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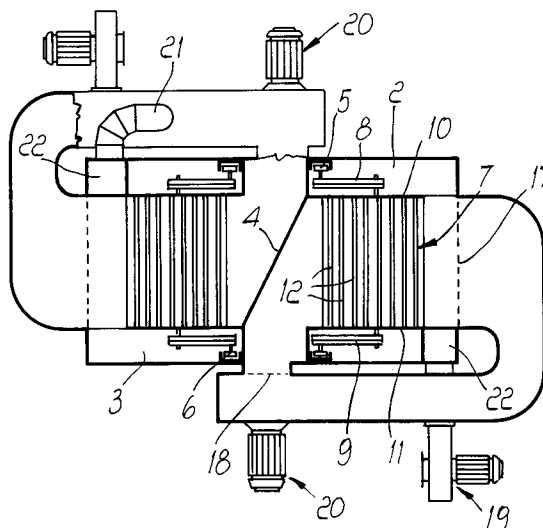
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I-20123 Milano (IT)**(54) **Vertical drying kiln for drying tiles.**

(57) Vertical drying kiln for drying tiles, comprising a vertical container (1) which forms two vertical compartments (2, 3) which are connected at their opposite ends and inside which there slide conveyance chains (5, 6) for the tile supporting baskets (7), characterized in that the vertical compartments are connected with a plurality of superimposed circuits (15) for conveying drying air which are closed in a loop through the compartments.

**FIG.2****EP 0 590 370 A1**

The present invention relates to a vertical drying kiln for drying tiles.

As is known, vertical drying kilns comprise a container including two vertical compartments which are mutually connected at the top and at the base; the baskets supporting the tiles to be dried, move inside these compartments. The baskets are suspended from a pair of chains which are closed in a loop and have an ascending and a descending portion moving in the respective vertical compartments.

In known drying kilns of the described type, the drying air is conveyed inside the container so as to flow as much as possible through the baskets and flow around the tiles to remove their humidity.

However, conveyance of the drying air is highly irregular, and this is detrimental to the efficiency of the drying kiln. Furthermore, the temperature distribution inside the drying kiln is rather approximate with respect to the need to obtain a drying curve which is optimized for the type of product to be dried.

A principal aim of the present invention is to provide a drying kiln which can ensure a considerable increase in efficiency, so as to obviate the shortcomings of conventional ones.

Within the scope of this aim, another aim of the present invention is to provide a drying kiln in which the temperature can be modulated in a manner which is more suitable for the need to dry the products uniformly without damaging or deforming them.

With these and other aims in view, there is provided, according to the present invention, a vertical drying kiln for drying tiles which comprises a vertical container forming two vertical compartments connected at their opposite ends and inside which there slide conveyance chains for the tile supporting baskets, characterized in that said vertical compartments are connected with a plurality of superimposed circuits for conveying drying air which are closed in a loop through said compartments.

Further particularities of the present invention will become apparent from the following detailed description of a preferred embodiment thereof, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

figure 1 is a perspective view of a vertical drying kiln according to the present invention; and
figure 2 is a sectional view thereof.

With reference to the above figures 1 and 2, the drying kiln comprises a container 1 substantially shaped like a prism-like tower which is divided into two vertical compartments 2 and 3 by a partition 4. The compartments 2 and 3 are mutually connected at the top and at the base, and the pair of chains 5 and 6 for supporting the tile-carrying

baskets 7 runs in these compartments. The baskets 7 are suspended from the chains 5 and 6 by means of arms 8 and 9 and conventionally comprise a cage-like structure with two side walls 10 and 11 to which the arms 8 and 9 are articulately connected; rods or rollers 12 extend between said side walls and form superimposed tile resting surfaces.

The reference numeral 13 designates the region for loading the tiles to be dried in the baskets 7, whereas the dried tiles are unloaded onto a device 14 for removal from the drying kiln, which is arranged at the base between the compartments 2 and 3.

Conveyance of the drying air inside the container occurs by means of a plurality of circuits 15, each one of which is composed of a duct 16 which extends around the respective vertical compartment 2 and 3 and is connected to said compartment by means of an inlet 17 formed in the side wall of the container.

The air flows out through an opening 18 formed in the front wall between the ascending and descending portions of the chains 5 and 6.

The drying air, which is produced for each circuit by a burner 19, is circulated along the duct 16 by means of a fan 20, the inlet of which is aligned with the outlet 18 and the delivery of which is directed toward the duct 16.

The reference numeral 21 designates a duct which branches from the duct 16 and merges into a vertical channel 22 which is connected to the stack 23.

As can be seen from figure 2, the circuits 15 produce air currents which are closed in a loop and are arranged at superimposed levels. The air of each circuit flows through the baskets parallel to the side walls 10 and 11 which convey it toward the outlet 18. As the air becomes saturated with the humidity removed from the tiles, part of it is re-directed into the duct 21 and removed through the collection channel 22 and the stack 23.

As can be seen, the described drying kiln perfectly achieves the intended aim and objects. In particular, it should be noted that the layers of tiles in the baskets help to keep separate the air currents between the various circuits. This allows to differentiate the air temperature of the various circuits in order to optimize the drying process by varying the temperature of the air in the circuits 15 according to the characteristics of the material of the tiles.

The described drying kiln is Susceptible to numerous modifications and variations. For example, it is possible to provide a single burner preset to convey hot air onto two or more superimposed ducts 16.

Where technical features mentioned in any claim are followed by reference Signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the scope of each element identified by way of example by such reference signs.

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Claims

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1. Vertical drying kiln for drying tiles which comprises a vertical container (1) which forms two vertical compartments (2, 3) which are connected at their opposite ends and inside which there slide conveyance chains (5, 6) for the tile supporting baskets (7), characterized in that said vertical compartments (2, 3) are connected with a plurality of superimposed circuits (15) for conveying drying air which are closed in a loop through said compartments. 15 20
2. Vertical drying kiln according to claim 1, characterized in that each circuit (15) comprises a duct (16) which extends around the respective vertical compartment (2, 3) and is connected to said compartment by means of an air inlet (17) and of an outlet (18), a fan (19) being provided to circulate the drying air, which is heated by a burner (20), through said baskets (7). 25 30
3. Drying kiln according to claim 2, characterized in that a duct (21) branches from said duct (16) and is connected to a channel (22) for collecting the used air which leads into a stack (23). 35

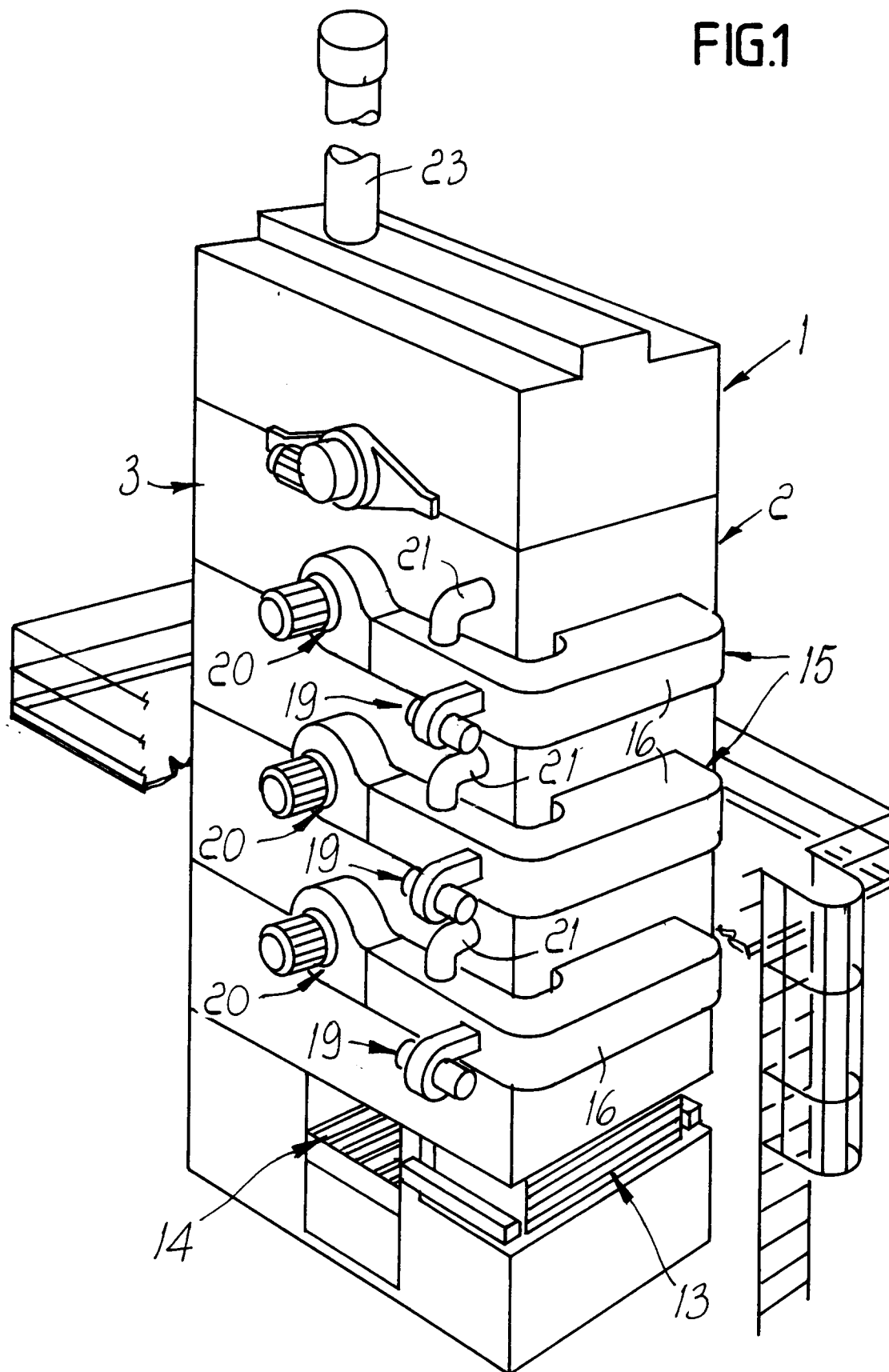
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FIG.1



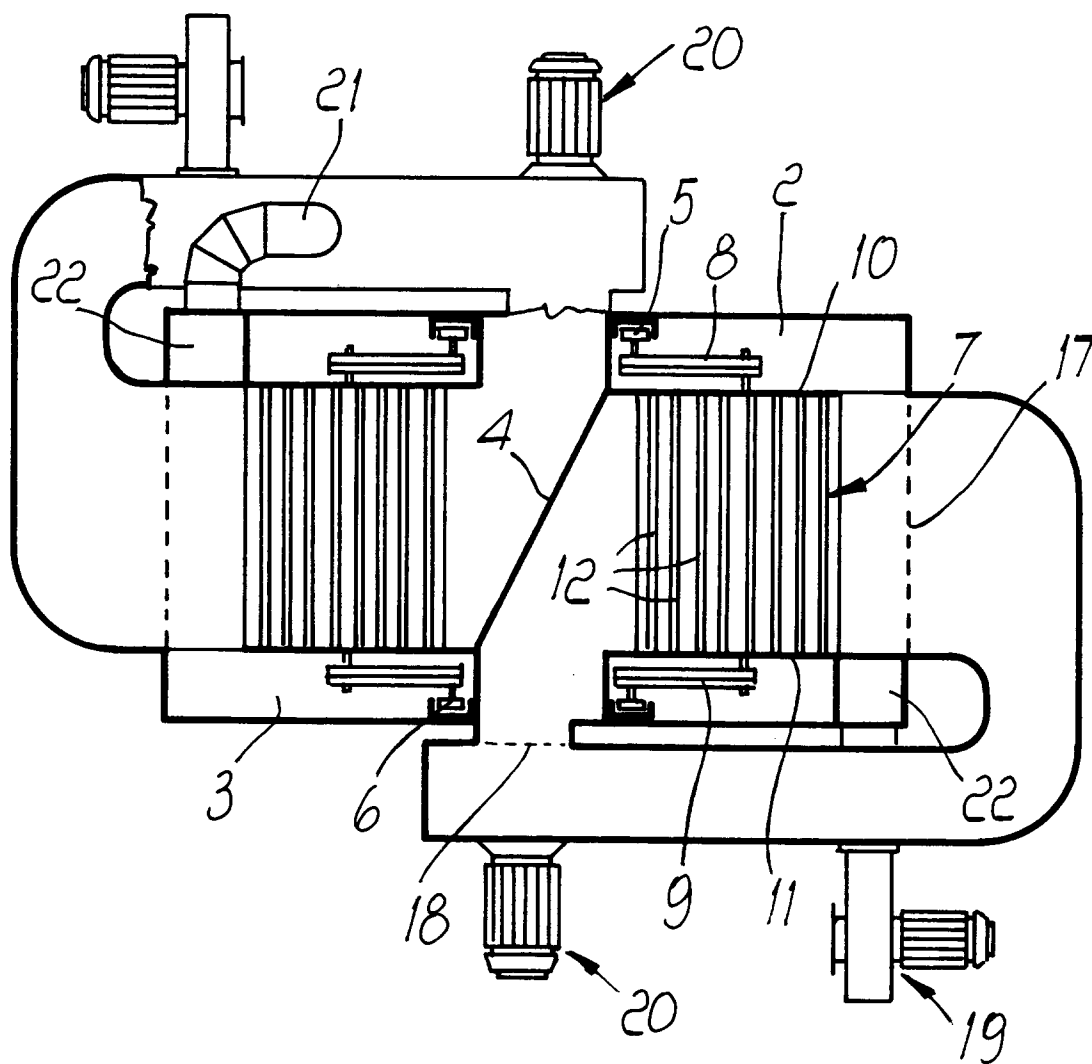


FIG.2



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EUROPEAN SEARCH REPORT

Application Number
EP 93 11 4407

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
X	DE-C-448 186 (WEBER)	1	F26B15/22
Y	* the whole document *	2,3	F26B21/04
Y	DE-A-16 04 944 (JASCHKE, GEB. MAGYERA) * the whole document *	2,3	
X	DE-C-731 184 (MASCHINENFABRIK FRIEDRICH HAAS KOM.-GES.)	1	
A	* the whole document *	2	
A	BE-A-672 267 (LUNDGREN) * the whole document *	1,2	
A	US-A-2 628 087 (MAYER) * the whole document *	1	
A	GB-A-649 989 (J. K. INNES & COMPANY LIMITED ET AL) * figure 4 *	1	
A	GB-A-659 901 (F. J. BALLARD & CO. LIMITED ET AL)		TECHNICAL FIELDS SEARCHED (Int.Cl.5)
A	GB-A-638 879 (STORDY ENGINEERING, LIMITED ET AL)		F26B
A	US-A-2 603 882 (MAYER)		
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 4 January 1994	Examiner Silvis, H
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