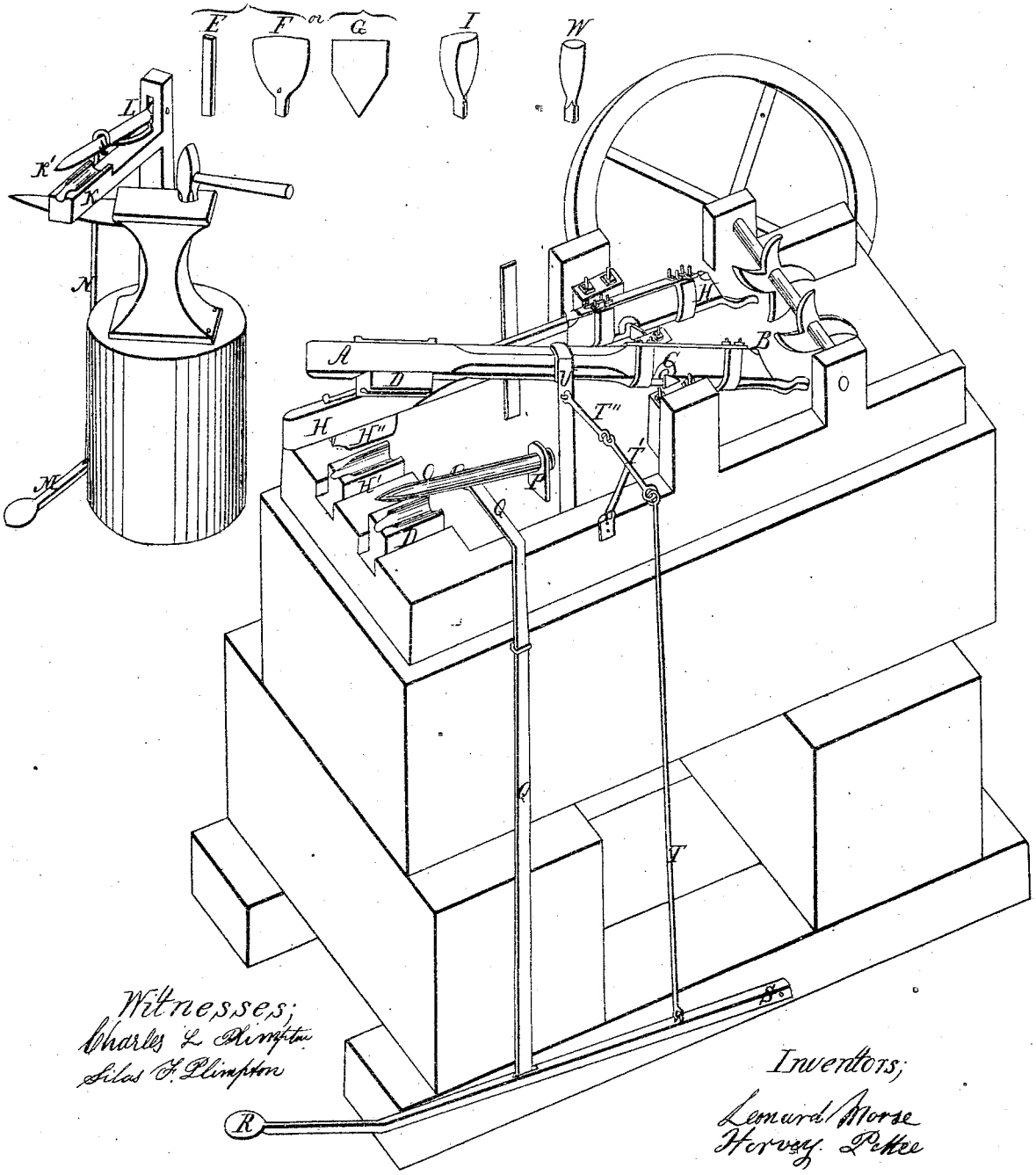
Morse & Pettee.

Making Metal Tools.

No. 1,046. Patented Dec. 28, 1838.



Witnesses;
Charles L. Plimpton
Silas F. Plimpton

Inventors;
Leonard Morse
Harvey Pettee

UNITED STATES PATENT OFFICE.

LEONARD MORSE AND HERVEY PETTEE, OF FOXBOROUGH, MASSACHUSETTS; SAID PETTEE ASSIGNOR TO SAID MORSE.

MACHINE FOR MAKING IRON SOCKETS.

Specification of Letters Patent No. 1,046, dated December 28, 1838.

To all whom it may concern:

Be it known that we, the undersigned, LEONARD MORSE and HERVEY PETTEE, of Foxborough, in the county of Norfolk, in the State of Massachusetts, have invented a new and useful Machine, called "Morse's Machine for Making Sockets," of which the following is a full and exact description.

It resembles in some of its parts the common tilt-hammer, having a similar helve (as represented in the drawing at A B) which turns on a fulcrum (as represented at C), the power being applied by wipers or cams at one end (B) and the dies (D D′) being placed at the opposite end.

A bar of metal of convenient size is cut by the common means into pieces of proper length (such as is represented in the drawing at E). Each of these pieces is then hammered at one end under a common tilt-hammer or trip-hammer to a certain width and thinness (and to a shape represented at F). Or instead of this a somewhat similarly shaped piece may be cut from a plate of metal of a thickness proportionate to the required strength of the socket (as represented at G). It is then heated and the flattened or broad end destined for the socket is placed longitudinally under a kind of tilt-hammer (represented in the drawing at H H) of which the lower die (H′) is cylindrically or otherwise concave and the upper (H″) cylindrically or otherwise convex, the convexity being similar to the concavity and playing into it, and both the convexity and concavity varying from a cylindric to a tapering or other form according to the required form of the socket. Between these dies the above mentioned flattened end is beaten into a form somewhat resembling one side of a hollow frustum of a cone (as indicated at I). This is then placed in another similar concave die (represented at K) under the end of a piece of metal (represented at K′) which we shall call a triplet, being of a cylindrical tapering or other shape according to that required for the interior of the socket, and of which the end (L) farthest from the last-mentioned die, is so confined as to allow the other end without being moved latterally to be raised out of, and depressed into, the concave die (K) beneath, whose concavity corresponds in shape to a longitudinal half of the required exterior surface of the socket. The end of the triplet (K′) which is before kept elevated above the die by a spring is now drawn down by means of a foot-lever (M) with a connecting rod (N), firmly upon the concave part of the piece of metal (I) above described which is now resting in the die beneath, where it has its opposite edges lapped closely together about the triplet, with a hammer when it becomes an imperfect socket prepared for the action of our machine. In this state it is removed from the triplet, heated again if necessary and (now follows the essential part of the process) slid upon the end of another cylindrical, conical, paraboloidal, hyperboloidal or otherwise shaped piece of metal (depicted in the drawing at O) the end of which is similar to that of the triplet (the shape and size of each being such as are required for the interior of the socket) and which we shall call a mandrel, which is situated between the dies of a kind of tilt-hammer the same as was first mentioned, and which, being, at the end farthest from the dies, loosely confined by a collar (P) or otherwise so as to admit of a revolving and also of an upward and downward motion of the other end, is kept raised when the machine is at rest (as represented in the diagram) by a support (Q). This support now kept elevated by means soon to be described is, by applying the foot to the end (R) of a conveniently situated foot-lever (represented at R S in the drawing) to which it is joined, drawn down, letting the mandrel with the socket enveloping it into the die (D) beneath; the hammer above being at the same instant released, also by the depression of the foot-lever which, through some movable jointed connecting rods (represented in the drawing at T T′ T″), draws aside a spring-prop (represented in the drawing at U) that acting as a prop before supported the hammer in an elevated position, and at the same time acting as a spring kept the foot-lever elevated and with it the aforementioned support that kept elevated the mandrel. This last mentioned hammer, by the action of the wipers or cams (at the end B), is made to play rapidly upon the socket situated between its dies which when brought together inclose (nearly) a space of the precise form and size intended for the exterior of the socket; and between these the whole exterior is beaten into the required size and shape. And in the meantime the inside of

the socket is formed by being beaten closely about the end of the mandrel which is of the form required for the interior of the socket; and by this same operation also the edges before lapped together are firmly united by welding, and that so instantaneously through the whole length as to avoid the troublesome and expensive necessity of repeated heatings which attend the common process in making thin sockets. Thus an entire and beautiful socket is made. Now on raising the foot from the lever (R), the hammer is stopped in an elevated position by the spring-prop (U); and the mandrel (O) now inclosed by the socket, is raised by the action of the said spring-prop through the medium of the connecting rods (T'' T' T), the lever (R S) and the support (Q Q), before described. The socket (W) is then withdrawn from the mandrel, with the same tongs or other instrument with which it has been before managed. As a material for the mandrel we believe cast-steel to be the best.

By substituting dies, triplets and mandrels of different forms and sizes, this arrangement may be employed for making sockets of any required form and proportions, from the thicker, stouter and heavier, to the thinnest, lightest and most delicate, according to the uses to which they are to be applied. They are affixed to various kinds of utensils or tools by welding or by some other of the arts of uniting metals. After being thus forged, they may, from their superior symmetry and smoothness, be easily finished or polished in a lathe or by other means to any degree of fineness. They are also more readily supplied with a firmly fitted handle than those made in the common way. For, the end of the handle which is to be applied to the socket may, with a single thrust into a hollow turning instrument of the right dimensions, be formed to fit, exactly, any number of sockets which were formed upon the same mandrel or upon similar mandrels.

Although the simplicity of the contrivance is sufficient to afford it a collateral recommendation, yet the seeming perfection and despatch with which it operates, are such as to save, in the opinion of competent judges, more than one half, certainly, and probably more than two thirds, of the time and labor, with a like proportion of the coal, that are expended in doing the same execution more imperfectly by the common method.

What we claim as our invention and desire to secure by Letters Patent, is—

The combination of the mandrel with the last described dies (D and D') and with the trip or tilt hammer, for the purpose and in the manner herein described.

In testimony whereof, we the said Leonard Morse and Hervey Pettee hereto subscribe our names in the presence of the witnesses whose names are hereto subscribed on the thirtieth day of November A. D. 1838.

LEONARD MORSE.
HERVEY PETTEE.

Witnesses:
Charles L. Plimpton,
Silas F. Plimpton.