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ORE CHARGES FOR RETORTS AND METHOD OF TREATING THE SAME.
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1,166,447.

Patented Jan. 4, 1916.

Fig 1

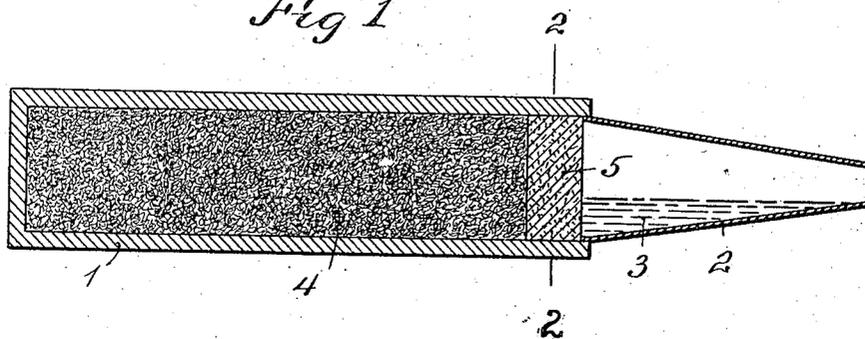


Fig 2

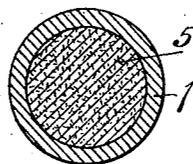
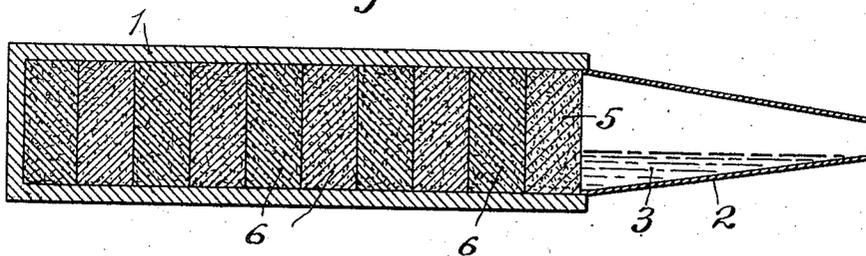


Fig 3



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ORE CHARGES FOR RETORTS AND METHOD OF TREATING THE SAME.

1,166,447.

Specification of Letters Patent.

Patented Jan. 4, 1916.

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To all whom it may concern:

Be it known that I, CHARLES A. H. DE SAULLES, a citizen of the United States, residing at New York city, in the borough of Manhattan and State of New York, have invented a certain new and useful Improvement in Ore Charges for Retorts and Methods of Treating the same, of which the following is a specification.

My invention relates to improvements in ore charges for retorts and methods of treating the same.

It relates particularly to the treatment of zinc ore which is high in iron or lead or both.

As usually treated, prior to my present invention, zinc ore high in iron and lead was heated in a retort or muffle and the spelter collected in a condenser. In such treatment the spelter in the condenser would take up iron from the charge, which lessened the value of the product. To prevent this, I, prior to my present invention, employed a front charge low in iron and in a relatively loose or unstable condition, which served as a dam which partly prevented the passage of iron from the back charge into the spelter in the condenser. Such a front charge, however, merely reduced the amount of iron which would pass into the spelter, as, owing to the comparatively loose and unstable condition of the front charge, small particles of iron would "balloon" over the front charge and be taken up by the spelter. Also, in removing the spelter from the condenser with a scraper, the usual implement employed for such purpose, the front charge would be disturbed, thus permitting iron to pass into the condenser.

The object of this invention is to provide a novel method of charging and charge for a retort or muffle which will prevent the passage of iron or lead from the back charge into the condenser, and which will prevent the formation in the front part of the retort of "slag knobs".

In the accompanying drawing, which is illustrative of the preferred embodiment of my invention, Figure 1 is a longitudinal sectional view of a retort and condenser, the back charge, shown in the retort, being introduced into the retort in loose condition and being retained therein by a briquetted front charge of ore low in iron and lead.

Fig. 2 is a cross section on the line 2—2 of

Fig. 1. Fig. 3 is a view similar to Fig. 1, the back charge being in the form of briquets as well as the front charge.

Similar reference characters designate similar parts in the different views.

1 designates an ordinary retort closed at the rear end and adapted to have inserted into its forward open end a condenser 2, which is adapted to condense and collect the spelter 3 in a molten condition.

In Fig. 1, 4 designates the back charge of zinc ore which may be high in iron and lead, and which is introduced into the retort in a loose condition and then tamped until it presents at its front end a substantially perpendicular face. A briquet charge of zinc ore 5 low in iron and lead, or such substance as it is desired to filter from the rear charge of ore, is then placed in the retort 1 in front of the charge 4, after which the condenser 2 is inserted in the mouth of the retort. By the term "low", in this connection, it is to be understood that the front charge shall contain very little or none of the substance which is to be filtered, the idea being to prevent the adulteration of the product with such substance. The retort is then heated in the usual manner to a temperature sufficiently high to vaporize the zinc in the front and back charges, the zinc vapor and gases from the retort passing through the front briquet charge 5, the latter containing, preferably, a reducing agent, such as coal or coke, which renders the briquet porous. The vapor from the retort is thus filtered through the front briquet charge 5, the temperature of which at the front side thereof is not sufficiently high to cause the lead vapor to be driven through into the condenser, so that the lead, or the most of it remains in the briquet 5. The zinc vapor passes into the condenser and is therein condensed and forms the spelter 3.

The front charge briquet 5 has considerable stability, so that it will substantially retain its form throughout the retorting operation. It will, therefore, hold back the iron from the back charge 4 and will not be disturbed or have its form changed by the scraper in its forward and backward movement during the removal of the spelter from the condenser 2. It will also prevent the formation of "slag knobs" in the front part of the retort.

In Fig. 3, the back charge 6 comprises

briqueted zinc ore high in iron or lead or both. This is treated in the same manner as the charge 4, shown in Figs. 1 and 2, the front briqueted charge 5 being employed in the same manner as has already been described.

Modifications of my invention, within the scope of the appended claims, may be made without departing from the spirit of my invention.

What I claim is:—

1. The method consisting in employing in a retort or muffle a front briqueted charge of ore low in a substance which it is desired to filter from a rear charge of ore which is being treated in the retort or muffle.
2. The method consisting in employing in a retort or muffle a front briqueted charge of ore containing a reducing agent and low in a substance which it is desired to filter from a rear charge of ore which is being treated in the retort or muffle.
3. The method consisting in employing in a retort or muffle a front charge briquet of ore low in iron and containing a reducing agent.
4. The method consisting in employing in a retort or muffle a front charge briquet of ore low in lead and containing a reducing agent.
5. The method consisting in employing in a retort or muffle a front charge briquet of ore low in iron and lead and containing a reducing agent.
6. A retort or muffle charge, consisting of a rear charge of ore, and a front briqueted

charge of ore low in a substance which it is desired to filter from the rear charge.

7. A retort or muffle charge, consisting of a rear charge of ore, and a front briqueted charge of ore low in a substance which it is desired to filter from the rear charge and containing a reducing agent.

8. A retort or muffle charge consisting of a rear charge of ore, and a front briqueted charge of ore low in iron.

9. A retort or muffle charge consisting of a rear charge of ore, and a front briqueted charge of ore low in iron and containing a reducing agent.

10. A retort or muffle charge consisting of a rear charge of ore, and a front briqueted charge of ore low in lead.

11. A retort or muffle charge consisting of a rear charge of ore, and a front briqueted charge of ore low in lead and containing a reducing agent.

12. A retort or muffle charge consisting of a rear charge of ore, and a front briqueted charge of ore low in iron and lead.

13. A retort or muffle charge consisting of a rear charge of ore, and a front briqueted charge of ore low in iron and lead and containing a reducing agent.

In testimony whereof I have signed my name to this specification in presence of two subscribing witnesses.

CHARLES A. H. DE SAULLES.

Witnesses:

T. E. FELL,
M. A. GATELY.