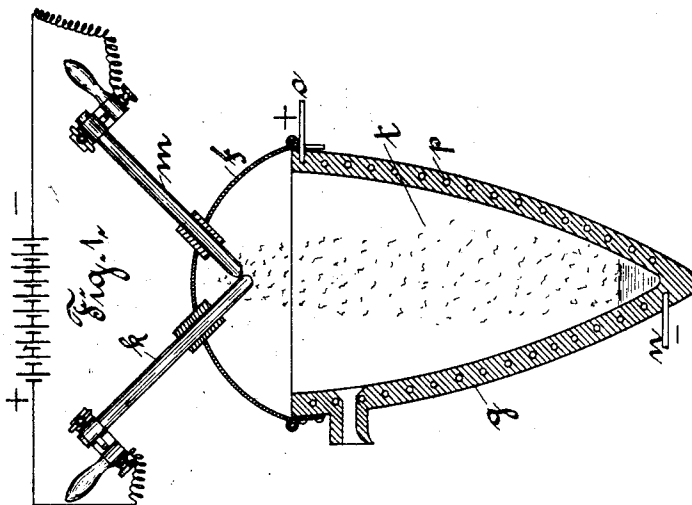
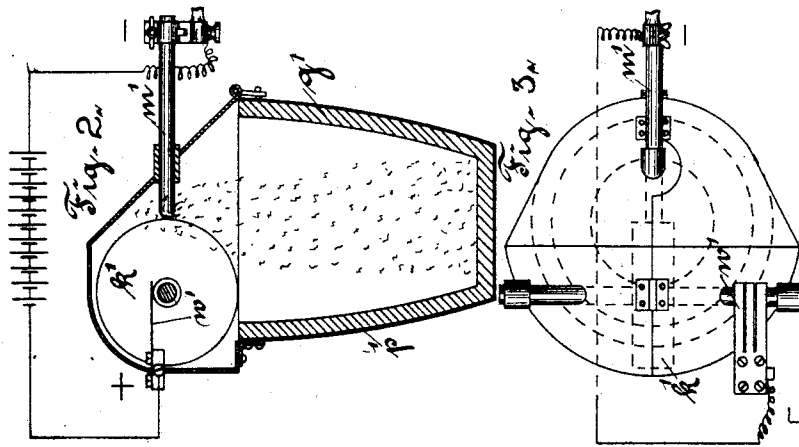


(No Model.)

A. F. W. KREINSEN.
PROCESS OF AND APPARATUS FOR MELTING METALS BY MEANS OF
ELECTRICITY.
No. 513,270. Patented Jan. 23, 1894.



WITNESSES:
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AUGUST FRIEDRICH WILHELM KREINSEN, OF HAMBURG, GERMANY.

PROCESS OF AND APPARATUS FOR MELTING METALS BY MEANS OF ELECTRICITY.

SPECIFICATION forming part of Letters Patent No. 513,270, dated January 23, 1894.

Application filed September 28, 1892. Serial No. 447,134. (No model.)

To all whom it may concern:

Be it known that I, AUGUST FRIEDRICH WILHELM KREINSEN, of Hamburg, in the Kingdom of Prussia and German Empire,

have invented a new and useful Process of and Apparatus for Melting Metals and other Substances by Means of Electricity, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to the melting of metals and other materials by the aid of electricity.

According to these improvements, the fusion of the metal is effected in electrically heated crucibles or receptacles, but it may be primarily fused, by being brought into contact with a carbon electrode through which and the material a sufficient electric current is caused to pass.

I will describe my invention with reference to the accompanying drawings, which illustrate various modifications of my improvements, and in which—

Figure 1 is a vertical transverse sectional view of one construction of my improved apparatus for melting by electricity. Fig. 2 is a plan view of a modified construction. Fig. 3 is a vertical transverse sectional view of a further modification. Fig. 4 is a plan-view of the same.

Similar letters of reference indicate corresponding parts.

In Fig. 1, k is a positive electrode which may best consist of an electric light carbon, and m is the negative electrode which consists of the material to be melted. Both of the electrodes are movable and adjustable so that they may be moved toward or withdrawn from each other as may be required either by hand or by mechanical means. The fusion of the material is thus effected, on the passage of a current, without the use of a second carbon electrode. The electrodes k and m , are arranged above the center of the crucible g and above them there is arranged the cap or shield f , to prevent the escape of any sparks and splashes from the fusing material. As the material is melted, it drops into the hollow t , of the crucible where it is melted or kept in fusion by the means to be hereinafter described. n and o are the conductors.

In the modification represented by Fig. 2,

the positive electrode, instead of being a carbon rod, is a rotary carbon disk k' against which the negative electrode m' of the material to be melted is pushed. The current may be conveyed to the disk by means of the strong spring w' , pressing upon the spindle of the disk.

The means which I employ for heating the crucible or receiver are illustrated by Fig. 1. One or more spirals of platinum wire or platinum ribbon p , may be embedded in the walls of the crucible or surround it closely. This circuit is arranged in a shunt from the main circuit and the heat produced by the resistance of the platinum will be transmitted through the crucible to its contents.

In Fig. 2, an ordinary plumbago crucible g' or h^2 , of high electrical resistance, is inserted in a thin platinum vessel p' or p^2 of similar form as shown. The platinum vessel receives a current through the terminals n and o , between which the continuity of the metal is destroyed, so that the current is compelled to traverse the whole of the metal of the vessel p' or p^2 , thereby raising it to a temperature of from 1,600° to 2,000° centigrade if desired. This high temperature is transmitted through the crucible to the material contained therein and effects its fusion or maintains it in melted condition as required. The platinum vessel may be surrounded by a non-conductor of heat, and to prevent the waste of platinum, the apparatus may be worked in a vacuum, and if the metals also be poured from the crucible or cast in the vacuum, the occurrence of blisters and air bubbles will be avoided.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

In an apparatus for melting metals and other substances by electricity, the combination, with an electrode composed of the metal or substance to be melted, and a carbon electrode, of a crucible and a cap on the crucible, the electrodes being located within said cap, substantially as set forth.

In witness whereof I have hereunto set my hand in presence of two witnesses.

AUGUST FRIEDRICH WILHELM KREINSEN.

Witnesses:

AUG. WEDEKING,
CARL OTTO.