

UNITED STATES PATENT OFFICE.

WILLIAM J. SAGER, OF WARREN, PENNSYLVANIA.

PROCESS OF TREATING METALS.

SPECIFICATION forming part of Letters Patent No. 547,361, dated October 1, 1895.

Application filed August 19, 1895. Serial No. 559,787. (No specimens.)

To all whom it may concern:

Be it known that I, WILLIAM J. SAGER, a citizen of the United States, residing at Warren, in the county of Warren and State of Pennsylvania, have invented certain new and useful Improvements in Processes of Treating Metals, of which the following is a specification.

My invention is an improved composition of matter and a method of treatment for the working of steel to improve its quality and durability, and thus adding materially to its wear.

In carrying out my invention I first prepare my composition in pulverized form, well mixed, using the ingredients hereinafter described in substantially the proportions stated, and into this compound I dip or immerse the piece being forged, then heat the piece to a proper temperature, and hammer the same, and repeat this operation as often as may be necessary. By this operation and subjecting the piece being forged to the repeated action of the compound great durability is imparted to the article forged. I then complete the method by taking the piece thus forged and temper and harden it by subjecting it (after first heating the article or piece to a cherry-red) to a bath composed of the same ingredients as the compound described, but in different proportions and dissolved in water, the solution standing, preferably, about forty hours before being used. I reduce the

article to the desired temper in the well-known manner.

The compound is made up of the following ingredients: prussiate of potash, saltpeter, blue vitriol, sal-ammoniac, concentrated lye, salt, and borate of iron.

The proportions used for forging are one part of the prussiate of potash, one and one-half of saltpeter, two parts of blue vitriol, two parts of the sal-ammoniac, one part of concentrated lye, three parts of salt, and one part of borate of iron.

What I claim is—

1. The herein described composition of matter consisting of prussiate of potash; saltpeter; blue vitriol; sal ammoniac; concentrated lye; salt and borate of iron in substantially the proportions described.

2. The herein described method consisting in alternately dipping or immersing the metal to be forged in a compound of prussiate of potash; saltpeter; blue vitriol; sal ammoniac; concentrated lye; salt and borate of iron and heating the same, then heating the forged piece to a cherry red and finally subjecting it to a tempering bath substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM J. SAGER.

Witnesses:

E. S. MACK,
F. T. SAGER.