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(54) **Tile decorating system**

(57) A system (4) for decorating tiles by free fall of finishing material onto the upper surface of the tile, comprising a flat conveyor (6) for the tiles and overlying fin-

ishing material distribution means (9), said conveyor (6) being provided with at least one interruption in a direction transverse to the tile travelling direction, overlaid by at least one finishing material distribution device (9).

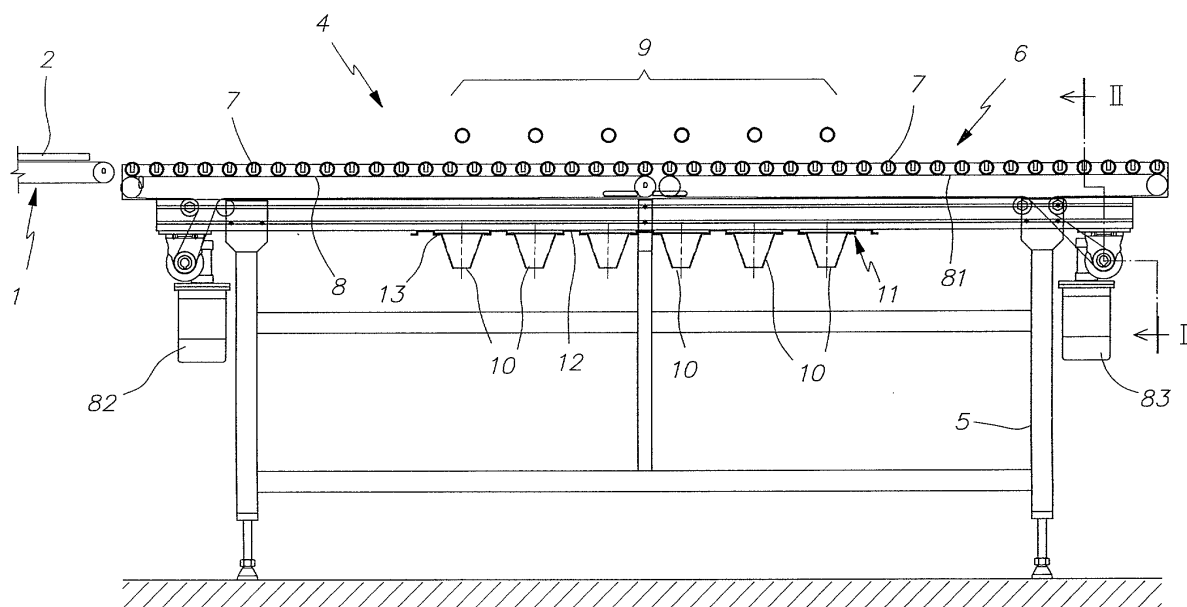


FIG.1

Description

[0001] This invention relates to the decorating of ceramic tiles, and in particular to the decorating of large-dimension tiles, by distributing material by free fall onto their exposed surface.

[0002] Decorating systems are known comprising distribution means for finishing material intended to cover the upper exposed surface of the tiles which transit below said means on a conveyor.

[0003] Said systems, conceived for covering the tile surface with a layer of vitreous glaze in aqueous suspension, have been gradually improved to enable not only liquid material but also material in powder form to be distributed, with latterly the programmed distribution of several materials having different characteristics.

[0004] The known decorating systems present the serious drawback that any finishing material which does not fall onto the tiles soils to a sometimes irremediable extent those portions of the conveyor not covered by the tiles, and in addition cannot be salvaged because it is easily contaminated when in contact with the conveyor.

[0005] Typical examples are those cases in which two different finishing materials are distributed which on falling onto the uncovered portions of the conveyor partially mix together.

[0006] The state of the art has partly remedied these drawbacks by making the conveyor advance stepwise, and allowing the finishing material to fall only during pauses, and exactly onto the underlying tile.

[0007] This remedy has proved unsatisfactory not only because it requires elaborate control means, but also because, as it does not enable the tiles to advance continuously, it greatly limits the plant productive capacity.

[0008] This drawback is aggravated if different finishing materials in powder form, such as coloured glazes or pigments, are distributed, especially if the distribution is effected at several points of the conveying line and is programmed to create a sort of decoration on the tile.

[0009] The object of the present invention is to remedy the said drawbacks by providing a decorating system in which the tiles are made to advance continuously and uniformly along a conveyor below one or more distributors providing free fall of finishing material, said system operating without soiling the line while at the same time enabling complete recovery of any finishing material which has not been collected on the tiles.

[0010] This object is attained by the system defined in the claims. According to this, the conveyor is constructed as coplanar sections separated from each other by interruptions which correspond to the regions onto which the finishing material is made to fall.

[0011] In this manner, when said interruptions are not occupied by the tile, the finishing material falls through them into an underlying collection container.

[0012] The number of interruptions must be at least equal to the number of overlying free-fall distribution means for the finishing material.

[0013] The operational and constructional characteristics of the invention will be apparent from the ensuing detailed description of a particular preferred embodiment of the invention illustrated by way of nonlimiting example in the figures of the accompanying drawings.

[0014] Figure 1 is a schematic side view of one embodiment of the invention.

[0015] Figure 2 shows the section II-II of Figure 1.

[0016] With reference to the figures, a conveying line 1 for tiles 2, of known type, feeds an alignment of tiles preferably but not necessarily spaced equally apart, to a decorating system 4.

[0017] This latter comprises a bench 5 which supports an overlying flat conveyor 6 consisting of a series of equidistant motorized rollers driven by an underlying common belt 8, 81

[0018] In the illustrated example two belts 8 and 81 are shown, symmetrically disposed on each side of the conveyor and driven respectively by two geared motors 82 and 83 after conveniently passing about suitable pulleys.

[0019] Above the conveyor 6 there are six finishing material distribution devices, of known type, arranged exactly above the space defined between two adjacent rollers 7.

[0020] Below said pair of adjacent rollers 7 there is a transverse trough 10 which collects the material falling from the overlying distribution device 9.

[0021] The trough 10 is supported in a laterally open seat 11 provided in a lower protection plate 12; specifically, the trough 10 comprises two flanges 13 which rest on the edges of said seat, and can be withdrawn by lateral sliding.

[0022] The invention can also be implemented in other ways, for example by making the conveyor in the form of a succession of belt conveyor segments of usual type, separated from each other by a space enabling the finishing material distributed by an overlying device 9 to pass through.

[0023] It should also be noted that each distribution device 9 can distribute material different from the material of the other devices, and is provided with closure means, of which the times and manner of opening are controlled by a programmable processor which enables different decorative effects to be obtained on the tile.

Claims

1. A system for decorating tiles by free fall of finishing material onto the upper surface of the tile, comprising a flat conveyor for the tiles and overlying finishing material distribution means, **characterised in that** the conveyor comprises at least one interruption in a direction transverse to the tile travelling direction, overlaid by at least one finishing material distribution device.

2. A system as claimed in claim 1, **characterised in that** the conveyor is a motorized roller conveyor, at least one pair of said rollers being disposed to the sides of the vertical plane containing the finishing material distribution device. 5
3. A system as claimed in claim 2, **characterised in that** the rollers of said at least one pair are spaced apart in the tile travel direction by a distance at least equal to the dimension of the stream of finishing material falling from above. 10
4. A system as claimed in claim 1, **characterised in that** the conveyor consists of belt portions separated by at least one interruption located below the finishing material distribution means. 15
5. A system as claimed in claim 4, **characterised in that** said interruption has a dimension in the tile travel direction at least equal to the dimension of the stream of finishing material falling from above. 20
6. A system as claimed in claim 1, **characterised in that** the at least one distribution device has a dimension transverse to the tile travel direction which is equal to the transverse dimension of the underlying conveyor. 25
7. A system as claimed in claim 1, **characterised in that** each distribution device is provided with closure means controlled by a programmable processor which controls the times and manner of opening of the distributor. 30

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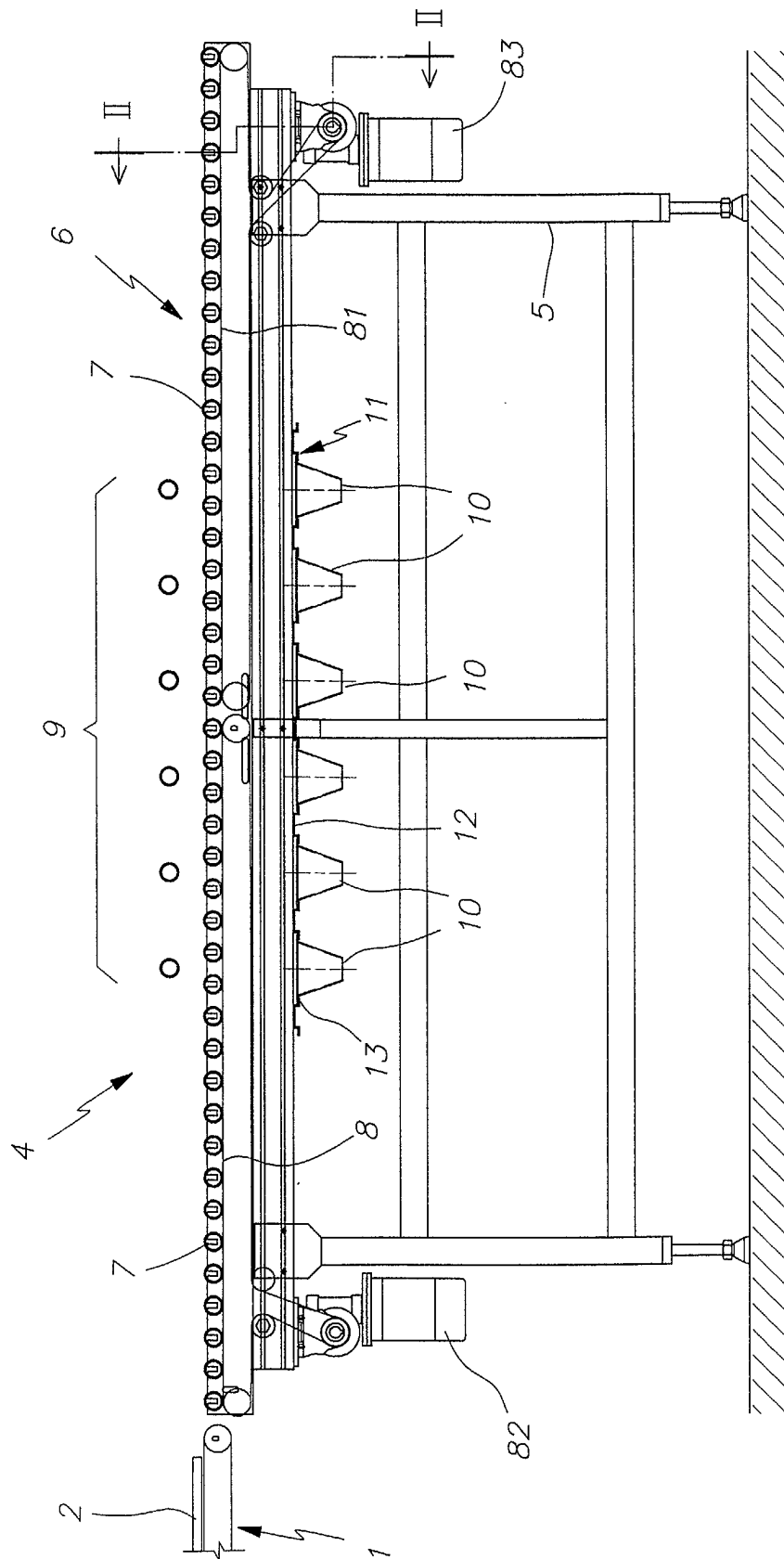


FIG. 1

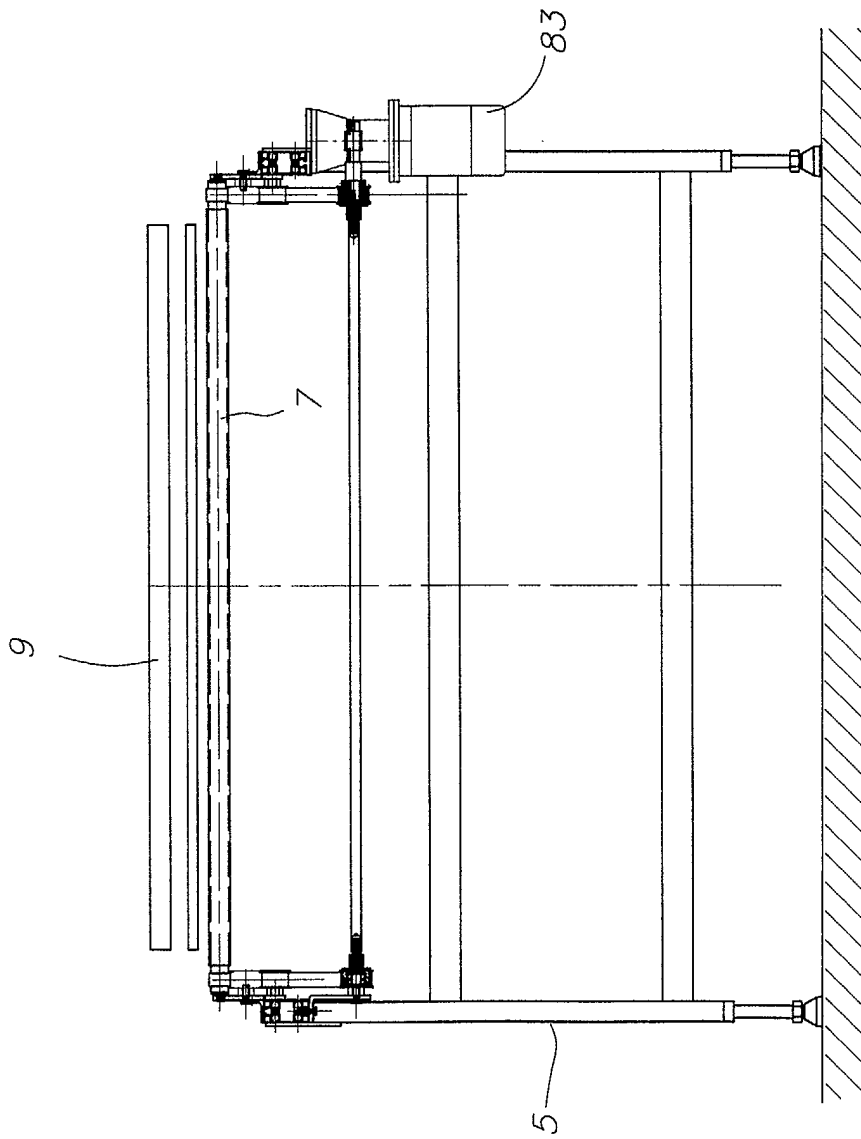


FIG. 2