

UNITED STATES PATENT OFFICE.

WILLIAM K. THOMPSON, OF ALEXANDRIA, INDIANA.

METHOD OF MANUFACTURING EDGED TOOLS.

SPECIFICATION forming part of Letters Patent No. 566,037, dated August 18, 1896.

Application filed December 9, 1895. Serial No. 571,576. (No specimens.)

To all whom it may concern:

Be it known that I, WILLIAM K. THOMPSON, a citizen of the United States, residing at Alexandria, in the county of Madison and State of Indiana, have invented certain new and useful Improvements in Methods of Manufacturing Edged Tools, of which the following is a specification.

My invention relates to an improvement in the method of manufacturing edged tools, one of the objects being to effectually prevent the rusting or discoloration and injuring of such articles by exposure to atmospheric changes or any of the causes which commonly produce such results.

Another object of the invention is to overcome or avoid the objectionable results incident to finishing such tools by the methods commonly employed.

Heretofore in the manufacture of such tools it has been customary, after tempering the article, to submit it to the action of grinding or abrading wheels for the purpose of imparting a polish and the desired finished appearance to the exterior surfaces thereof. Such a step, however, is objectionable, because of the fact that the operation frequently affects the temper of the tool and materially damages it. To overcome these objectionable features of the common practice is one of the main objects of my improvements.

In carrying out my invention the article, after being forged, edged, and pressed in the usual manner, is subjected to the action of abrading material to impart a comparatively smooth surface to its exterior. Then it is heated, in any desired and suitable manner, until it assumes a light cherry-red color, when it is immersed in brine and thereby thoroughly hardened. Any scale which may have formed on the part heated or any dirt which may have become lodged thereon is then removed by a "rough-wheel," which effectually cleans the article and gives it a relatively bright appearance. Then the tool is tempered. After the metal has been brought to the desired color it is immersed in a tub or vessel containing boiling water, the temperature of the water being preferably maintained at the boiling-point by admitting steam thereto. The tool is retained in this bath of boiling water until it is of substantially the same

temperature as the water, when it is removed, and as soon as the moisture thereon has evaporated or been removed by suitable means, but while the metal is still hot, it is immersed in a solution of water and bark. Preferably this solution is formed by steeping in water the bark of oak, hemlock, or other suitable trees and concentrating the solution, by evaporation or otherwise, until it contains from two and one-half to two and three-quarters per cent., more or less, of tannic acid. The articles are simply immersed in this tannic-acid solution and instantly removed therefrom. On exposure to the atmosphere the last-named solution tends to coagulate, and therefore it is necessary that shortly prior to the complete drying of the article the gum-like substance which has been formed at the lowest point thereof must be removed.

The action of the tannic-acid solution on the metal is to form an oxid which imparts a dull brownish or bronze-like color to the exterior surfaces and which effectually prevents the rusting of the article when brought into contact with moisture or any of the conditions which tend to produce that result.

In the manufacturing of axes, to which this process is particularly applicable, the bitt thereof is "raised" off, preferably by means of an emery-wheel, to give the desired smooth and finished appearance to that portion of the tool.

The advantages of such a process as that hereinbefore described will be readily understood and appreciated by those skilled in the art.

It will be seen that I dispense entirely with the grinding and polishing which is required to give the article a bright appearance after being tempered when made in the ordinary manner. In the case of the manufacture of axes, also, I save painting the poll of the ax, and by the omission of the steps mentioned insure that the temper of the tool, after once fixed, will not be changed by subsequent steps in the process, and also materially reduce the cost of manufacture.

I am aware that prior to my invention it has been proposed, in a process for ornamenting and improving the appearance of metallic slabs, to first rough the surface of the metal by the application of acid, then immerse the

metal in a solution containing gallic and tannic acid for the purpose of forming a solid substance in the cavities, and then applying a coating of fireproof paint to the slabs;
5 also that it has been proposed to color gun-barrels and similar articles by coating them with an acid paste for a sufficient length of time to change the color of the metal, and such improvements I do not claim. I do
10 claim, however, the above-described process of manufacturing edged tools, which will be hereinafter more specifically pointed out.

Having thus described my improvements, what I claim is—

15 1. The herein-described improvement in the method of manufacturing edged tools, which consists in first hardening a blank, then removing scale therefrom, then tempering the article, then raising the temperature of
20 the same, and while it is in this heated con-

dition immersing it in an acid bath, whereby a uniform color is imparted to the article and the formation of rust thereon is prevented, substantially as set forth.

2. The herein-described improvement in 25 the method of manufacturing edged tools, which consists in first hardening the tool, then removing scale therefrom, then tempering the metal then immersing it in a bath of boiling water until it is of the same temperature 30 as the water, and finally immersing it, while at the last said temperature, in a tannic-acid solution, substantially as and for the purpose set forth.

In testimony whereof I affix my signature 35 in presence of two witnesses.

WILLIAM K. THOMPSON.

Witnesses:

GEORGE T. PRICE,
JAMES HORNER.