

J. D. JAMES.
 APPARATUS FOR FILLING ZINC RETORTS WITH GRANULAR MATERIAL.
 APPLICATION FILED APR. 8, 1907.

936,245.

Patented Oct. 5, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

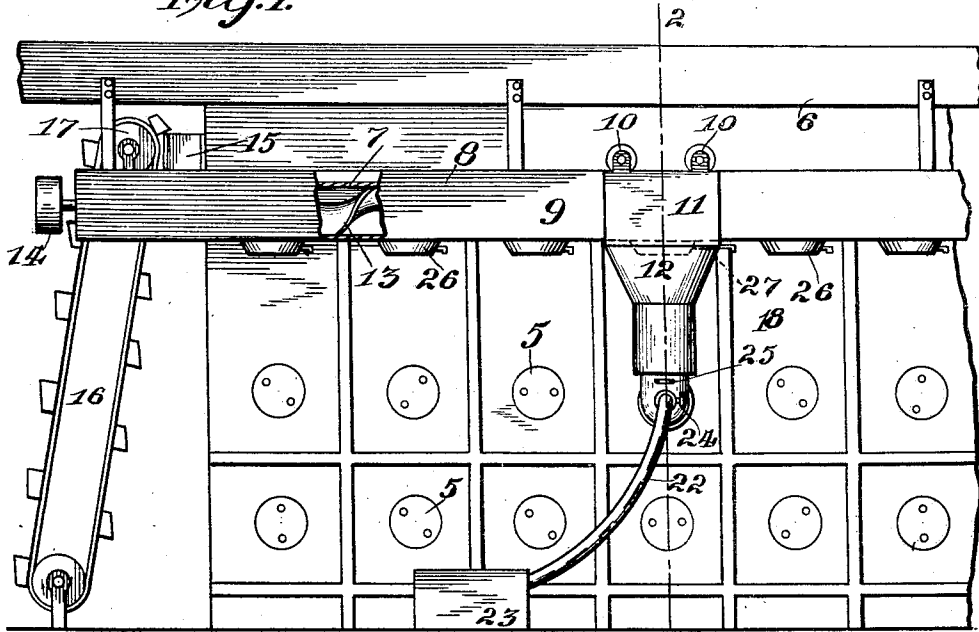
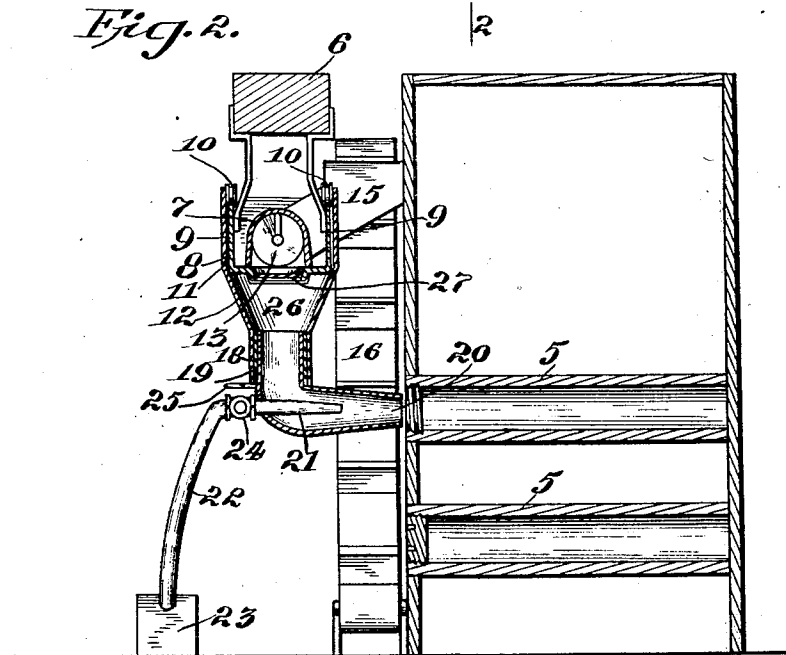


Fig. 2.



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Fig. 3.

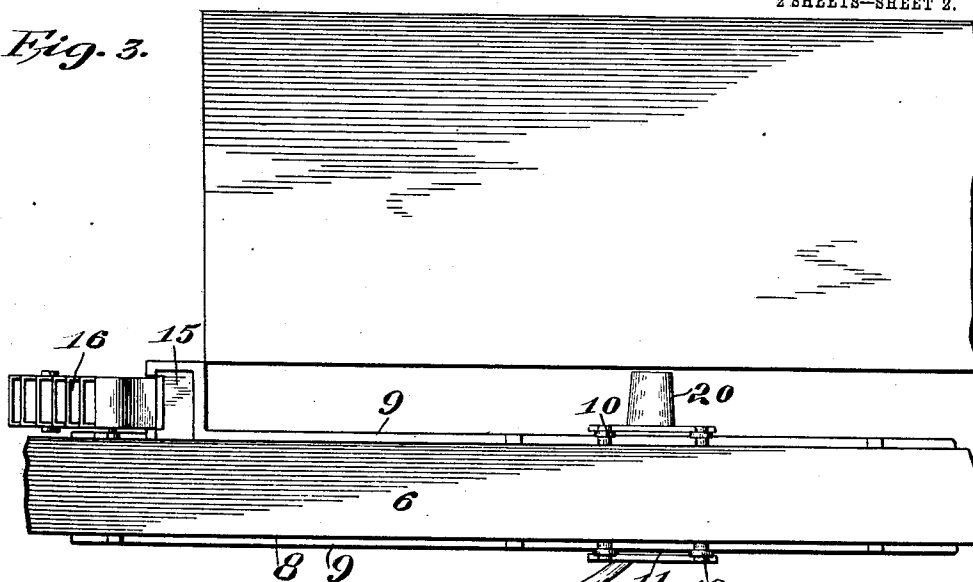
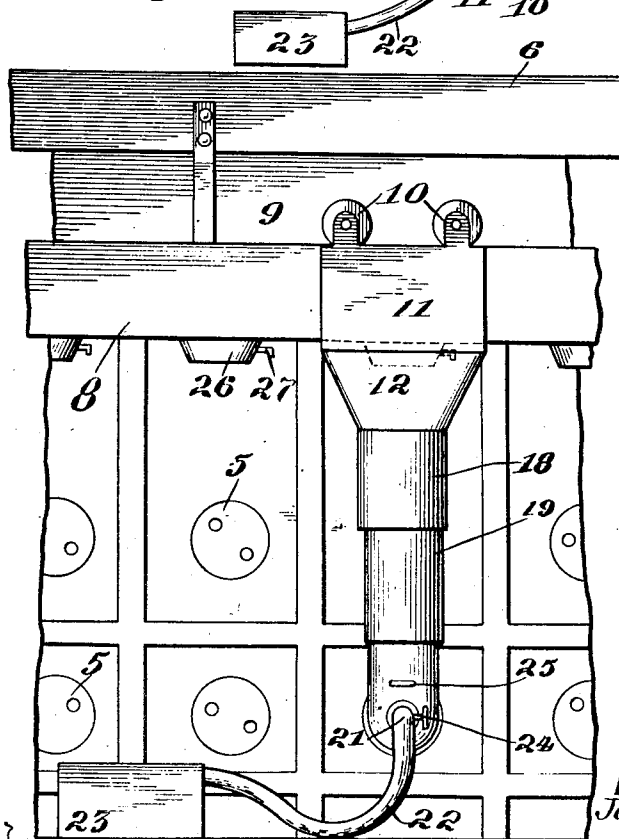


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN D. JAMES, OF PULASKI, VIRGINIA.

APPARATUS FOR FILLING ZINC-RETORTS WITH GRANULAR MATERIAL.

936,245.

Specification of Letters Patent.

Patented Oct. 5, 1909.

Original application filed November 12, 1906, Serial No. 343,085. Divided and this application filed April 8, 1907. Serial No. 367,117.

To all whom it may concern:

Be it known that I, JOHN D. JAMES, a citizen of the United States, residing at Pulaski, State of Virginia, have invented certain new and useful Improvements in Apparatus for Filling Zinc-Retorts with Granular Material, of which the following is a full, clear, and complete disclosure.

This part of my invention relates to the apparatus for filling zinc retorts, and is particularly applicable to the packing or filling of retorts for reducing or smelting zinc ore.

This application is a division of my prior application, Serial No. 343,085, filed November 12, 1906, which is a division of my application Serial No. 294,408, filed January 3, 1906, which describes and illustrates the apparatus which is the subject-matter of this application.

Heretofore, the packing of zinc retorts has usually been accomplished by hand and was not only a slow process, but also resulted in packing the material unevenly within the retort.

The object of this invention is to provide a means for packing zinc retorts and similar receptacles, which not only can be easily carried out, but will also introduce the material into the retort evenly and compactly throughout its whole cross-sectional area, and will also result in a great saving of time.

In the drawings forming a portion of this specification and in which like numerals of reference indicate similar parts of the several views, Figure 1 is an elevational view showing the apparatus for carrying out the present invention. Fig. 2 is a cross-sectional view taken on the line 2—2 of Fig. 1. Fig. 3 is a top plan view. Fig. 4 is a view similar to Fig. 1, showing the delivery tube extended.

Referring now to the drawings, there is shown a plurality of retorts 5 located in a zinc smelting furnace and disposed with their open ends turned in a common direction and arranged in horizontal series. A beam 6 is located above the retorts and secured to this beam, there is a horizontal cylindrical conveyer casing 7 mounted in the frame 8 which depends from the beam 6 and this frame includes upwardly extending side portions 9, the upper edges of which form tracks upon which rest rollers 10 carried by the upwardly extending side portions 11 of a hopper 12. These side portions 11 lie at

opposite sides of the casing 7, as will be seen, and in the casing, there is located a revoluble screw 13 which coöperates with the casing 7 to form a screw conveyer to feed the material being treated to the hopper 12. The shaft carries a pulley 14, as shown. A chute 15 is arranged to discharge into the conveyer 7 at the feed end thereof and is located in position to receive material to be treated from an elevator 16 of the bucket type, the upper sprocket 17 of the elevator being journaled upon the frame 8.

The hopper 12 lies beneath the conveyer casing 7, as shown, and has connected therewith a tube 18 which includes a plurality of telescoping sections 19, (the inner one of which preferably extends at right angles as shown), and thus permits of longitudinal extension of the tube. The arrangement is such that the lower portion of the tube may also be revolved with respect to the hopper 12. The lower end portion of the tube is turned laterally and is tapered to form a discharge nozzle 20. A pipe 21 enters the tube 18 horizontally and extends into the nozzle 20 from the tube and with the nozzle 20 constitutes an injector or aspirator acting to suck or draw the material into the latter and to project the material into and through the retort. The pipe 21 has a flexible connection 22 with a source of fluid under pressure 23. The pipe 21 has a valve 24 for regulation of this flow of fluid there-through and a handle 25 is carried by the inner section of the tube. The tube 18 extends downwardly in front of the open ends of the retorts and may be moved vertically, as shown, to position its nozzle before any desired horizontal series of retorts and the hopper and tube are movable longitudinally of the conveyer casing 7, as will be understood, to position the nozzle before any one of the retorts.

A plurality of openings 26 are formed in the lower portion of the conveyer casing 7 and are provided with closures 27, movable into and out of operative position. These openings permit of passage of material from the conveyer into the hopper from which such material will pass into the nozzle and will be blown therefrom by the blasts from the pipe 21 and into the retort before which the nozzle is positioned.

The fluid used is supplied to the pipes 21 and 22 under comparatively high pressure,

so that the jet will have sufficient force to pack the zinc ore within the retort evenly and firmly and so as to fill its entire interior space and its entire cross section.

5 It will be understood that the material to be placed in the retorts is transferred to the conveyer 13 by means of the elevator 16, and it will be understood that the present apparatus may be used in connection with receptacles other than retorts for smelting zinc.

What I claim and desire to protect by Letters Patent is:

1. A retort packing or filling apparatus, 15 comprising a closed or continuous nozzle whose cross-section approximates that of a retort to be filled, and adapted to be situated opposite the end of the latter, an injector for producing a suction and blast of fluid within said nozzle, and means for supplying the material to be treated to said nozzle. 20

2. A retort packing or filling apparatus comprising a short continuous nozzle adapted to be placed adjacent the open end 25 of a horizontal retort, a jet forming device projecting into the central portion of said nozzle and means for supplying granular material about said jet forming device.

3. A retort packing or filling apparatus, 30 comprising a vertical tube for supplying the material to be treated, a horizontal nozzle connected with said tube, and a jet forming

device located in said nozzle between its inlet and outlet.

4. A retort packing or filling apparatus, 35 comprising a continuous nozzle of a diameter approximately that of a retort to be charged and a jet forming device in said nozzle and situated substantially concentric therewith. 40

5. A retort packing or filling apparatus comprising a continuous tapering nozzle, a tube connected with said nozzle for supplying the material to be treated, and a jet forming device located in the tapering portion of said nozzle for injecting said material into a retort from a point exterior to the open end thereof. 45

6. A packing or filling apparatus for retorts, comprising a short nozzle for projecting the material to be treated the whole 50 length of the retort from the exterior thereof, jet-forming means situated within said nozzle between its inlet and outlet, and means for supplying said jet-forming means with fluid under pressure. 55

In witness whereof I have hereunto signed my name this 30th day of March 1907, in the presence of two witnesses, at Pulaski, State of Virginia.

JOHN D. JAMES.

Witnesses:

D. W. BARNARD,
B. F. GARNETT.