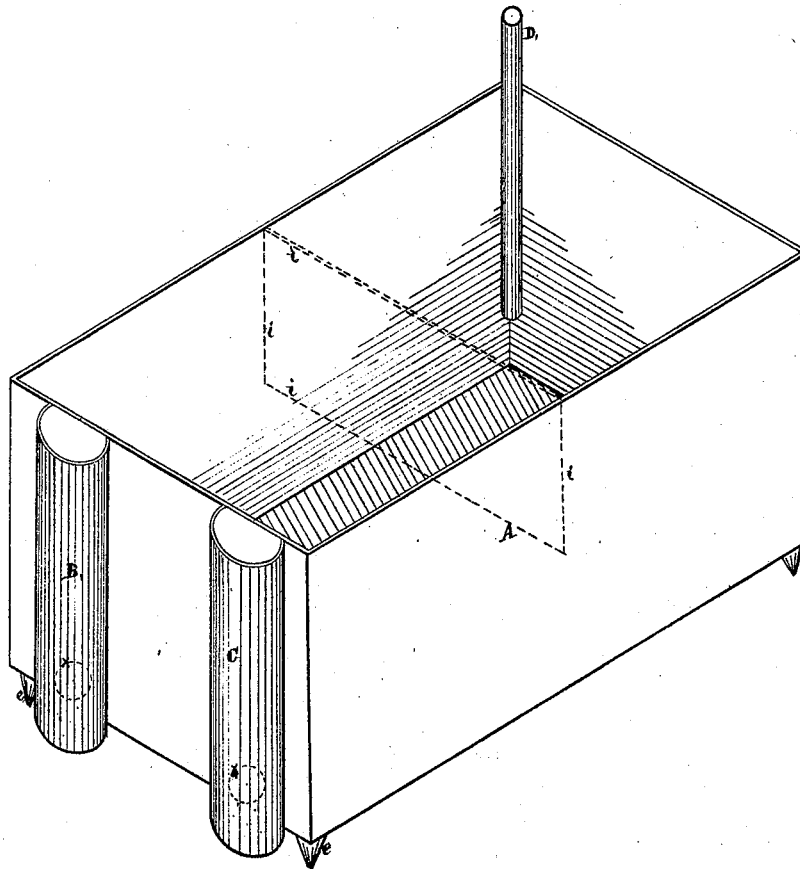


A. B. Sprout,

Tempering Steel.

No. 54,429.

Patented May 1. 1866.



Inventor

Witnesses.

James F. Johnston
Alexander Hay

A. B. Sprout

UNITED STATES PATENT OFFICE.

ARIEL B. SPROUT, OF HUGHESVILLE, PENNSYLVANIA.

IMPROVED PROCESS FOR TEMPERING STEEL.

Specification forming part of Letters Patent No. 54,429, dated May 1, 1866.

To all whom it may concern:

Be it known that I, ARIEL B. SPROUT, of Hughesville, in the county of Lycoming and State of Pennsylvania, have invented a certain new and useful Improvement in the Process of Tempering Cast-Steel; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention consists in the use of a saponaceous bath covered with a coat of oil and heated to the boiling-point, and regulated and graduated in its strength to suit the different kind and quality of steel article or thing to be tempered, said saponaceous and heated bath being an improvement on process of tempering steel for which Letters Patent of the United States were granted to me on the 16th day of August, in the year of our Lord, 1864.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

In the accompanying drawings, A represents an iron vessel, which rests on suitable feet and is furnished with two small compartments, (marked B and C,) which are connected by means of openings (marked X) with the interior of the vessel A. The vessel A is also furnished with a pipe, (marked D,) which may be connected to a steam-boiler.

As the construction and arrangement of the several parts mentioned will readily be understood by reference to the accompanying drawings, I will proceed to describe their use and the operation of my process.

Having the vessel A and its appendages B, C, and D constructed and arranged as described and represented, I fill the vessel A to the desired depth with a saponaceous or alkaline liquid, the strength of which must be in proportion to the kind and quality of steel article or thing to be tempered, and when a large number of pieces are to be tempered and each piece is required to have the same temper the strength of the liquid which forms the bath must be uniformly and invariably the same, which is done by the addition of a stronger or weaker liquid.

I place an alkalimeter or other instrument

in the compartment B or C. I also place a thermometer (self-registering) in one of the compartments B or C. I then cover the liquid with a thin coat of oil. I then heat the bath up to the boiling-point (212° Fahrenheit) by admitting steam into the bath by means of pipe D.

When the bath is sufficiently heated, which will be indicated by the thermometer, and the desired strength of liquid obtained, which will be indicated by the alkalimeter, the bath is then ready for use. I then heat the steel article or thing to be tempered and plunge or dip in the bath, which completes the tempering process.

I wish it to be clearly understood that I do not confine myself to any precise strength of liquid or degree of heat, provided it is near or above the boiling-point; nor do I confine myself to the quantity of oil used in combination with the saponaceous or alkaline liquor of the bath; neither do I confine myself to the mode of heating or form or size of vessels which contain the bath.

When I desire to prevent the article to be tempered from passing through the oil in removing it from the bath I use a division-piece, as indicated by the dotted lines marked *i*. This division-piece extends down some distance below the top of the bath, and the bath is only covered with oil on one side of the piece *i*, so that the article to be tempered may pass through the oil in entering the bath, but prevented from coming in contact with the oil in removing the article from the bath by taking it out on that side of the bath not covered with oil.

Having thus described the nature, construction, and operation of my improvement, what I claim as of my invention is—

The use of a saponaceous or alkaline liquor covered with a coat of oil and heated to about the boiling-point, and regulated and graduated in its strength to suit the different kind and quality of steel article or thing to be tempered, substantially as herein described and set forth.

A. B. SPROUT.

Witnesses:

JAMES J. JOHNSTON,
ALEXANDER HAYS.