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ANALYSIS OF CONSTRUCTIONS OF ROLLER MILLS FOR PREPARATION OF PULVERIZED-COAL FUEL AND WAYS THEM FURTHER DEVELOPMENT

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It is realized the analysis of the different constructions of vertical roller mills used in the iron and steel industry, thermal power generation and building sector in article. There are presented information about features constructions, the basic criteria's of the mills and the ways of their further development.
Keywords: pulverized-coal fuel, milling, roller mill, separator, features

An important role among equipment for preparation of pulverized fuel is occupied to the roller mills which grind the hard types of coal.

To main advantages of mills of the noted type it follows to take: subzero specific charges of electric power on to tone of the ground up fuel, namely in 1.5-2.0 times less than comparatively with the low-speed barrel-type mills; compactness of apparatus, which occupies an area which in four times less than for the low-speed barrel-type mills, and also small wear of milling elements, which folds 4.0-20.0 g/t fuel against 400-500 g/t for low-speed barrel-type mills.

It follows to consider impossibility of exploitation of mills the lacks of roller mills at a hit to the working chamber of the metallic including, which results in breakage of milling elements and stop of process of grade, and also hard demands to damp of the crushed fuel for prevention of its agglutination and contamination over impossible.

Classification of roller mills is carried out after next parameters: by the nominal productivity in relation to a calculation fuel, by parametric and overall information, frequency of rotation for working organs and them structural implementation, by an expense drying to the agent and by its temperature of и by working pressure, reliability of milling elements, by mass of the mill and by the set power.

By a data-our for the choice of chipper also the parameters of material serve as: maximal linear sizes of most particles of raw material and product; a coefficient of external friction, density and apparent density, coefficient of fluff out and border of durability on a compression.

Bowl a mill as MBC is produced by the bundle enterprises, in particular OAJ "Tyazhmash" (Saransk) and OAJ "Strommashina" (Russian Federation), firms "FL Smidth" (Denmark), "Gebr. Pfeiffer AG" (Germany), "Krupp Polysius, Greate Wall Co" (China) and other [1]. The feature of construction of such mill is a conical form to the belt of rollers and angle of slope of axis of rotation to the roller which provides optimal correlation of effective grade and economy of equipment [2].

The table of bowl of roller mill as TBM is executed with an wavy channel, located eccentrically in relation to the axis of its rotation, and rollers provided cylindrical bearing for their axial and radial moving.

Mill as MPS, that a firm "Babcock" [3] produces, has three rollers of large-break with a toroidal belt, which pin jointed chock fastened to thrust ring of onslaught and rolled in relation to the saddle-like track of milling table. The feature of construction of mill of the noted type is a profile of surface of milling elements, which relieves crowding of rollers into the layer of fuel and diminishes the specific charges of energy on the grade of coal. A defect is absence of mechanism of getting up of rollers at starting of engine that is why such mills require engine with a considerable starting moment.

Mills of type "Raymond" [4] have all main signs of roller mills. A mill consists of ring, envisaged in circulating milling cup. Milling rollers are pinned by springs to the milling ring. The feature of construction of mill of the noted type is structural implementation of circulating milling table. In mills with a considerably sloping table at the wear of working surfaces look sliding of rollers and diminishing of frequency of their rotation, and in a construction with a poorly sloping table frequency of rotation of roller at its wear remains permanent, and the specific charges of electric power diminish.

Mills as MB, which is products by a firm "Foster-Uiller" [5], consist of milling rollers and rings of hard-to-make, which make Mark Berts on a patent. It follows to mark the difficult profile of rollers and absence the feature of construction of mill of the noted type at the rollers of axes. A mill, on information given by a firm, befits for the grade of all sorts of fuel and mixture of fuel with moist slime to 15 %.

One from the most widespread firms in area of production of vertical roller mills there is a firm ""Loesche" [6]. Due to the rotation of milling table the ground up material is cast aside to the wall of carcass mill. Through a jalousie ring, located between a milling table and wall of carcass mill, give hot gas which transports a braize up to the separator. Rough particles become separated from a separator and through a collapsible cone get on a milling table for the repeated growing shallow. The prepared product passes through dynamic circulating separator and together with the stream of gas abandons a mill. A mill over is brought to motion by means of electric motor and vertical reducing gear.

Relatively bowl mills of majority publications advertising character has cleanly, actually absents is information in relation to stand and industrial researches, and also mathematical modeling of processes in a mill. To the vertical roller mills for the most pull out such requirements: quality of initial product (to the fine grinding grade), productivity of mill, expense of electric power on a productive process, wear of milling elements. On efficiency of work the far of factors influences: quantity of cycles of growing of material shallow, force of tightness of rollers, frequency of rotation of milling table, adjusting of parameters of work of separator, coefficient of capacity to milling coal, wearproofness of material of milling elements and other. However without the proper attention there are such parameters as working process of separation of factions in a separator, character of motion of material on a circulating table, aerodynamic processes in the chamber of mill and influence of construction of nozzle apparatus, adjusting of structural parameters of помольного table and bracers.

It is thus possible confidently to define the areas of further study and research of валкових mills : influence of structural implementation of nozzle vehicle on aerodynamics of processes in a mill, and, properly, influence of air flows in a mill on the process of separation, resistance of mill and wear of armature of carcass; kinetic processes of grade of coal; process of separation and prognostication of grain-size distribution; structural implementation of milling table and rollers.

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