

[72] Inventor **Per Ake Henning Jakobsson**
 Orebro, Sweden
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 [73] Assignee **Intong Aktiebolag**
 Hallabrottet, Sweden
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[54] **METHOD AND APPARATUS FOR SEPARATING STEAM-CURED AERATED CONCRETE UNITS**
 10 Claims, 2 Drawing Figs.

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 198/76, 214/1 Q, 214/8.5 A, 214/152
 [51] Int. Cl. **B65g 37/00**
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 8.5, 1, 1 R, 1 RA, 1 RT, 1 R6, 8.5 H, 152;
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Primary Examiner—Gerald M. Forlenza
Assistant Examiner—Frank E. Werner
Attorney—Larsen, Taylor and Hinds

ABSTRACT: A method and an apparatus for separating steam-cured aerated concrete units, already divided before curing, the separating of the units being performed between two pair of rollers arranged one after the other and having different peripheral speeds.

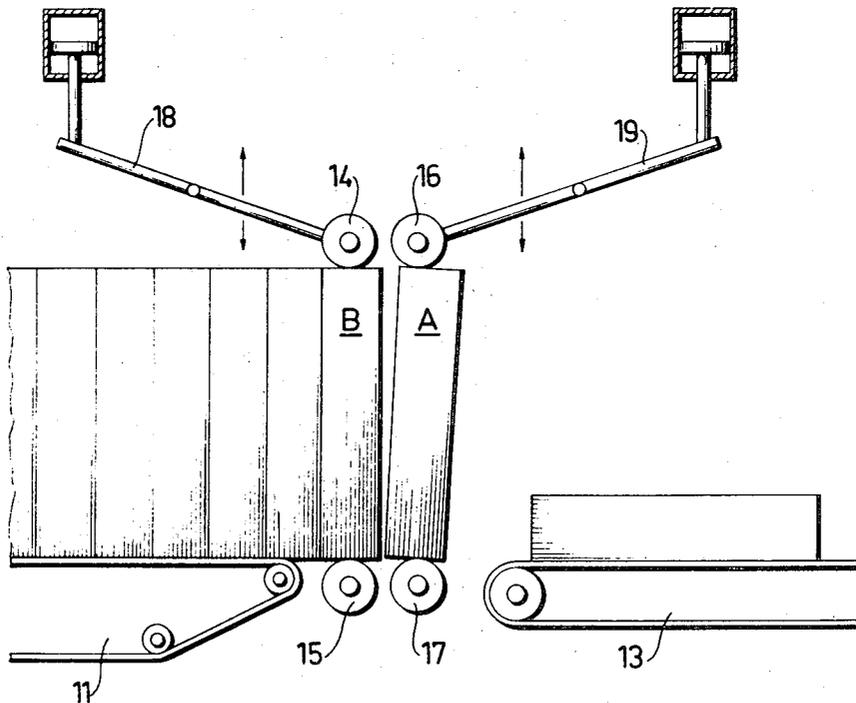


Fig.1

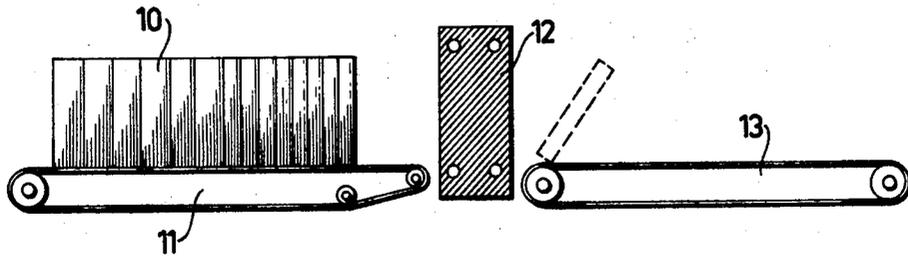
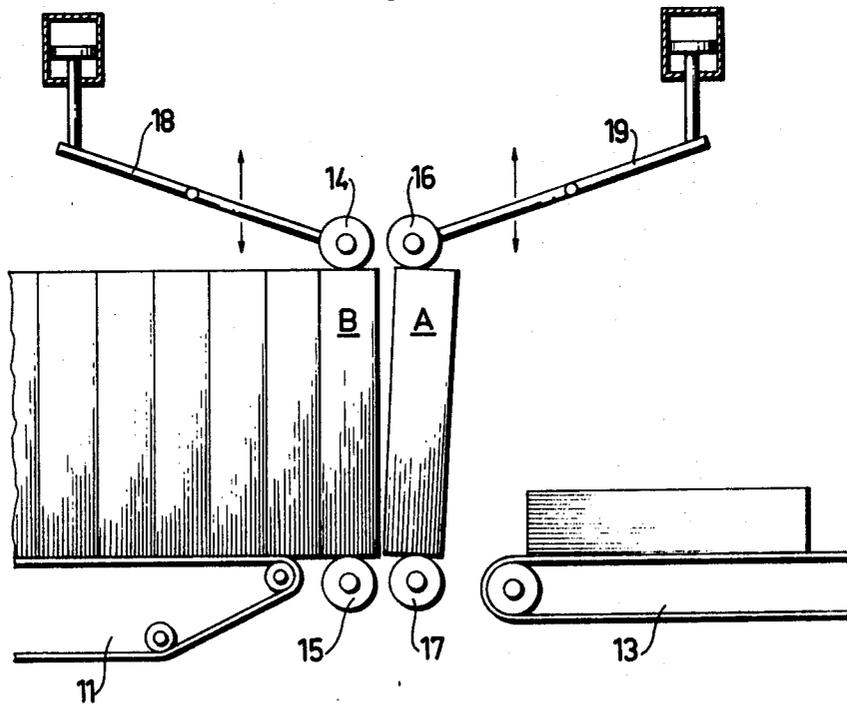


Fig.2



METHOD AND APPARATUS FOR SEPARATING STEAM-CURED AERATED CONCRETE UNITS

This invention refers to a method and apparatus for unloading steam-cured aerated concrete units, already cut before the steam curing, wherein a mold content still not separated through cut is brought between two pairs of rollers arranged one after the other and having different periphery speeds.

Aerated concrete is normally produced in the following way: Finely crushed raw materials, containing lime and silicic acid are mixed with water and then some porosity-forming agent, such as aluminum powder, is added, whereafter the mass obtained is cast into relatively large molds where it is left to expand and to bind to a consistency suitable for dividing it into smaller units. While in this plastic state the mold content is divided into the desired units by sawing with cutting devices, such as wires, braced in frames. After dividing, the material is brought into horizontal autoclaves to be steam-cured. When the cured material arrives from the autoclaves to be unloaded and stored in groups of different units, there may, when using certain raw materials, appear some adhesion in the saw cuts rendering the separating difficult.

All manual methods used for the separating have in common that they require a good deal of labor and that the risk of damage is relatively great, particularly at the corners of the units. Some mechanical devices for facilitating the separating work are known earlier, e.g. by the Swedish Pat. 164,138. They are preferably intended for large reinforced aerated concrete units but have proved less usable for masonry blocks for instance, because their use is too time consuming and rather costly.

The present invention relates to a solution of the problem of separating steam cured aerated concrete units, preferably blocks, mechanically. According to the invention the mold content arriving from the autoclaves is, before being separated, brought between two pairs of rollers arranged one pair after the other in the transport direction and separately driven, the rollers of the first or downstream pair having a somewhat higher peripheral speed than those of the second or upstream pair. By the difference of speed between the pairs of rollers a pulling force arises, working between the aerated concrete units to make them separate at the saw cuts. According to one embodiment of the invention, one of the rollers in the first pair has a greater peripheral speed than the other one in the same pair, whereby, beside the pulling force, there arises a breaking moment contributing to the separating of the aerated concrete units from each other. The method and apparatus of the invention will be described in detail here below in connection with a statement of one way of constructing a device for practicing it:

In the drawings:

FIG. 1 shows a schematic arrangement of a separating device including the features of the present invention.

FIG. 2 is an enlarged detailed view of a part of FIG. 1.

FIG. 1 shows the installations around an separating device. On an endless belt conveyor 11, the mold content 10 still not separated (though divided by a cutter) is placed in such a position that the dividing cuts in the aerated concrete mass are perpendicular to the moving direction of the belt which transports it through the separating device 12. For continuous transporting away of the separated aerated concrete units, there is behind the separating device a further endless belt conveyor 13. This one may consist of a rubber strip, to protect the units against edge damage. Alternatively the units may be palletted immediately after separating and the pallets transported away.

The apparatus functions as follows. Referring in particular to FIG. 2, divided and autoclaved mold content is transported on the belt conveyor 11 and seized by the rollers 14 and 15 which possess the same peripheral speed as the conveyor 11. The roller 14 is arranged so as to press against the mold content with a certain force perpendicularly to the transport direction. The block A passes the second rollers 14 and 15 and

when these have seized the block B, the block first mentioned has already been brought in between the first rollers 16 and 17, the roller 16 pressing against block A with a certain force perpendicularly to the transport direction. Because the rollers 16 and 17 of the first roller pair possess a peripheral speed somewhat greater than that of the second pair of rollers, and particularly if the 16 has a still greater peripheral speed than the 17, there arises a pulling force and a bending moment in the mass separating the blocks at the saw cuts. The block A falls down onto the belt conveyor 13 and is brought away. The moment of the roller 16 during this operation approaching 0, this roller is lifted by an automatic control device, not described here, and, after a certain time interval for preventing damage on the edges of the aerated concrete, it starts pressing against the next block. The length of the time interval mentioned depends on the distance center to center between the rollers which distance in its turn is decided by the smallest size of the blocks treated. The rollers 14 and 16 may suitably be fixed to one end of levers 18, 19, preferably driven mechanically, e.g. by hydraulic cylinders.

The device thus operates so as to separate the aerated divided concrete automatically and continuously at the saw cuts without any need adjust the dimensions.

I claim:

1. A method for separating units of a steam cured aerated concrete block, which block has already been divided into units but wherein some adhesion remains between the units, comprising the steps of:

Moving the block in succession between two sets of rollers, the said movement being in a direction generally transverse to the planes of the divisions between the units, engaging the periphery of a first unit with a first set of rollers while rotating the rollers of the first set at a first peripheral speed, concurrently engaging the periphery of a second unit, which is adjacent to and trailing the first unit, with a second set of rollers while rotating the rollers of the second set at a peripheral speed lower than the said first peripheral speed and exerting a turning moment on the first unit tending to turn it from its orientation relative to the second unit by rotating one of the rollers of the first set at a peripheral speed greater than that of the other roller of the first set.

2. A method according to claim 1, wherein said method is carried out continuously until the units of an entire block are separated, each unit of the block passing first through said second set of rollers and then through the first set of rollers.

3. A method according to claim 1, wherein said sets each comprise an opposed pair of rollers, and wherein the step of engaging the units comprises engaging opposed sides of a unit.

4. An apparatus for separating units of a block, which block has already been divided into units but wherein some adhesion remains to hold the units together, comprising, first and second sets of rollers, means for conveying the block through the sets of rollers such that the units of the block pass in succession through said second set of rollers and then through said first set of rollers, said sets of rollers being arranged to grasp the units passing therethrough, means for rotating the rollers of both sets, including rotating the rollers of the first set at a greater peripheral speed than the rollers of the second set and including means for exerting a turning moment on the first unit tending to turn it from its orientation relative to the second unit, said means including means for rotating one roller of the first set at a greater peripheral speed than the other roller of the first set.

5. An apparatus according to claim 4, wherein the sets of rollers are spaced apart a distance equal to the distance between the centers of adjacent units, whereby as the second set of rollers engage one unit, the first set cause separation of the unit engaged thereby from the block.

6. An apparatus according to claim 5, wherein each set comprises a pair of opposed rollers arranged to grasp opposite sides of a unit passing therethrough.

7 An apparatus for separating units of a block, which block has already been divided into units but wherein some adhesion remains to hold the units together, comprising, first and second sets of rollers, means for conveying the block through the set of rollers such that the units of the block pass in succession through said second set of rollers and then through said first set of rollers, said sets of rollers being arranged to grasp the units passing therethrough, means for rotating the rollers of both sets, including rotating the rollers of the first set at a greater peripheral speed than the rollers of the second set, and wherein each set comprises a pair of opposed rollers arranged to grasp opposite sides of a unit passing therethrough, and including means for moving at least one roller of at least one

pair towards and away from the unit in a direction substantially perpendicular to the direction of travel of the block.

8. An apparatus according to claim 7, wherein one roller of both pairs are movable towards and away from the units in a direction substantially perpendicular to the direction of travel of the units.

9. An apparatus according to claim 7, wherein said movable roller is mounted at one end of a lever device.

10. An apparatus according to claim 9, including a fluid operated piston and cylinder unit for operating said lever device.

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