

UNITED STATES PATENT OFFICE.

ROGER WILLIAM WALLACE, OF LONDON, ENGLAND, ASSIGNOR TO THE
ELECTRO-METALLURGICAL COMPANY, LIMITED, OF SAME PLACE.

CRUCIBLE AND PROCESS OF MAKING SAME.

SPECIFICATION forming part of Letters Patent No. 585,993, dated July 6, 1897.

Application filed June 13, 1896. Serial No. 595,480. (No model.)

To all whom it may concern:

Be it known that I, ROGER WILLIAM WALLACE, a citizen of England, and a resident of London, England, have invented certain new
5 and useful Improvements in Crucibles and Processes of Making the Same, of which the the following is a full, clear, and exact description.

This invention relates to improvements in
10 the fusion of chromium and similar metals and to the manufacture of their alloys with the usual metals.

To facilitate the following description, it may be said at once that the bodies herein
15 referred to as similar to chromium are molybdenum, tungsten, uranium, or alloys of these metals, either with one another or with chromium; and it should be fully understood that when "chromium" is spoken of what is said
20 is to be understood of the above-designated metals or their alloys.

The fusion of chromium requires the use of excessively-high temperatures, and when this fusion is effected in ordinary crucibles,
25 able to resist the temperatures employed, the chromium is contaminated by the very matter which constitutes the crucible. Thus it is that a crucible or receptacle of carbon carburizes the metal and imparts to it properties
30 which it is important to guard against. To avoid difficulty from this source, the crucibles or receptacles are, in accordance with the present invention, lined with oxid of chromium. To effect this lining, the following procedure
35 is employed: In a suitable crucible or receptacle borax, cryolite, sodium chlorid, calcium fluoride, or a mixture of these bodies is melted with an addition of oxid of chromium, which rests in suspension in the fused or molten
40 mass. This done, the interior surface of the crucible which is to be lined (and which may be heated or not) is coated with the molten mass by any suitable process, or, in particular, by successively inclining the crucible in
45 all directions, so that the fused mass covers

over the whole interior surface of the crucible and thereby forms a protecting coat.

It is to be noted that, the object of this invention being to obtain alloys of chromium, &c., containing no additional metal than that
50 which serves as the base of the alloy, it is not admissible to employ chrome ores, as has been proposed heretofore for making linings of furnaces, and which contain iron oxid and silica. I utilize by my invention the ordi-
55 nary graphite retorts by lining the same expeditiously at the moment of utilization.

The method of lining just described, with reference to the fusion, is applicable without
60 modification to the preparation of crucibles or receptacles for the production of alloys of chromium with the usual metals.

I claim as my invention or discovery—

1. The described improvement in the manufacture of crucibles for fusion of chromium
65 and similar metals and for production of alloys thereof with other metals, said improvement consisting in lining the crucible with the oxid of the corresponding metal by fusing a flux, such as borax, with addition of an oxid
70 of the desired metal until the oxid is held in suspension in the flux, and then, by agitating the mass while the same hardens, forming a coating thereof upon the interior of the crucible, as set forth. 75

2. A crucible provided with an adherent interior coating of oxid of chromium free from other metallic base, substantially as described.

3. A crucible with an adherent interior coating of oxid of chromium free from other metallic base and a suitable flux, substantially as described. 80

In testimony whereof I have signed this specification in the presence of two subscrib-
85 ing witnesses.

ROGER WILLIAM WALLACE.

Witnesses:

EDWARD P. MACLEAN,
EDWARD BARBARY.