H. DISSTON.

Tempering Steel.

No. 67,734. Patented Aug. 13, 1867.

Fig. 2.

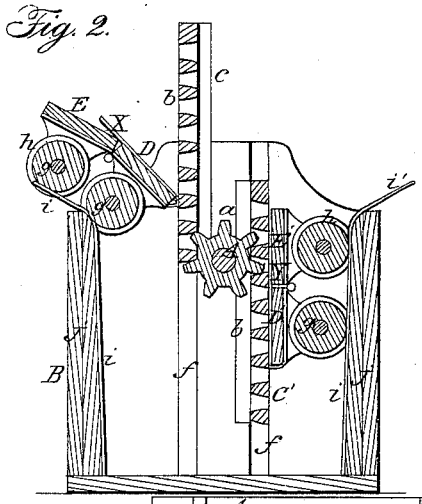


Fig. 3.

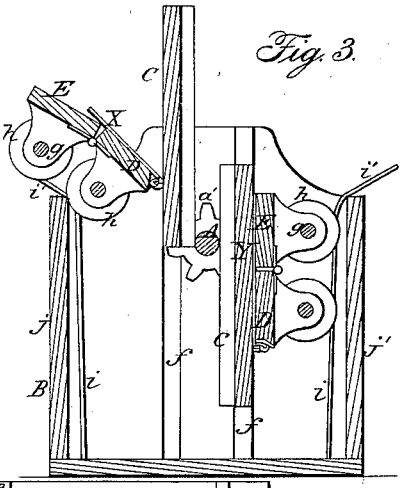


Fig. 1.

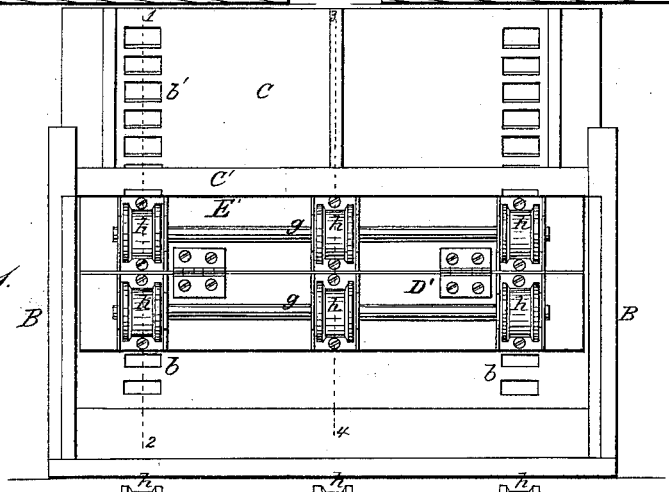
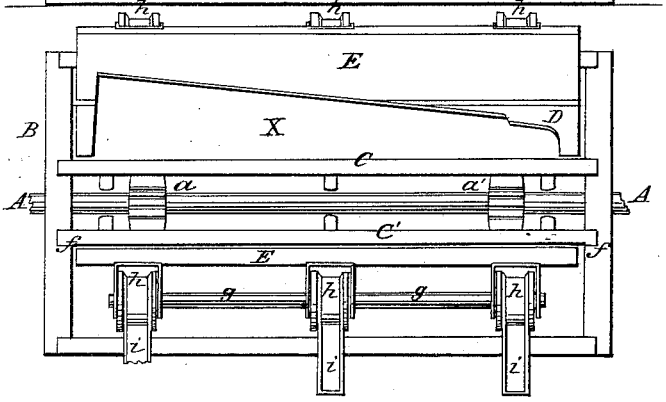


Fig. 4.



Witnesses:

Wm. Albert Steel
John Parker

Inventor:

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By his attorney
H. Howson

United States Patent Office.

HENRY DISSTON, OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 67,734, *dated August* 13, 1867.

IMPROVEMENT IN HARDENING AND STRAIGHTENING STEEL BLADES.

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, HENRY DISSTON, of Philadelphia, Pennsylvania, have invented a Mode of Simultaneously Hardening and Straightening Blades of Steel; and I do hereby declare the following to be a full, clear, and exact description of the same.

My invention consists in simultaneously hardening and straightening blades of steel by subjecting them, while in a heated state, to a gradual pressure between plates, simultaneously with the dipping of the latter, with the blades, into the hardening composition.

In order to enable others skilled in the art to practise my invention, I will now proceed to describe a mode of carrying the same into effect, reference being had to the accompanying drawing, which forms a part of this specification, and in which—

Figure 1 is an elevation of apparatus which may be used for carrying out my invention.

Figure 2 a transverse sectional view on the line 1–2, fig. 1.

Figure 3 a transverse section on the line 3–4, fig. 1; and

Figure 4 a plan view.

Similar letters refer to similar parts throughout the several views.

A horizontal shaft, A, turns in suitable bearings in the opposite ends of the trough B, and is provided with pinions *a* and *a'*, gearing into racks *b b* formed in vertical sliding plates C and C', which move in grooves *f* formed in the ends of the trough, fig. 2. A plate, D is hinged to the sliding plate C, near the lower edge of the same, and has hinged to it a similar plate, E. A shaft, *g*, turns in projections at the back of each of the plates D and E, and each shaft is provided, in the present instance, with three flanged wheels or pulleys, *h*, adapted to inclined guides or ways *i*, secured to one side of the trough. The opposite sliding plate C' has hinged to it plates D' and E', of a like character to those described, these plates being also provided with wheels, *h*, guided by ways *i*, secured to the other side *j'* of the trough. By imparting a rocking motion to the shaft A a reciprocating motion in opposite directions is transmitted to the sliding plates C and C', the arrangement being such that when one plate is at the limit of its upward movement the other plate C' is at or near the bottom of the vessel. The upper projecting ends *i'* of the ways *i* are bent outwards, so that when either of the sliding plates reaches the limit of its upward movement the hinged plates D and E will assume the inclined position illustrated in the drawing.

The method of operating with the above-described apparatus is as follows: The trough B is filled or nearly filled with oil or other hardening liquor, and the plate C is elevated so that the plates D and E may assume the position indicated. The saw-blade or other plate to be hardened is then laid, while in a heated state, on the plate D, its lower edge resting against the face of the plate C. The moment the blade has been thus adjusted the plate C is instantly lowered, and with it the hinged plates D and E, which, owing to the inclination of the ways *i i*, are gradually forced towards the plate C, between which and the said hinged plates the blade is firmly confined by the time the plate C has reached the limit of its downward movement. In the mean time the other plate C' has been elevated until its hinged plates D' and E' have assumed the inclined position, when the hardened plate previously confined between these plates is removed, prior to the introduction of another blade. Thus the process is continued, blade after blade being simultaneously hardened and straightened with rapidity and accuracy.

Attempts have been made to straighten and harden blades of steel by dies or plates immersed in the hardening composition, but the dipping of the blades into the liquor before the plates could be brought to bear on them rendered the attempts unsuccessful, the blades being reduced to such a hard condition before receiving the pressure of the plates that the latter was ineffectual to complete the hardening process—an evil obviated by my invention, in the practice of which the pressure of the heated plates is simultaneous with the dipping or hardening.

One plate may be substituted for the hinged plates D and E, although I prefer the latter, and different mechanism may be employed for raising and lowering the plate C. It is not essential that there should be two sets of tempering-plates, but the latter afford facilities for carrying out the process rapidly.

Without confining myself to the mechanism described, I claim as my invention, and desire to secure by Letters Patent—

The mode, substantially as herein described, of simultaneously hardening and straightening saw or other blades of steel; that is to say, subjecting the blades, while in a heated state, to a gradual pressure between plates simultaneously with the dipping of the latter and the blades into a hardening composition or fluid.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY DISSTON.

Witnesses:

JOHN WHITE,

W. J. R. DELANY.