UNITED STATES PATENT OFFICE.

ADAM SCHAEFER, OF PHILADELPHIA, PENNSYLVANIA.

COMPOUND FOR TEMPERING STEEL.

SPECIFICATION forming part of Letters Patent No. 341,173, dated May 4, 1886.

Application filed January 22, 1886. Serial No. 189,403. (Specimens.)

To all whom it may concern:

Be it known that I, ADAM SCHAEFER, a subject of the King of Bavaria, now residing in the city and county of Philadelphia, and State of Pennsylvania, (having in the year 1881, in the said city of Philadelphia, in due legal form declared my intention of becoming a citizen of the United States,) have invented certain new and useful Improvements in Compounds for Tempering Steel; and I do hereby declare the following to be a sufficiently full, clear, and exact description thereof as to enable others skilled in the art to make and use the said invention.

This invention relates to the improvement in the quality of steel, and has for its object the increasing of the tenacity and hardness of steel, and is specially applicable to tools used for working metal where the highest perfection of cutting-edges and greatest durability thereof is important, and is also usefully applicable to steel which has deteriorated in quality by excessive heat or burning.

To effect these desiderata the nature of this invention may be briefly stated to consist of a mixture of rosin, glycerine, linseed-oil, and pulverized carbon, made in the manner and proportions hereinafter stated, into which articles of steel, immersed in a heated state, become improved in tenacity and hardness, and upon being afterward hardened and tempered in the usual manner possess increased strength and durability.

I will now proceed to fully and particularly describe the mode of making and using the said invention.

I take eight parts of common rosin, two parts of crude glycerine, four parts of linseed-oil, and one part of finely-pulverized charcoal, the charcoal from willow similar to that used in gunpowder manufacture being preferable. I place the oil and glycerine in a kettle. I then apply sufficient heat to fuse the rosin, and stir the mixture, adding the charcoal and intimately mixing all of the ingredients. It is then placed in cans or other vessels for sale or use.

The articles to be treated, finished as to form, as is usual, before hardening, are heated to a clear cherry-red heat, as shown, in a dark room, and then immersed in the mixture, and allowed to remain therein for from two minutes for the small or thin articles to longer time for thicker ones. The length of time is indicated by the cooling of the article. Next, the articles are reheated to the usual temperature or red heat, and hardened by suddenly cooling them in a cold bath, or by equivalent means, and then the hardness reduced by tempering them by applying lower degrees of heat, according to the degree of hardness required.

I am aware that a compound for hardening, cooling, and tempering metals, consisting of a mixture of linseed-oil, resin, and lamp-black has been used, as appears in United States Patent No. 58,031, dated September 11, 1866. Such compound is hereby disclaimed as not of my invention; but,

Having described my invention and the mode of making the same, what I claim is—

The compound for improving the quality of steel, consisting, essentially, of rosin, glycerine, linseed-oil, and carbon, substantially in the proportions hereinbefore recited.

ADAM SCHAEFER.

Witnesses:
J. DANIEL EBY,
GEO. MCARTHUR.