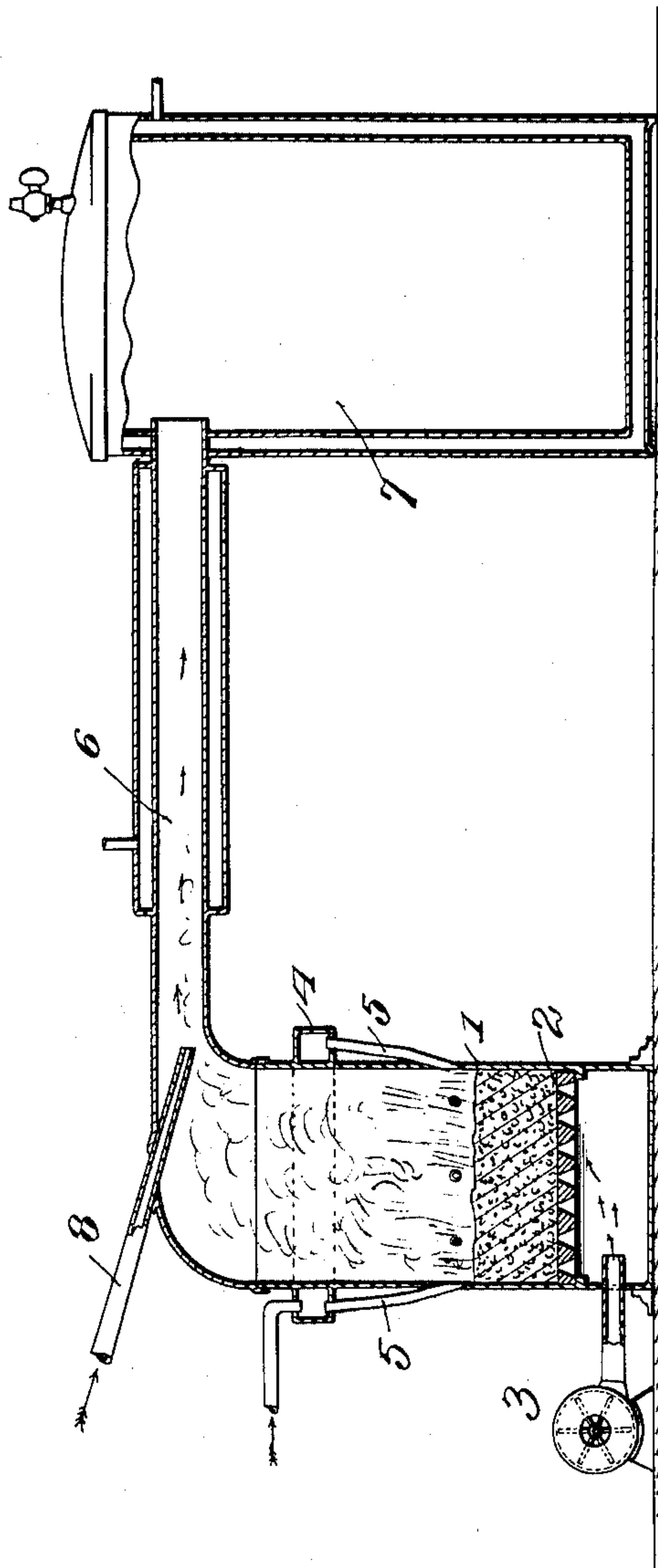


O. B. DAWSON.
PROCESS OF PRODUCING METALLIC ZINC.
APPLICATION FILED MAR. 16, 1909.

976,557.

Patented Nov. 22, 1910.



Inventor

Witnesses

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PROCESS OF PRODUCING METALLIC ZINC.

976,557.

Specification of Letters Patent.

Patented Nov. 22, 1910.

Application filed March 16, 1909. Serial No. 483,776.

To all whom it may concern:

Be it known that I, OLIVER B. DAWSON, of El Paso, in the county of El Paso and State of Texas, have invented certain new and useful Improvements in Processes of Producing Metallic Zinc; and I do hereby 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.

The object of this invention is to prevent the oxidation of zinc vapor so that zinc bearing ores may be directly reduced to a powdered metallic state, called zinc fume, avoiding thereby the necessity heretofore experienced of having to reduce zinc oxid.

As is well known in the art the reduction of zinc is ordinarily effected by burning the ore in contact with coal, combustion being accelerated by an air blast introduced beneath the grate. The vapor arising from the mass of coal and zinc ore has heretofore passed off as zinc oxid, in the form of a white powder. For commercial purposes this powder has had to be subsequently treated to produce metallic zinc.

By means of my invention I avoid this step by introducing into the zinc vapor, at a point just above or close to the bed of zinc ore and coal, while the mass is at a temperature above the temperature at which zinc oxid is reduced to a metallic state by carbon monoxid, sprays of water gas in quantities sufficiently in excess of the amount required to take up any oxygen that may have escaped combining with the carbon of the fuel. This effectively prevents the action of carbon dioxid upon the metallic zinc vapor. The water gas, which contains a large percentage of carbon monoxid, mingles freely with the zinc vapor and passes upward therewith and into a receiver which is preferably in the form of a water cooled chamber or pipes. The escape of the zinc vapor and water gas is accelerated by a second jet of water gas introduced into the outlet pipe under slightly greater pressure, such stream of water gas serving to entrain and eject the vapor. The vapor collects as a metallic powder known as zinc fume.

It is immaterial how the water gas is pro-

duced, nor is it absolutely essential that water gas be used, since what is required is the presence of carbon monoxid to combine with any unconsumed particles of oxygen.

For the purpose of making my invention readily understood, I have shown in the accompanying drawings, a single diagrammatic view, partly in section.

1 designates the furnace; 2 the grate for supporting the mixture of coal and zinc ore; 3 the air blower; 4 a bustle pipe surrounding the furnace; 5 twyers which lead from the bustle pipe into the furnace so as to discharge the water gas low down in the vapor at or above the mixture of coal and ore.

The top of the furnace opens into a water cooled pipe 6 which is shown as connected with a water cooled receiver 7. An ejecting pipe 8 is shown in line with pipe 6 for introducing the blast of gas for ejecting or accelerating the outlet of the zinc vapors.

I claim as my invention:—

1. The process of producing metallic zinc which consists in introducing into the zinc vapors at or above the zone of combustion carbon monoxid in sufficient quantity to combine with any unconsumed particles of oxygen.

2. The process of producing metallic zinc which consists in introducing into the zinc vapors at or above the zone of combustion water gas in sufficient quantity to combine with any unconsumed particles of oxygen.

3. The process of producing metallic zinc which consists in introducing into the zinc vapors at or above the zone of combustion carbon monoxid in sufficient quantity to combine with any unconsumed particles of oxygen and at a point beyond the zone of combustion introducing a gas of such constituency as to preclude the oxidation of the zinc vapor for the purpose of aiding the ejection thereof.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

OLIVER B. DAWSON.

Witnesses:

LLOYD E. MITCHELL,

CHARLES LOWELL HOWARD.