

No. 773,030.

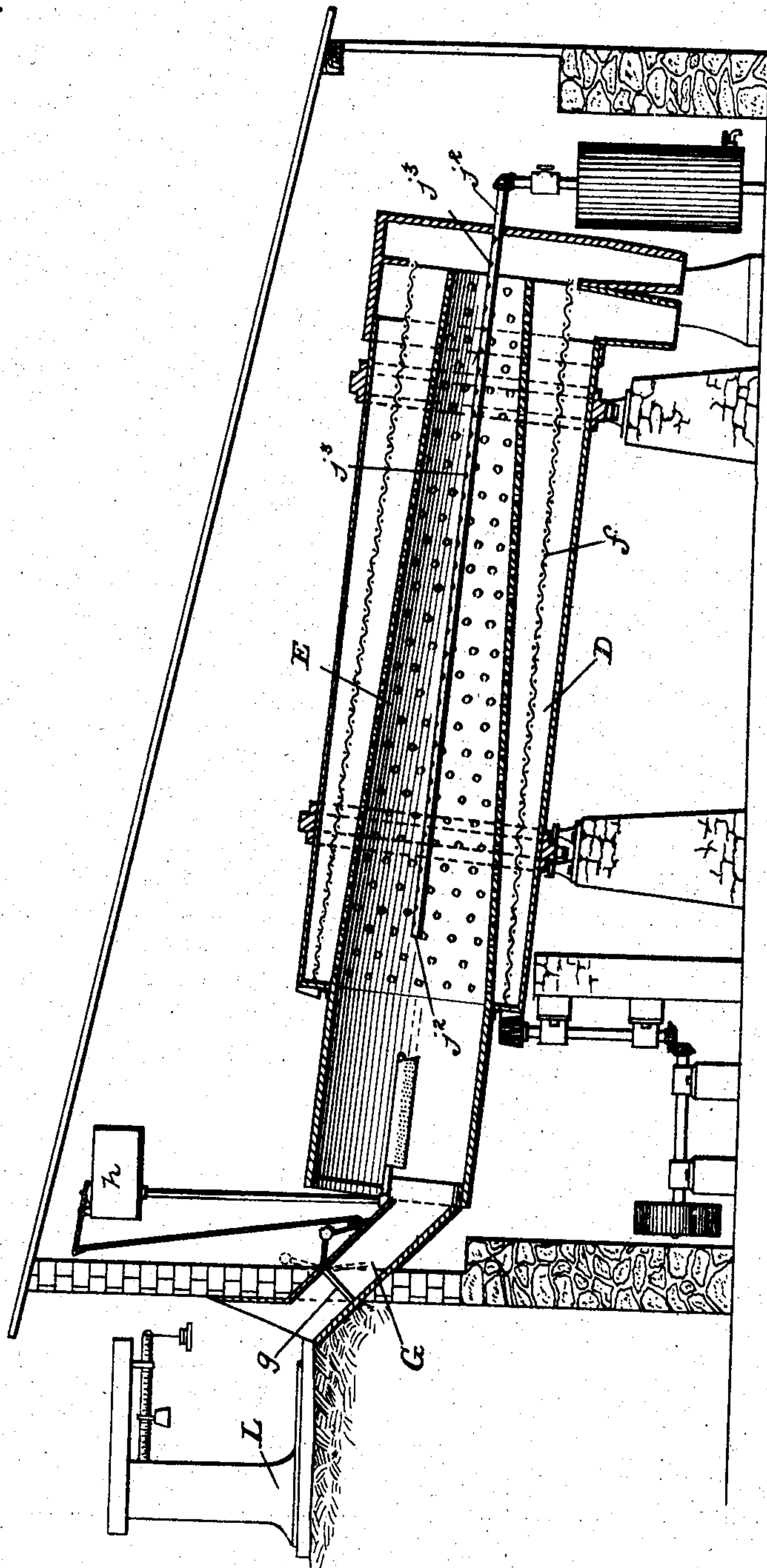
PATENTED OCT. 25, 1904.

J. REANEY, JR.

PROCESS OF CONVERTING QUICKLIME INTO POWDERED HYDRATED LIME.

APPLICATION FILED MAR. 16, 1904.

NO MODEL.



Witnesses:  
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## UNITED STATES PATENT OFFICE.

JAMES REANEY, JR., OF SHERWOOD, MARYLAND.

PROCESS OF CONVERTING QUICKLIME INTO POWDERED HYDRATED LIME.

SPECIFICATION forming part of Letters Patent No. 773,030, dated October 25, 1904.

Application filed March 16, 1904. Serial No. 198,383. (No specimens.)

*To all whom it may concern:*

Be it known that I, JAMES REANEY, JR., a citizen of the United States, residing at Sherwood, in the county of Baltimore and State of Maryland, have invented certain new and useful Improvements in Processes of Converting Quicklime into Powdered Hydrated Lime, of which the following is a specification.

This invention relates to an improved process for converting quicklime into powdered hydrated lime and at the same time removing from the hydrated lime any impurities, such as unburned or overburned particles or stone.

In carrying out the process an apparatus such as illustrated in the accompanying drawing is preferably employed, though other forms of apparatus may be used.

The form and construction of the apparatus illustrated is made the subject of a separate application executed and filed by me simultaneously with the present application.

Briefly described, the apparatus comprises an outer housing or receptacle constructed so as to exclude air and inclosing a plurality of revoluble cylinders D and E, one within the other, with a revoluble screen  $f$  interposed between said cylinders. The outer cylinder is imperforate, while the inner cylinder is provided with perforations, and the cylinders and screen are inclined at different angles, so that the passage of the lime through the inner cylinder will be slower than that through the screen and outer cylinder. A steam-pipe  $j^2$ , having a series of perforations  $j^3$ , extends through the inner cylinder E, and steam is supplied to the interior of the said cylinder through said pipe. A charging-chute G is provided which communicates with the inner cylinder, and this chute has a gate  $g$ , which is pivoted so as to normally keep the chute closed and confine the steam and heat within the cylinder and practically exclude the air during the process. A water-tank  $h$  is provided with a valve which is connected with the gate  $g$ , so that when the latter is opened by the passage of lime into the inner cylinder the valve will be operated to permit the escape of water onto the lime in the said inner cylinder. The tank is designed to contain a quantity of water a little less than is sufficient

to convert a given quantity of quicklime into a perfect hydrate. The quicklime is then weighed on a scale device, (indicated at L on the drawing,) so that the proper proportions of lime with respect to the quantity of water in the tank will be mixed in the inner cylinder. The predetermined quantity of water is sprayed on the mass in the inner cylinder while the mass is tumbled, and the dampened mass then commingles, begins to heat, swell, and slake, and forms some steam, which latter, together with the steam supplied by the pipe  $j^2$ , completes the hydration, and the finer particles sift through onto the screen  $f$ , where they are further broken and sifted and deposited onto the outer cylinder D.

It is desirable that both water and steam be employed to effect the complete hydration, for the reason that if water alone were used a relatively greater quantity would have to be used, and it would be liable to pass through the perforated cylinder and also through the screen  $f$  and into the outer cylinder, and thus moisten the lime that has been pulverized and cause it to cake or assume a putty form when stored. By the addition of the steam a less quantity of water can be used, and thereby all liability of the pulverized lime becoming dampened is removed; besides the steam greatly hastens the process. This surplus moisture of any particles overmoist is driven off by the heating of the lime itself in slaking, whereas other particles needing moisture will absorb the steam and the entire mass will become converted into a perfect hydrate. The continuous supply of steam into the cylinder will aid in the exclusion of air from the interior of the cylinder.

It is important that as the lime becomes pulverized and reaches the hydrated state it should be removed as rapidly as possible in order to avoid again absorbing moisture, which would tend to make it cake or get lumpy when stored, and in order to prevent this the sprayed mass is moved slowly until the fine particles have been separated by sifting. Then the fine particles are caused to move more rapidly to a barrel or receptacle in which they are to be packed.

Having thus fully described my invention,

what I claim as new, and desire to secure by Letters Patent, is—

1. The process of hydrating lime consisting of taking a given quantity of quicklime, tum-  
5 bling, wetting and simultaneously therewith sifting same to immediately remove the hydrated particles and subjecting the remaining unhydrated particles to the action of steam and continuing the tumbling and sifting to  
10 complete the hydration of said remaining particles.

2. The process of hydrating lime consisting of weighing out a given quantity of quick-

lime, simultaneously tumbling the weighed lime and sprinkling the same with a prede- 15  
termined quantity of water and moving the entire mass slowly over a screen to separate the fine particles of lime, and then rapidly moving the said separated fine particles to a  
point of discharge. 20

In testimony whereof I affix my signature in presence of two witnesses.

JAMES REANEY, Jr.

Witnesses:

WM. D. POULTNEY,  
JNO. H. DUNCAN.