

# United States Patent Office.

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IMPROVED MODE OF FINISHING FIRE-ARMS SO AS TO PREVENT OXIDATION AND CORROSION.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that we, JOHN ALLEN, of the city, county, and State of New York, and SAMUEL P. TOWNSEND, of New Providence, in the county of Union, and State of New Jersey, have invented a new and Improved Mode of Finishing Fire-Arms of all descriptions, so as to preserve them from damage by oxidation or corrosion, and also of restoring to good condition arms which are damaged by oxidation or corrosion; and we do hereby declare that the following is a full and exact description thereof.

The nature of our invention consists in omitting the usual finish of fire-arms by polishing, burnishing, painting, or varnishing, and, instead thereof, to finish them by galvanizing them, so that water, gases, and other injurious agents shall be excluded from contact with the metal of the arms, as formerly made and finished.

To enable others skilled in the art to use our invention, we proceed to describe our process:

After the arms are completed, except the usual finish by polishing or otherwise, and before the several parts (of small-arms) are put together, we make the surfaces clean, and then plunge them into a bath of molten metal or metals, known as a galvanizing bath. This bath fills the pores of the metal of the arms, and also covers the entire surfaces exposed to the action of the bath, making the arms impervious to water, gases, and other agents which corrode iron, steel, and other gun metal. For small-arms, if put together, we detach the barrel, bayonet, guard, and other parts of metal, and galvanize them separately; and the barrel may be left open in the bath, or stopped, so that it may be galvanized in the bore as well, or upon the outside only.

In preparing the bath we prefer to use metals which have not too high a point of fusion, and which do not readily tarnish, as zinc and tin. For cannon, we use about eighty parts of zinc and twenty parts of tin; for small-arms, we use a larger proportion of tin, varying the quantity according to the color and smoothness of the work required, without limiting ourselves to any particular proportions or description of metals used for the bath, our purpose being to fill the pores of the metal of the arms and cover their surfaces with fused metals, and to apply the process to fire-arms of all descriptions.

To restore to good condition fire-arms which are damaged by rust or corrosion, we first clean their surfaces, using therefor acid, if that be necessary, and then subject them to the action of the bath the same as in finishing described above. The metal of the bath will penetrate iron and become incorporated with it to the depth of one-sixteenth of an inch or more, making a surface and body to that depth of much closer texture and greater solidity than that of iron. This, in heavy ordnance, particularly if the bore be galvanized, will, in some measure, prevent the dispersion of the force of the charge, and will in like measure increase its effectiveness.

The alloys we use oxidize very slightly, however long they may be exposed to the action of air or water, either salt or fresh, and when properly applied present a beautiful, smooth, white, or nearly white surface, easily kept clean and bright by simply rubbing with a cloth or soft leather, and also susceptible of a high polish. For arms stored, or not in actual service, this is an effectual and economical method of preserving them an indefinite time from corrosion or tarnishing. Arms submerged in water may be recovered in good condition, so far as the galvanized surfaces are concerned; and long exposure to the weather only dims the color slightly, without corroding their surfaces.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The finishing of fire-arms of all descriptions, by the mode and means hereinbefore described, and for the purpose of preserving them from damage by oxidation or corrosion, as set forth.

2. The restoration of damaged arms to good condition; by the method and means above set forth.

JOHN ALLEN,  
SAMUEL P. TOWNSEND.

Witnesses:

CHAS. SEARS,  
TAPPEN TOWNSEND.