B. Le DOYT, Dec'd.
M. M. TAYLOR, Adm'x.

Hardening-Tongs.

No. 220,681. Patented Oct. 14, 1879.

Fig. 1.

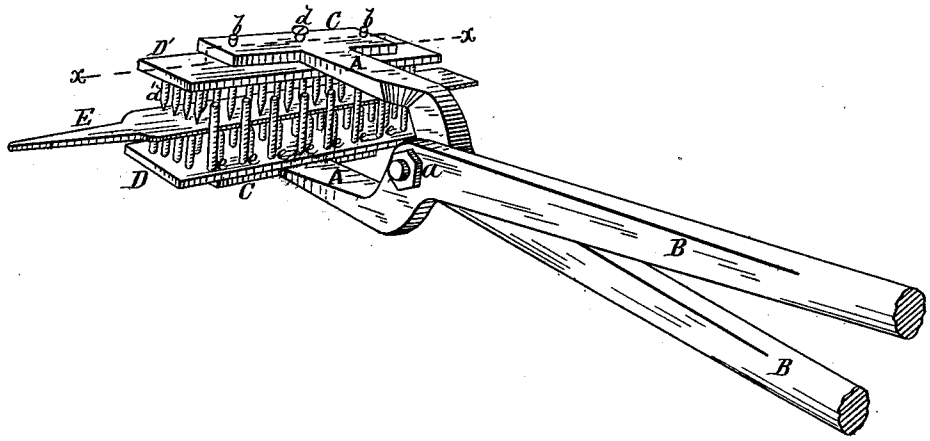
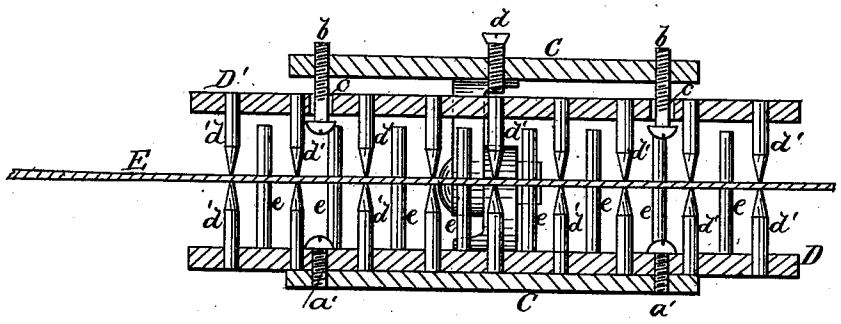


Fig. 2.



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UNITED STATES PATENT OFFICE.

MARY M. TAYLOR, OF MANSFIELD, MASSACHUSETTS, ADMINISTRATRIX OF BIEL LE DOYT, DECEASED.

IMPROVEMENT IN HARDENING-TONGS.

Specification forming part of Letters Patent No. **220,681**, dated October 14, 1879; application filed April 16, 1879.

To all whom it may concern:

Be it known that BIEL LE DOYT, deceased, of Mansfield, in the county of Bristol and State of Massachusetts, did invent a new and Improved Hardening-Tongs, of which the following is a specification.

The object of this invention is to furnish an implement for holding and manipulating steel articles in the process of hardening them, so that they will not warp nor chill by the contact of the tongs.

It consists in connecting one of the jaws or plates, which are provided with pointed pins, loosely to one of the T-heads of the tongs, so that the said plate will turn slightly and adapt itself to the shape of the article, and thus hold it evenly, as hereinafter more fully described.

In the accompanying drawings, Figure 1 is a perspective view of the improvement; and Fig. 2 is a section of the jaws on line *x x*, Fig. 1.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A A are the jaws of the tongs, with handles B B, pivoted together at *a*. On the ends of the jaws are T-heads C C, forming a part thereof.

D D′ are plates laid upon the T-heads, with their edges parallel. The former is connected permanently with the head of the lower jaw by screws *a′ a′*, and the latter is connected with the upper jaw by screws *b b*, passed through holes *c c* into the T-head, so that it is capable of a slightly oblique adjustment sidewise and endwise with respect to the upper T-head. A set-screw, *d*, passed down through the middle of the head, limits the adjustment of and forms a bearing for plate D′. From the surface of plates D D′ project several rows of metal pins *d′*, sharpened at their points, as clearly shown in the drawings. These points form the grasping-surface of the tongs, which are employed as follows:

When a knife-blade, E, or any other article which is liable to warp or crack is to be hardened, it is placed edgewise between the jaws until its edge bears against the studs *e* projecting upward near the back edge of plate D; then the two jaws are brought together until the points of pins *d′* bear upon the two sides of the blade and hold it securely, as shown in the drawings. As the blade tapers from back to edge, and from heel to point, it follows that if the plate D′ were rigidly attached to the T-head of the upper jaw, the blade would not be held over its entire surface; but by attaching the plate loosely, so that it will take an oblique adjustment, it adapts itself to the shape of the article to be hardened, and every point in each plate bears upon one or the other of the two surfaces, and thus the article is held securely and evenly, and when plunged into the hardening-bath the pressure prevents it from warping. Moreover, the sharp points of pins *d′* offer but little bearing-surface; consequently there is no danger of their contact with the blade or other article chilling before it enters the bath, which would prevent hardening and leave soft places.

By making the plates D D′ removable from the T-heads of the jaws they can be adapted to the size and shape of the article to be treated, as it is essential to the perfect operation of the device that the article should be held over its whole surface, or as much of it as is liable to crack or warp.

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

The plate D′, provided with pins *d′* and holes *c*, and secured loosely to the T-head C of the upper jaw by the screws *b*, and fulcrumed on the screw *d*, in combination with the upper T-head C and the plate D, provided with pins *d′* and *e*, and secured to the lower T-head C, substantially as shown and described, and for the purpose set forth.

MARY M. TAYLOR,
Administratrix.

Witnesses:
ROBERT G. PARKER,
W. WALLACE TAYLOR.