

# UNITED STATES PATENT OFFICE.

JAMES JENKINS, OF ELIZABETH, NEW JERSEY, AND JAMES McMAHON, OF LOWER SAUCON TOWNSHIP, NORTHAMPTON COUNTY, PENNSYLVANIA.

## IMPROVEMENT IN THE MANUFACTURE OF OXIDE OF ZINC.

Specification forming part of Letters Patent No. 43,587, dated July 19, 1864.

*To all whom it may concern:*

Be it known that we, JAMES JENKINS, of the city of Elizabeth, in the county of Union and State of New Jersey, and JAMES McMAHON, of the township of Lower Saucon, in the county of Northampton and State of Pennsylvania, have invented an Improvement in the Apparatus for the Manufacture of the Oxide of Zinc; and we do hereby declare that the following is a full and exact description thereof.

The construction of an apparatus for the manufacture of the oxide of zinc consists of furnaces in which the ore, in combination with fuel, is burned, an exhausting apparatus, (generally fan-blowers,) by which the products of combustion from the furnaces are controlled, and a collecting or bag room, which at the same time affords a place of deposit for the oxidized zinc and an escape for the gases.

The exhaust-blower, which turns at a high rate of speed, is located at a point between the furnaces and the bag-room. The products of the combustion are drawn to it from the furnaces, and, secondly, forced onward by its operation to the bag-room. The bag-room is provided with tubes running horizontally, secured to the highest point in the room, and from which others (being attached) hang vertically, extending to the lowest point in the room. The horizontal tubes are sometimes made of sheet-iron, occasionally of woolen or cotton fabric, while the vertical tubes or bags are made of the latter material, involving the employment of about fifteen hundred yards of bag-surface for each ton of oxide produced in twenty-four hours. To produce ten tons of oxide daily, fifteen thousand yards of bag-surface must be constantly employed.

The manufacturing operation is as follows: The furnaces, being in blast, are at a bright-red heat. The products from the combustion of the coal and ore are drawn rapidly away by the exhaust-blower, and arrive at that point in a highly-heated condition. They are thence forced by the blower onward to the bag-room, where the cotton or woolen cloth furnishes the outlet for the heated air and gases, while the metallic element in its course then becomes

completely oxidized, and is deposited in the bottom of the vertical bags.

It will be understood that the gases reach the bag-room in a highly-heated condition, while from their destructive character and the pressure under which they are driven there the fabric of which the bags are made undergoes a constant decay and requires constant renewal. This supply of bag-room fabrics in this manufacture is a principal item in the repairs, &c., and the improvement herein claimed has also reference to the reduction of this expense, a diminution of the risk of loss by fire, (to which the present method is constantly liable,) and the ability to produce a given quantity of oxide in a smaller compass than is made necessary by the present construction when cotton or woolen cloths are employed.

The nature of our improvement consists in using fine wire-cloth as a substitute for the woolen or cotton fabrics in whole or in part. The works at present erected may apply this material exclusively or in connection with the woolen or cotton, an upper section of the vertical tubes being made of the wire-cloth.

We do not claim the construction of that part of the apparatus for the manufacture of oxide of zinc known as the "collecting or bag room;" nor do we claim the use and employment of woolen or cotton fabrics for the purposes to which they are applied; but

What we do claim, and desire to secure by Letters Patent, is—

The use and employment of wire-cloth as a substitute, in whole or in part, for the woolen or cotton cloths now employed in the manufacture of the oxide of zinc, substantially as herein described, and for the purposes herein named.

JAMES JENKINS.  
JAMES McMAHON.

Witnesses to James Jenkins:

JOHN O. MAGIL,  
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Witnesses to James McMahon:

CHARLES BRODHEAD,  
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