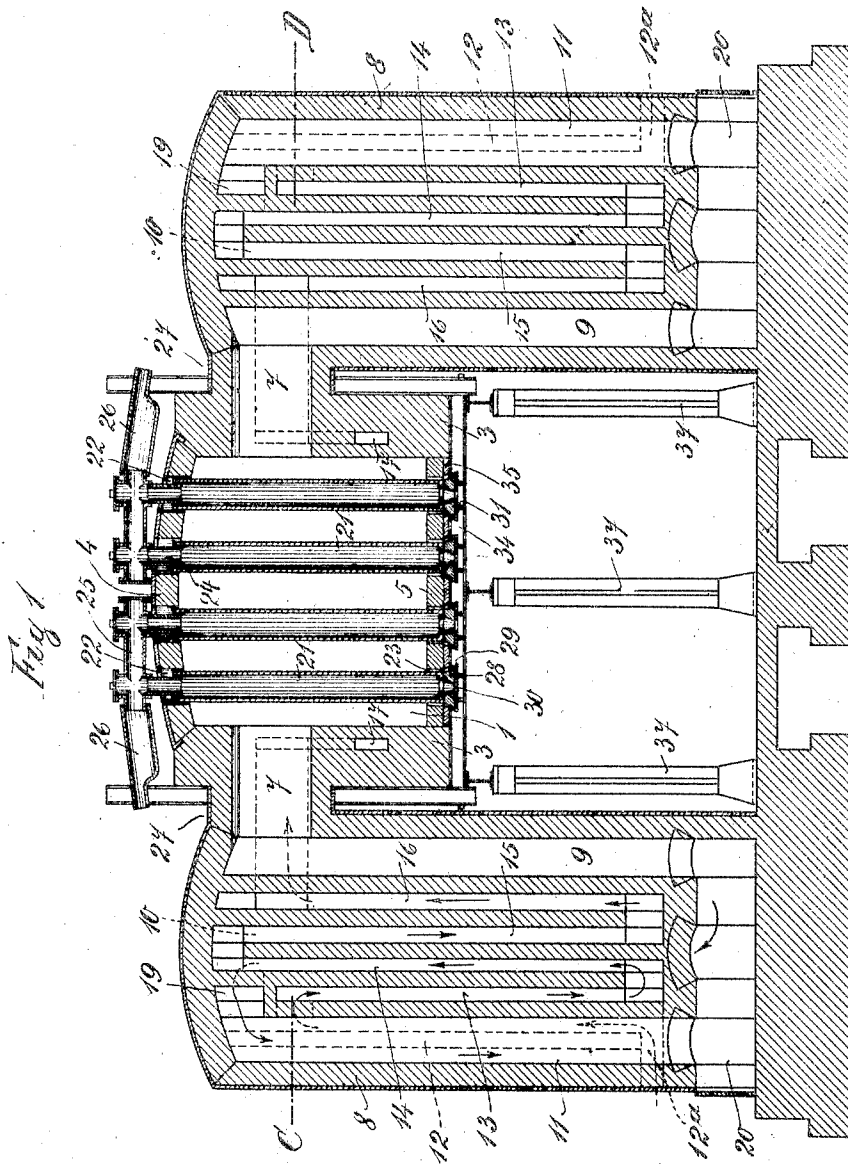


O. SCHNEEMILCH.
FURNACE FOR EXTRACTING ZINC.
APPLICATION FILED JULY 28, 1911.

1,009,863.

Patented Nov. 28, 1911.

4 SHEETS—SHEET 1



Witnesses:
Corinne Myers.
Richard F. Bochen

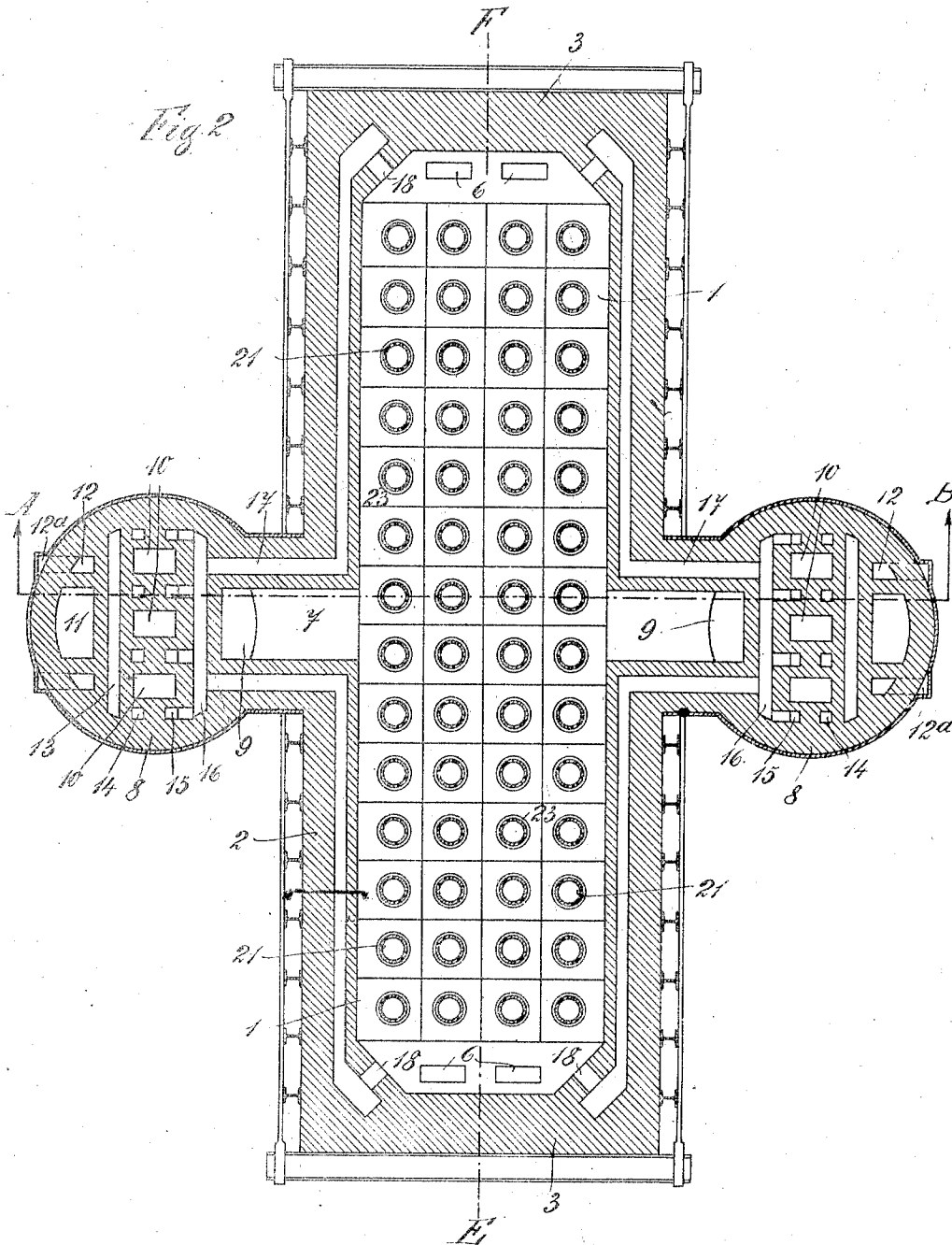
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4 SHEETS—SHEET 2.



Witnesses
Corinne Myers
Richard F. Boehm

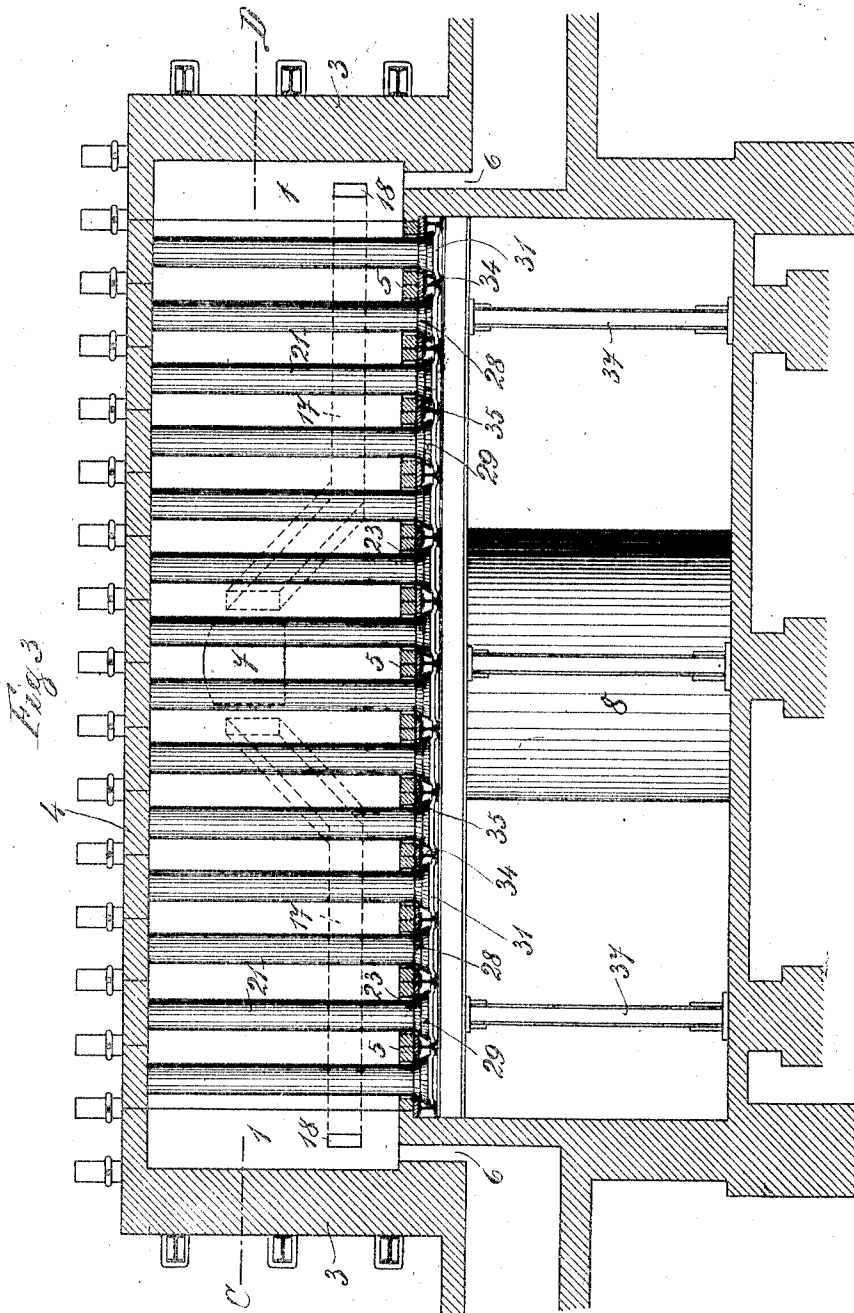
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4 SHEETS—SHEET 3.



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4 SHEETS-SHEET 4.

Fig. 4.

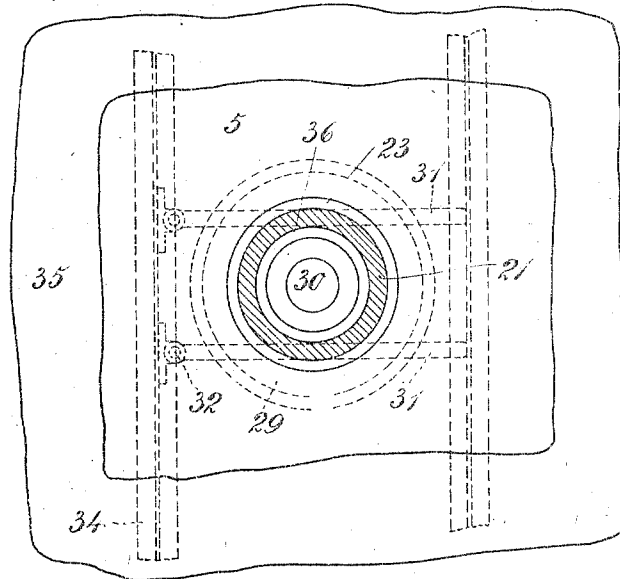
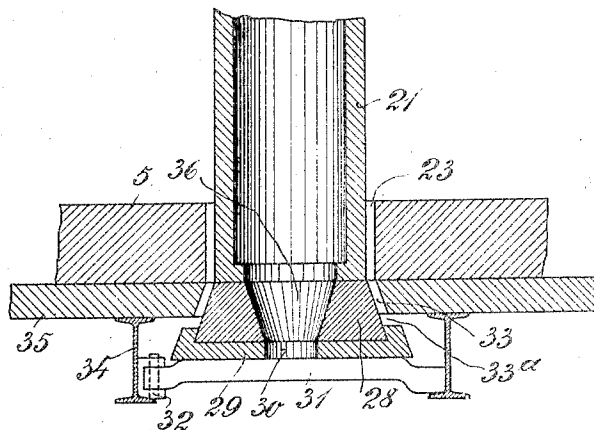


Fig. 5.

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UNITED STATES PATENT OFFICE.

OTTO SCHNEEMILCH, OF WILHELMINENHÜTTE, NEAR SCHOPPINITZ, GERMANY.

FURNACE FOR EXTRACTING ZINC

1,009,863.

Specification of Letters Patent.

Patented Nov. 28, 1911.

Application filed July 28, 1911. Serial No. 641,155.

To all whom it may concern:

Be it known that I, OTTO SCHNEEMILCH, a subject of the King of Prussia, and resident of Wilhelminenhütte, near Schoppinitz, Germany, have invented an Improved Furnace for Extracting Zinc, of which the following is a specification.

This invention relates to an improved furnace for extracting zinc from zinc ores under continuous working.

My invention relates to furnaces of the type having vertical retorts and the object of the present invention is to expedite the treatment of the ore and to insure a uniform reduction taking place throughout the retorts.

According to the present invention the retorts are so arranged in the furnace that they pass freely their whole length through the furnace so that the hot gases uniformly surround the retorts over their whole length. This arrangement also enables a larger number of retorts to be arranged side by side in the transverse direction of the furnace.

A further improvement according to this invention consists in arranging the retorts so that they may be readily inserted and removed, this being preferably effected by inserting the retorts from above and removing them from below the furnace.

My invention also consists in certain other improvements which will be hereinafter referred to and set forth in the claims.

In order that the invention may be clearly understood reference is made to the accompanying drawings wherein the preferred method of carrying out my invention is shown by way of example.

Figure 1 is a transverse section of the furnace taken on the line A—B of Fig. 2. Fig. 2 is a sectional plan taken on the line C—D of Figs. 1 and 3. Fig. 3 is a section on the line E—F of Fig. 2. Fig. 4 is a detail view showing the means for supporting the lower ends of the retorts. Fig. 5 is an inverted plan view of Fig. 4.

Referring to the drawings 1 indicates the furnace proper comprising side walls 2, end walls 3, an arch 4, and a bottom 5, the arch 4 and bottom 5 being built up of a number of segmental bricks or the like. The hot gases are admitted to the furnace 1 by way of conduits 6 and the hot gases pass therefrom through passages 7 arranged at each side and at or about the center of the furnace. These passages 7 lead to towers 8

provided with gas passages 9, 10 and 11 from which the gases pass to the chimney. The towers 8 are also provided with air channels 12, 13, 14, 15, 16, air gaining admission to the channel 12 through air inlet openings 12^a and passing from the channel 16 through a passage 17 from which it exits at 18 into the furnace 1.

The gases entering the furnace 1 by way of the channel 6 mix with air entering at 18 and exit from the furnace at 7 down the channel 9, up the channel 10 and down the channel 11 to the chimney by way of the collecting channels 20, while the air entering the furnace passes in the reverse direction through the tower, passing up the passages 12 down the channel 13, up the channel 14, down the channel 15 to the channel 16, from which admission is gained to the passage 17, it being of course understood that the channels for the gas and air are connected alternately above and below.

It will be seen in Fig. 1 of the drawings that the gases passing from the channel 10 pass over the air channel 13, into a space 19, above the air channel 13 and from thence to the channel 11, while the air channels 12, which are separated from and therefore do not communicate with the space 19 owing to the walls separating the chambers 11 and 12, communicate through an opening below the space 19 with the channels 13, so that by this construction there is no possibility of the gases mixing with the air in the channel 13. It will thus be seen that in this manner the air entering the furnace is heated on its way through the regenerators or towers 8.

The retorts 21 are arranged vertically in the furnace 1 leading through openings 22 in the roof 4 and through openings 23 in the bottom 5, each adjacent retort being connected above through connections 24 with a collecting conduit 25 from which the zinc vapors are conducted to a delivery spout 26 delivering into channels 27. The retorts 21 are supported from below by means of fire clay caps 28 each having a conical orifice therein, said fire clay cap being mounted in an iron ring 29, having a central aperture 30, said ring 29 being supported in position so as to maintain the fire clay cap 28 in position against the bottom of the retort 21 by means of hinged supports 31 hinged at 32 to iron beams 34 which support the iron foundation 35 for the bottom 5 of the furnace. As may

be seen in plan in Fig. 5, the supporting members 31 are adapted when turned transversely to the iron beams 34 to rest at their free ends on the adjacent iron beam and thus support the cap 29 and fire clay cap 28 in position. It will thus be seen that by this construction the caps 28 and 29 may be readily removed by swinging the members 31 outwardly.

During the working of the furnace the spaces between the retorts and the openings 22 and the connections 24 are plugged by means of clay or the like, while the lower openings 23 between the retorts 21 and the bricks forming the bottom 5, and the spaces 33 and 33* formed between the caps 28 and 29 and the iron foundation 35 are filled in with clay or the like. The conical opening 36 in the fire clay cap 28 and the central opening 30 in the cap 29 are normally plugged with clay or the like but serve for the discharge of the ash upon removing the plug. It will thus be seen that the caps do not require to be removed to discharge the retorts.

From the description and drawings it will be readily seen that the retorts may be inserted through the openings 22 in the arch 4 of the furnace and that they may be readily removed from the lower furnace by swinging out the members 31 and removing the caps 28 and 29. It will also be seen that the retorts pass their whole length entirely freely through the furnace there being no brick work projecting in close proximity thereto so that the hot gases uniformly surround the retorts and thereby enable uniform reduction of the ore in the retorts to take place. It will also be seen that the retorts may be readily connected in pairs and thus two pairs of retorts may be arranged in the same line transversely of the furnace.

The iron plates 35 forming the foundation for the furnace bottom are supported by the iron beams 34 which are in turn mounted upon iron standards 37 standing upon any suitable foundation.

I claim:

1. A furnace for extracting zinc from zinc ores comprising a chamber to which hot gases are admitted, vertical retorts passing their whole length freely through said chamber so as to be uniformly surrounded by the hot gases over their whole length and means whereby said retorts may be removed from below said chamber.

2. A furnace for extracting zinc from zinc ores comprising a chamber to which the hot gases are admitted, the top and bottom of said chamber being constructed of fire-brick

having cylindrical openings therein, vertical cylindrical retorts in said chamber and passing through said openings, means for supporting said retorts and means whereby said retorts may be removed from below said chamber.

3. A furnace for extracting zinc from zinc ores comprising a chamber to which the hot gases are admitted, vertical retorts in said chamber, perforated caps adapted to close the bottom of said retorts and to support the same, and means for temporarily supporting said caps, said caps being adapted to be filled to retain the charge in the retorts and being adapted to enable said retorts to be discharged on removing said filling, whereby the removal of the caps on discharging the retorts is rendered unnecessary.

4. A furnace for extracting zinc from zinc ores comprising a chamber having openings in the bottom thereof and to which hot gases are admitted, vertical retorts in said chamber and passing through said openings, caps adapted to close the bottom of said retorts and to support the same, members supporting said caps and beams supporting the bottom of said chamber and to which said members are pivoted.

5. A furnace for extracting zinc from zinc ores comprising a chamber having openings in the bottom thereof and to which hot gases are admitted, vertical retorts in said chamber and passing through said openings, hollow fire clay blocks supporting said retorts, perforated caps carrying said blocks and means for temporarily supporting said caps, said hollow blocks and perforated caps being adapted to be filled to retain the charge in the retorts and being adapted to enable said retorts to be discharged on removing said filling.

6. A furnace for extracting zinc from zinc ores comprising a chamber having openings in the top and bottom thereof and to which hot gases are admitted, vertical retorts in said chamber and passing through said openings so as to be capable of insertion from above the furnace, means for supporting said retorts so as to enable the same to be removed from below the furnace, connections between said retorts and above the chamber for collecting the vapors from the retorts and outlets in communication with said connections.

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

OTTO SCHNEEMILCH.

Witnesses:

LOUIS KELLY,
ERNST BLINK.