(No Model.)

I. P. RICHARDS.

Metal Punch.

No. 229,840. Patented July 13, 1880.

Fig. 1.

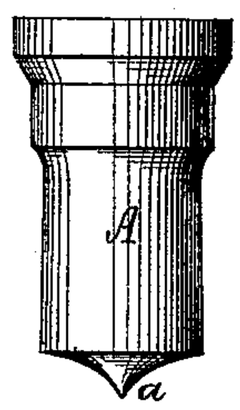


Fig. 2.

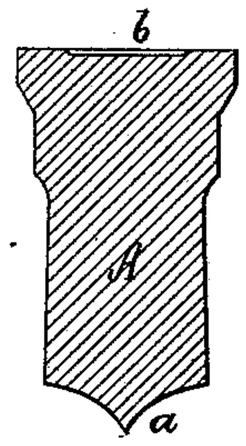
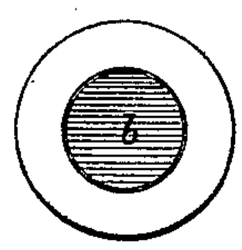


Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

ISAAC P. RICHARDS, OF PROVIDENCE, RHODE ISLAND.

METAL-PUNCH.

SPECIFICATION forming part of Letters Patent No. 229,840, dated July 13, 1880.

Application filed April 5, 1880. (No model.)

To all whom it may concern:

Be it known that I, ISAAC P. RICHARDS, of the city and county of Providence, and State of Rhode Island, have invented a new and useful Improvement in Punches for Perforating Metals; and I do hereby declare the same to be described in the following specification, and represented in the accompanying drawings, of which—

Figure 1 is a front elevation, Fig. 2 a longitudinal section, and Fig. 3 a top view, of a punch made in accordance with my invention.

Heretofore in constructing punches for perforating metal plates it has been customary to make them with flat punching ends, or with such and a conical or cylindro-conical teat or center projecting from the flat end.

In carrying out my improvement, instead of so making the punch at its punching end, I there construct it tapering and concave from the apex of the tapered part to the circumference of its base, all as shown in the drawings, in which A denotes the punch; *a*, its concavo-conical end, curved, as shown, from its apex to its base.

In the butt or head of the punch I form a circular recess or shallow cavity, *b*, concentric with the outer surface of the head.

By thus constructing the end of the punch from the outside cutting-edge to the apex or protruding center the punch will enter metal easier, and I avoid the shock usually experienced in the case of the flat punch when brought down upon a sheet or bar. Furthermore, the concavo-conical end will wear longer than a flat end usually will, and is not so liable to break or scale off on being withdrawn from the metal.

As steel in the process of hardening is very apt to become changed in form, especially when the surface is flat and constitutes the head or end of a punch, which under such circumstances is liable to become bulged out in the process of hardening, the cavity enables such bulging to take place without materially affecting the surrounding bearing-surface of the head. The cavity also answers to receive the mark or marks indicative of the size of the punch.

I claim as my invention—

A punch for the purpose described, having its punching end tapering and concave from its apex to its base, as set forth.

ISAAC P. RICHARDS.

Witnesses:

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