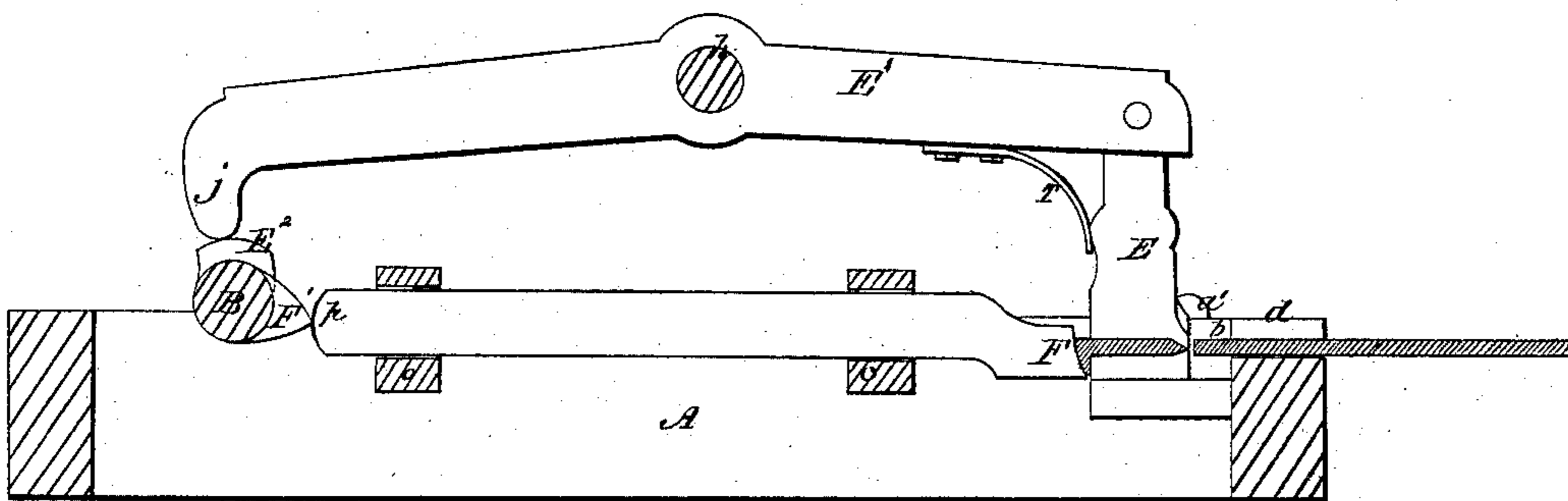
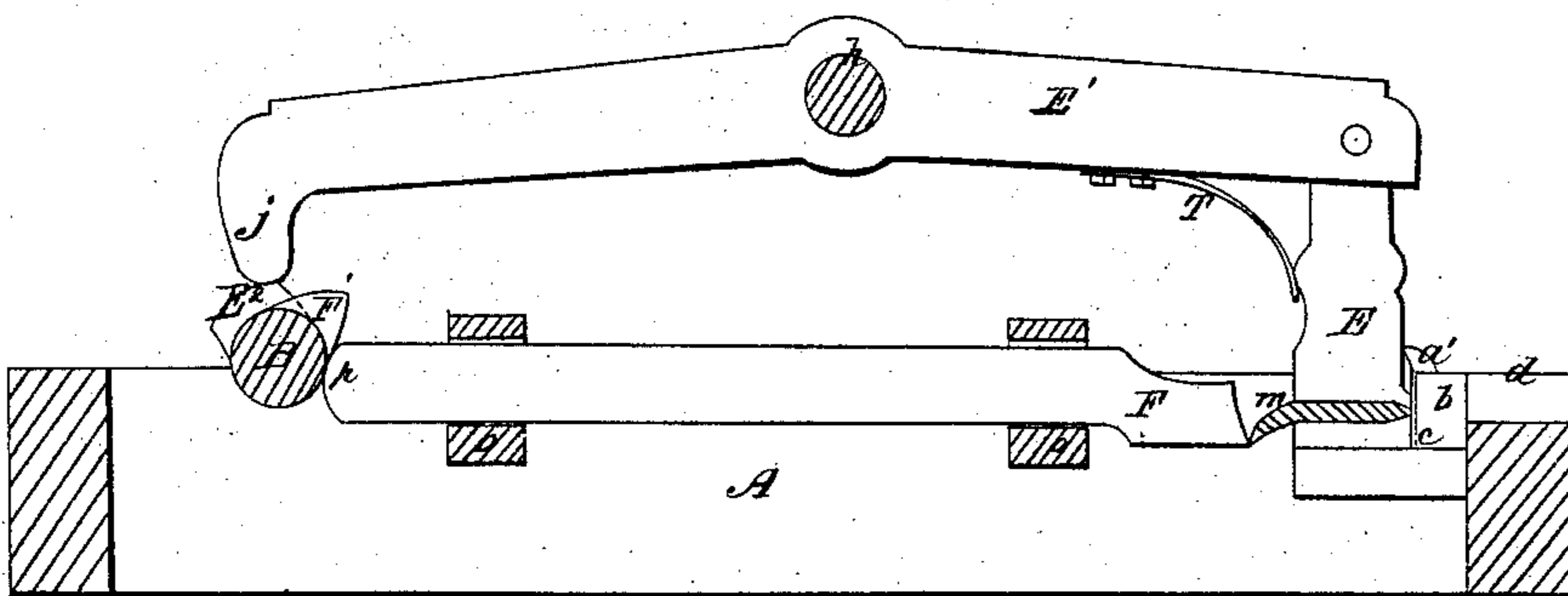


Fig. 3.



UNITED STATES PATENT OFFICE.

PHILIP P. TRAYSER, OF BALTIMORE, MARYLAND.

SPIKE-MACHINE.

Specification of Letters Patent No. 9,474, dated December 14, 1852.

To all whom it may concern:

Be it known that I, PHILIP P. TRAYSER, of the city and county of Baltimore and State of Maryland, have invented certain new and useful Improvements in Machines for Making Hook or Brad-Headed Spikes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which make part of this specification, and in which—

Figure 1, is a view in perspective of a machine having my improvements applied thereto, in which the several parts are in the proper position to receive the spike-rod and commence the operation of making a spike. Fig. 2 is a top view of the machine with those parts that project above the frame removed to show the gripping-die closed, the knife in its forward position, and a blank severed from the rod. Fig. 3, represents a longitudinal section of the machine at the line X X of Fig. 2, with the parts in the position which they occupy when the gripping and pointing dies are closed and the spike pointed, and Fig. 4, is a similar view with the dies and heading punch in the position which they respectively occupy when the spike is headed and ready to be discharged.

The machine represented in the accompanying drawings, is made with a strong frame (A) to support the several parts of the mechanism against the powerful strain to which they are subject in forming a spike. Upon the top of this frame a cam shaft (B) is mounted which originates the several movements of the different parts, and determines the extent of those movements and the order in which they relatively take place.

The die-box for holding the blank and shaping it into a spike, consists of one stationary part (C) and two moving parts (D and E,) and which act in connection with a heading punch. The stationary part (C) which receives the end (F) is the heading punch of the spike-rod, should, like the moving parts be made of tempered steel; it has a rabbet (a) in the upper edge of its inner end the side whereof corresponds in shape with one edge and the bottom, with one side of the spike to be formed; at the end of this rabbet at which the rod is fed into the die-box, a recess (b) is formed by making a rabbet in the corner of the die block at right

angles to the first (a); the angle (c) formed by the meeting of the sides of the two rabbets (a and b) constitutes the fixed member of the shears or cutter for severing the blank from the rod, and is at such a distance within the extremity of the bottom of the rabbet (a), that the blank when cut off will have room to be drawn out to a thin point. In a line with the rabbet (a) of the stationary die, a groove (d) is made in the frame wide enough to permit the spike rod to pass through it into the die-box.

The gripping die (D) consists of a rectangular block of metal which, together with the knife (e) should be secured in a box that slides in guides at right angles to the die box, or the knife and gripping die may be made in one piece which may be connected directly with the moving mechanism. It would in general be preferable to make the gripping die and knife in separate pieces, and secure them in a sliding box in order to facilitate their removal for sharpening, repairs, or replacement by others. After the end of the rod has been inserted into the die-box, the gripping-die (D) and the knife or moving member (e) of the shears, are caused to approach the stationary die-block (C), the knife (e) being in advance of the die (D) and its cutting edge (x) within the end of the die box, will cut the blank off the bar a short distance within the end of the die-box, and by the continued forward movement, the die will press the blank against the side of the rabbet, and the knife will bend the end of the rod into the recess (b) as shown in Fig. 2, the blank and rod being meanwhile prevented from rising out of the die-box by a projecting cap (a'). The forward movement of the knife (e) and gripping-die (D) is produced by the extension into a right line of the toggle-joint levers (D') which are flexed when the die and knife are drawn back, one extremity of these levers is hinged to the heel of the gripping-die and the other to a bracket (f) at the side of the frame (A). The extension of the levers is effected by connecting their central joint by a link-rod (s) with one extremity of a crooked lever (D²) pivoted to the side of the frame; the other extremity of the lever has a shoe formed on it to bear against a cam (D³) on the shaft (B), by which the

rear end of the lever is raised to depress its front end, to close the die (D), and grip the blank which it holds until the pointing and heading are completed, after which, the cam releases the lever and permits its forward
 5 extremity to be raised, the toggle-joint levers (D') to be flexed, and the gripping-die (D) with the knife to be drawn back by a spring (g) to the position represented in
 10 Fig. 1. After the knife has been moved forward with the gripping-die (D) so as to sever the blank from the rod, and grasp it firmly, the pointing die (E) descends to compress the point of the blank into the proper shape as seen in Fig. 3. The face of
 15 this die (E) is the counterpart in shape of the side of the shank and the point of the spike, and is jointed to the end of a lever (E') the latter mounted on a rock shaft (h) which is supported on standards (i) erected
 20 on the top of the frame (A); the rear end of this lever has a shoe (j), formed on it which rests upon a cam (E²), on the cam shaft (B) which at the proper time raises it, and depresses its opposite end with the
 25 pointing-die, in which depressed position the latter is held until the blank is headed and ready to be discharged, after which, the cam releases the lever and allows the spring (K see Fig. 1) to depress its rear end again and raise its front end with the die (E) into
 30 the position represented in Fig. 1.

The pointing-die (E) is pressed forward against the stop or cap (a') which extends
 35 over the front end of the die (C), by a spring (T) on the under side of the lever (E') to which it is attached; the front corner of this die projects forward so as to enter a recess formed in the side of the knife
 40 behind the cutting edge to give sufficient room for the point of the spike to be drawn out to a thin edge, as the die descends, this projecting portion which forms the point of the spike, is held back by the stop (a')
 45 so that it comes in contact with the blank before the parts behind it, and strikes the blank a short distance from the end, and as the end of the blank yields to fill up the space left in the end of the die-box, the
 50 point of the die aided by the spring (T) follows this yielding until the lower face of the portion of the die behind the point, becomes parallel to the lower side of the die-box as seen in Figs. 3 and 4, when the
 55 pointing of the blank will be completed and the die-box just filled with it.

As the die (E) is not moved forward to point the spike by a positive motion but by a spring (T) there is no danger of breaking
 60 either the die, or the cutter (e) in case any obstruction should be interposed between the point of the die, and the back of the knife, as the spring would in such a case allow the die simply to descend without
 65 moving forward, making a slightly shorter,

and less perfectly formed spike. When the pointing die, as in machines heretofore made, has all its movements positive, in case of an obstruction, such for example as
 70 too great an accumulation of metal, by reason of a swell or protuberance of the rod, the descent of the die would be resisted until it or the cutter would break or bend, to give vent for the excess of metal. My improved
 75 arrangement of the spring die avoids all danger of breakage from the cause just mentioned. The cam which causes this die to descend is so shaped, that it will allow the pointing die to rise out of the recess in the knife before the latter is drawn back. After
 80 the gripping die (D) and pointing die (E) have been closed upon the blank as described, and the pointing is completed, nothing remains but to form the head which is done by forcing a punch (F) against the
 85 protruding end (m) of the blank and upsetting it into the shape seen in Fig. 4.

The punch is composed of a sliding bar, having a die fitted to, or formed on its forward extremity, the face of which die is
 90 the counterpart in shape and position of the top of the head to be formed by it. The punch slides in guides formed in the cross bars (o) of the frame, and is driven forward by a cam (F') on the cam shaft (B) and is
 95 caused to retrograde by means of a spring (n see Fig. 1), on its underside as soon as the cam has passed the shoe (p) formed on its rear extremity.

The spike being now complete, the die-box
 100 is opened that the finished spike may be discharged, by the insertion of the end of the spike-rod, to have another blank cut off it. Previous to the insertion of the rod into the die-box, it is turned so that the portion of
 105 it bent aside in the act of cutting off the previous blank will hang downward in such a position, that it will be upset into the proper shape to form a head by the forward motion of the punch (E). In entering the
 110 rod into the die-box, it is pushed forward until its bent extremity strikes the face of the heading punch (F) which thus acts as the gage to determine the point at which the blank is to be cut off the rod. The opera-
 115 tion just described of closing the dies (D and E) upon the blank being repeated upon a second blank the latter will be cut off to the proper length, pointed, and headed.

I wish it to be understood that I do not
 120 confine myself to any particular form or arrangement of the several parts of the machine I have just described, provided the spike is headed and pointed by the mode of operation I have described, as a great num-
 125 ber of changes may be introduced into the machine that will not in any way affect the principle upon which it works, indeed the improvements which I have made could be introduced with advantage either separately 130

or together into various machines now in use.

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

5 The combination of the hinged pointing die (E) pressed forward by a spring, with the guard or stop (a) or the equivalent thereof, which guides the die and limits its

forward movement, substantially as herein set forth.

In testimony whereof I have hereunto subscribed my name.

PHILIP P. TRAYSER.

Witnesses:

SAMUEL RINGGOLD,
GEO. P. D. BRICE.

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