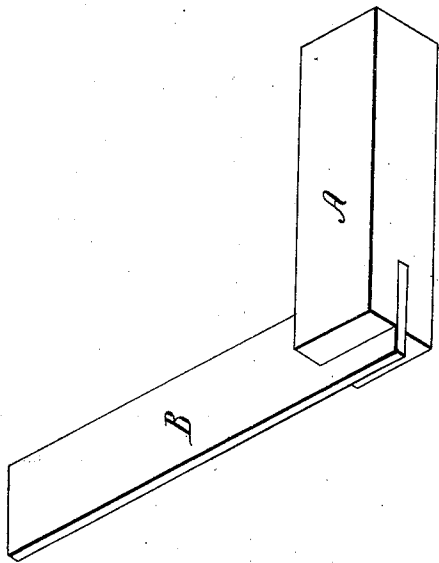


*S. Darling.*

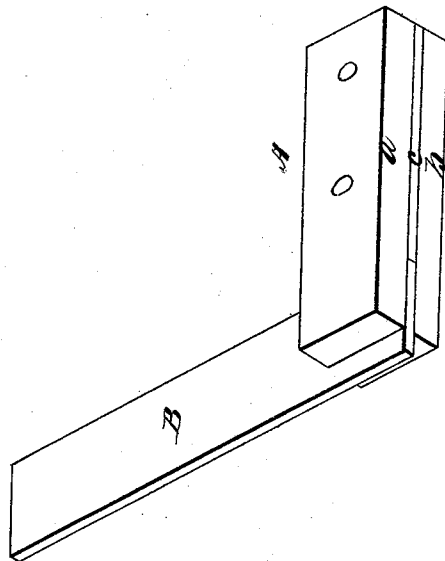
*Making Metal Tools.*

*N<sup>o</sup> 18,327.*

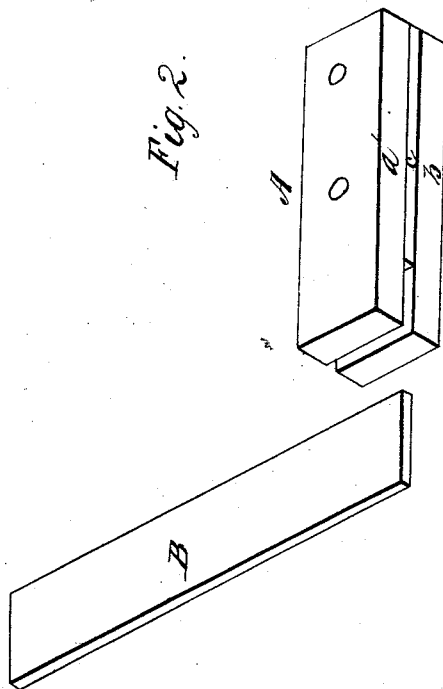
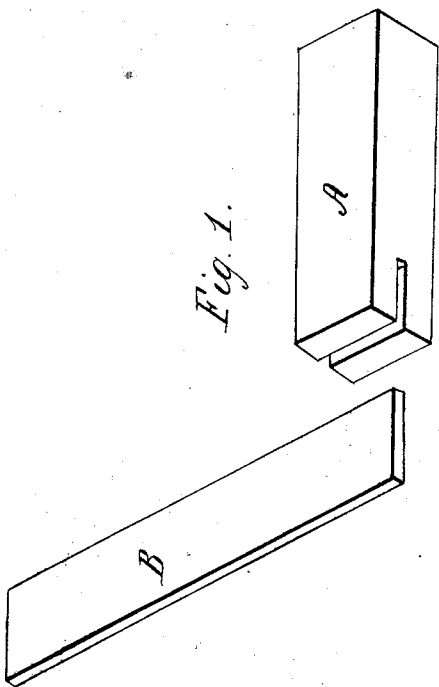
*Patented Oct. 6, 1857.*



*Fig. 1.*



*Fig. 2.*



# UNITED STATES PATENT OFFICE.

SAMUEL DARLING, OF BANGOR, MAINE.

## MANUFACTURE OF METALLIC SQUARES.

Specification forming part of Letters Patent No. 18,327, dated October 6, 1857; Reissued February 18, 1868, No. 2,869.

*To all whom it may concern:*

Be it known that I, SAMUEL DARLING, of Bangor, in the county of Penobscot and State of Maine, have invented certain new and useful Improvements in the Manufacture of Metallic Squares; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part thereof, in which—

Figures 1 and 2, represent in perspective the square in question, and showing the tongue and beam separate, and united together.

The leading feature, in the manufacture of my square, consists in uniting the tongue and beam together by solder, by which means I make a better and more perfect article, than by any of the means heretofore practiced.

To enable others skilled in the art to make and use my invention, I will proceed to describe the manner of making the same, and wherein consists its superiority over other squares as made by the common methods.

In Fig. 1, A, represents the beam of the square which may be made of steel, iron, brass, or any other metal, and B, represents the tongue thereof which is made of steel, for the sake of durability. In this figure the beam is represented as made of one piece of metal; and the slot, for the reception of the tongue is sawed into the end of the beam, in a manner well known to mechanics.

Fig. 2, represents a modification of the plan shown in Fig. 1, for making the beam. In this latter case, the beam is made of three pieces *a*, *b*, *c*, the two outside pieces *a*, *b*, being of uniform thickness, or otherwise, and the inner piece *c*, between them, of the exact thickness of the tongue, and as much shorter than the outside pieces, as it is desirable to let the tongue into the beam. When the beam is thus made of three pieces, they are united together by rivets, or in any other well known manner; and the advantage in this form consists mainly in the facility for making the slot for the reception of the tongue perfectly true, as its sides may be finished before the pieces are put together. In this case as well as in Fig. 1, the tongue is soldered to the beam, which makes a stronger connection than by rivets, and a much more perfect article; for the greatest care, and exactitude, will not prevent the rivets from

crowding or drawing, and although the tongue and beam may be rigidly clamped in a former, while they are being riveted together, yet when taken from the clamp they will spring out of true.

The tongue B, is made of steel, but not hardened, except at the edges. If the steel in the tongue were hardened uniformly, or all over, the temper would have to be drawn quite low to prevent it from breaking, and to undertake to draw the temper in the middle of the tongue, and leave the edges hard, would be very difficult if at all practicable. I harden the edges of the tongue by placing it between two pieces of thick iron, allowing the edges of the tongue to project on all sides; the tongue and side pieces are then heated sufficiently for the purpose, and afterward plunged into water which hardens the edges, and leaves the center soft. If the whole tongue were hardened, it would work badly, and could not be trued until the temper was drawn, and even then it would be difficult, for to attempt to harden the whole tongue, it being thin, would warp it considerably. It is therefore after many repeated trials, and much labor and thought that I have been able to make a perfect square, with the requisite strength hardness, and elasticity of tongue, without liability to become disarranged. It is obvious that, the side pieces of the beam, when made in sections, may be thicker or thinner as the circumstances of the case may be; and for convenience in handling, the said side pieces may be faced with wood, the rivets passing through the whole; or the wood and side pieces may be united by screws, the heads of which after they are in place being dressed off, so as to leave a finished surface.

The soldering in of the tongue makes a better and stronger square than riveting. It is more perfect, and less liable to get out of true. The metal in the tongue can be better tempered, and proportioned. And although I have mentioned but one way of tempering the edges of the tongue without tempering the central portions of it, yet other methods may be used, as for instance the edges may be tempered or hardened by pressure between plates or surfaces of cold iron. The end of the tongue, and the slot in the beam being tinned or coated with solder, are put together, trued, and clamped in a gage or former, and then heated until the solder

flows through the joints, and afterward allowed to cool evenly and gradually.

I believe myself to be the first inventor or discoverer of a tongue for squares, which is  
5 hardened at the edges and soft in the center, as above described, and although I have not specially claimed it, yet I intend to do so in due time.

Having thus fully described the nature of

my invention, what I claim therein as new 10 and desire to secure by Letters Patent as a new article of manufacture, is—

A square when constructed substantially as herein set forth and described.

SAMUEL DARLING.

Witnesses:

THOS. H. UPPERMAN,

E. COHEN.

[FIRST PRINTED 1912.]