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OSCILLATING MIXER-ACTIVATOR

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Mixers belong to technological equipment used for preparation of various mixtures and can be used in construction, agriculture, chemical industry, mining for dry or wet mixing performed in a continuous mode.

Mixers can be classified into the following types:

– a gravity mixer. The blades mounted on the walls of the housing lift the material up, and mixing occurs as a result of collision of certain amounts of the mixture;

– a forced mixer which is divided into bowl-shaped and trough-shaped types. In bowl-shaped mixers, the housing is a cylindrical bowl with a different number of working members. In trough-shaped mixers, the blade shafts are used as working members;

– a vortex mixer in which the binding component of the sand-clay mixture is distributed evenly over the entire area of aggregate grains;

– a planetary mixer which consists of a housing and a drive screw mixer. In the upper part there is a sealed charging hatch, in the lower part there is a discharge outlet.

The proposed oscillating mixer-activator has a frame on which a deformable working chamber is mounted by means of attachment fixtures. The chamber is made of an elastic band-like coating connected on one side to a crank mechanism by a hinge. On the other side of the working chamber installed at a slight angle to the horizon, vibration dampers are mounted, and the blades are fixed inside the chamber.

The working principle of the mixer is as follows. The crank mechanism is set in motion and transfers complex periodic movements through the hinge to the deformable working chamber. As the original components of the mixture enter the upper part of the working chamber, they perform oscillating movements that ensure their intensive mixing as they move along the axis of the chamber and subsequently leave it through the outlet. The blades provide high-quality mixing, and resonant vibrations of the chamber walls are eliminated due to a spring shock absorber. The developed design can be used as a basis for the creation of devices for separation of materials by size, mechanical activation and granulation.

The oscillating mixer-activator can be used for preparation of dry mixtures, concrete mixtures, clay-based mixtures, molding silicate mixtures, raw materials for production of binders for combining mixing processes with mechanical activation.

The advantages of the oscillation mixer-activator are its simplicity, technological versatility, ease of maintenance and repair, which implies the possibility of its rapid manufacture. In addition, its small overall dimensions and weight make it easy to integrate into existing or newly created technological lines.