

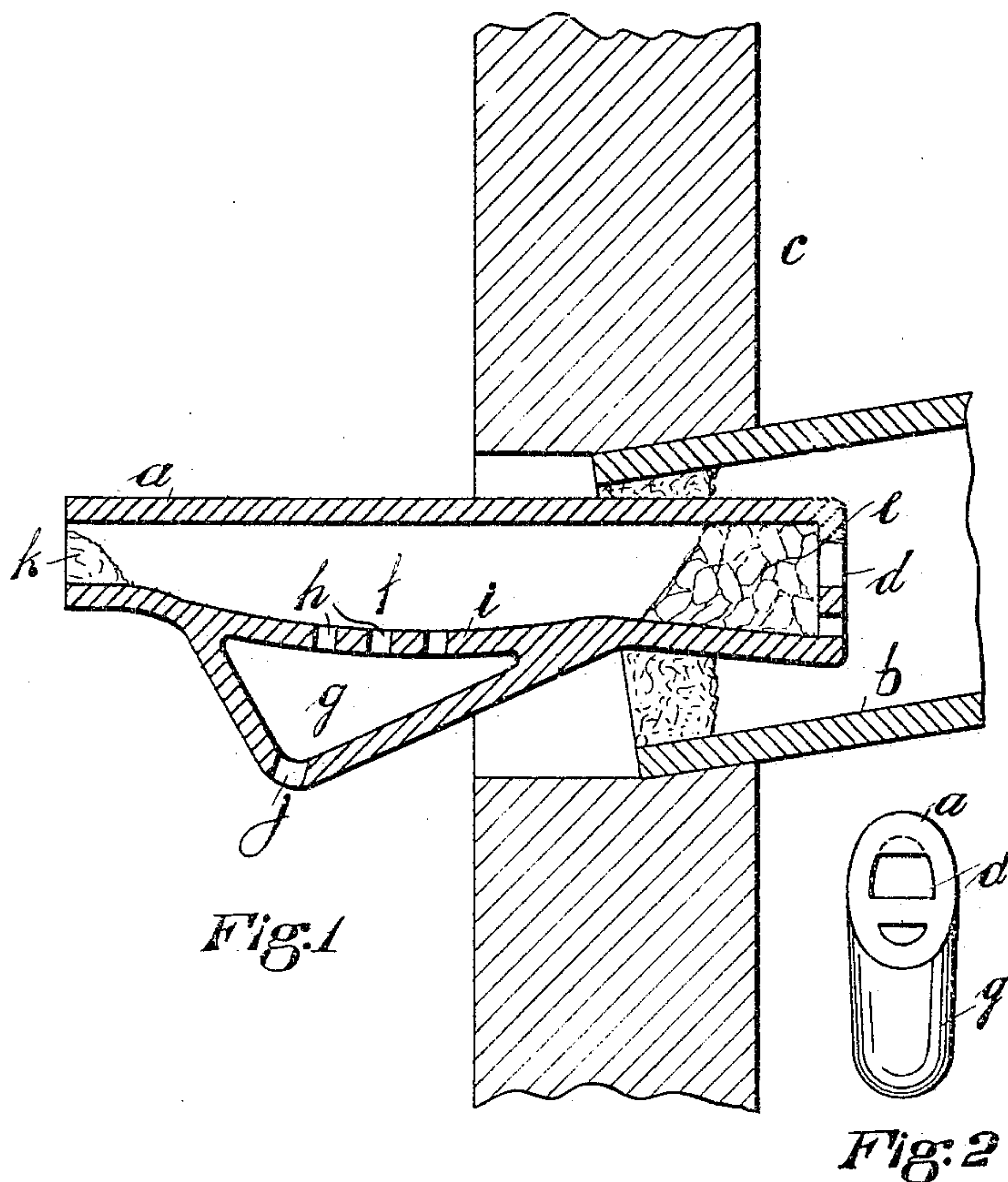
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PATENTED NOV. 22, 1904.

C. S. BRAND.  
APPARATUS FOR THE EXTRACTION OF ZINC.

APPLICATION FILED FEB. 6, 1904.

NO MODEL.



WITNESSES

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# UNITED STATES PATENT OFFICE.

CHARLES SKINNER BRAND, OF KNOWLE, ENGLAND.

## APPARATUS FOR THE EXTRACTION OF ZINC.

SPECIFICATION forming part of Letters Patent No. 775,359, dated November 22, 1904.

Application filed February 6, 1904. Serial No. 192,432. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES SKINNER BRAND, a subject of the King of Great Britain and Ireland, residing at Gladstone Road, Dorridge, Knowle, in the county of Warwick, England, have invented certain new and useful Improvements Relating to Apparatus for the Extraction of Zinc, (for which I have filed an application in Great Britain, No. 263, bearing date January 5, 1904,) of which the following is a specification.

It is well known that ordinary commercial zinc or spelter contains a considerable admixture of lead, amounting in some instances to as much as two or even three per cent., which renders it useless for many services. It is also well known that in the extraction of zinc very great difficulty is experienced in obtaining the said metal free from such admixture of lead.

Apparatus is now in use with which the zinc-vapors are caused to pass through incandescent carbon, placed either in the retort itself or in a special form of nozzle or condensing-pipe; but I have found that such employment of carbon is unnecessary, costly, and does not yield the best results.

My invention comprises the separation of the lead from the zinc-vapors by means of a filter-bed or the like composed of broken clay crucibles or other chemically-inert non-combustible or refractory material.

Referring to the accompanying sheet of explanatory drawings, Figure 1 is a sectional side elevation representing the application of my invention by the placing of the filter of refractory material within the nozzles or condensing-pipes of the retorts or distilling-chambers. Fig. 2 is an end view of the nozzle or condensing-pipe shown at Fig. 1.

The same reference-letters in the two views indicate the same parts.

The nozzle or condensing-pipe *a* is luted in the mouth of the retort or distilling-chamber *b*, according to the well-known practice in zinc-smelting. A series of such retorts, each having a nozzle or condensing-pipe luted therein, is arranged in the ordinary manner within the furnace *c*, whereby the heating of the retorts is effected. The outwardly-projecting por-

tions of the nozzles are supported by any well-known means.

The rear or retort end of the nozzle *a* has its under surface inclined toward its perforated extremity *d*, and within such end is placed the mass of refractory material, as *e*. The said refractory mass may consist of broken fire-clay crucibles.

The interior of the nozzles in advance of the said refractory mass forms the condensing-chamber *f* for the zinc-vapors. A collecting-pocket, as *g*, is provided beneath the said condensing-chamber portion *f* for the reception of the molten zinc. Suitable apertures, as *h*, are provided in the division-wall *i* to allow the metal to flow from the condensing-chamber to the collecting-pocket. The metal is withdrawn from the pocket by way of the clay-stoppered aperture at *j*. During working the forward or outer extremity of the nozzle is partially closed by clay, as *k*.

The zinc-vapors produced in the retort or distilling-chamber *b* in the well-known manner pass through the upper apertures in the extremity *d* of the nozzle or condensing-pipe *a*; but before obtaining access to the condensing chamber or area *f* the vapors must pass through the mass of refractory material *e*, which arrests and throws down the lead brought in with the zinc-vapors, while allowing the latter to pass through to the condensing chamber or area. The lead which is thus arrested and separated from the zinc-vapors flows back into the retort by way of the lower aperture in the extremity *d* of the nozzle or condensing-pipe *a*.

I sometimes place the mass of refractory material within the retort itself instead of in the nozzle or condensing-pipe.

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

1. The combination with means for the extraction of zinc, of the condensing-chamber, the passage connecting the means for extraction of zinc with the condensing-chamber and a mass of chemically-inert and refractory or non-combustible material in said passage, substantially as described.



2. In the extraction of zinc, the combination consisting of a retort or distilling-chamber, a nozzle or condensing-pipe inserted in the mouth of the said retort, and a mass of  
5 chemically-inert and refractory material in the retort end of the said nozzle through which the said vapors are caused to pass before condensation, as set forth.

3. In the extraction of zinc, the combination  
10 with a retort or distilling-chamber, of a filter-bed of chemically-inert and refractory material arranged at the mouth of the said

retort, a condensing-chamber in advance of the said filter-bed of refractory material, and a collecting-pocket beneath and communicating with the said condensing-chamber, as set  
15 forth.

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

CHARLES SKINNER BRAND.

Witnesses:

EDWARD MARKS,  
JOHN MORGAN.