

UNITED STATES PATENT OFFICE.

THOMAS S. MERRELL AND JOHN K. WILDER, OF SOUTH TOLEDO, OHIO.

IMPROVEMENT IN COMPOSITION ALLOYS.

Specification forming part of Letters Patent No. 184,884, dated November 28, 1876; application filed October 17, 1876.

To all whom it may concern:

Be it known that we, THOMAS S. MERRELL and JOHN K. WILDER, of South Toledo, in the county of Lucas and State of Ohio, have invented a new and useful Composition Metal, which we designate as "Compound Iron," which compound is fully described in the following specification:

The object of our invention is the production of a metallic compound, which, when wrought into plows and other agricultural implements, shall be peculiarly adapted for use in prairie-soil, and for which use steel has heretofore, for the most part, been applied, for the reason that the soil of the prairies readily frees itself therefrom in the act of cultivation.

By our invention we produce a metal possessing all the advantages of steel for such uses, while at the same time it is far less expensive.

In making our composition metal we proceed as follows, as regards the relative proportions of the ingredients composing it and the treatment thereof, in the process of producing said composition metal. For example, first, we take thirty-five pounds of cold steel, twenty-five pounds of cold wrought-iron, and two pounds of cold copper, each of which metals has been reduced to small lumps or pieces, and, by machinery, scour or polish them bright, in order to remove all foreign substances, such as rust and dirt therefrom; second, this whole mass, thus scoured, is then placed into a suitable receptacle, which may be simply a trough or box made in sand, whereupon we then pour into the box or trough, and over and among this whole mass, thirty-eight pounds of molten cast-iron, thus running among and surrounding the lumps or pieces of cold steel, wrought-iron, and cop-

per first placed in the trough or box, and making, as the cast-iron cools, a conglomerate mass of all of the said ingredients; third, this conglomerate mass we then melt all together, the product being a homogeneous compound of the several ingredients, which, in a molten state, we cast into suitable forms for use in the manufacture of agricultural implements. If, in the foregoing process, we should leave out the copper, the resulting composition metal would be hard, brittle, and rather coarse-grained. But by the use of copper, as aforesaid, in quantities of from two to four per cent., we make a composition metal which is as dense, as fine-grained, as heavy, and as strong, or nearly so, as steel. The copper in the foregoing process thoroughly permeates the other metals used, so that our composition metal will bear a very high polish, while it is also so hard that it will wear bright and "scour" in all soils where the best steel will scour. The copper also prevents our composition metal from corroding to a great extent, which is of material importance in plows.

Having described our composition metal, what we claim as new, and desire to secure by Letters Patent, is—

The metallic alloy composed of steel, wrought-iron, cast-iron, and copper, in about the proportions, and in the manner substantially as and for the purpose described.

Witness our hands in the matter of our application for a patent for a composition metal this 12th day of October, 1876.

JOHN K. WILDER.
THOMAS S. MERRELL.

Witnesses:
L. KAISER,
W. O. BROWN.