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SUBSTANTIATION OF DESIGN PARAMETERS OF TECHNOLOGICAL DEVICES OF GRAIN CLEANING MACHINES WITH PNEUMATIC SYSTEM OF GRAIN HEAP FEEDING

Anarov U., Khan V A.

Grain cleaning machine — agricultural machine for cleaning and sorting grain on various grounds: aerodynamic properties of seeds and impurities; grain size — thickness, width and length; roughness of the seed surface; shape; density; color, etc. the Principle of operation is based on the difference in the physical and mechanical properties of the heap of grain (leguminous) particles and impurities. These properties include: aerodynamic properties; dimensions; form; density; surface condition; elasticity; color; electrophysical properties.

Cleaning methods in grain cleaning machines:

seed cleaning by air flow;

separation of seeds by size on grids;

seed cleaning by air flow and sieve mill

the division of seeds in teerah;

cleaning and sorting of seeds by density;

seed separation by appearance using digital cameras and injectors.

The principle of operation of the machine is based directly on the aerodynamic properties of the grain, and depends on what physical and mechanical properties it has. There are several types of processing of grain crops in the grain cleaning machine. Let's call the main of them, the first is the purification of grain by air flow. In this case, in special air chambers, the grain is divided into fractions and impurities, that is, the flow removes all unnecessary from the mass of grain crops.

The next type of grain cleaning is the separation of grain in special latticed type mills by size. In this case, there is a kind of sifting of grain through the lattice of different sizes, and thus the grain of a certain size remains on its lattice, and smaller grains slip below. There is also a way to separate the grain lengthwise. This is done by means of a special unit in the grain cleaning machine, which is called a Trier. The work of the Trier is somewhat similar to that of the lattice separator. However, in this case, the trieres are made in the form of cylinders, and the grain of the usual form is sifted down, and the impurities of the longer form depart to the side. Thus, there is a separation of grain lengthwise.

We turn now to consider primarily man-portable grain cleaners as the most simple. These small machines are now less and less used in our system and its mainly in non-mechanized farms and deep points.

Spiral separator SSC-0.05 ("snake"). Spiral separator ("snake") is used for the separation of pea and separating seed round wiki from oats, as well as for the separation of waste after the passage of grain through the screening.

"Snake" as unproductive in sorting and inconvenient to maintain (manually) has limited use, although it can get very good results. To facilitate its use, it is possible to recommend the installation of this machine under and above the hopper (silo, larem, etc.); then it will not require continuous and tedious maintenance for workers.

"Snake" should be protected from impacts and from exposure to atmospheric moisture.

"Slides" of various designs. The work is based on the use of the principle of sorting on the basis of differences in the form of both. "Hill" is an obliquely mounted long wooden frame, inside which there are six freely inserted into the grooves of plywood boards (working planes).

Between boards left gaps the size of which can be changed by moving the boards in the slots. The slope of the frame can also be changed within 30-50°, raising its rear part with the feed bucket.

Part of the shields is recommended to be covered with a sieve to filter out small impurities, as was done at the Elan-Kolenovsky point of the Voronezh region when cleaning peas on the "hill" of another design. "Slides" build one-way and two-way.

They can also be used to clean the globular grain of other crops (for example, wiki, peas, etc.).

The performance of each "slide" with a width of 600 mm shields is almost 100 kg.

In some cases (in particular in the purification of oat from the wild oat) could be very useful Gorka Sartakova with three moving paintings. This "hill" is made on the spot. Its work is based on the principle of using differences in the surface state of grains and impurities.

Frame "slides", consisting of two boards with a thickness of 5 cm, rests on two sliding racks, which allows you to change the angle of its inclination (frame). In this frame there are three moving fabric (technical cloth or coarse burlap, sheathed with gauze). At the end of the first and second canvases, reflector boards are installed to prevent the mass of the main grain from moving too quickly, and at the bottom under all three canvases there are wooden ribbed rolls or brushes for cleaning them. Above the frame is a small bucket with a feed roller, providing a uniform supply of grain.

"Slide" can be driven by an electric motor with a capacity of 0.5—1 ket, and manually. In the latter case, on the roller of the second blade, a handle is attached, which must be rotated at a speed of 35-40 Rev/min. the Movement of the other two

blades, the cleaner and the feeding roller is transmitted by a chain with detachable links thrown through the teeth.

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