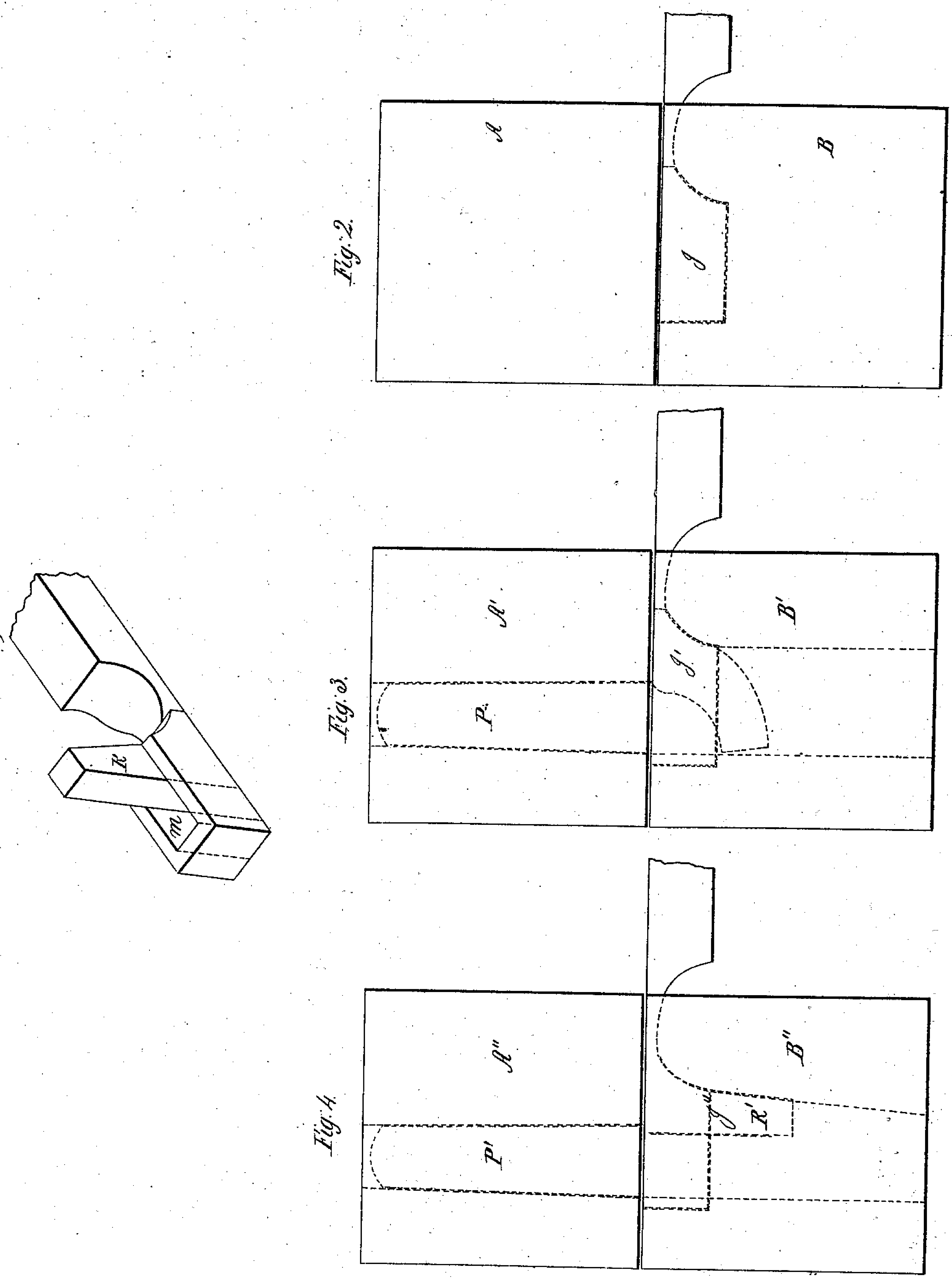
J. S. Farnsworth.

Making Metal Tools.

No. 66,009. Patented Jun. 25, 1867.



Witnesses;
Henry Warden
Horace T. Love

Inventor;
J. S. Farnsworth

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

United States Patent Office.

JOSEPH S. FARNSWORTH, OF WINDSOR, VERMONT, ASSIGNOR TO EBENEZER G. LAMSON, PRESIDENT OF THE WINDSOR MANUFACTURING COMPANY.

Letters Patent No. 66,009, *dated June* 25, 1867.

IMPROVEMENT IN DIES FOR SWAGING AND PUNCHING THE JAWS OF WRENCHES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, JOSEPH S. FARNSWORTH, of Windsor, in the county of Windsor, in the State of Vermont, have invented a new and improved Mode in the Process of Forging and Swaging the Sliding-Jaw of an Adjustable Screw-Wrench; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon.

Figure 1 shows the jaw in perspective, wherein M is a mortise, in constructing which the solid metal is displaced and converted into the arm R, necessary for the screw appliance whereby the jaw is made to slide.

Figure 2 shows a pair of dies A B, by which the process of forging is begun, and wherein the outside shape of the jaw J is formed. A is the outline of the upper or striking-die; B that of the anvil or lower die. Both are indicated by black lines, and represented as in a state of rest, after A has been dropped, or otherwise driven upon B. The dotted red lines indicate the face of the matrix; the dotted black lines the shape of the jaw, as driven therein by the stroke of the die A.

Figure 3 shows a pair of dies A′ B′, indicated by black lines, by which the process of forging is continued, and wherein the punch P is indicated by red dotted lines in the die. A′ is driven into the jaw J′, indicated by black dotted lines in the die B′, so as partly to displace the metal for the mortise.

Figure 4 shows a pair of dies, A″ B″, in black lines, by which the process of forging and swaging is completed, and wherein the punch P′, in red dotted lines, converts the metal taken out of the mortise into the arm R′, and the jaw J″ is left as indicated by the black dotted lines in the figure, and as shown in perspective by fig. 1. When now, A″ falling, has driven punch P′ through the jaw, the punch by the heat of the hot jaw, enlarges, and the size of mortise, by the cooling of the hot iron, contracts, and the consequence is that the jaw is shrunk on tightly to P′. To remedy this, I lift my drop and so lift off A″ from the punch P′, and then by a slight stroke of a hammar I loosen P′ by driving it down through the hole of B″, that hole being made through B″, and P′ being made tapering for that purpose.

The advantages of constructing the movable jaw of an adjustable screw-wrench by this process of forging and swaging are numerous, some of which are:

First, I am thus able to make the wrench of wrought iron or of steel, instead of malleable iron, the usual material for making such screw-wrenches; malleable iron being comparatively of little value, so liable is it to break where strength is required.

Second, by this process of forging and swaging, I make a wrought-iron or steel wrench cheaper than the cost of one made out of malleable iron, so offering it to the public at a less cost; the finishing up of a malleable wrench being more expensive than that of wrought iron or steel, and the malleable iron costing more per pound than wrought iron or steel.

Third, compared with a wrought-iron or steel wrench made by the old process of forging, it is vastly cheaper, and much better, it not being liable to the imperfections arising from the old mode of lapping and welding.

Fourth, by this process I save all the stock taken from the mortise, as I convert the same into the arm in all that variety of adjustable screw-wrenches having mortise and arm, and I construct the teeth from the case-hardened iron or steel jaws, instead of having to insert them, as when the jaws are of malleable iron, in those cases where I apply my invention to griping wrenches.

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

The combination of dies and punch, constructed and operating substantially as described.

Windsor, July 6, 1866.

J. S. FARNSWORTH.

Witnesses:

HENRY WARDNER,

HIRAM T. LOVE.