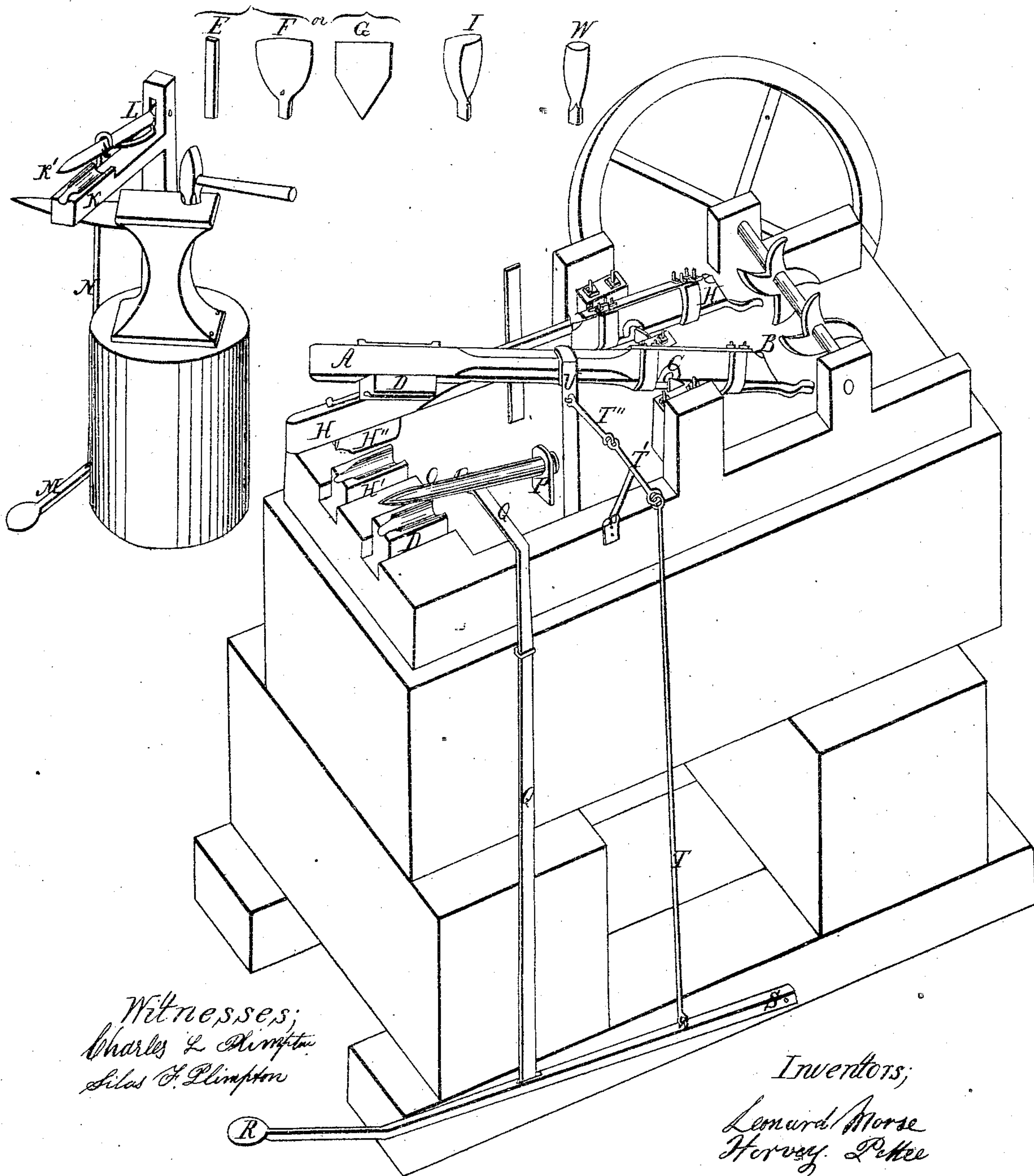


Morse & Pettee.

Making Metal Tools.

N^o 1,046.

Patented Dec. 28, 1838.



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 com-
mon 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 draw-
ing 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 simi-
larly shaped piece may be cut from a plate
of metal of a thickness proportionate to the
required strength of the socket (as repre-
sented 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 draw-
ing 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 cy-
lindric to a tapering or other form accord-
ing to the required form of the socket. Be-
tween these dies the above mentioned flat-
tened 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 (rep-
resented at K) under the end of a piece of
metal (represented at K') which we shall
call a triplet, being of a cylindrical taper-
ing or other shape according to that re-
quired for the interior of the socket, and
of which the end (L) farthest from the
last-mentioned die, is so confined as to al-
low the other end without being moved lat-
terally to be raised out of, and depressed
into, the concave die (K) beneath, whose
concavity corresponds in shape to a longi-
tudinal half of the required exterior sur-
face 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 connect-
ing 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 pre-
pared 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, para-
boloidal, 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 men-
tioned, and which, being, at the end far-
thest 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 rep-
resented 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 draw-
ing) to which it is joined, drawn down,
letting the mandrel with the socket envelop-
ing it into the die (D) beneath; the ham-
mer above being at the same instant re-
leased, also by the depression of the foot-
lever which, through some movable jointed
connecting rods (represented in the draw-
ing at T T' T''), draws aside a spring-prop
(represented in the drawing at U) that act-
ing as a prop before supported the hammer
in an elevated position, and at the same time
acting as a spring kept the foot-lever ele-
vated and with it the aforementioned sup-
port 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 be-
tween 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 ex-
terior 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'), 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.