

M. R. CONLEY.
CARTRIDGE FOR MELTING FURNACES.
APPLICATION FILED MAY 17, 1910.

Patented Feb. 14, 1911.

984,123.

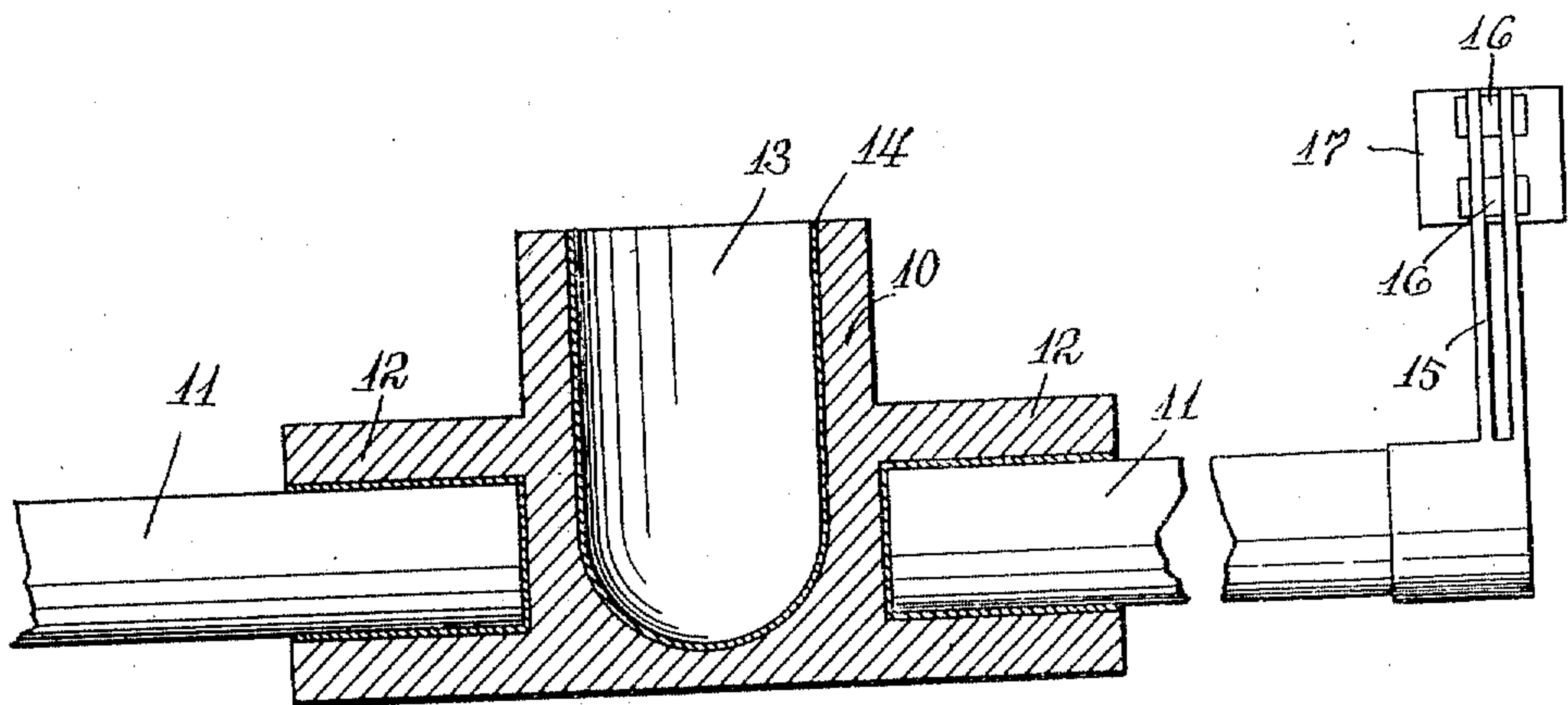


Fig. 1.

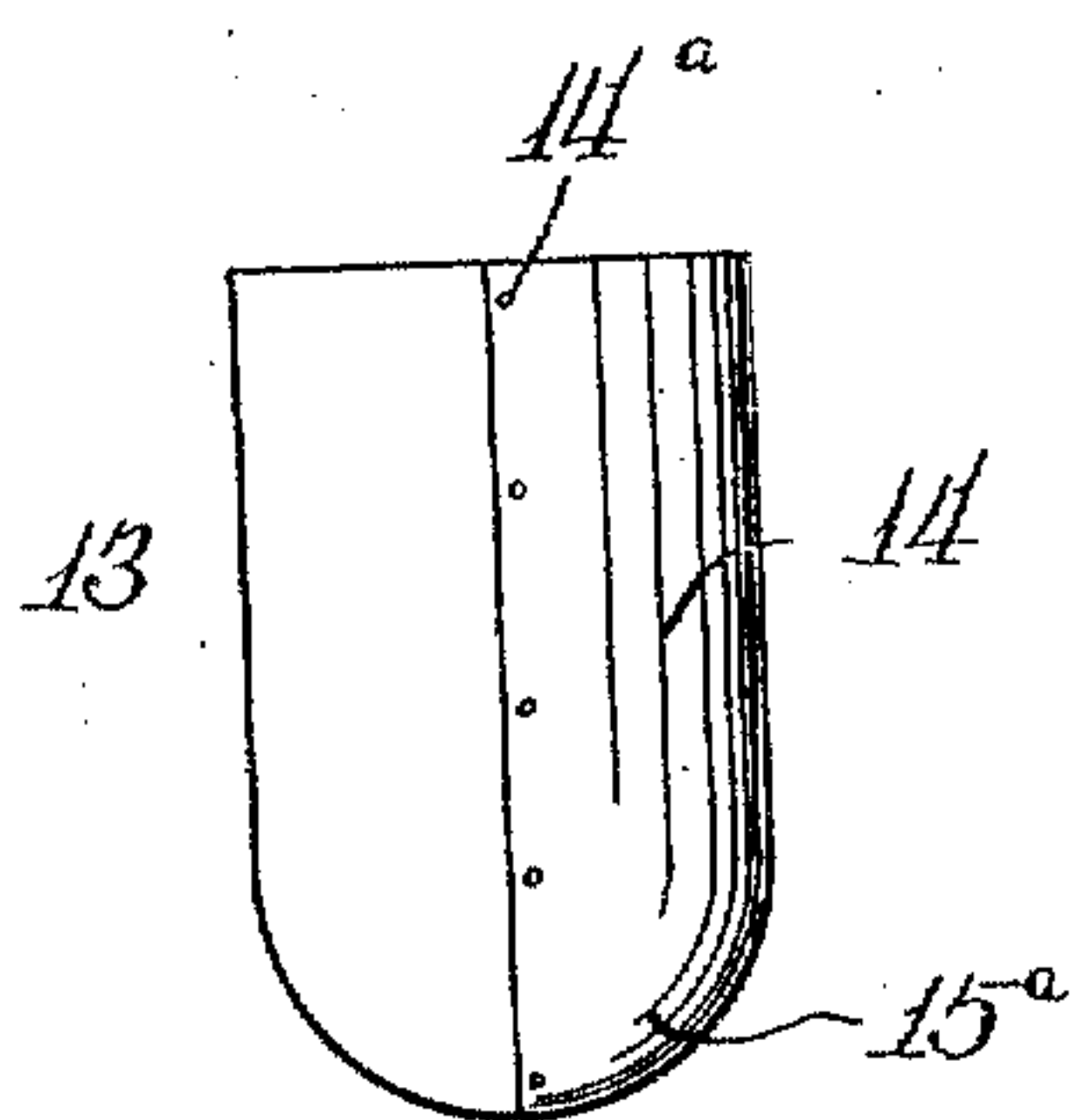


Fig. 2.

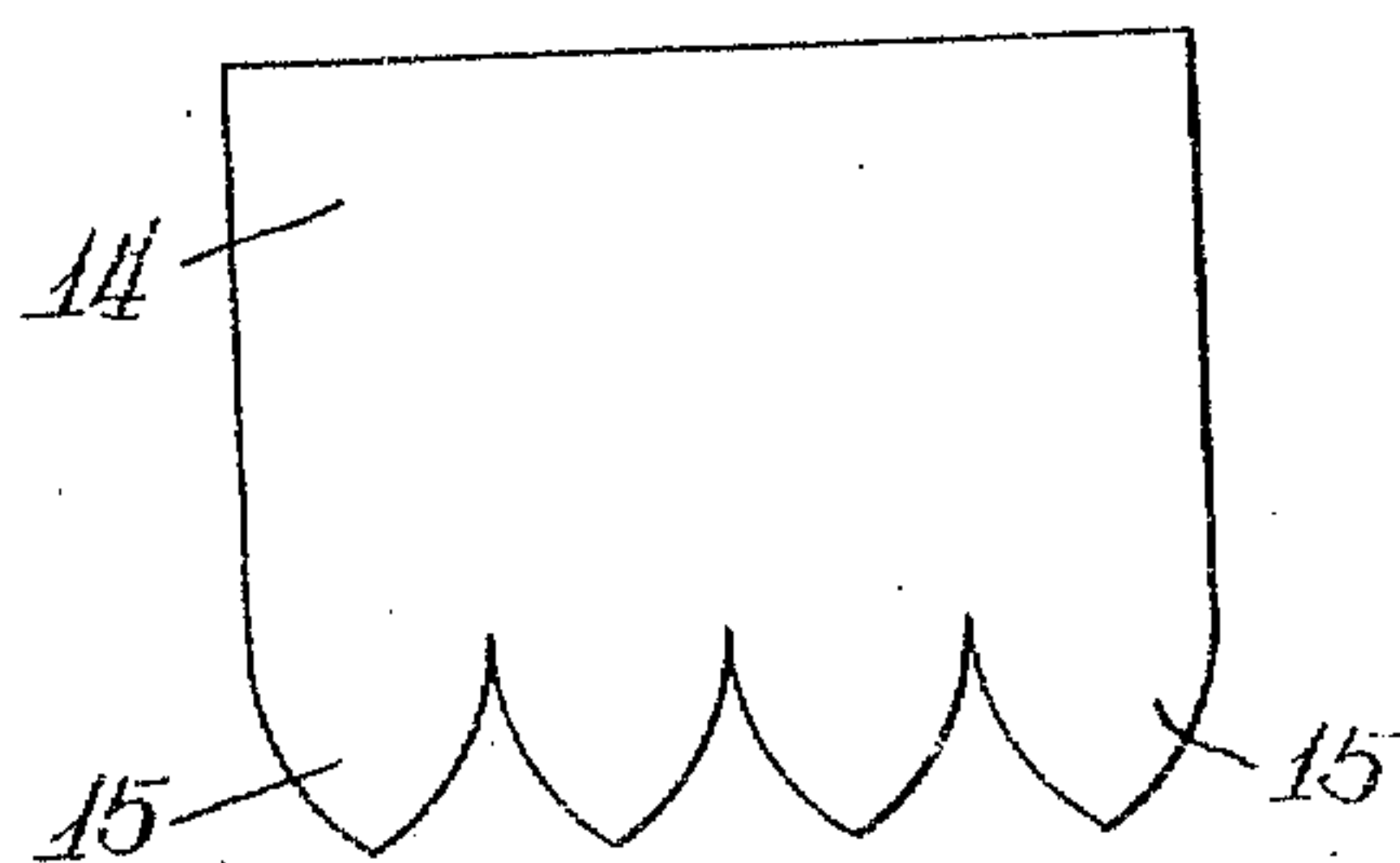


Fig. 3.

Witnesses:
Frank L. Stubbs
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UNITED STATES PATENT OFFICE.

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CARTRIDGE FOR MELTING-FURNACES.

984,123.

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To all whom it may concern:

Be it known that I, MICHAEL R. CONLEY, of the city of New York, county of Kings, and State of New York, have invented a new and useful Improvement in Cartridges for Melting-Furnaces, of which the following is a full, clear, and exact description.

My invention relates to improvements in a cartridge adapted for use in melting of various metals in furnaces, and especially in crucibles, and more particularly still electric crucibles or furnaces. The charge in such furnaces is usually scrap metal and it is very likely to dig holes or scratches in the side of the furnace and thus greatly weaken the furnace and reduce its life. Moreover in electric furnaces and furnaces of the resistance type, the thinning of the walls in any particular place renders this thinner portion of higher resistance so that the furnace is unevenly heated and unevenly worn, and therefore the cartridge is valuable as it enables the charge to be placed in the cartridge and the cartridge then placed in the furnace so that the walls are kept intact and of even thickness, which in electric furnaces means even temperature.

The object of my invention therefore is to produce a cartridge which is of meltable material, preferably sheet iron of a known analysis, which is adapted to receive a charge and which is shaped so as to approximately fit the walls of the furnace. Thus the charge can be put in the cartridge and the cartridge deposited in the furnace, and a quick and easy melting follows without undue strain on the furnace. Obviously, however, if precious metals or metals other than iron or steel are to be melted, the containing cartridge can be of other material.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar reference characters indicate corresponding parts in all the views.

Figure 1 is a sectional elevation of one form of furnace in which the cartridge is adapted for use. Fig. 2 is a side elevation of the cartridge, and Fig. 3 is a plan or development of the cartridge blank.

The furnace 10 can be made of any desired shape and I have illustrated one having the usual melting chamber which can be covered if desired, and which is shaped substantially like an ordinary crucible so far as

its internal structure is concerned. The body portion of this furnace is preferably high in carbon so that it will be of low resistance, and I have found that from seventy to eighty per cent. of carbon and from thirty to twenty per cent. fire clay make a good mixture which is durable and suitable, but so far as this invention is concerned the furnace can be of any approved structure and may or may not be an electric furnace.

As shown the body portion 10 is provided with arms or terminals 12 which are hollow so as to receive the carbon terminals 11, and the hollow arms are preferably lined with conducting material where the terminals enter the arms, and a perfectly tight joint is requisite. I have shown one of the terminals 11 provided with a split switch arm 15 adapted to engage contacts 16 on the base 17, and the second arm should be similarly equipped so that when the furnace is tipped in one direction the contact is broken and when tipped in the opposite direction the contact is closed. All this, however, is not material to the invention, and the description is given so that the furnace may be understood merely as an electric resistance furnace, and the invention itself is applicable to this or any other type of melting furnace. The invention itself lies in the cartridge 13 which is preferably of sheet metal and is formed of a blank 14 and this is adapted to fit nicely within the melting chamber of the furnace 10, and for convenience the blank has pointed projections 15 at the lower edge so that when the blank is rolled up in cylinder form these parts 15 may be knocked or bent inward so as to meet and form the bottom of the crucible. This makes a very cheap and convenient structure, as the cartridge may be shipped in blank form and then knocked together for use. If desired the meeting edges can be riveted together or otherwise fastened, as shown at 14^a. I wish it distinctly understood, however, that I do not limit myself to this particular means of making the cartridge or to this precise structure, though I claim these as novel, but the essential thing is to have a meltable cartridge preferably of metal which is shaped to fit the furnace wall and is adapted to contain a charge. This cartridge should obviously be only thick enough to afford a convenient vehicle for a charge and to sustain the charge while

the latter is being handled. When the cartridge is deposited in the furnace it will be seen that it will fit nicely against the furnace walls, and that when heat is applied, a very even application of the heat will occur and that the cartridge or shell will quickly melt.

The cartridge should obviously be of a known analysis so that no harm will result to the melted product, and this analysis will of course depend on the nature of the charge. For instance, if steel of a certain quality is to be produced, the carbon content of the cartridge should be such as not to injure the produced steel, and if other metals are to be melted the cartridge should of course correspond with such metals and be either like the charge or of such a nature as to produce a known alloy.

I have used the term furnace in a very general sense and wish it understood that it applies, according to my understanding, to crucibles or other furnaces or melting devices in which a charge is reduced in its containing vessel.

In the foregoing specification I have shown and described a cartridge which is of

a generally cylindrical shape, which is the most usual form, but obviously the cross section of the cartridge can be varied to make it fit approximately furnaces of other shapes.

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

1. As an improved article of manufacture, a cartridge for melting furnaces composed of thin meltable material to contain the charge for the furnace, and of the same shape and size as the interior of the furnace.

2. As an improved article of manufacture, a charge cartridge for furnaces of a shape to essentially fit the interior of the furnace and to contact with the inner walls thereof.

3. As an improved article of manufacture, a charge carrier for melting furnaces consisting of sheet metal formed of a blank having notched lower edges intumed to form the carrier bottom.

MICHAEL R. CONLEY.

Witnesses:

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FRANK L. STUBBS.