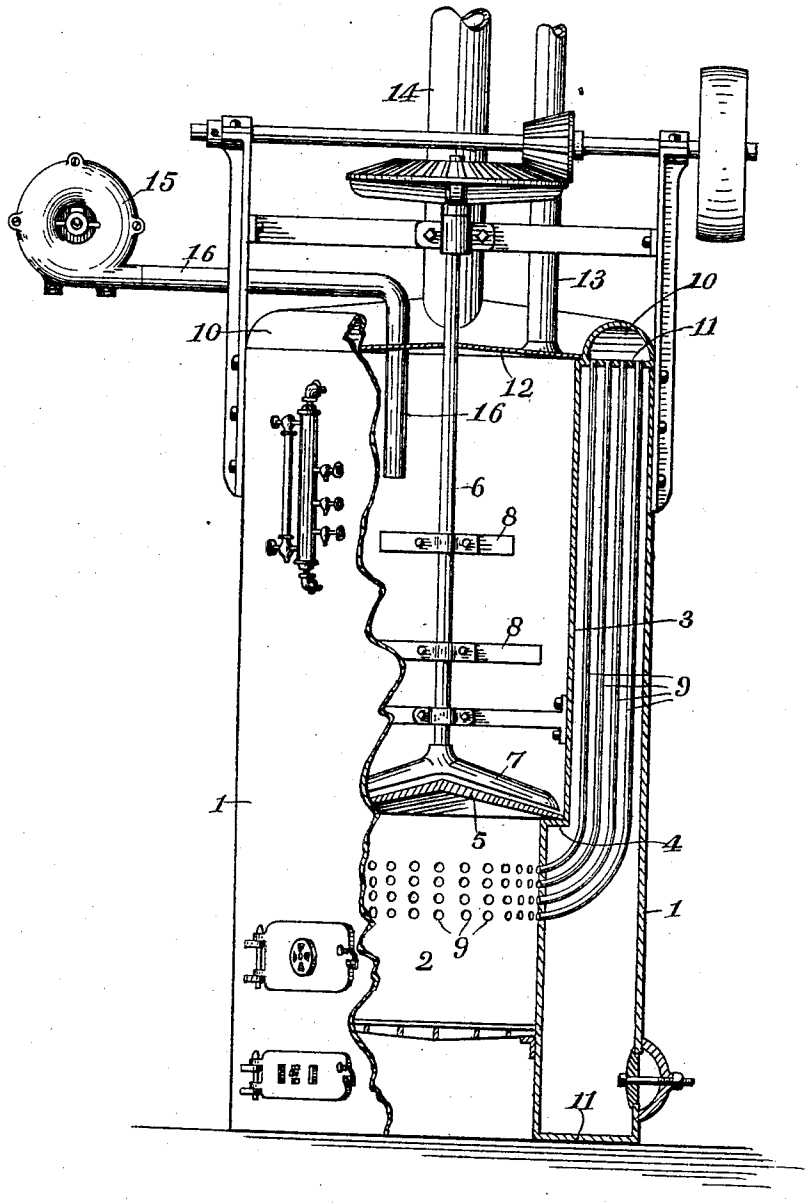
C. DE JONGE & W. NEVERS.

CALCINER.

APPLICATION FILED MAR. 27, 1908.

907,575.

Patented Dec. 22, 1908.



Witnesses
H. C. Van Antwerp.
Georgiana Chace

Inventor
Cornelius De Longe and
Wilbur Nevers
By Luther V. Moulton
Attorney

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CORNELIUS DE JONGE AND WILBUR NEVERS, OF GRAND RAPIDS, MICHIGAN.

CALCINER.

No. 907,575. Specification of Letters Patent. Patented Dec. 22, 1908.

Application filed March 27, 1908. Serial No. 423,533.

To all whom it may concern:

Be it known that we, CORNELIUS DE JONGE and WILBUR NEVERS, both citizens of the United States of America, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Calciners; and we 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.

Our invention relates to improvements in calciners, and its object is to provide the same with various new and useful features, hereinafter more fully described and particularly pointed out in the claims.

The device consists essentially of two large, concentric, upright tubes connected by annular heads at the ends, the inner tube being divided transversely by a diaphragm into a fire-box below and a receptacle for the material to be calcined above, and flues extending from the fire-box upward between the tubes and through the upper head, the device being provided with an agitator, breeching, smoke pipe, cover, air pipe and blower, as will hereafter more fully appear, reference being had to the accompanying drawings, in which:

1 represents the outer tube or shell substantially the same in appearance and construction as the outer shell of a large, upright steam boiler; 2 the lower part of the inner tube, forming a fire-box, substantially like the fire-box of a steam boiler, above which the upper part 3 is of greater diameter thus forming an inwardly turned, projecting ledge, upon which is supported a conical bottom 5, such as is commonly used for the bottom of a calcining kettle. The upper part of the inner tube thus serves as a receptacle for the material to be calcined when the device is used for that purpose.

9 are any convenient number of boiler flues bent inward at the lower end and inserted in the wall of the fire-box and thence extending upward between the outer shell 1 and the inner tube 3 and opening through the head 11 into an annular breeching 10 provided with a smoke stack 14. In the axis of the device is an agitator 6, such as is commonly used in calcining kettles and provided with the usual radial arms 7 and 8 and means for rotating the same.

12 is a cover for the receptacle and 13 a pipe to convey away the vapors, when used for calcining, or the hot air when used as a calciner, and to convey the air when the device is used as an air heater. To adapt the device for the latter purpose, we add a blower 15 having a discharge pipe 16 extending through the cover 12 whereby air may be blown into the device and heated therein.

In operation when used as a calcining apparatus, the plaster or other mateiral to be calcined is placed within the upper part of the inner tube 3 and treated in the usual way. The space between the tubes being supplied with water forms a steam generator the same as an ordinary steam boiler, and the fire-box and flues 9 will generate steam therein. When used for air heating the agitator 6 need not be rotated, but instead the fan blower 15 put into operation and a current of air forced through the device which will be heated and escaping by the pipe 13 can be used for warming rooms or other purposes, such as heating a dry-kiln or the like. The fan is also useful to force a current of cold air through the material to cool the same after it has been calcined.

What we claim is:

1. A device of the class described, comprising two upright concentric tubes, annular heads connecting the ends of the respective tubes to each other, a diaphragm in the inner tube and at a distance from the ends thereof, flues communicating with the inner tube below the diaphragm and extending through the upper head.

2. A device of the class described, comprising two upright, concentric tubes spaced apart and connected at the end by annular heads, the inner tube being reduced in the lower part and having an inwardly projecting ledge at a distance from its ends, a diaphragm supported on the ledge, an agitator in the upper part of the inner tube, flues communicating with the interior of the said lower part and extending through the upper head, an annular breeching inclosing the upper ends of the flues, and a cover above the inner tube.

3. The combination of two upright concentric tubes spaced apart, a diaphragm di-

viding the inner tube into an upper and lower part, flues communicating with the said lower part and extending through the upper head, an agitator in the said upper part, an annular breeching above the flues, a cover above the inner tube, an outlet pipe inserted in the cover, a blower, and a pipe extending from the blower and through the cover.

In testimony whereof we affix our signatures in presence of two witnesses.

CORNELIUS DE JONGE.
WILBUR NEVERS.

Witnesses:
PALMER A. JONES,
GEORGIANA CHACE.