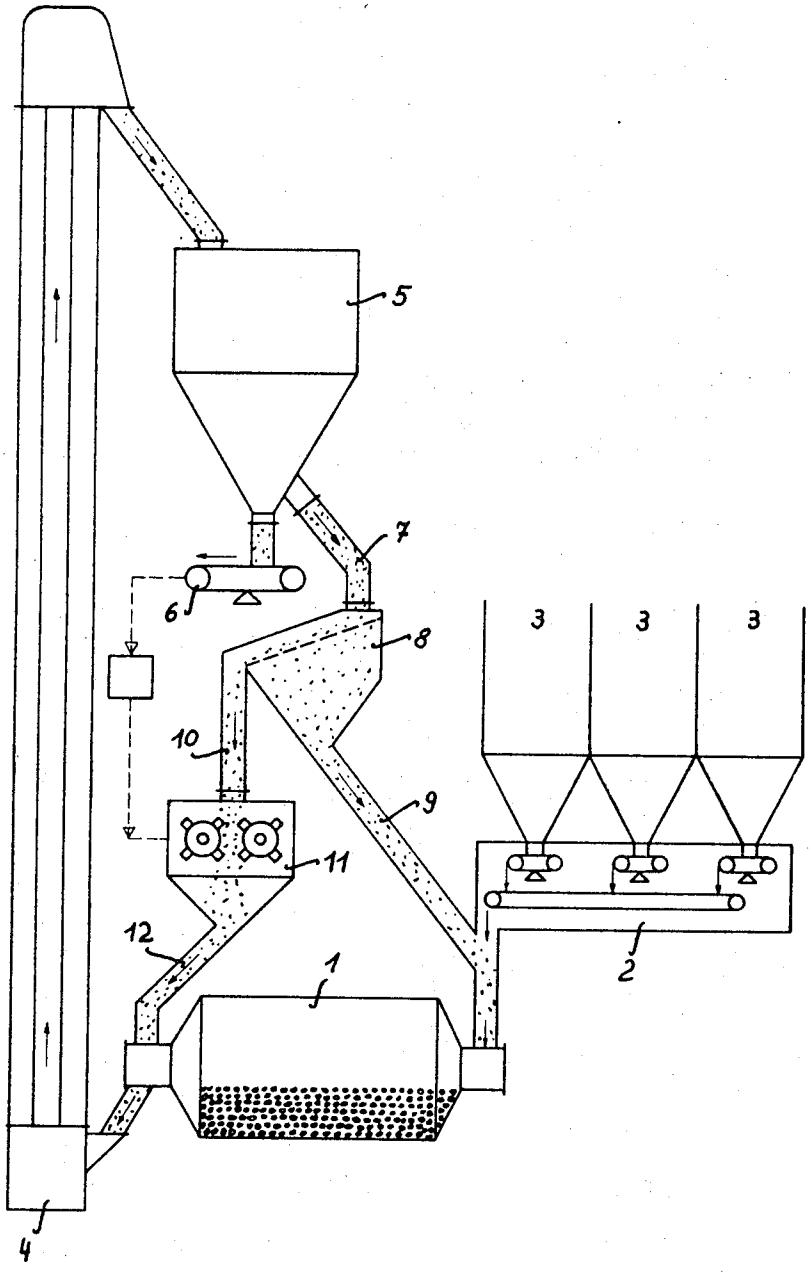
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PLANT FOR THE SIMULTANEOUS GRINDING OF DIFFERENTLY GRINDABLE MATERIALS

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PLANT FOR THE SIMULTANEOUS GRINDING OF DIFFERENTLY GRINDABLE MATERIALS

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1 Claim. (Cl. 241—36)

This invention relates to a method for the simultaneous grinding of several raw materials of different grindability in uniform amounts. More particularly, it relates to the grinding of cement in a tube mill whose discharge is screened and to which the grit is returned from the sifting device.

In the simultaneous grinding of several raw materials of different grindability, which must be present in the end product in constant proportions, it is known to perform the grinding operation in a tube mill and to adjust the feed of the materials as a function of the grinding results by checking the delivery of the tube mill; this method has been applied especially to the grinding of cement where relatively hard clinkers, in addition slag and the like, and gypsum, are comminuted together. As it is important to maintain a uniform composition of the finished material, the individual components must be charged with the same ratio. But as the grinding output of the tube mill can be controlled only with considerable expenditure, and as the cement clinker as well as the additives are obtained with varying properties and grindabilities, inherently the total output of the plant decreases with variation of the amounts charged.

Said drawbacks cannot be avoided by passing the discharge of the tube mill to screening means and returning the coarse material to the mill. If the grindability of individual components deteriorates, the feed of all the components must be changed at the same rate.

It is a principal object of the invention to provide a method avoiding the recited shortcomings of the methods now in use.

Other objects and advantages will become apparent from a consideration of the specification and claim.

In accordance with the invention, the discharge of the tube mill, if desired after separation of the finished material in the screening device, is passed to a classifier which allows the grits to pass, separates the coarse grain and delivered to a high speed mill which has a common discharge with the tube mill; the output of finely ground material of the high speed mill is increased when the discharge of finished material of the screening device decreases, and it is decreased when the output of finished material from the screening device increases.

The method of the invention makes it possible to feed into the grinding plant always constant quantities of the starting materials, irrespectively whether or not the grindability of the individual components changes. When a component becomes less grindable, the coarse portions are ground in the high speed mill, and the grinding output

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of said mill becomes the higher, the lower the discharge of the finished good from sifting device. In chronological sequence, the adjustment of the high speed mill takes place substantially immediately following the discharge of the ground material from the tube mill; therefore, the variations in the discharge of the finished good are relatively small. As a result, the costly adaptation of the amount of charged material to the grindability is eliminated.

It is of advantage to place the classifier, e.g. a screening plant separating the ground material into a coarse and a fine fraction, in the flow of the material behind the sorting plant so as not to burden the screening plant with the finely ground finished material. But it is, of course, also possible to place the classifier in front of the sorting plant.

A suitable high speed mill is a beater mill with one or more rotors.

The invention will be better understood with reference to the accompanying drawing which is a schematic illustration of a plant according to the invention.

In the drawing, the materials to be ground are charged from the bunkers **3** over the conveyor **2** to a tube mill **1**, which, in a turn, delivers the ground matreial to a conveyor **4**. Said conveyor **4** conveys the ground material to a sifting device **5** which discharges the finished good and passes the grits through line **7** to the classifier **8**. The classifier **8** passes the grits through line **9** to the tube mill, while the coarse grains are fed through line **10** into a high speed mill, e.g. a beater mill **11**. Said beater mill has a discharge **12** common with the discharge of the tube mill **1**. The high speed mill is controlled by control means **13** as a function of the discharge of finished good **6**.

I claim:

1. An apparatus for the simultaneous grinding of a plurality of raw materials of different grindability in constant amounts comprising a tube mill and a high speed mill having common discharge outlets, means charging a mixture of materials of different grindability to said tube mill, separating means comprising sorting means and classifying means, said sorting means separating the finished ground material and discharging the same, said classifying means separating the grits and the coarse grain, conveyor means passing said common discharge to said separating means, means passing said coarse grain from said classifying means to said high speed mill, means returning said grits from said classifying means to said tube mill, and means adjusting the finely ground output of the high speed mill as a function of the output of the finished ground material from said sorting means.

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