

UNITED STATES PATENT OFFICE.

ORLANDO M. THOWLESS, OF NEWARK, NEW JERSEY.

PROCESS OF OBTAINING MANGANESE ALLOYS.

SPECIFICATION forming part of Letters Patent No. 389,910, dated September 25, 1888.

Application filed April 18, 1887. Serial No. 235,146. (Specimens.)

To all whom it may concern:

Be it known that I, ORLANDO M. THOWLESS, of Newark, Essex county, New Jersey, have invented a new and useful Process of
5 Obtaining Manganese Alloys, of which the following is a specification.

The object of my invention is to simplify and cheapen the process of obtaining alloys of manganese and to obtain a more perfect result
10 in the extraction of the manganese.

Heretofore manganese alloys have been made by first extracting metallic manganese by fusing the black oxide with lamp-black and oil at a very high heat, whereby a button of metallic manganese is obtained, and then melting
15 this button with the requisite amount of copper or other metal to form the necessary alloy. Another and later method has been to fuse ferro-manganese with a large amount of wrought-iron scrap, such amount depending upon the amount of manganese contained in the ferro-manganese used, and then to add the copper necessary to form the alloy. The first
20 of these methods has not been put into operation, owing to its expense and the difficulty of fusing the buttons of metallic manganese obtained. The second process, while being an advance in the art, is more complicated and expensive than my process, in that a large
25 amount of wrought-iron scrap is first melted with the manganese material, while by my process I obviate this and obtain a more perfect result. It has also been suggested that ferro-manganese and copper or other metals
30 be melted together direct; but the objection to this is that the alloy, if any produced, would be largely contaminated with the iron. By my method I obtain alloys which are practically free from iron.

In carrying out my invention I take the ferro-manganese of commerce and mix with it
35 silex, (which I preferably use in powder form,) cryolite, and copper, nickel, tin, or other metal, according to the nature of the alloy desired, in varying proportions. The cryolite is used as a flux, and may be replaced by any other suitable flux. The ferro-manganese used in carrying out this process contains about
45 sixty-five per cent of manganese. The silex used is ordinary white sand as free as possible from iron. It is not pure silica.

I have found the following proportions work well in practice: ten parts of ferro-man-

gane, three parts of silex, one part of cryolite, and ten parts of copper or other desired
55 metal. These proportions produce an alloy which is very rich in manganese, but which is capable of being remelted without much difficulty for the purpose of adding more copper or other metal thereto, if desired. 60

If it is desired to produce an alloy less rich in manganese by the one process, more copper or other metal than the percentage above named may be used.

The mixture above described is placed in a
65 crucible or other similar vessel and subjected to heat in a furnace, and when melted the contents of the vessel are poured out, the manganese alloy running into a mass separately from the other contents of the vessel, which
70 latter run off in the form of slag. The action which has taken place during the reduction would appear to be that the silex and flux have combined with the larger part of the iron and the copper or other desired metal has
75 alloyed with the manganese, thus causing the alloy to be set free and run off in a separate mass.

In making these alloys on a large scale I do not confine myself to the use of crucibles or
80 other such vessels, as the process can be successfully carried out by my method above described in any furnace such as is used for the reduction of iron.

When the mixture has been melted, as above
85 referred to, the contents of the vessel are poured out, and in pouring out the contents the alloy will first run off in a liquid state, and then the other contents of the vessel, being heavier, will follow in the form of slag. 90

What I claim is—

That improvement in the process of obtaining alloys of manganese which consists in mixing ferro-manganese with silex, a metal, and a flux, subjecting the mixture to heat in a suitable receptacle, and separating the alloy from
95 the contents of the vessel by pouring it out of the receptacle in a liquid form, substantially as described.

In testimony whereof I have hereunto subscribed my name. 100

ORLANDO M. THOWLESS.

Witnesses:

WM. H. MEADOWCROFT,
W. S. BLACK.