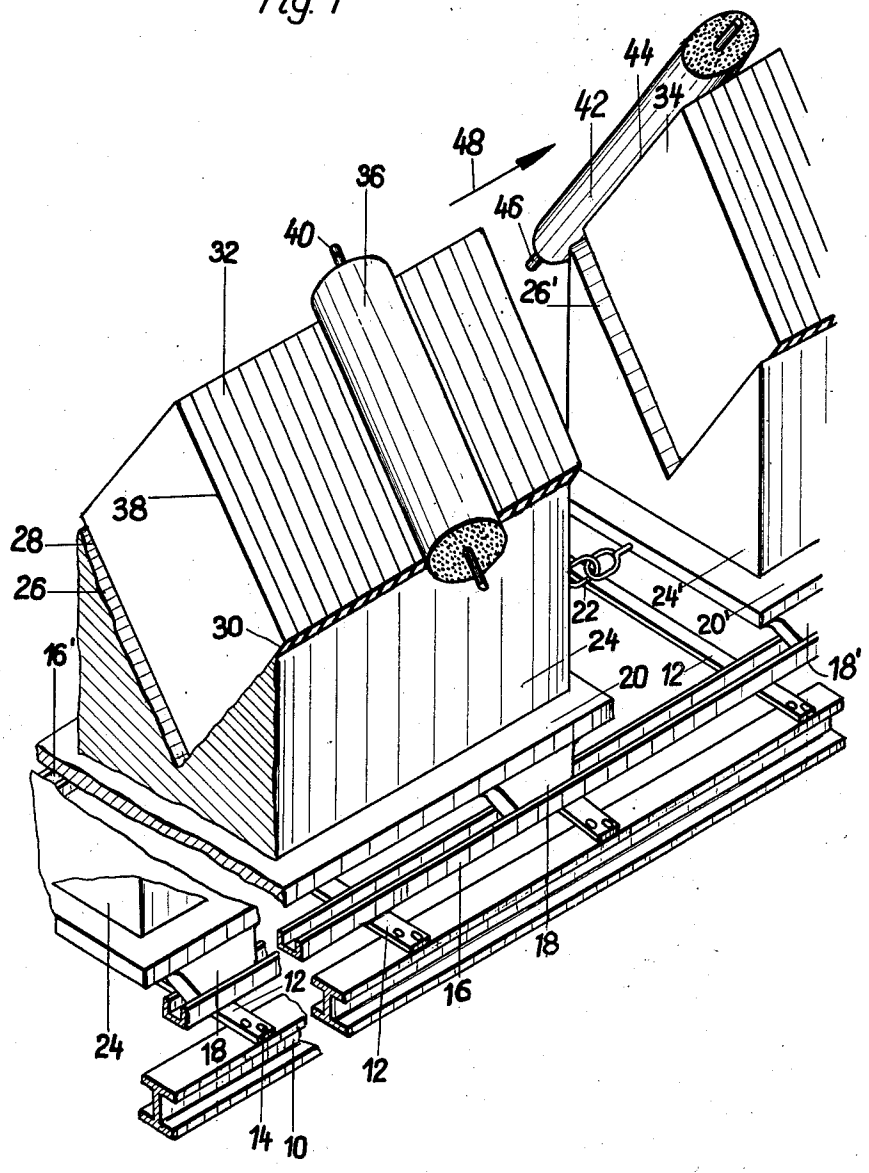
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METHOD AND DEVICE FOR GRINDING TILES

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Fig. 1

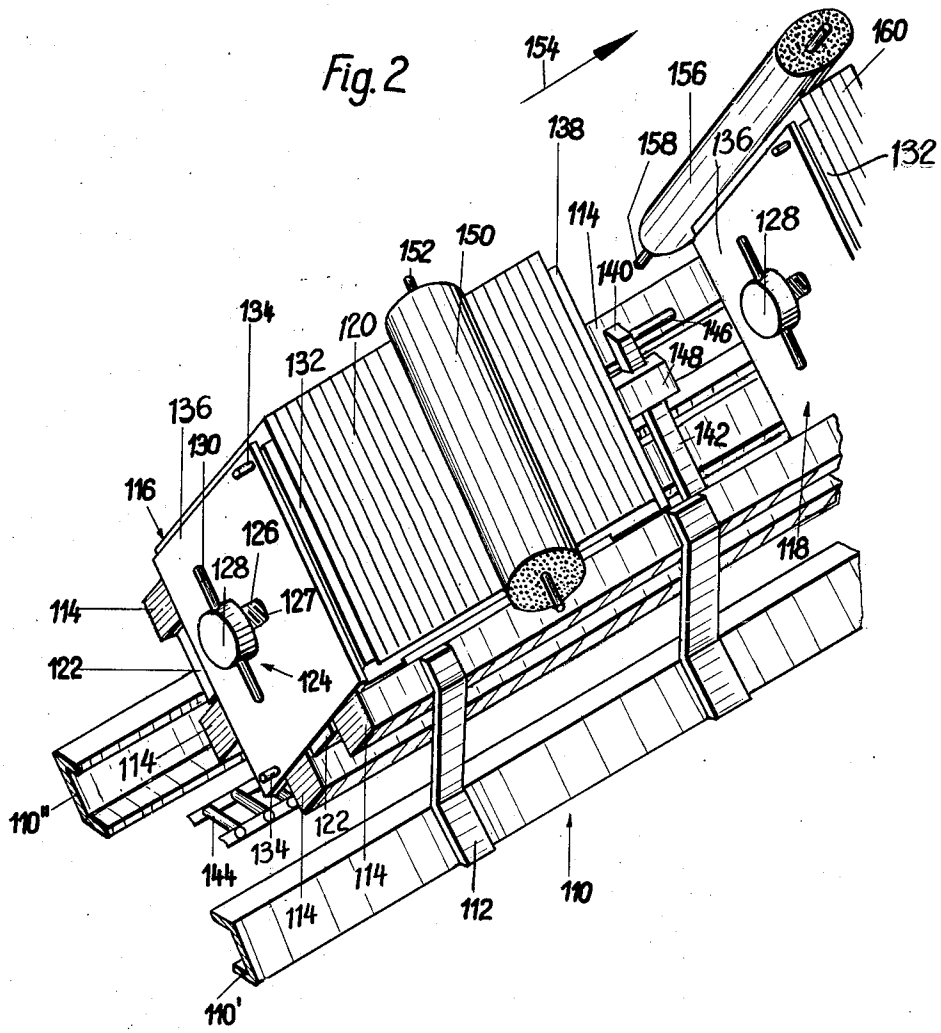


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Fig. 2



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METHOD AND DEVICE FOR GRINDING TILES

Manfred Engel, Broitzem, uber Braunschweig, Germany, assignor to Marienberger Mosaikplattenfabrik A. G., Broitzem, uber Braunschweig, Germany

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12 Claims. (Cl. 51—80)

The invention relates to a method and a device for grinding to measure the edges of wall tiles or the like, and more particularly to a method and/or device for grinding to measure tiles which are arranged in stacks and the edges thereof are ground along the stack.

It is an object of the invention to provide a method and/or device of the kind described in which the stacked tiles need not be pressed against a stationary countermember.

It is another object of the invention to secure the automatic adjustment of the tiles by their own weight.

It is a further object of the invention to reduce the friction of the stacked tiles against the member supporting the same.

According to a preferred embodiment of the invention the tiles are arranged in stacks in an upright position, said edges of the tiles being ground in a diagonal position so that the tiles assume automatically the correct position under their own weight.

Advantageously friction is reduced by providing grinding rollers having stationary axles and moving the stack of tiles arranged on a slide, carriage, or the like, relatively to the grinding rollers.

Preferably a plurality of slides or carriages are combined by providing joints or articulations between the same so as to form an endless strand which is driven continuously like a conveyor belt, the individual slides or carriages being charged with the tiles to be ground at one end of the conveying device whereas the tiles are discharged from the conveying device at the other end thereof after the tiles have been ground to measure.

Other objects and advantages of the present invention will become apparent from the following detailed description thereof in connection with the accompanying drawings showing, by way of example, two embodiments of the present invention. In the drawings

Fig. 1 is a perspective partial view of a first embodiment of the present invention, some parts being broken away, and

Fig. 2 is a similar perspective view of a second embodiment of the present invention.

Referring now to the drawings, and first to Fig. 1, a frame **10** including two rails only one of which is shown in the drawing, is provided with crossmembers such as **12** connected to the rails **10** by rivets **14** or the like. To the crossmembers **12** guide rails **16, 16'** are secured so as to form parallel supporting members for the sliding pieces or runners **18, 18'** moving within the rails **16, 16'**. Slides, carriages or plates **20, 20'** connected with the sliding pieces **18, 18'** can be moved along the rails **16, 16'**. The plates **20, 20'** are connected with each other by connecting members **22** such as a chain so that the plates **20, 20'** form an endless strand supported by the frame **10** which is driven by a motor (not shown) along the rails **16, 16'**.

The plates or slides **20, 20'** carry, respectively, attachment pieces **24, 24'** provided with wedge-shaped grooves **26, 26'**, respectively, adapted to receive two neighboring

edges or sides such as **28** and **30** of a plurality of tiles such as **32** and **34** which are stacked in upright positions so that the edges or sides **28, 30** thereof are in contact with the wedge-shaped grooves **26, 26'** of the attachment pieces **24, 24'**. The tiles **32, 34** are maintained in stacked condition by clamping devices (not shown).

A first grinding roller **36** is arranged with the axle **40** thereof parallel to the edges **28** and **38** of the stack **32** of tiles. The axle **40** of the first roller **36** is stationary in space and arranged in bearings (not shown) so that the axle **40** is substantially parallel to the edges **38** of the stacked tiles **32**. The diameter of the first roller **36** is chosen so that the first grinding roller **36** is arranged in contact with the edges **38** of the stacked pile **32**.

A second grinding roller **42** is arranged with the axle **46** thereof parallel to the edges **44** of the stack **34** of tiles. The axle **46** of the second roller **42** is stationary in space and arranged in bearings (not shown) so that the axle **46** is substantially parallel to the edges **44** of the stack **34** of tiles. The diameter of the second roller **42** is chosen so that the second grinding roller **42** is arranged in contact with the edges **44** of the stacked pile **34**.

The operation of this device is as follows:

The endless strand formed by the slides or plates **20, 20'** connected with each other by the chain **22** is driven by the motor (not shown) so that the attachment pieces **24, 24'** and the stacked tiles **32, 34** supported by the wedge-shaped grooves **26, 26'** are carried along in the direction of the arrow **48**. The grinding rollers **36** and **42** are rotated by motors driving the axles **40, 46**, of the grinding rollers **36** and **42** positively for rotation.

Preferably the attachment pieces **24** provided at one end of the frame **10** are loaded with stacked tiles such as **32**, at the other end of the frame **10** the attachment pieces **24'** being relieved from stacked tiles such as **34**, after the stacked tiles have been ground to measure by the grinding rollers **36** and **42**.

Referring now to Fig. 2 of the drawings, a frame **110** including two members **110'** and **110''** having each a U-shaped cross section, is connected by connecting members such as **112** with square bar irons such as **114** forming an angular guide for a plurality of slides such as **116** and **118** which are adapted to hold in position stacks of tiles such as **120** and **160**. The slides such as **116** include two end plates **136** and **138** connected by angular guiding pieces **122** arranged between each pair of square bar irons **114**. Between the end plates **136, 138** of the slide **116** the tiles such as **120** are held together by a pressing device **124** including a clamping screw **126** screwed into a screw thread in the central boring **127** of the end plate **136** and provided with a head piece **128** having a handle **130** for rotating the clamping screw **126** and pressing thereby an intermediate plate **132** guided by guide pins such as **134** in holes of the end plate **136** of the slide **116** so as to exert a pressure on the intermediate plate **132** which is transferred to the stack of tiles **120**. At the other end plate **138** of the slide **116** a latch **140** is arranged for displacement, the latch **140** being connected by a connecting member **142** with a conveyer chain **144** provided between the U-shaped members **110'** and **110''** of the frame **110**. If it is desired to couple the end plate **138** of the slide **116** with the conveyor chain **144** the latch **140** is moved downwards by actuating the handle **146** thereof so that the connecting member **142** passing through a member **148** connected to the other end plate **138** of the slide **116** is connected with the conveyor chain **144**. By raising the latch **140** the slide **116** may be uncoupled from the conveyor chain **144**.

The conveyor chain **144** is driven by a motor (not shown) in direction of the arrow **154** so as to drive the slide **116** in the same direction when the connecting

member **142** is in the lower position thereof coupling the end plate **138** with the conveyor chain **144**.

A first grinding roller **150** engaging one set of edges of the stack of tiles **120** has a stationary axle positively driven for rotation by a motor (not shown), whereas a second grinding roller **156** is arranged with the axle **158** thereof so that the second roller **156** is in contact with the other edges of the stack **160** of the tiles. The axles **152** and **158** are supported by stationary bearings (not shown) and positively driven for rotation by motors (not shown).

In operation the conveyor chain **144** is driven by the motor (not shown) in the direction of the arrow **154** so as to take along the stacked piles **120** and **160** coupled by the latch **140** and the connecting member **142** with the conveyor chain **144**, the first and second grinding rollers **150** and **156** being rotated by the motors (not shown) positively driving the axles thereof.

As will be seen from Figs. 1 and 2, the grinding rollers **36, 42** and **150, 156** have an axial length surpassing the length of the side faces of the tiles **32, 34** and **120, 160** to be ground.

I have described hereinbefore preferred embodiments of a device for grinding the edges of tiles or the like. However, I wish it to be understood that various modifications of the device described hereinbefore, changes of elements thereof, and substitutions of equivalents may be carried out without departing from the gist and spirit of the present invention, the embodiments described hereinbefore in detail being only examples of my invention.

I claim:

1. A device for grinding tiles to measure, comprising, in combination, a plurality of members each supporting a plurality of tiles stacked in upright position so as to form separate stacks each having sides in diagonal positions with respect of said supporting members, means for moving said supporting members along a substantially rectilinear path so as to move said diagonally positioned sides of said stacked tiles in substantially rectilinear paths, a first grinding roller having a first axle arranged substantially parallel to one of said diagonally positioned sides of said stacked tiles, said first grinding roller being arranged so as to contact one of said diagonally positioned sides of one of said separate stacks of tiles, and a second grinding roller having a second axle arranged substantially parallel to the other of said diagonally positioned sides of said stacked tiles, said second grinding roller being arranged so as to contact the other of said diagonally positioned sides of another of said separate stacks of tiles, said axles being positively driven so as to impart, respectively, rotating movements to said grinding rollers.

2. A device as claimed in claim 1, an endless strand including articulated members, each of said articulated members supporting one of said tile supporting members, and a frame supporting said endless strand, said frame having two ends, at one of said ends of said frame said tile supporting members supported by said endless strand being loaded with stacked tiles, at the other of said ends of said frame said tile supporting members supported by said endless strand being relieved from said stacked tiles after the same have been ground to measure.

3. A device as claimed in claim 2, said tile supporting members being designed as attachment pieces supported, respectively, by said articulated members, said attachment pieces having wedge-shaped recesses for receiving said sides of said tiles in diagonal positions.

4. A device for grinding tiles to measure, comprising, in combination a frame, a plurality of members supported by said frame, each of said members supporting a plurality of tiles stacked in upright position so as to form separate stacks each having sets of sides in diagonal positions with respect to said supporting members, guiding means connected with said tile supporting members, a conveyor chain arranged below said guiding means, said chain being adapted to drive said supporting members, a first grinding roller having a first axle, said first grinding roller being arranged with respect to said supporting members so as to contact one set of said diagonally positioned sides of one of said stacks of said tiles stacked on one of said supporting members, and a second grinding roller having a second axle, said second grinding roller being arranged with respect to a second one of said tile supporting members so as to contact another set of said diagonally positioned sides of another of said stacks of said tiles.

5. A device as claimed in claim 4, said supporting member being designed as a slide.

6. A device as claimed in claim 5, and clamping means acting on said stacks of said stacked tiles, said clamping means being supported by said slide.

7. A device as claimed in claim 6, and manually operable coupling device provided, respectively, on each of said slides, said coupling devices being adapted to couple said slides with said conveyor chain and to effect the connection with an element thereof.

8. A device as claimed in claim 7, said coupling devices being designed, respectively, as latches displaceably supported on one of the end faces of said slides supporting said stacked tiles.

9. A device as claimed in claim 8, said latches being adapted to engage said conveyor chain.

10. A device as claimed in claim 9, and handles connected, respectively, to each of said latches.

11. A device for grinding tiles to measure, comprising, in combination, means for moving a first batch of superposed tiles along a substantially rectilinear path, means for moving a second batch of superposed tiles along the rectilinear path, means for connecting said moving means with each other, said first and second batches of superposed tiles having each adjoining straight edges to be ground, first grinding means having a first axle arranged substantially at right angles to said rectilinear path of moving and parallel to one set of said adjoining straight edges of said tiles, and second grinding means having a second axle arranged substantially at right angles to said rectilinear path of moving and parallel to the other of said adjoining straight edges of said tiles, said first and second grinding means being arranged at a distance from one another corresponding substantially to the length of said connecting means.

12. A device as claimed in claim 11, said first and second grinding means being designed as grinding rollers arranged parallel, respectively, to said adjoining straight edges to be ground, said grinding rollers having an axial length surpassing the length of the side faces of the tiles to be ground.

References Cited in the file of this patent

UNITED STATES PATENTS

19,702	Killiam	Mar. 23, 1858
369,074	Pearce et al.	Aug. 30, 1887
542,159	Grey	July 2, 1895
961,560	Trautvetter	June 14, 1910
1,863,303	Goad	June 14, 1932
1,933,640	Schafer	Nov. 7, 1933
2,684,088	Miller	July 20, 1954