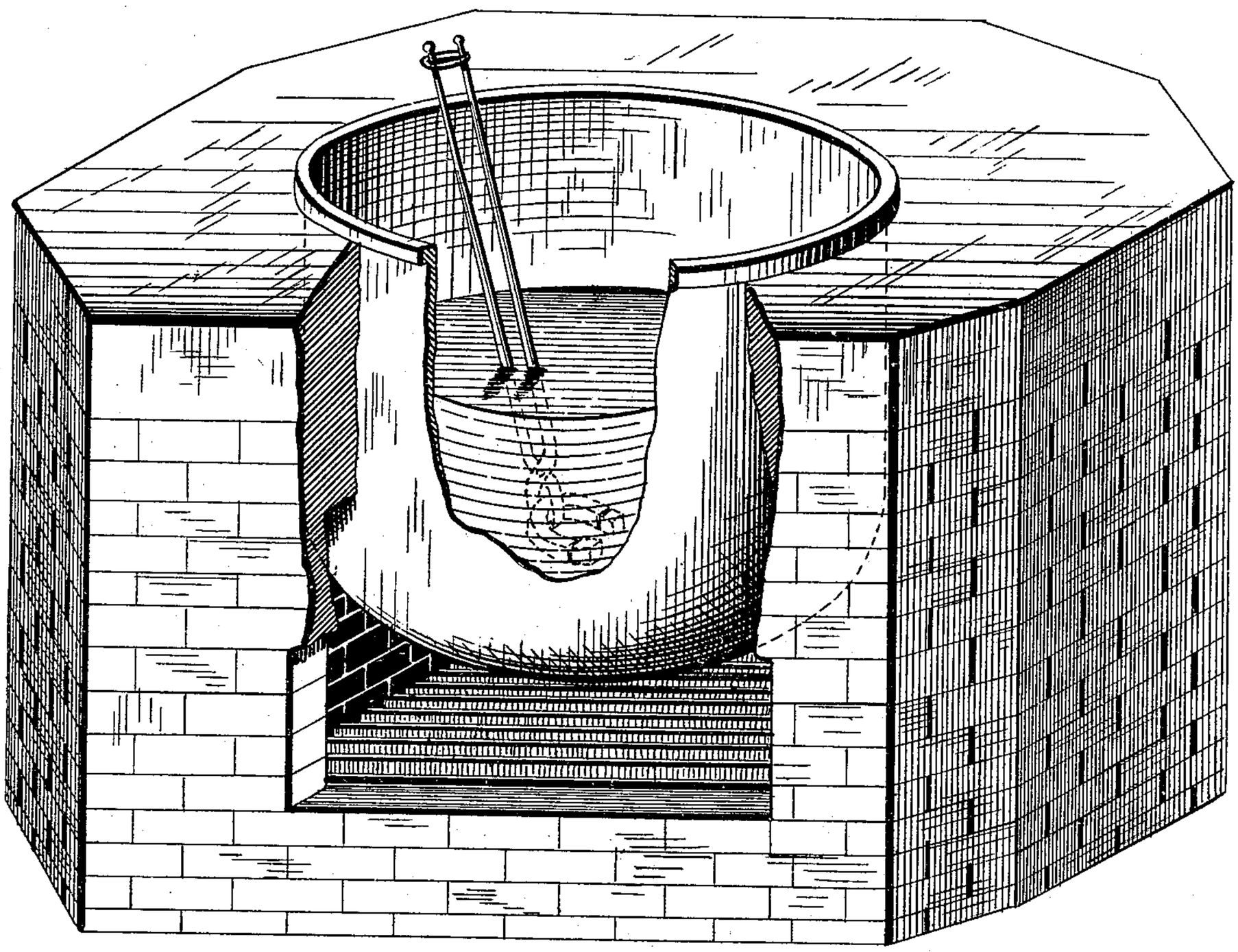
(No Model.)

S. NICHOLSON & H. A. BOWEN.

PROCESS OF OBTAINING CARBON FOR INCANDESCENTS.

No. 329,670. Patented Nov. 3, 1885.



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UNITED STATES PATENT OFFICE.

STEPHEN NICHOLSON AND HERBERT ANTHONY BOWEN, OF PROVIDENCE, R. I.

PROCESS OF OBTAINING CARBON FOR INCANDESCENTS.

SPECIFICATION forming part of Letters Patent No. 329,670, dated November 3, 1885.

Application filed June 18, 1884. Serial No. 135,284. (Specimens.)

To all whom it may concern:

Be it known that we, STEPHEN NICHOLSON and HERBERT ANTHONY BOWEN, citizens of the United States, and residents of Providence, Providence county, and State of Rhode Island, have invented an Improvement in Processes for Obtaining Carbons from Materials Containing Carbons, of which the following description, in connection with the accompanying drawing, is a specification, like letters on the drawing representing like parts.

This invention relates to that class of processes employed to obtain carbon from materials containing carbon for incandescent and other electric-lighting apparatus, sugar-refineries, and other purposes; and it has for its object to obtain comparatively pure carbon practically free from other matter or volatile substances in a cheap, rapid, and easy manner.

To this end our improved process consists in immersing material or matter containing carbon, either directly or when confined in a mold of suitable form, to obtain carbon in desired shapes or figures, in a bath of melted lead, tin, alloys, or other suitable metallic substances or compounds which will fuse at a comparatively low temperature, so that the material containing carbon will be in effect hermetically sealed while in the bath, and be thoroughly protected from exposure to atmospheric air or other injurious influences while the body of melted lead or other metallic substance is at a low degree of temperature; next, raising the temperature of the bath to thoroughly drive off or consume all organic and volatile matter, and, lastly, of removing the carbonized material or practically pure carbon after the metallic bath is allowed to cool down to a comparatively low degree of temperature, which shall, however, be above the fusing-point, substantially as hereinafter fully described, and particularly pointed out in the claims.

The drawing shows a suitable cast-iron pot to contain the bath, a furnace to heat the bath, and a pair of tongs to retain the mold below the surface of said bath and to permit it to be readily removed therefrom.

As one method of carrying out our invention, we provide a bath, preferably of melted lead, contained in a cast-iron pot or vessel, such as is illustrated in the drawing, and while the liquid metal is at a comparatively low degree of temperature the material containing carbon is immersed or confined therein, when the temperature of the bath is raised, say, to 1,200° or 1,500° Fahrenheit, (more or less,) to drive off or consume all volatile and organic matter. The bath is then cooled or allowed to cool to a comparatively low degree of temperature, when the carbonized material or practically pure carbon is removed. The bath should be at a sufficiently low degree of temperature so that the material to be carbonized will not be destroyed or damaged as it is being immersed in said bath by reason of the heat thereof and of the presence of oxygen at its surface. After the material is immersed and the temperature of the bath raised, as stated, the latter should be allowed to cool sufficiently to prevent combustion of the carbonized material when removed and exposed to the atmosphere by reason of its heated condition and the presence of oxygen.

When it is desired to obtain the carbon in any required shape or figure, the material containing carbon is placed in cast-iron or other suitable molds, and the molds then immersed in the bath.

Instead of lead we may use tin, alloys, fusible solder, or any suitable metal or metallic compound which will fulfill the conditions herein stated—viz., those of hermetically sealing the material to be carbonized, of fusing at a sufficiently low degree of temperature to permit the material to be immersed without damaging or destroying the same, as stated, and of being adapted to be heated to a high degree of temperature to drive off or consume all volatile and organic matter in the material.

The material to be carbonized may be held submerged in the bath by means of an iron rod, a clamp, a pair of tongs, or by any other suitable means, the holder being but partly immersed in the bath, as indicated in the drawing, in which, however, a mold containing the material is shown as kept in said bath by means of a pair of tongs.

As the essential element of our invention is the hermetical sealing of the material to be carbonized by means of melted metal or metallic compound, it would be no departure from the spirit of our invention to bury or embed the material in a body of sand or other earthy substance confined in a pot or kettle or

other suitable receptacle, and then cover the said body of sand with a layer or stratum of metal or metallic compound in liquid form to hermetically seal the material, when the entire body would be heated to drive off all organic or volatile substances from the material, after which the metal would be poured off so that the carbonized material could be removed from the body of the sand.

I claim—

1. An improved method of obtaining carbon from materials containing carbon, which consists in confining the material in a mold, next plunging the mold in a bath of liquefied material adapted to support a high temperature, to hermetically seal the confined material, next subjecting the material while in the bath to heat sufficient to carbonize it, and lastly removing the mold containing the carbonized material from the bath, substantially as set forth.

2. The improved method of obtaining carbon from materials containing carbon, which consists in immersing the material in a liquid metallic bath to hermetically seal the same, next raising the temperature of the bath to drive off or consume all volatile and organic matter, next cooling the bath to a comparatively low degree of temperature, and lastly removing the carbonized material from the bath while at such low degree of temperature, substantially as set forth.

3. The herein-described process of obtaining carbon from materials containing carbon, which consists in confining the material in a mold, next immersing the mold in a bath of liquid metal or metal alloy fusible at a low degree of temperature, next raising the temperature of the bath, next allowing the bath to cool in part, and lastly removing the mold containing the carbonized material from the bath while the latter is at a temperature above the fusing-point, substantially as set forth.

4. The improved method of obtaining carbon from materials containing carbon, which consists in retaining or confining the material below a confined layer or stratum of melted metal or metallic compound to hermetically seal the same, next to drive off by heat all organic or volatile substances from the material while so confined, and lastly removing the material from confinement before the layer or stratum of metal solidifies in its confined state, substantially as set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

STEPHEN NICHOLSON.
HERBERT ANTHONY BOWEN.

Witnesses:
JAS. H. LAINGE,
AUGUSTUS S. MILLER.