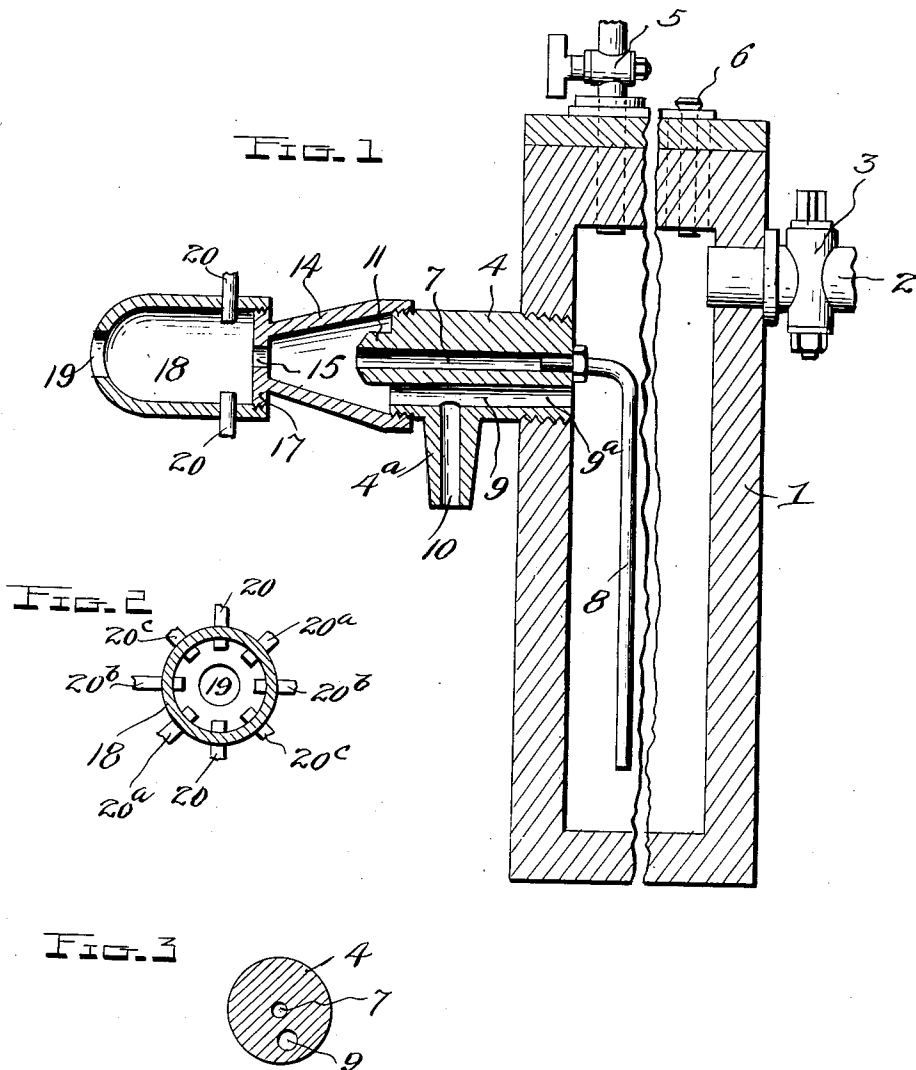


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L. FINK-HUGUENOT.
PROCESS OF PRODUCING METALLIC OXIDS.
APPLICATION FILED JAN. 10, 1905.



Witnesses

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LAURENT FINK-HUGUENOT, OF PARIS, FRANCE.

PROCESS OF PRODUCING METALLIC OXIDS.

No. 813,786.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, LAURENT FINK-HUGUENOT, a citizen of the Republic of France, residing at Paris, France, have invented certain new and useful Improvements in Processes of Producing Metallic Oxids; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improved process for making metallic oxids.

The object of the invention is to provide a process of this character by means of which metallic oxids may be produced in an efficient, expeditious, and inexpensive manner.

The means for carrying out my invention is illustrated in the accompanying drawings, in which—

Figure 1 is a vertical sectional view through a suitable form of apparatus. Fig. 2 is a detail vertical sectional view taken on the line 2 2 of Fig. 1 and showing the metallic oxid or powder receiving chamber provided with an increased number of jet-tubes which supply the reducing-gas, and Fig. 3 is a detail vertical sectional view taken on the line 3 3 of Fig. 1.

Referring to the drawings by numerals, 1 denotes a receiver or container for molten metal which is admitted therein through an inlet-pipe 2, leading from a retort (not shown) and provided with a controlling valve or cock 3. Said container 1 is closed by a cover in which is provided a suitable pressure-relief valve 6 and a turning plug valve or cock 5.

Screwed or otherwise secured in the upper portion of said container is a discharge nozzle or connection 4, which is formed with a central bore or passage 7 and a lower bore or passage 9 of greater diameter or size in cross-section than the said passage 7 and disposed angularly below the same, as shown. These passages or conduits extend entirely through said discharge connection 4, which has formed upon its front or outer end a projection 11, disposed concentrically with the passage 7, and upon its under side intermediate its ends a projection 4^a, in which is formed a bore or passage 10, having its upper end opening into said passage 9. Steam or other suitable elastic gas or fluid is admitted into the passage or conduit 10 by means of a suitable connection, (not shown,) and the fused or molten metal in the container 1 is discharged under pressure, as presently explained, through a pipe

or tube 8, which has its upper end communicating with said passage 7 and its lower end opening adjacent to the bottom of said container. The passage 9 has its inner end opening at 9^a into the interior of the container above the normal level of the molten metal, and its outer end is disposed below the said projection 11.

Upon the outer end of the discharge nozzle or connection 4 is screwed or otherwise secured a cap 14, preferably in the form of a truncated cone, as shown. The small end of said cone 14 is formed with a central opening or orifice 15, which aligns with said passage 7. Said end of the cone is also formed with an annular flange 17, upon which is screwed or otherwise secured a cylinder or tube 18, which forms a receiving chamber or receptacle for the oxid or powder, as hereinafter explained.

The outer end of the tube 18 is formed with an opening 19, which is of slightly less diameter than the inner end of said tube, and projecting radially through said tube adjacent to its inner end is a series of burner-tubes 20 for a suitable oxidizing-gas. Any number of these burner-tubes 20 may be employed. In Fig. 1 of the drawings I have shown two, while in Fig. 2 I have provided a greater number and have marked them 20^a, 20^b, and 20^c; but in both instances they are disposed radially and oppose each other, so as to form a "blowpipe."

My improved process is as follows: The tin or other metal to be oxidized is admitted in a state of fusion through the pipe or conduit 2 into the receiver or container 1, and when the latter is sufficiently full the cock 3 is closed. Steam or other suitable elastic gas or fluid is then admitted into the passage 10, from which it passes out of the two diverging branches of the passage 9. That portion which passes out of its end 9^a enters the container 1 and exerts a strong pressure upon the surface of the molten metal therein to cause the latter to be forced up through the tube 8 and out through the passage 7 into the discharge-nozzle 4. A stream of molten metal is thus projected with great force against the interior of the truncated cone 14 and at the same time is met by the jet of steam discharged out of the forwardly-extending branch of the passage 9. Owing to the disposition of this passage 9 and the shape of the cone 14, a vortex stirring action is set up in the latter to cause a thorough mingling of the metal and steam, so that as the steam expands the metal will be entirely

pulverized. The shock which the metal in fusion receives as it strikes the fixed inner surface of the cone also tends to reduce the same to powder. The powder thus formed is discharged from the cone 14 through its outlet-opening 15, and as it passes through the flame of the gas or gases entering through the tubes 20, 20^a, 20^b, or 20^c said powder is thoroughly oxidized and falls into the receptacle 18 in the form of a metallic oxid. This metallic oxid may be removed from time to time through the opening 19 in the outer end of said tube or receptacle.

It will thus be seen that the essential features of my improved process are the mingling under strong pressure of a current of fused metal with a current of elastic fluid in order to produce a metallic powder and subjecting this powder to the action of heat, preferably in the form of an oxidizing-flame, as described.

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

The herein-described process of producing metallic oxids, which consists in forcing a fused metal to flow in a current under the action of a strong pressure, mingling an elastic fluid with said current, utilizing a portion of the force of the elastic fluid to create said strong pressure, confining the current to a restricted space to form a vortex jet and finally directing an oxidizing-flame against said jet, essentially as described.

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

LAURENT FINK-HUGUENOT.

Witnesses:

ANTOINE AUGIER,
JOHN BAKER.