

# UNITED STATES PATENT OFFICE.

JOHN McDONALD, OF KANKAKEE, ILLINOIS.

## IMPROVEMENT IN COMPOUNDS FOR HARDENING IRON AND STEEL.

Specification forming part of Letters Patent No. 121,645, dated December 5, 1871.

*To all whom it may concern:*

Be it known that I, JOHN McDONALD, of Kankakee, in the county of Kankakee and State of Illinois, have invented certain Improvements in Chemical Compound for Hardening Iron and Steel; and I do hereby declare that the following is a full, clear, and exact description of the same.

This invention relates to a new and useful improvement in a liquid composition for hardening iron and steel, as farming implements, plows, cultivator-teeth, edge-tools, &c.; and it consists in the use of a compound formed of the ingredients hereinafter named, and applied as described.

In carrying out my invention and discovery I form a compound of the following articles, and in about the proportions named, viz.: ten gallons whale or seal-oil; three and one-half pounds gum arabic; three and one-half pounds common salt; three and one-half pounds prussiate of potash; three pounds sulphate of zinc; and five pounds saltpeter.

The iron to be hardened—mold-boards, plow-

points, cultivator-teeth, &c.—is smoothed off by grinding in the usual manner, and then heated to a temperature a little above a cherry-red color, and then immersed in the compound and allowed to remain until nearly cooled. Then the articles are removed and quickly plunged into cold brine—salt and water—when they are ready for use. When the mold-boards or other articles of iron are treated in this manner they are not liable to spring, and are thoroughly hardened, so that their durability is greatly increased. Edge-tools and other articles of steel may be hardened in a similar manner, but the process may be varied according to the temper required.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

The above compound, as and for the purposes described.

JOHN McDONALD.

Witnesses:

JAMES H. PADDOCK,  
CHAS. P. SWIGERT.

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