

UNITED STATES PATENT OFFICE.

GEORGE WHITNEY, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN METALS FOR CASTINGS.

Specification forming part of Letters Patent No. 129,261, dated July 16, 1872.

To all whom it may concern:

Be it known that I, GEORGE WHITNEY, of the city and county of Philadelphia, in the State of Pennsylvania, have invented or discovered a certain new and useful composition of matter, of which the following is a specification:

My invention consists in an improved metal for castings, said improved metal being the product of wrought-iron and pig-iron, or of wrought-iron, pig-iron, and steel, melted together, substantially as hereinafter set forth.

I believe that I am the original and first discoverer of the fact that wrought-iron and pig-iron, or wrought-iron, pig-iron, and steel, charged together into an ordinary cupola or air furnace, may be melted without any flux, but in the same simple and well-known way as if the entire charge was pig-iron alone, and this with any proportion of wrought-iron, say, not exceeding fifty per cent. of the whole charge. The product of this mixture I am unable to designate by any specific name, but I have demonstrated by numerous tests that castings made from such product—where the charge consisted of eighty per cent. of pig-iron and twenty per cent. of wrought-iron, or of eighty per cent. of pig-iron, ten per cent. of wrought-iron, and ten per cent. of steel—possess the qualities of strength in a degree superior to any castings heretofore obtained from pig-iron alone, or from the various mixtures of pig-iron and steel more recently introduced into public use.

I have in practice varied the proportions of wrought-iron and the kinds of pig-iron, as exemplified in the following charges, from which I have found a good result in each case—that is to say: Charcoal pig-iron, forty per cent.; anthracite pig-iron, forty per cent.; wrought-iron, twenty per cent. Again, anthracite pig-iron, eighty per cent.; wrought-iron, twenty per cent. Again, charcoal pig-iron, forty per cent.; anthracite pig-iron, forty per cent.;

Bessemer steel, ten per cent.; wrought-iron, ten per cent. Again, anthracite pig-iron, eighty per cent.; Bessemer steel, ten per cent.; and wrought-iron, ten per cent. From which examples it will be fully understood that, while in all cases the percentage of pig-iron should preponderate in the charge, exactly the percentage of wrought-iron, or of wrought-iron and steel, to be used in any particular instance must necessarily depend upon and be adapted to the particular castings to be produced, and, with reference to these conditions only, must be left to ordinary skill and judgment, the same as in the case of castings made of pig-iron only. The pig-iron should always preponderate, as I have found that the product obtained from equal parts of pig-iron and wrought-iron melted together is a hard and brittle metal, unsuitable for good strong castings, and that the percentage of loss in melting such a mixture is very great.

In my practice I have used for my wrought-iron old railroad-rails cut into lengths about the same as the pieces into which the pig-iron is usually broken up for charging into the ordinary cupola-furnace. The charge is thus made up in the ordinary well-known way.

I do not, of course, confine myself to the use of the ordinary cupola or air furnace for melting the charge, although I deem them the best, because the most economical apparatus; but

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

As an improved metal for castings, the product of wrought-iron and pig-iron, or of wrought-iron, pig-iron, and steel, (the pig-iron preponderating in the charge,) melted together, substantially as hereinbefore set forth.

GEO. WHITNEY.

Witnesses:

GEO. H. KIRK,
ROBT. S. REDFIELD.