

# UNITED STATES PATENT OFFICE.

CHARLES T. J. HAYDEN, OF VERSAILLES, MISSOURI.

## IMPROVED COMPOSITION FOR HARDENING STEEL.

Specification forming part of Letters Patent No. 70,210, dated October 29, 1867.

*To all whom it may concern:*

Be it known that I, CHARLES T. J. HAYDEN, of Versailles, in the county of Morgan, in the State of Missouri, have invented or discovered a new and Improved mode of Hardening Steel, so that the same can be used as a substitute for diamonds in cutting glass, and of cutting railroad-iron and tools of steel used either as mill-picks or in cutting stone. I hereby declare that the following is a full, true, and exact description thereof.

Take and mix up well the following chemicals, always using the same proportions of each in making up quantities either large or small: one ounce of alcohol, ninety-five per cent.; half an ounce of nitric acid, chemically pure; fifty grains of iodine; five grains bichromate of potash; five grains salt. Compound, and mix up well in one bottle.

And to enable others skilled in the art to make and use my invention successfully, I give the following instructions or directions: Take the piece of steel desired to be hardened. First dip the steel into the mixture prepared

as above as far in as it is to be hardened. Take it out immediately and hold it over a blaze of fire until it begins to get hot or turn blue. Then take it from the fire, dip it into cold water until it cools perfectly. Apply the steel in this manner three times, with the difference that the steel is to be held in the blaze of fire the last or third time until it heats to a cherry red, or a little above. Each time after the steel is cooled wipe it clean with a piece of cloth. When steel is hardened it can be used in cutting glass, steel, or other hard substances.

What I claim as my invention, and desire to secure by Letters Patent, is—

The application of the aforesaid chemical compound or mixture to steel, for the purpose of hardening it, or any other substantially the same which will produce the same effect.

CHARLES T. J. HAYDEN.

Witnesses:

JOHN T. CAMPBELL,  
P. R. BURNS.