

# UNITED STATES PATENT OFFICE.

BYRON W. NICHOLS, OF CANTON, OHIO, ASSIGNOR TO HIMSELF, C. AULTMAN, GEO. H. BUCKIUS, P. S. SOWERS, AND A. CLARK TONNER, OF SAME PLACE.

## IMPROVED COMPOSITION OF MATTER TO BE USED IN THE PROCESS OF RESTORING STEEL.

Specification forming part of Letters Patent No. 92,875, dated July 20, 1869.

### *To all whom it may concern:*

Be it known that I, BYRON W. NICHOLS, of Canton, county of Stark, and State of Ohio, have invented or discovered a new and improved process or composition of matter to be used in the process of restoring steel which has been injured by overheating during the various manipulations requisite for converting it into the articles of manufacture, and in which condition it is usually known as "burnt steel," also for refining and toughening steel after it has been rolled into bars or worked into articles of merchandise, of which the following is a specification.

I take in proportions about twenty (20) parts of black oxide manganese, ten (10) parts common salt, seventy (70) parts common resin. I melt the resin over a gentle fire in a suitable vessel, then add the other ingredients slowly, carefully stirring until the whole mass is thoroughly mixed. When cold, the compound becomes hard, not unlike common pitch in appearance. To restore the burnt steel, heat it to a bright-red heat, then rub the compound thoroughly over the surface, after which the steel is again slowly heated to redness and allowed to gradually cool; or, if it is desired to harden it, it may be plunged into water or any of the solutions commonly known and used for hardening purposes. By the addi-

tion of fish-oil or its equivalent the compound is reduced to a liquid state, so that the heated articles may be plunged into it when it is found more convenient to do so.

In operating upon steel in a melted state I mix the compound, either in a solid or liquid form, with the steel while in the crucible, agitating the steel in any desired manner, so as to bring the compound into intimate contact with every part of the entire mass. The quantity of the compound to be used under various circumstances will be determined by the appearance of the steel, and the proportions of the ingredients may be varied according to the condition or requirements of the steel to be operated upon.

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

1. The employment of manganese and resin in the process of restoring or refining and improving steel.
2. The employment of the ingredients herein named, when compounded and used about in the proportions and substantially in the manner and for the purpose set forth.

BYRON W. NICHOLS.

Witnesses:

GEO. E. BALDWIN,  
SAMUEL IRWIN.