

# UNITED STATES PATENT OFFICE.

SOLOMON W. YOUNG, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO THE  
HOMOGENEOUS METAL MANUFACTURING COMPANY.

IMPROVEMENT IN CARBONIZING OR COATING ARTICLES OF IRON OR STEEL.

Specification forming part of Letters Patent No. **177,189**, dated May 9, 1876; application filed  
February 24, 1876.

*To all whom it may concern:*

Be it known that I, SOLOMON W. YOUNG, of Providence, in the State of Rhode Island, have invented a new and useful Process of Carbonizing or Coating Iron and Steel; and I do hereby declare that the following specification is a full, clear, and exact description thereof.

The object of my invention is to give to small articles made from iron or steel—as, for instance, eyelets—a finish which shall preserve them from rust, and at the same time be incapable of peeling or cracking off during the subsequent setting up or bending of the same.

In my process I take the articles to which I desire to give a finish, as above stated, and place them in a perforated cylinder, or a cylinder made of gauze wire, which revolves within a stationary tight box or compartment. Into the bottom of such box or compartment I pour a quantity of oil, not enough, however, to come in contact with the cylinder. To this box or compartment heat is then ap-

plied until its temperature is raised to, say, 700°. After this degree of heat has been maintained for a short time the articles may be removed from the cylinder, when they will be found to have a dark, or nearly black, smooth finish, of no appreciable thickness, which will preserve them from rust, and will not be damaged by their subsequent use.

The heat applied to the oil, confined as described, produces a gas, which carbonizes the metal, and gives it the protection and finish described.

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

The process of carbonizing or coating small articles of iron or steel, which consists in exposing them in a tight chamber (and during constant rotation) to an atmosphere of heated-oil vapor, substantially as herein described.

SOLOMON W. YOUNG.

Witnesses:

WALTER B. VINCENT,  
J. T. RICH.