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(54) **Method for grinding particulate material in a roller press and apparatus for carrying out the method.**

(57) In order to improve the operation of a roller press, a method is described according to which water is added to the material to be ground.

By this method it is obtained that the material bed formation is improved and that the vibration level of the roller press is reduced, thus making it possible to increase the roller speed and hence the utilization of the roller press capacity.

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The present invention relates to a method for grinding particulate material in a roller press. The invention also relates to an apparatus for carrying out the method.

A roller press comprises two oppositely rotating rollers, which are forced against one another and against the layer of particulate grinding material between the rollers, this layer being also referred to as the material bed.

When grinding the material, certain operational problems may occur, involving i.a. vibrations in the roller press, instability in the formation of the material bed and variations in the power consumption of the roller press, and these problems tend to grow as the degree of fineness of the grinding material increases.

In practice, the mentioned problems are resolved by reducing the roller speed to a level where the vibration level and other operating parameters of the roller press are acceptable. In connection with the grinding of very fine material, where the greatest problems occur, it is, however, a disadvantage that the roller speed has to be reduced so much that the capacity utilization of the roller press is reduced to an unacceptable extent.

Therefore it is the object of the present invention to provide a method whereby the aforementioned problems can be avoided, hence resulting in optimum utilization of the roller press capacity.

According to the invention this object is obtained by a method of the kind mentioned in the introduction, being characterized in that water is added to the grinding material.

The present invention is based on the fact that dry, fine-grained materials which contain air, causing them to behave as a liquid, have favourable agglomeration characteristics, and, at the same time, enhanced ability to form a uniform material bed if only a small amount of water is added.

A number of tests with grinding of particulate material in a roller press has shown that material bed formation can be improved by adding water to the material and that the vibration level of the roller press is substantially reduced, whereby the roller speed, and hence the capacity of the roller press, can be increased.

In fact, the tests have shown that the vibration level of the roller press can be halved by adding merely 1.2 per cent water corresponding to 12 litres of water per tonne of material, which is generally equivalent to the effect achievable by a 50 per cent reduction of the roller speed.

To ensure that the water is properly mixed with the grinding material, it is preferred that water is sprayed onto the material at a specific location before the material is introduced into the roller press. It would be advantageous to do this while the material is deposited on a feed belt conveyor

or in a supply hopper carrying the material to the roller press.

In order to achieve the optimum effect of the water addition, it is preferred that water is continuously added to the material in a smooth, uniform flow, and that the addition of water is controlled as a function of the material feed or alternatively as a function of the vibration level.

The quantity of water which should be added depends on the fineness of the material. Therefore, it is a general rule that the greater the fineness of the material, the greater the quantity of water to be added. According to the invention it is preferred that water is added in a quantity between 0 and 30 litres per tonne of material, substantially between 5 and 15 litres per tonne of material.

In order that water can be added, it is preferred that the grinding apparatus should comprise, in addition to a roller press, a supply hopper and/or a feed belt conveyor, also a number of nozzles for addition of water.

The invention will now be described in further details in the following with reference to the accompanying drawing, being diagrammatical and showing a grinding apparatus for carrying out the method according to the invention.

The illustrated grinding apparatus 1 comprises a roller press 3, a supply hopper 5 and a feed belt conveyor 7. The material to be ground is extracted from a silo 9 onto the feed belt conveyor 7, but the material may also be led directly into the hopper 5 from the silo 9.

According to the invention the apparatus also incorporates a number of nozzles 11 which may be fitted above the feed belt conveyor 7 for water spraying of the material before the material drops into the hopper 5, or a number of nozzles 13 being installed directly in the hopper 5 for water spraying of the material contained in the hopper.

Claims

1. A method for grinding particulate material in a roller press, **characterized in**, that water is added to the material to be ground.
2. A method according to claim 1, **characterized in**, that the water is sprayed onto the material at a specific location before the material is introduced into the roller press.
3. A method according to claims 1 or 2, **characterized in**, that water is sprayed onto the material while the material is deposited on a feed belt conveyor carrying the material to the roller press.

4. A method according to claims 1 or 2, **characterized in**, that water is sprayed onto the material while the material is deposited in a supply hopper carrying the material to the roller press. 5
5. A method according to claims 1-4, **characterized in**, that water is continuously added to the material in a smooth uniform flow, and that the addition of water is controlled as a function of the material supply. 10
6. A method according to claims 1-4, **characterized in**, that water is continuously added to the material in a smooth uniform flow, and that the water injection is controlled as a function of the vibration level. 15
7. A method according to claim 5 or 6, **characterized in**, that the water addition rate is between 0 and 30 litres per tonne of material, preferably between 5 and 15 litres per tonne of material. 20
8. An apparatus for carrying out the method as claimed in any of the preceding claims comprising a roller press, a supply hopper and/or a feed belt conveyor, **characterized in**, that it incorporates also a number of nozzles (11, 13) for addition of water to the material to be ground. 25 30

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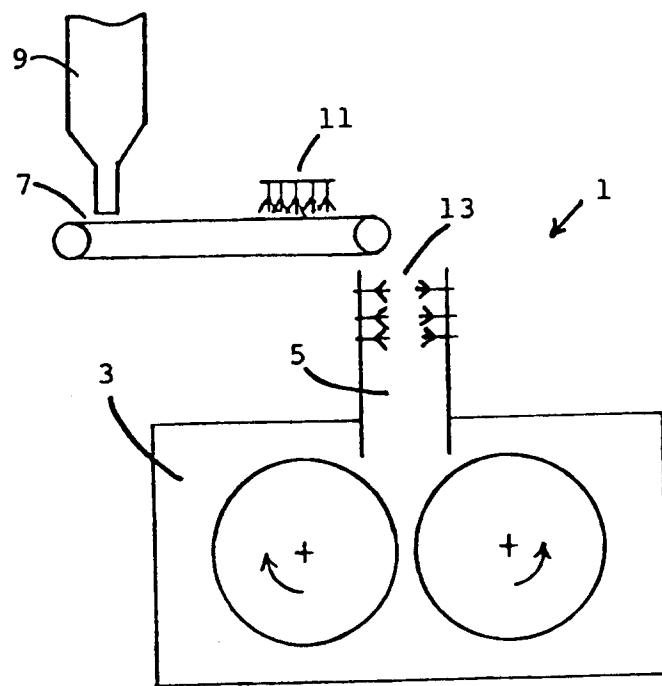


Fig. 1.