ROTATIVE KILN FOR CONCRETE BLOCKS

Pierre Laforest, 2694 Letourneux St.,
Montreal, Quebec, Canada

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This invention relates to apparatus for manufacturing concrete blocks and more particularly to a curing apparatus, in which it is an object of the present invention to provide a curing apparatus for concrete blocks that will reduce the handling thereof to a minimum. Another object of the present invention is to provide a rotative apparatus for curing concrete blocks which requires a minimum amount of handling and which effectively prevents the blocks from being broken before they are cured.

Still another object of the present invention is to provide an apparatus of the above type which may be rotated past a single loading and discharge station so as to enable a relatively large apparatus to be loaded from a single point without damaging any of the blocks already loaded therein.

Other objects of the invention are to provide a curing apparatus for concrete blocks bearing the above objects in mind which is of simple construction, has a minimum number of parts, is inexpensive to manufacture and efficient in operation. For other objects and for a better understanding of the invention, reference may be had to the following detailed description taken in conjunction with the accompanying drawings.

Figure 1 is a horizontal sectional view of the apparatus and circular hole at ground level;

Figure 2 is a vertical and broken section taken along line 2—2 of Figure 1;

Figure 3 is a vertical sectional view taken along line 3—3 of Figure 1;

Figure 4 is a plan view showing the opening in the top wall of the apparatus for placing or removing concrete blocks.

Referring now more in detail to the drawings, the apparatus made in accordance with the present invention for curing concrete blocks is shown to include a large annular shaped curing chamber or receptacle 10 defined by a vertical inner wall 12 and a vertical outer wall 13. A top wall 14 is supported upon the respective inner and outer circular walls 12, 13 so as to define a compartment 16 therewithin and with a bottom wall, which is partially filled with water 17. An inspection well 18 is disposed at one point along the outer wall 13 and has rungs 19 which will enable a workman to descend into the water filled compartment 16 for inspection purposes. A circular canal 22 is also provided for inspection purposes which is directly beneath the central portion of the compartment 16.

An annular container 25 defined by inner and outer circular walls 23, 24 and a bottom wall 26 is floated upon the water 17 within the main receptacle. This container is sequentially rotatable about the central axis of the receptacle so as to move it past a single loading station 40, as will be hereinafter described. Rotation of container 25 can be effected, for example by hydraulic cylinder and piston unit 50 engageable with lugs 51 laterally projecting from container 25, so that the latter is moved in the direction of arrow 54 in a step by step manner. A plurality of radial walls 27 define a plurality of compartments, each compartment being adapted to receive a pair of racks 28 supported in spaced relationship with the walls defining each such compartment by means of radial support bars 30 which overlie and are supported upon the inner and outer side walls 23, 24 of the container. A plurality of spaced parallel cross bars 33 are integrally secured to each radial support bar 30, a pair of downwardly depending hanger elements 34 being secured to the opposite ends of each of the cross bars 33. These hangers 34 are used to removably support a plurality of vertically spaced apart parallel shelves 35 for receiving the concrete blocks that are loaded therein and unloaded therefrom at the loading station 40.

Referring now to Figure 4 of the drawing, the loading station 40 is shown to be disposed at a single point being defined by an opening in top wall 10, through which racks 28 may be raised and lowered out from and into the compartments of container 25. A conveyor 42 serves for loading concrete blocks from the concrete block machine 43 into the raised racks 28 which are then lowered into the compartments of the container that are sequentially rotated to the loading position. A conveyor 42 serves for unloading the cured concrete blocks from the raised racks prior to the loading of said racks with uncured blocks.

The inner wall 12 of the annular unit encloses a complete power station and living quarters for the workmen. The boiler room 45 is adjacent to the shop 46, while the reservoir 47 and pump room 48 are at a diametrically opposite side from the machine 49 which has all of the facilities required for the needs of the workers. Thus, a very efficient kiln and power station has been provided which is extremely compact and which is adapted to load a maximum number of blocks with a minimum amount of breakage and handling.

The boiler 52 in room 45 supplies curing steam at spaced points of the annular receptacle 10 through pipes 53. Hydrualic unit 50 or other rotating means which can be used, requires very little power to rotate container 25 because the latter floats on water 27 and offers a minimum of resistance even when fully loaded with concrete blocks. The chamber 10 is totally enclosed except for top opening 40 and thus there is a minimum loss of curing steam.

While various changes may be made in the detail construction, it shall be understood that such changes shall be within the spirit and scope of the present invention as defined by the appended claims.

What is claimed is:

1. A rotary apparatus for curing concrete blocks comprising, in combination, a bottom wall, a top wall and a pair of spaced inner and outer circular walls defining an annular receptacle for receiving water therewithin, an open top annular container floating in the water within said receptacle for rotation about an axis concentric with the central axis of said receptacle, means dividing said container into a plurality of similar compartments, a loading station including an opening in the top wall of said receptacle, means for rotating said compartments of said container sequentially into register with said top opening, means for storing concrete blocks in said compartments, and means for heating said blocks while stored in said compartments.

2. The combination according to claim 1, wherein said dividing means comprises a plurality of equally spaced apart radial walls.

3. The combination according to claim 2, said storing means including concrete block storage racks removably supported within said compartments.

4. The combination according to claim 3, wherein each
said storage rack comprises a radial support bar extending across the central portion of each compartment and supported upon said container.

5. The combination according to claim 4, further comprising a plurality of vertical stringers secured to and depending from said radial support bar in spaced relationship with the sides of said container.

6. An apparatus for curing concrete blocks and similar concrete articles comprising in combination an annular closed receptacle for holding water in the bottom part thereof, a plurality of similar open top vessels floating in the water in said receptacle and arranged for rotation about an axis concentric with the central axis of said annular receptacle, discharge and loading stations, means for rotating said vessels within said receptacle so as to bring said vessels successively in register with said discharge and loading stations, concrete blocks supporting racks removably supported within said vessels and adapted to be raised from and lowered into said vessels at said discharge and loading stations respectively, and means for supplying steam to said closed receptacle.

7. A curing chamber for concrete blocks and the like concrete articles comprising an annular receptacle having circular side walls and a bottom wall and adapted to contain water, compartments through the open top thereof disposed within said receptacle and floating in said water, said compartments being linked together to form an annular system adapted to move in a circular path in said receptacle so that each compartment can be successively brought to loading and discharge stations, concrete blocks supporting racks adapted to be supported within said compartments and to be loaded into and removed from said compartments at said loading and discharge stations, and means for heating the space within said compartments.

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