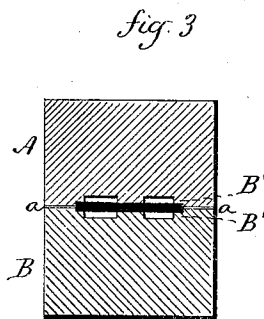
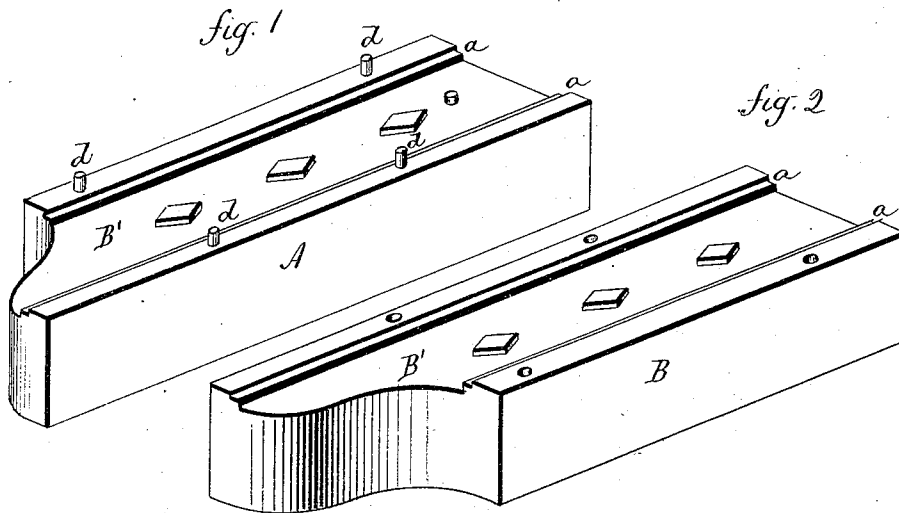


I. J. ROBINSON.

Processes for Tempering the Blades of Squares.

No. 153,115.

Patented July 14, 1874.



Witnesses
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ST. JOHNSBURY TOOL COMPANY, OF SAME PLACE.

IMPROVEMENT IN PROCESSES FOR TEMPERING THE BLADES OF SQUARES.

Specification forming part of Letters Patent No. **153,115**, dated July 14, 1874; application filed
May 11, 1874.

To all whom it may concern:

Be it known that I, ISAIAH J. ROBINSON, of St. Johnsbury, in the county of Caledonia and State of Vermont, have invented a new Improvement in Process of Tempering the Blades of Squares; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a perspective view of one part, Fig. 2, a perspective view of the other part, of the tempering device; and in Fig. 3, a transverse section of the two parts as set together upon the blade.

This invention relates to an improvement in method of tempering the blades of squares.

In the usual method of tempering by immersion it is impossible to prevent the blade from twisting or springing out of shape, necessitating a subsequent operation to bring the blade back into proper shape. By such method the blade is hardened alike throughout, whereas the edges only require to be hardened; and if the blade be hardened only at the edges, then it is less liable to spring and break.

The object of this invention is to harden the blades only at the edges, and prevent the possibility of their twisting during the process; and it consists in placing the blade, when heated to the proper extent for tempering, between two cold metal clamps, which will closely clasp the blade at the two edges, and thereby chill and harden the edges, while the remainder of the blade is exposed to the atmosphere, as more fully hereinafter described.

A is one part, and B the other part, of the clamp. Through the center of these a channel, B', is formed, deeper than the thickness of the blade, and a little less in width than the blade; and upon each edge of this channel a rabbet, *a*, is formed, corresponding to the thickness of the blade, or a very little less. This may be all in one part, or half in each, as shown. Guide-pins *d*, or other suitable de-

vice, should be provided, that the two may be set together in a proper corresponding position.

The blade, denoted in solid black, Fig. 3, is heated to the proper degree for hardening, and then laid into one of the clamps, and the other closed upon it, as seen in Fig. 3, grasping the edge of the blade, so as to prevent its twisting either transversely or longitudinally. These clamps are cold, and hence instantly chill the blade, so as to give to the blade the required temper. The channels B allow a free circulation of air through the clamps above and below the blade, over the central portion, or between the two edges or chills; hence this portion will cool so slowly that it will be very much softer than the edges which have been chilled, and render it almost impossible to break the blade.

This method of tempering leaves the effect apparent upon the blade, as the edges which are chilled will appear finer after polishing than the central portion, which is not equally hard.

Intermediate supports may be placed in the channels, as shown; but these are not essential. Such bearings or supports may be made to ornament the surface of the blade, as the point touched by these bearings in the chill will be indicated on the polished surface of the blade, or the same browned with acid.

This process is applicable not only to the tempering of the blades of squares, but to analogous uses, such as steel scales, straight-edges, &c.

I claim as my invention—

The process herein described for hardening steel plates, the same consisting in grasping the plate between metal chills, constructed to bear only upon that portion of the surface of the blade which is required to be hardened, and expose the remaining portion to the surrounding atmosphere.

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Witnesses:

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