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M. S. CLAWSON

LINED CRUCIBLE

Filed July 9, 1923

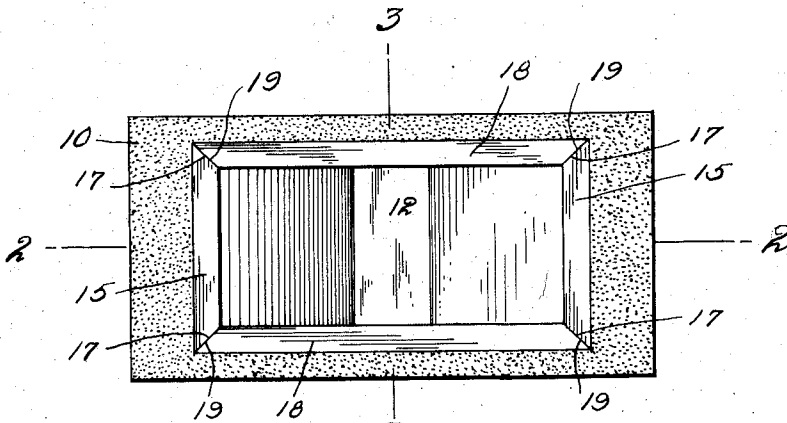


Fig. 1.

Fig. 2.

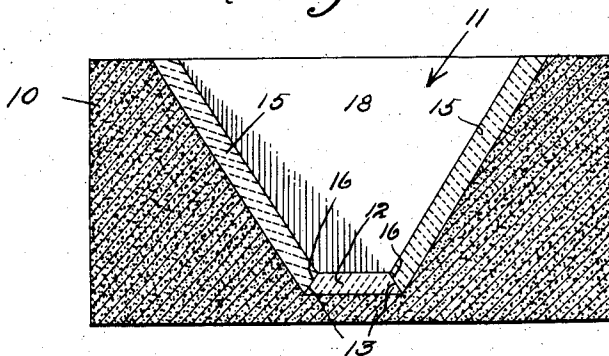
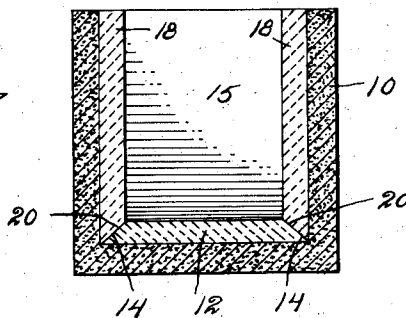


Fig. 3.



Witness

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MONROE S. CLAWSON, OF UPPER MONTCLAIR, NEW JERSEY.

LINED CRUCIBLE.

Application filed July 9, 1923. Serial No. 650,271.

To all whom it may concern:

Be it known that I, MONROE S. CLAWSON, a citizen of the United States, residing at Upper Montclair, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Lined Crucibles, of which the following is a specification.

This invention relates to resistors or crucibles for use in connection with electric furnaces in which current is passed through the crucible or resistor and generates heat by the resistance thereof, and has for its object the provision of a crucible which is lined with refractory material to prevent contact of the molten metal with the carbon or graphite from which the major portion of the crucible is constructed.

An important and more specific object is the provision of a lining which is formed of separate slabs fitting within the concavity within the crucible and having a species of interlocking engagement whereby the individual slabs will be held properly and all will be held in the proper relation.

Another object is the provision of a lining in which the interengagement of the adjacent parts or slabs prevents floating when the metal becomes molten.

An additional object is the provision of a device of this character which will be simple and inexpensive in manufacture, highly efficient and durable in use, and a general improvement in the art.

With the above and other objects and advantages in view, the invention consists in the combination and arrangement of parts to be hereinafter more fully described and claimed and illustrated in the accompanying drawings in which:

Figure 1 is a plan view of a crucible constructed in accordance with my invention.

Figure 2 is a longitudinal section on the line 2—2 of Figure 1.

Figure 3 is a cross section on the line 3—3 of Figure 1.

Referring more particularly to the drawings, I have shown the crucible as comprising a somewhat elongated body 10 which might be rectangular in shape, as shown, or which might have any other preferred contour, depending upon the preference of the manufacturer or user. This body is formed of carbon or graphite as these materials appear to be the most suitable for use in resistance furnaces. The body 10 is formed

with a cavity or depression 11 for the reception of the material to be melted.

The essential feature of the present invention is the provision of a lining which covers the entire surface of the cavity for preventing contact of the molten metal with the carbon or graphite from which the body is formed. This lining must be of refractory material and in actual practice I have discovered that it will be highly satisfactory when made from either magnesite, chromite, zirconia, silica, alumina or calcium oxide, it being possible, however, that certain other equivalent materials might be used in some instances. In making this lining I provide a base slab 12 which has its ends beveled, as shown at 13, and its side edges beveled, as indicated at 14. Engaged within the cavity and lying against the two opposite inclined walls thereof are slabs 15 which have their lower edges beveled at 16 for conforming engagement with the beveled ends 13 of the bottom slab. The side edges of these slabs are beveled, as shown at 17, for a purpose to be described. The lining is completed by two slabs 18 which are disposed against the vertical sides of the cavity and which have their side edges beveled, as indicated at 19, for engagement with the beveled edges 17 of the slabs 15, the lower edge of these slabs 18 being beveled at 20 for engagement with the beveled edges 14 of the base. Owing to the peculiar beveling of the edges of the various elements which constitute the lining, it is apparent that there is defined a species of interlock which positively holds all the slabs in their proper relation. The side slabs rest upon the bottom slab and operate to prevent floating thereof when the material within the crucible becomes molten.

From the foregoing description and a study of the drawings it will be apparent that I have thus provided a simply constructed and consequently inexpensive lined crucible in which contact of the molten metal with the carbon material of the crucible body will be prevented. Owing to the construction of the lining from the various sections or slabs, it is apparent that in case of breakage of any one it may be replaced without involving discarding the whole crucible.

While I have shown and described the preferred embodiment of my invention, it is of course to be understood that I reserve

the right to make such changes in the form, construction and arrangement of parts as will not depart from the spirit of the invention or the scope of the subjoined claims.

5 I claim:

1. A crucible including a body of high resistance material formed with a cavity for the reception of material to be melted, and a lining of refractory material covering the
10 walls of the cavity, said lining being formed of sections.

2. A crucible including a body of high resistance material formed with a cavity for the reception of material to be melted, and
15 a lining of refractory material covering the walls of the cavity, said lining being formed of sections having interfitting engagement.

3. In a crucible, a body of high resistance material formed with a cavity for the reception of material to be melted, and a lining for covering the entire surface of the
20 cavity, the lining consisting of a plurality of separate slabs of refractory material disposed against the respective surfaces of the
5 cavity and having interfitting engagement.

4. A crucible comprising a body of high resistance material formed with a cavity having angularly arranged faces, and a lining of refractory material consisting of separate slabs disposed against the respective angular faces of the cavity, the contacting edges of said slabs being beveled and having conforming engagement to define a species of interlock. 30

5. In a crucible formed from a body of high resistance material having a cavity therein, the cavity having a bottom wall, upwardly diverging end walls and upright side walls, a lining of refractory material consisting of a plurality of slabs, one arranged upon the bottom wall and the others being disposed flat against said inclined and upright walls, all of the slabs having their contacting edges beveled for interfitting engagement and said upright and inclined slabs operating to hold down the bottom slab to prevent floating. 40 45

In testimony whereof I hereto affix my signature.

MONROE S. CLAWSON.