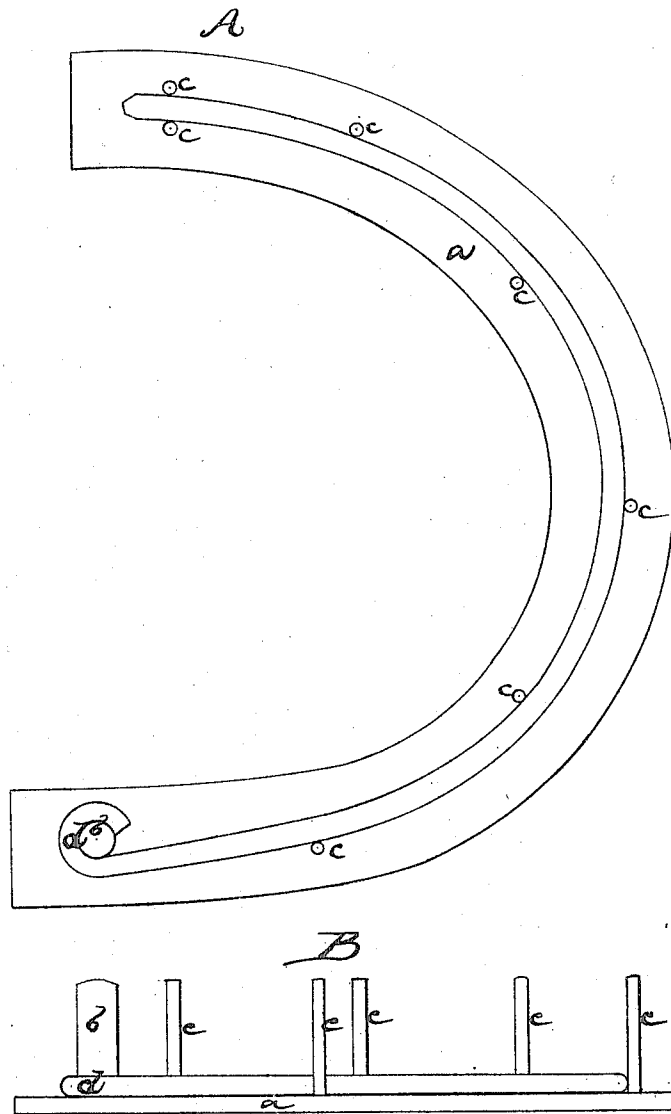


J. A. FERSON.

Tempering Horse-Rake Teeth, &c.

No. 134,264.

Patented Dec. 24, 1872.



Witnesses,  
Mo. W. Frothingham,  
L. H. Atkins,

Inventor  
James A. Ferson,  
By his Atty.  
Crosby & Gould.

# UNITED STATES PATENT OFFICE.

JAMES A. FERSON, OF FITCHBURG, MASSACHUSETTS, ASSIGNOR TO SIMONDS  
MANUFACTURING COMPANY, OF SAME PLACE.

## IMPROVEMENT IN TEMPERING HORSE-RAKE TEETH, &c.

Specification forming part of Letters Patent No. 134,264, dated December 24, 1872.

*To all whom it may concern:*

Be it known that I, JAMES A. FERSON, of Fitchburg, in the county of Worcester and State of Massachusetts, have invented an Improvement in the Manufacture of Horse-Rake Teeth; and I do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of my invention, sufficient to enable those skilled in the art to practice it.

In the manufacture of spring-wire horse-rake teeth the teeth are sometimes hardened to shape by bending them upon a former, and, while held in bent position, immersing them in the hardening liquid contained in the hardening-vat. When removed from the vat and from the bending mechanism or former, they are afterward heated and tempered; but, notwithstanding the hardening, when bent they sometimes fail to perfectly retain their bent shape, from want of uniformity of metal or from failure to become uniformly hardened, or from some other cause.

To remedy this difficulty I take each tooth as it comes from the hardening-vat, and preferably before it gets entirely cold, and place it in a holder that confines it positively in perfect shape, and then, while so held and confined, heat and temper it while upon the former, preferably using a former that will receive a series of teeth for each operation.

It is in this process of tempering horse-rake teeth while held to their ultimate form that my invention consists.

The drawing represents a holder embodying or for practicing the invention.

A shows a plan of the holder; B, a side view of it.

*a* denotes a curved steel bar; *b c*, steel pins extending therefrom, the pin *b* being of a size to receive the eye *d* of the rake-tooth and the pins *c c* being arranged in a series and in such relative positions and at such distance apart that when the wire is run through them, passing in front of one and back of the next, and so on through the series, it will

have the curved form ultimately to be possessed by it. The pins are made sufficiently long to receive several teeth, each passing between the teeth, as with the one seen at A. When the hardening process has reached the proper stage the formed teeth are removed from the hardening-vat, and then, instead of being tempered without restraint as to form, each is bent to its proper shape between the pins *c*, or by means of any other suitable holder that will confine the wire in shape, and the holder is then, with the tooth or teeth, so confined or held by it, introduced into the tempering-furnace, so that the tooth will be tempered to shape or while held in shape. The tooth thus made retains its form, so that in any departure therefrom by springing it invariably recovers its normal shape when released from strain.

In practicing the invention I prefer to heat to temper before the teeth become wholly cold after hardening.

Teeth thus made are not only much more perfect as to form or permanency of form, but are far less liable to break.

The teeth may be hardened to form otherwise than by the specific process described, although that is considered the best method; but in every case the teeth are first hardened to form and are subsequently tempered upon a former.

I claim—

1. The improvement in the manufacture of spring-teeth for horse-rakes, consisting in tempering each tooth after it has been hardened by confining it in proper shape upon a holder and then heating both it and the holder together to give the temper.

2. A former for tempering rake-teeth and similar articles, consisting of a plate provided with the upright pins for holding the tooth or teeth positively in proper position.

Executed this 24th day of July, A. D. 1872.  
JAMES A. FERSON.

Witnesses:

A. A. MARSHALL,  
R. O. GRAHAM,