

UNITED STATES PATENT OFFICE.

WILLIAM A. SKINNER AND JOHN E. GOODSON, OF CALLAO, MISSOURI.

IMPROVEMENT IN COMPOUNDS FOR TREATING IRON, STEEL, &c.

Specification forming part of Letters Patent No. **139,335**, dated May 27, 1873; application filed May 5, 1873.

To all whom it may concern:

Be it known that we, WILLIAM A. SKINNER and JOHN E. GOODSON, of Callao, in the county of Macon and State of Missouri, have invented a certain Compound for Treating Iron, Steel, and other metals, of which the following is a specification:

The invention consists of the following ingredients, in about the proportions given, viz: Pulverized borax, two parts; muriate of ammonia, one part and one-half; nitrate of potash, one part; prussiate of iron, one-quarter of one part. These are to be pulverized and mixed thoroughly together, when they will be ready for use.

In using this compound it is not necessary, as in the case with all others with which we are acquainted, to apply it directly to the metal to be operated upon, but only that it be placed in the fire in which the metal is heated. It desulphurizes stone-coal, and iron or steel heated in a fire containing it is freed from scales and corruptions, is refined, toughened, and softened, and the coarsest grades of metals, when heated by a fire containing the composition, are so improved in texture and quality as to be equal to the best. Used in a smelting-furnace it refines the metal, and in a casting blast also renders the castings more smooth and tough than usual. Cast-steel heated in a fire containing the compound can be worked and welded without any external application, will bear a much higher heat without injury than it would without it, and will bear hammering at a heat that it could not possibly bear in ordinary fires.

In an ordinary blacksmith's forge it is used

as follows: While the fire is in full blast draw back the burning coals and place a package containing about two ounces of the compound immediately below and in front of the nozzle of the bellows-pipe; then throw the fire back immediately and proceed to work the fire, as usual. Cast-steel heated to a borax heat and hammered, as usual, will readily weld without the necessity of the direct application of borax or any other chemical compound or ingredient.

We further claim that this compound sprinkled or dusted over stone-coal, when used in stoves, furnaces, blasts, or any and all other places where stone-coal is used for heating for any purpose whatever, will, by desulphurizing and cleansing the coal, protect the stoves, furnace-grates, &c., thereby increasing their durability, and protecting them from the effects of burning coal.

Having thus described our invention and the manner of using it, we do not desire to be understood as limiting ourselves to the precise ingredients and proportions herein mentioned; but claim—

1. A compound, substantially as herein described, for use in the fire, but not in direct contact with the metal operated upon, as specified.

2. The combination of the ingredients described, or their equivalents, in substantially the proportions specified.

WILLIAM A. SKINNER.
JOHN E. GOODSON.

Signed in presence of—

A. R. POPE,
H. F. SHAW.