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APPARATUS FOR THE PRODUCTION OF METALLIC MAGNESIUM

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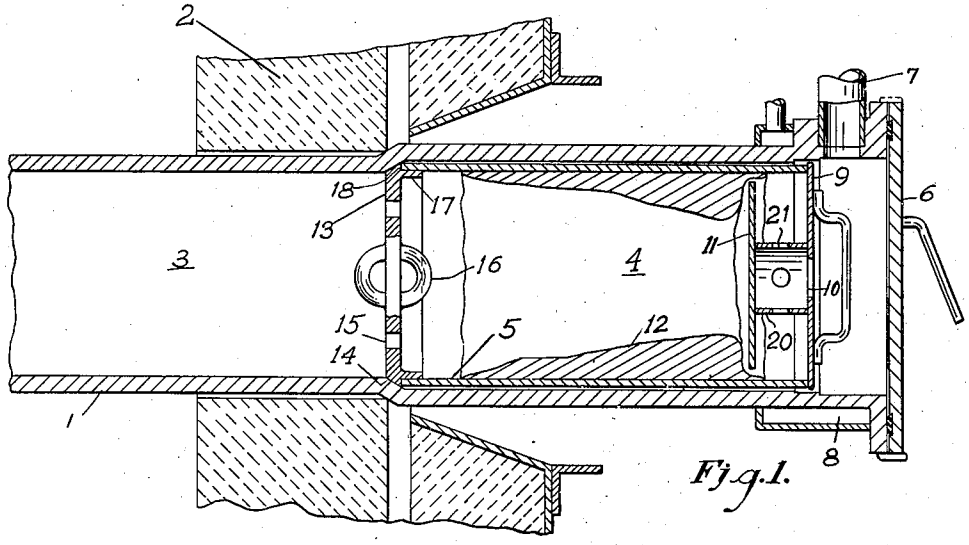


Fig. 1.

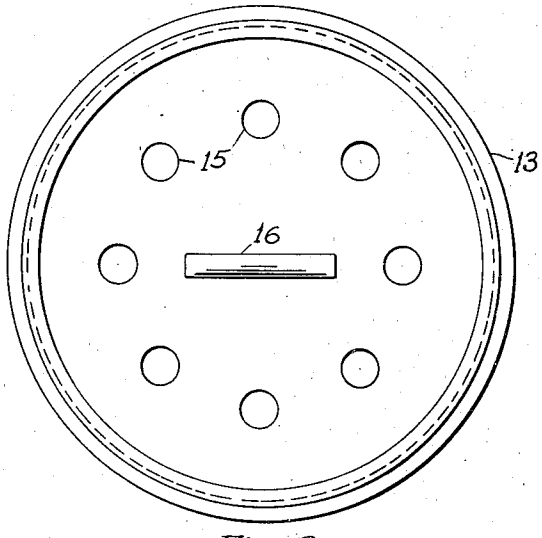


Fig. 2.

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APPARATUS FOR THE PRODUCTION OF METALLIC MAGNESIUM

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4 Claims. (Cl. 266—19)

This invention relates to apparatus for the production of metallic magnesium by the thermal reduction of magnesia containing material in metal retorts, and is particularly directed to the construction of an orifice plate or heat shield located between the reducing portion and the condensing portion of the retort.

In this method of producing metallic magnesium a removable sleeve is provided within the condenser zone of the retort to receive the condensed metal and with which the metal is removed from the retort. The subsequent removal of the sleeve from the retort is made difficult if metal vapours are permitted to escape from the reducing portion of the retort behind the sleeve and condense there. Furthermore when the magnesium is permitted to condense in a thin coating adjacent the inner end of the sleeve the removal of the metal is rendered more difficult and the thin portion of the deposit tends to break up into loose pieces which are objectional for remelting purposes.

The object of the present invention is to provide a construction whereby such difficulties may be overcome.

The invention will be described with reference to the accompanying drawing in which

Figure 1 is a sectional view of a retort with the orifice plate partially in elevation in position therein, and

Figure 2 is a plan view of the orifice plate.

In the apparatus as disclosed in the drawing 1 is a metal retort horizontally located in a furnace 2 and having a reducing portion 3 and a condensing portion 4. A removable sleeve 5 having squared ends is located within the condenser zone 4. The outer end of the retort is closed by a cover 6 and is provided with an outlet 7, through which reduced pressure is created within the retort, and cooling means 8. The outer end of the sleeve is closed by a cover 9 having an orifice 10 therein and carrying a plate 11 in spaced relation thereto to baffle and deflect magnesium vapours to cause them to condense on the removable sleeve in dense coherent structural form as shown at 12. It will be observed that the plate 11 is fixed to one end of a connecting tube 20 having openings 21 therein and the other end of which is fixed to the cover 9.

Between the reducing portion of the retort and the condenser zone is located an orifice plate 13 adapted to rest snugly against the wall of the retort. In the form shown the plate is bevelled at its periphery to rest on the shoulder 14. The plate is perforated as at 15 to permit passage of vapours and is provided with a lug 16. An upstanding flange 17 and a seat 18 is provided to receive the inner squared end of the sleeve. This arrangement prevents magnesium vapours from escaping behind the sleeve and avoids subsequent adherence of the sleeve to the retort wall. The flange 17 being hot keeps the condensate 12 away from the squared end of the sleeve which contacts the seat 18, and builds up the inner end of the deposit 12 so that the deposit may be removed, as by an hydraulic press, with minimum release of loose pieces of magnesium metal. This results in economy and efficiency in remelting the metal produced.

In operation, it will be observed that, the orifice plate although located substantially without the hot portion of the furnace is relatively hot owing to contact of the hot vapours. Thus the flange 17 extending into contact with the inner portion of the sleeve maintains this portion of the sleeve at a temperature at which the magnesium vapours do not condense. Accordingly the condensation of the vapours is removed from the immediate inner end of the sleeve and its contact with the orifice plate.

The ends of the condenser sleeve being squared rather than bevelled do not become so readily distorted in handling. The inner end thus rests snugly on the seat 18 and this further insures against undesired escape of the vapours.

I claim:

1. Apparatus for the production of metallic magnesium by thermal reduction of magnesia containing material comprising a metallic retort having a reducing portion and a condensing portion, a removable sleeve within the condensing portion and an orifice plate within the retort between the reducing portion and the condensing portion, the orifice plate constituting a seat for the inner end of the sleeve and adapted to prevent the condensation of magnesium vapours in the area of said seat.

2. Apparatus for the production of metallic magnesium by thermal reduction of magnesia containing material comprising a metallic retort having a reducing portion and a condensing portion, a removable sleeve within the condensing portion and an orifice plate located within the retort between the reducing portion and the condensing portion to provide a seat for the inner end of the sleeve and a flange adjacent the periphery of the orifice plate contacting the inner wall of the sleeve.

3. Apparatus for the production of metallic magnesium by thermal reduction of magnesia

containing material comprising a metallic retort having a reducing portion and a condensing portion, a removable sleeve within the condensing portion and a perforated orifice plate, constituting a seat for the sleeve and a seal to prevent escape of vapours behind the sleeve, located between the reducing portion and the condensing portion of the retort, a flange on said plate adjacent its periphery, a shoulder extending beyond said flange to contact the retort wall and the inner end of the sleeve being seated on said shoulder and contacting said flange.

4. An orifice plate for a metallic retort for the production of metallic magnesium comprising a plate having perforations therein for the passage of vapours, a flange adjacent the periphery of the plate and extending perpendicularly therefrom and a shoulder between said flange and the periphery of the plate.

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