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(54) **Grinding machine for ceramic tiles**

(57) The present invention has the object of a grinding machine for ceramic tiles (1) of those used in the ceramic piece manufacturing industry and, more specifically, tiles, to guarantee that the facing sides of the pieces are parallel to each other and that the adjacent sides

are perpendicular, where the grinding machine does not need an additional supply of water since the temperatures that are reached therein are not high and, furthermore, presents a series of grinding discs (7) placed in each grinding section at different heights that guarantee a single cut of surplus material.

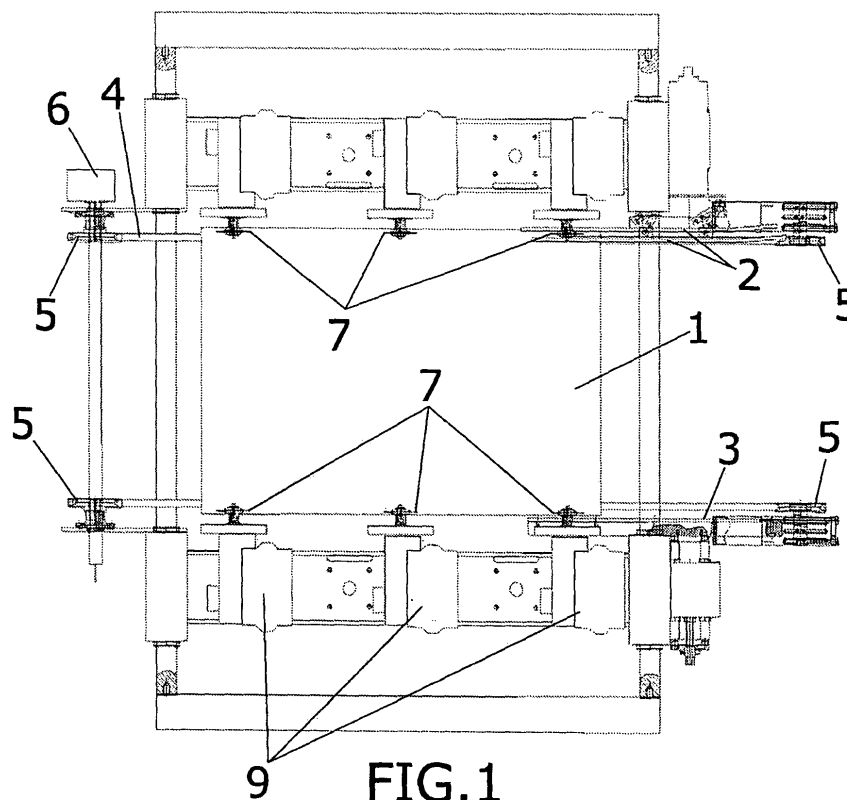


FIG.1

Description

OBJECT OF THE INVENTION

[0001] The present invention relates to a grinding machine used in the ceramic piece manufacturing industry and, more specifically, of tiles, to guarantee that the facing sides of the pieces are parallel to each other and that the adjacent sides are perpendicular.

[0002] Due to its special configuration, the grinding machine does not need an additional contribution of water since the temperatures that are reached therein are not high.

[0003] Likewise, the grinding machine presents a series of grinding discs placed in each grinding section at different heights that guarantee a single cut of surplus material.

BACKGROUND OF THE INVENTION

[0004] Grinding machines for ceramic pieces, and more precisely, tiles, which use grinding wheels or diamond discs to give the final finish to the tile, are only too well known in the state of the art.

[0005] In previous machines, as the piece is already fired before the grinding process, a large supply of energy is necessary to carry out the incisions in the fired piece.

[0006] Likewise, this process requires water to cool the diamond discs or the grinding wheels and avoid their burning, but in this way, upon the combination of the water with the dust coming from the wear of the sides of the tiles, clay that needs to be eliminated in an additional cleaning process is created.

[0007] Furthermore, being a fired material, it becomes harder and the grinding is carried out by means of progressive elimination of the surplus material, presenting the risk that the pieces break because of their own hardness.

[0008] All of these drawbacks are overcome by means of the grinding machine that will now be described, which presents a series of grinding discs placed in each grinding section at different heights that guarantee a single cut of the surplus material of the piece before firing.

DESCRIPTION OF THE INVENTION

[0009] The present invention relates to a grinding machine of those used in the ceramic piece manufacturing industry and, more specifically, of tiles, to guarantee that the facing sides of the pieces are parallel to each other and that the adjacent sides are perpendicular.

[0010] The pieces coming from the enamelling and decorating stage are centred in the grinding machine by means of rails that adjust to the size of the piece, which are detected by a sensor.

[0011] Subsequently, the piece is moved until it makes contact with grinding discs placed in grinding sections at different heights which guarantee a single cut of the sur-

plus material, where the rotation speed and the height of the discs is adjustable.

[0012] The grinding sections can present their grinding discs in the lower piece or in the upper piece to act on the piece's lower or upper piece, respectively.

[0013] The grinding machine also presents a bevelled section of the lower edges of the tile by means of grinding wheels.

[0014] At the exit of the grinding machine, the pieces are cleaned to eliminate the residual dust from the process before putting them in the kiln for their firing.

DESCRIPTION OF THE DRAWINGS

[0015] The present specification is complemented with a set of illustrative plans of the preferred, and never limitative, example of the invention.

[0016] Figure 1 shows a plan view of the grinding machine of the present invention.

[0017] Figure 2 shows an elevational view of the machine's cutting area of the present invention.

[0018] Figure 3 shows a side view of the cutting area of the grinding machine of the present invention where the grinding discs can be observed in the upper piece of the piece, where the pulleys have been omitted for a better understanding.

[0019] Figure 4 shows a side view of the machine's cutting area of the present invention where the grinding discs can be observed in the lower piece of the piece, where the pulleys have been omitted for a better understanding.

PREFERRED EMBODIMENT OF THE INVENTION

[0020] In view of the previous statements, the present invention relates to a grinding machine for ceramic tiles that presents grinding discs (7) placed at different heights in each grinding section which guarantee a single cut of surplus tile material (1) before the firing.

[0021] The tiles (1) coming from the enamelling and decorating stage are centred in the grinding machine by means of lateral positioning rails (2, 3) which adjust to the size of the piece, which is detected by a sensor (not shown in the Figures).

[0022] The lateral positioning rails (2, 3) comprise a lateral rail (2) with a brace to hold the piece and a fixed lateral positioning rail (3).

[0023] Next, the tile (1) is moved by means of belts (4) guided by pulleys (5) and actuated by a motor (6) towards the grinding discs (7), which in this example of preferred embodiment there are six, placed in three grinding sections so that there are two discs in each section, one on each side of the tile, that guarantee a single cut of surplus tile material (1), where the height of the grinding discs (7) is determined by means of the actuation of positioning motors (8).

[0024] In this example of preferred embodiment the grinding discs (7) act on the upper piece of the tile (1)

and each one of them is actuated by a cutting motor (9).

[0025] The grinding machine also presents a bevelled section of the lower edges of the tile (1) by means of grinding wheels (not shown in the Figures).

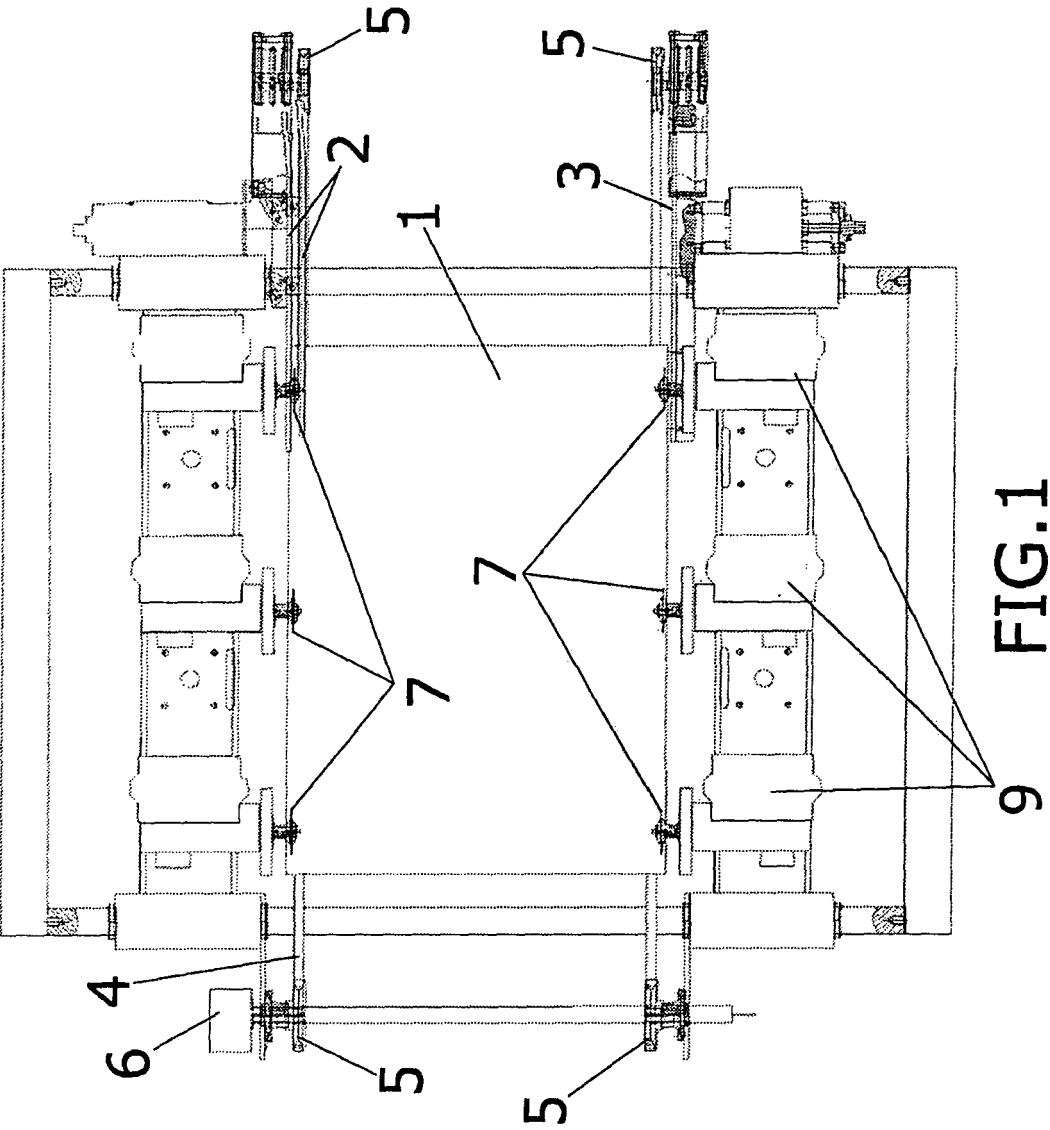
[0026] At the exit of the grinding machine, the tiles (1) are cleaned by means of blowing for the elimination of the residual dust from the process before putting them into the kiln for their firing.

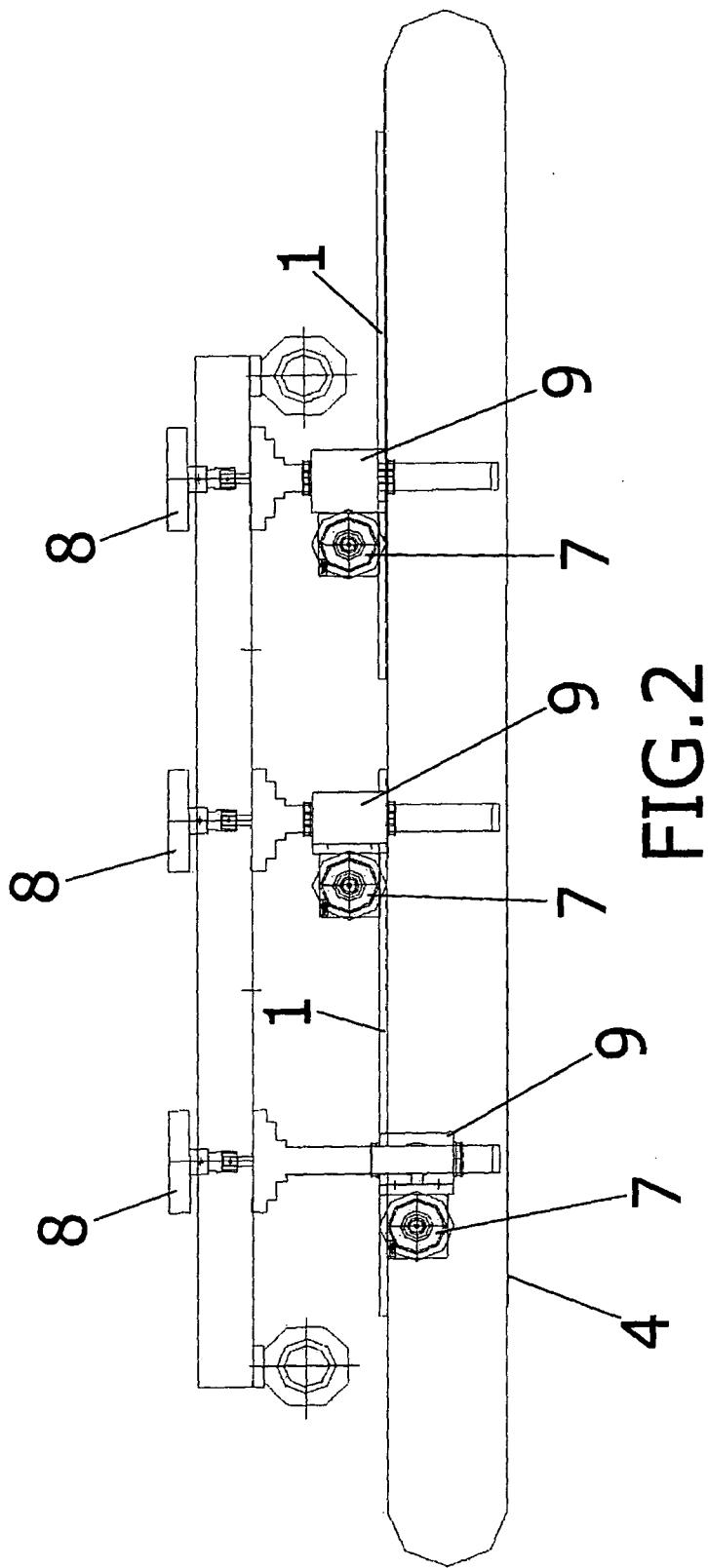
[0027] In other examples, the grinding machine presents eight and ten grinding discs (7) in four and five grinding sections, respectively.

[0028] Variations in materials, shapes, sizes and availability of the components, described in a non-limitative fashion, do not alter the essentiality of this invention, this being sufficient to go through with its reproduction by a person skilled in the art.

Claims

1. Grinding machine for ceramic tiles coming from the enamelling and decorating stage **characterised in that** it presents grinding discs (7) placed at different heights in each grinding section which guarantee a single cut of surplus tile material (1) before the firing.
2. Grinding machine for ceramic tiles according to claim 1, **characterised in that** the tiles (1) coming from the enamelling and decorating stage are centred in the grinding machine by means of lateral positioning rails (2, 3) that adjust to the size of the piece.
3. Grinding machine for ceramic tiles according to claim 2, **characterised in that** one of the lateral positioning rails (2) presents a brace to hold the piece.
4. Grinding machine for ceramic tiles according to claim 2, **characterised in that** one of the lateral positioning rails (3) is fixed.
5. Grinding machine for ceramic tiles according to claim 1, **characterised in that** the tile (1) is moved by means of belts (4) guided by pulleys (5) and actuated by a motor (6) towards the grinding discs (7).
6. Grinding machine for ceramic tiles according to claim 1, **characterised in that** the height of the grinding discs (7) is determined by means of the actuation of positioning motors (8).
7. Grinding machine for ceramic tiles according to claim 1, **characterised in that** each one of the grinding discs (7) is actuated by a cutting motor (9).
8. Grinding machine for ceramic tiles according to claim 1, **characterised in that** it presents a bevelled section of the lower edges of the tile (1) by means of grinding wheels.
9. Grinding machine for ceramic tiles according to claim 1, **characterised in that** the tiles (1) are cleaned at the exit of the machine by blowing for the elimination of residual dust from the process before being put into the kiln for their firing.
10. Grinding machine for ceramic tiles according to claim 1, **characterised in that** it presents six grinding discs (7) placed in three grinding sections, so that there are two discs in each section, one on each side of the tile.
11. Grinding machine for ceramic tiles according to claim 1, **characterised in that** it presents eight grinding discs (7) placed in four grinding sections, so that there are two discs in each section, one on each side of the tile.
12. Grinding machine for ceramic tiles according to claim 1, **characterised in that** it presents ten grinding discs (7) placed in five grinding sections, so that there are two discs in each section, one on each side of the tile.





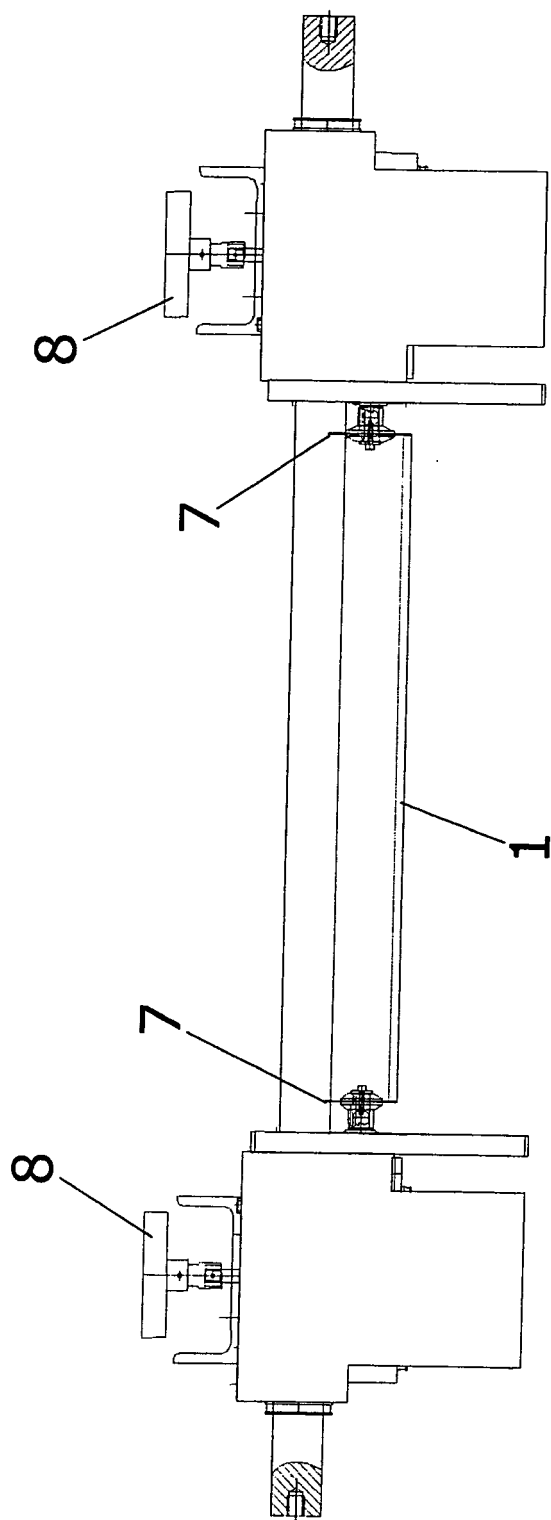


FIG.3

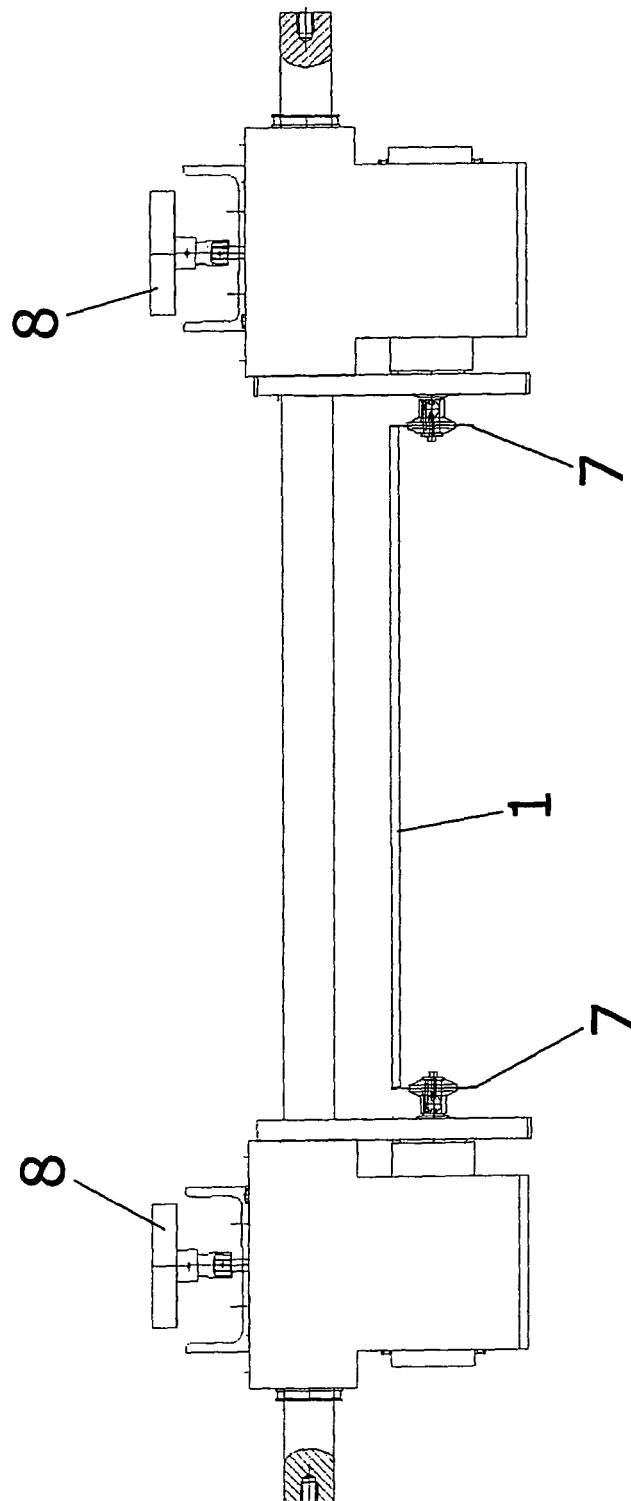


FIG.4