COMPARISON BETWEEN JAW CRUSHER AND CONE CRUSHER

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Annotation. In this article, grinding methods and their application. General information about Jaw and Cone grinder and their working principle and mutual differences between these two grinders

Key words: Grinding. Application, Jaw crusher, Cone crusher, Scheme of working principle, Proportion.

Annotatsiya. Ushbu maqolada maydalash usullari va qo’llash.Jag’li va konusli maydalagich va ularning ishlash printsipi va bu ikki maydalagich o’rtasidagi o’zaro farqlar haqida umumiy ma’lumot.

Kalit so’zlar: Maydalash.qo’llanilishi,Jag’li maydalagich,Konusli maydalagich,Ishlash prinspi sxemasi mutanosiblik.

Аннотация. В этой статье методы шлифования и их применение. Общие сведения о щековых и конусных шлифовальных машинах, принцип их работы и взаимные отличия этих двух шлифовальных машин.

Ключевые слова: Измельчение Применение, Щековая дробилка, Конусная дробилка, Принцип работы, Пропорции.

The chemical industry is in the forefront in terms of the number of types of hard materials to be ground, the degree of grinding and the types of grinders. The materials to be ground are hard, soft, brittle, viscous, sticky, thermally unstable, neutral, chemically active, flammable and explosive, for those around harmful can be harmless.

Grinding means breaking pieces of solid material to the required size, i.e. to the size required to use the material in industry. The grinding process of materials is divided into grinding and powdering stages. Depending on the fragility of the initial piece, the grinding process is divided into large 350-100mm, medium 100-30mm, fine 30-8mm and fine 0.5mm. There are different levels of coarse 0.5 mm, fine 0.1 mm and ultra fine 0.01 mm in grinding. Depending on the task and mode of operation, each grinding unit has four types of impact of the abrasive force on the pieces of material to be crushed. can be used: crushing, hitting, bending, rubbing.

Jaw crusher. Jaw crushers work in the following way. The material to be ground is placed in a cone-shaped crushing chamber with two jaws. Since the camera is cone-shaped, the pieces of material are placed in the chamber according to their size: larger ones are on top, smaller ones are on the bottom. Jaws when moving, the material is crushed. When the movable jaw moves away from the fixed jaw, the pieces of material fall down under the influence of gravity, and then the cycle repeats. Grinding level i=3-4. Productivity ranges from 1 to 500t/hour

and more. Crushers are distinguished by inlet and outlet holes. The inlet hole is called humza or jaw, and the outlet hole is called slot. When the size of the jaw crusher is 100x150 mm, the width of the slot is 25 mm or more, when the size of the jaw is 1500x2100 mm, the width of the slot is 300 mm. About 0.85 is accepted.

According to kinematic characteristics, jaw crushers can be divided into the following two groups:

- Movable jaws are simple oscillating crushers (in which movement is transmitted from the crankcase to the movable jaw through a certain kinematic chain, the movement trajectory of the points of the movable jaw consists of a part of a circular arc.

- Movable jaws are complex mobile crushers (in which the trajectory of the curves and points of the movable jaw is a closed curve, often an ellipse. Shown is a simple mobile crusher with a movable jaw designed for large crushing. "diamond jaw" is clamped. Two pairs of bearings for the axle are clamped on the longitudinal walls of the frame in parallel. A movable jaw is installed on the axle. An eccentric shaft with two flywheels is installed on the second bearing. The side case the plates are mounted on the crusher jaw and the walls of the crusher, they protect the wall from being eaten. The movable jaw 7 is fixed to the axis 4, and the jaw of the crusher is formed with the fixed jaw. It is made of steel. The inner side of the jaw is ribbed for lightness, and sometimes it is boxed. Grinding plates are cast on the surface of the jaw, they must be in close contact with the jaw, so lead gaskets are used. installed. Grinding plates are quickly eaten are replaced periodically, they are made of chromium and manganese steel.

Bleached cast iron plates can be used for crushing soft rocks. The working surface of the plates is grooved. The grooves are in the form of teeth and should fit into one jaw socket. The ratio of tooth height to pitch is 1:4 to 1 Acceptable up to :2.

Plates for grinding hard rocks are smoothed. When the teeth are eaten by more than 30% of their height, the mobile and fixed jaws are replaced with new ones. The teeth are covered with stalinite and restored. are installed or mounted on thrust bearings. Because they are under the influence of a large force, they are made of special steel: chrome-nickel, chrome-molybdenum and vanadium steel. Depending on the size of the grinders, the eccentricity of the shaft is from 10 to 60 mm. The bearings should not heat up more than 30-40C. The connecting rod and two flywheels are freely transferred on the eccentric shaft, and one of the flywheels is a transmission pulley with a belt. at the bottom there are grooves 9, into which support plates 5 are inserted. gan is supported by a special pillar 10. When the eccentric shaft 4 rotates, the connecting rod moves back and forth. When the connecting rod moves up, the support plates are straightened and push the lower end of the movable jaw towards the fixed jaw, as a result, the material is crushed between the jaws.

When the connecting rod moves down, there is a free movement, which causes the force to fall unevenly on the moving driver. Therefore, the power of the

free movement of the electric motor is collected in the flywheel and it is used in the working movement. The tensioner 13, which connects the movable jaw to the rear wall of the frame, always pulls the movable jaw to the rear wall with the help of a cylindrical spring 12, as a result, the support plates do not come out of the slot when the connecting rod is lowered.

In jaw crushers, movable and fixed jaws, support plates, nests of support plates, and side armor plates are eaten faster. The movement is transmitted from the electric drive to the flywheel pulley on the eccentric shaft through a V-belt drive. It is connected with the main electric drive pulley. In the jaw crushers, the drive plate is directly installed on the eccentric part of the shaft, so it moves forward and upward at the same time, they are also suitable for medium and fine grinding performance is used in small points. Recently, many companies have been producing complex vibration crushers, whose dimensions are larger than the dimensions of ordinary vibration crushers. This was achieved after the creation of large vibration bearings that can withstand large dynamic stresses.

Cone grinder. Enterprises producing inorganic substances and non-metallic materials use conical crushers to grind materials with low natural moisture. In them, the material is crushed under the influence of continuous and gradually increasing compression force in the annular space between two truncated cones. and is placed between the internal grinding cone. When the grinding surfaces are close, the ground material falls down.

Conical grinders are characterized by the following main characteristics:

1. Installation of a vertical shaft or axis - with the upper support of the driven shaft, with the lower support of the driven shaft.

2. According to the type of movement of the movable cone - a cone with rotational vibration movement, eccentric with respect to the inner surface of a fixed cone, and a cone with progressive movement in the horizontal plane.

3. According to the type of method - one-sided and two-sided tape or reduction method.

4. Without shock absorbers and with shock absorbers according to the availability and structure of shock absorbers.

5. According to the technological task:

YMK-with a large grinding cone, the width of the outlet opening is 50-200mm, the size of the pieces is 300-1500mm, the grinding level is 3-4, Q=150-2600m3/h.

UMK-medium grinding cone, the size of the pieces when the width of the exit hole is 15-50mm, the grinding level is 4-5, Q=190-580m3/hour.

MMK-fine grinding cone, when the width of the exit hole is 3-15mm, the size of the pieces is 30-75mm, grinding level is 4-6, Q=180m3/h.

By structure, grinders are divided into the following types:

- installation shaft grinder,
- eccentric grinders,

- cantilever shaft grinders (these are divided into normal cone, medium cone and short cone types).

In cone grinders, the material is crushed in a grinding chamber that creates two conical surfaces. The outer cone surface is fixed, the inner one is movable. For coarse grinding, the shaft is hinged, the work efficiency is 5000t/h, the power of the driver is 420kW (570 horsepower) grinders are used. For medium and fine grinding, smaller and more compact cantilever shaft grinders are used. These grinders have a grinding level of 20 or more.

The grinding details of such crushers consist of an external fixed cone 1 and a movable cone 2. The movable cone is connected to the oscillating shaft 3. The shaft is a cup connected by a cone transmission consisting of gears 5 and 6. 4 is installed eccentrically. When the gears rotate, the movable cone crusher with the help of an electric motor oscillates around the vertical axis, sometimes it approaches the fixed cone, and sometimes it moves away from it. crumbles down.

In cone crushers, as in jaw crushers, raw material is crushed between its parts that come close to each other. However, in a cone crusher, the grinding process continues without interruption. Therefore, the productivity of cone crushers is much higher.

The jaw crusher is mainly used for crushing hard stone materials, i.e. gravel and cobblestones, the cone crusher is used for grinding inorganic substances and non-ferrous materials. It is divided into certain types, the level of grinding in them is different. YMK grinding level 3-4, UMK grinding level 4-5, MMK grinding level 4-6. The main parts of a simple moving jaw crusher are: fixed jaw, eccentric shaft, connecting rod, axle, support plates, flywheel, movable jaw, grooves, swashplates, spring, tensioners. The main parts of the fixed shaft cone crusher are: integral base, outer cone, armor plates, crossbar, crossbar head, main shaft, inner cone, bushing, gear wheel, gear, guide. It consists of axle, supporting windows, assembly, support, bushings.

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