G. M. PARK.

APPARATUS FOR COOLING CLINKER IN THE MANUFACTURE OF CEMENT.

APPLICATION FILED APR. 21, 1916. RENEWED AUG. 9, 1917.

1,240,480.

Patented Sept. 18, 1917.

2 SHEETS—SHEET 1.

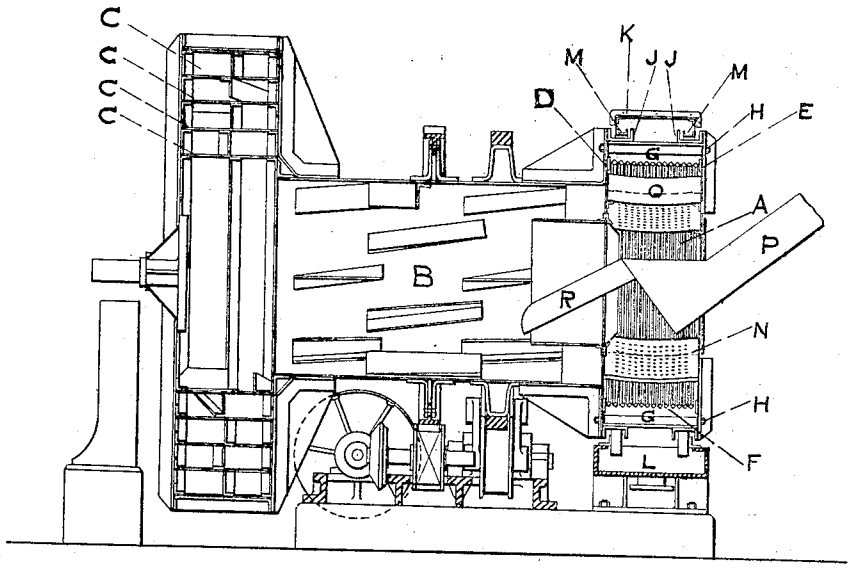


FIG. 1.

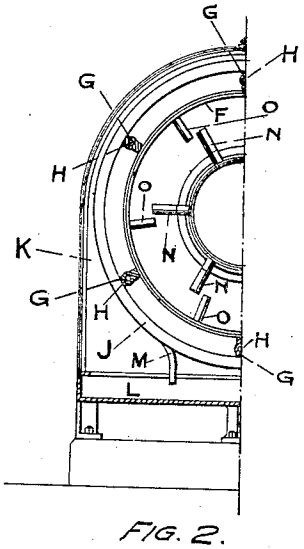


FIG. 2.

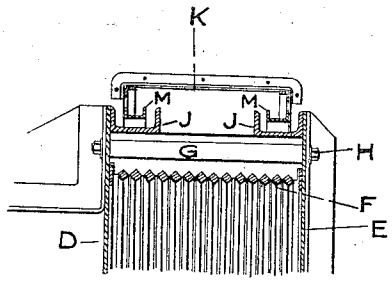


FIG. 3.

Witnesses.

Howard W. Cauble.

J. Burton

Inventor.

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2 SHEETS—SHEET 2.

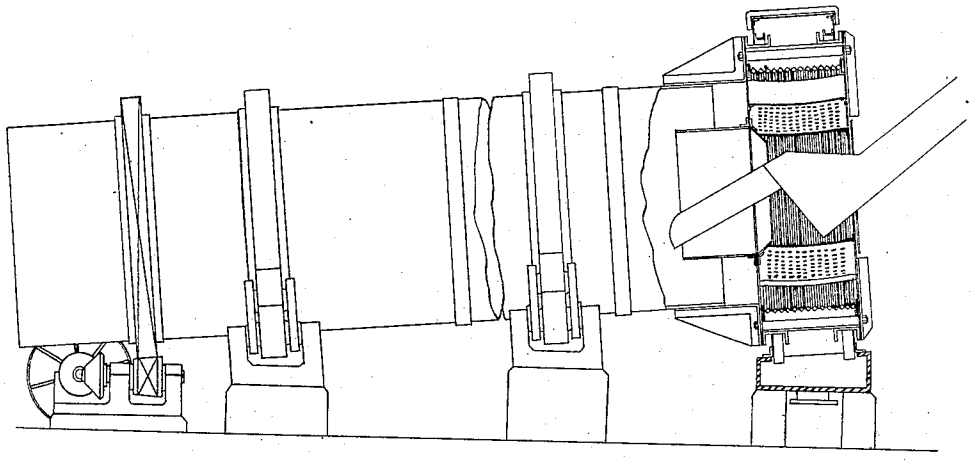


FIG. 4.

Witnesses.

Howard W. Cowles.

J. Burton

Inventor.

G. M. Park

UNITED STATES PATENT OFFICE.

GEORGE M. PARK, OF BLACKBURN, ENGLAND.

APPARATUS FOR COOLING CLINKER IN THE MANUFACTURE OF CEMENT.

1,240,480. Specification of Letters Patent. Patented Sept. 18, 1917.

Application filed April 21, 1916, Serial No. 92,800. Renewed August 9, 1917. Serial No. 185,392.

To all whom it may concern:

Be it known that I, GEORGE MOLYNEUX PARK, a citizen of Great Britain, residing at Roden, Gorse Road, Blackburn, in the county of Lancaster, England, have invented an Improvement in Apparatus for Cooling Clinker in the Manufacture of Cement and for like Cooling Purposes, of which the following is a specification.

My invention relates to improvements upon the existing method of cooling and treating clinker, in which hot clinker from the kiln is deposited by means of a chute, in a circular rotating tank, and sprayed with water therein, thereby hydrating the free lime in the clinker and on its surface, and greatly improving its quality.

The clinker is subsequently removed from this tank by lifter plates, and deposited, by means of a second chute, into, and carried through, a rotating tubular body, into a series of superimposed circular revolving trays, having communicating holes from one to another, commencing at the inner one, by which the clinker, considerably cooled by its subjection to the action of the water and by its passage through the tubular body, is made to travel the entire circumference of each tray in succession, finally being discharged from the outermost tray on to a conveyer or other handling apparatus.

The objects of my invention are, firstly, to pass a large surplus of water through the circular rotating tank; secondly, to produce and collect a continuous quantity of heated water by direct contact with the hot clinker; which water being at, or near boiling point, can, after filtration, be used for boiler feed or other purposes; thirdly, the clinker is greatly improved by reason of the free lime before referred to; fourthly, according to another arrangement, I apply my rotary tank to the ordinary tubular cooler commonly in use, to effect the objects already described.

I attain these objects by the apparatus illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal vertical section.

Fig. 2 is a transverse vertical section of one-half the rotating tank, and its casing.

Fig. 3, is a vertical longitudinal section, on an enlarged scale, of the upper portion of the rotating tank and its casing.

The first rotating tank "A," is shown as formed of two circular steel plates "D" and "E," having holes to admit the feed chutes already referred to. Inside this tank is a circular grid "F," consisting of a number of separate rings of square, or other section, steel bar; or this may be formed of a perforated steel plate.

The bars shown are held in position by a number of suitably shaped castings "G," "G," "G," etc. and the whole is fixed by a long bolt "H," passed through each casting "G," and securely tightened up outside of the circular back and front plates "D" and "E."

To each back and front plate "D" and "E," is secured a channel, or drip flange, "J," "J," and the whole rotating tank is encircled by a steel plate hood "K," sitting on a receiving trough or tank "L." This hood is further provided with drip flanges "M," "M."

The object of this hood and its drip flanges is to catch any escaping steam and collect the resultant moisture and lead it down into the receiving trough "L."

Inside the first circular rotating tank "A" are lifting plates "N," "N," "N" etc. which are perforated; while those similar plates shown at "O," "O," "O" etc. are plain. The feed chute from kiln into tank is shown at "P," and from thence to body of machine at "R."

I claim:

1. Apparatus for cooling clinker comprising a rotary chamber adapted to receive cold water, an inner ring or circumferential screen positioned within said chamber adapted to receive, retain and lift hot clinker on its surface while permitting passage of water therethrough, drip flanges at the exterior circumference of the chamber adapted to facilitate the collection of the heated water produced by the contact of the cold water with the hot clinker and a means for receiving the heated water from said chamber and drip flanges.

2. Apparatus for cooling clinker comprising a rotary chamber of circular cross section adapted to receive cold water, an inner perforated ring or circumferential screen positioned within said chamber, means for feeding hot clinker to the surface of said screen, means on said screen for retaining and lifting the hot clinker while in contact with the water, drip flanges at the exterior circumference of the chamber adapted to facilitate the collection of heated water pro-

duced by said contact of hot clinker and cold water and a receptacle below the chamber for receiving the heated water from said chamber and drip flanges.

3. Apparatus for cooling clinker comprising a rotary chamber adapted to receive cold water, an inner ring or circumferential screen positioned within said chamber and adapted to receive, retain and lift hot clinker on its surface while permitting passage of water therethrough, drip flanges at the exterior circumference of the chamber adapted to facilitate the collection of heated water produced by the contact of cold water with the hot clinker, a casing inclosing the chamber leaving an annular space around same, drip flanges on said casing within said annular space to collect and direct condensed steam or vapor and means for receiving heated water and products of condensation from said chamber and drip flanges.

4. Apparatus for cooling clinker comprising a rotary chamber of circular cross section adapted to receive cold water, a perforated ring or circumferential screen positioned within said chamber means for feeding hot clinker to the surface of said screen means on the latter for retaining and lifting the hot clinker while in contact with the water, drip flanges at the exterior circumference of the chamber to facilitate the collection of the resultant heated water, a hood or cover circumferentially inclosing the chamber leaving an annular space around same, drip flanges on said casing within said annular space to collect and direct condensed steam or vapor, and a receptacle below the chamber for receiving heated water and products of condensation from said chamber and drip flanges.

5. Apparatus for cooling clinker comprising in combination a rotary chamber, adapted to receive cold water, an inner ring or circumferential screen, positioned within said chamber and adapted to receive, retain and lift hot clinker on its surface, while permitting passage of water therethrough, drip flanges at the exterior circumference of the chamber adapted to facilitate the collection of heated-water produced by the contact of the cold water with the heated clinker, means for receiving the heated water from said chamber and drip flanges, rotary cooling device adjacent said rotary chamber and means for transferring the clinker from the screen within same to said cooling device.

G. M. PARK.

Witnesses:
HOWARD W. CAUSE,
J. BURTON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."