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Investigation of the possibilities of threshing oilseeds in grain grinders

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Abstract: the main content of this article is provided for the creation and application of flame retardant polymer composites to protect structures from thermal impact from Industrial Safety, large-scale scientific research work on the formation of Coke under the influence of thermal temperature, technology to protect compounds from its development, to increase thermal and corrosion tolerance of structures.
Keywords: corrosion, heat and corrosion of metal structures, iron and steel products, temperature, coatings.

Recently, there has been an increasing interest in the cultivation of oilseeds such as sunflower, flax, and sesame in Surkhandarya region. The main process in the harvesting of oilseeds is the selection of seeds from the grown crop. Due to the lack of appropriate equipment, these works are mostly performed manually. Taking this into account, we conducted a study of the possibilities of threshing oilseeds in small-volume grain grinders.

The small-volume grain grinder is manufactured in UzMEI and is designed for threshing wheat, barley and the like. In the production of grain threshing machines, the main attention is paid to rationalization and low volume, meeting the established requirements of performance indicators.

This grain grinder differs from the existing foundations by a tangential separating separator, as well as the ability to grind unpeeled ears, free seeds separated from the grain mixture.

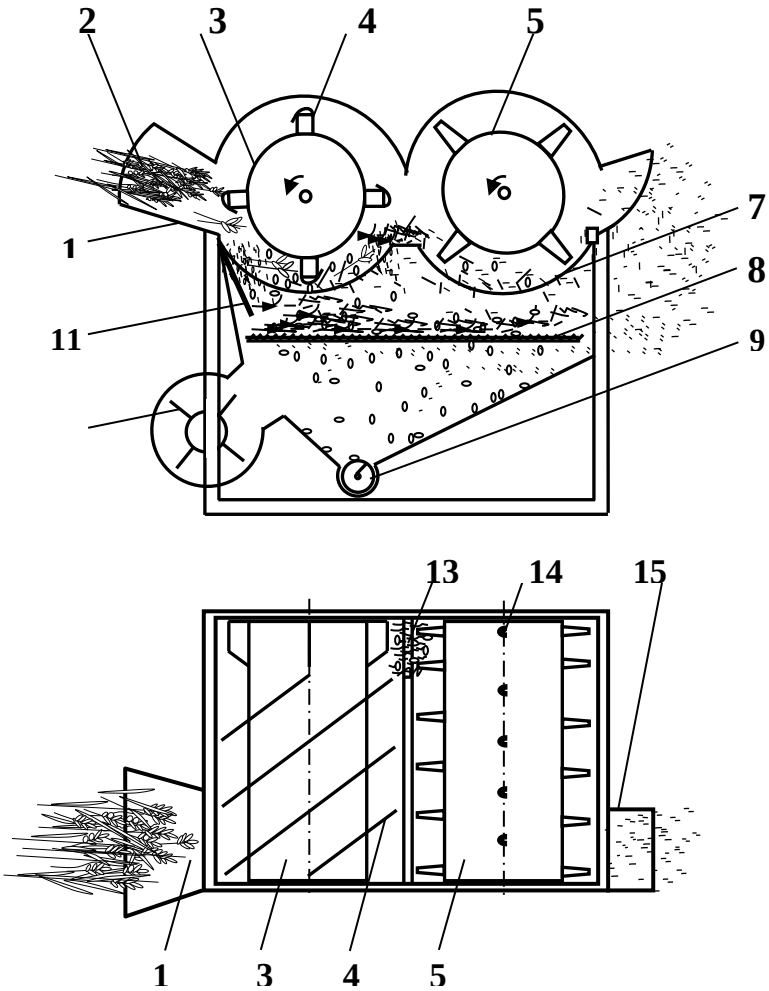
In the mill produced, the technological process of work proceeds as follows (Fig. 1).

The grain mass 2 is transversely transferred through the milking trough 1 to the threshing drum 3. The drum 3, covering the grain mass with whips 4, moves it sideways and carries it through the gap, which is located in the deck 12.

During the grinding process in the threshing machine, the grain mass rotates inside the machine, moving through an intermediate gap 13 into the rotor 5 of the separator. The crushed mass in the separator, moving sideways with the help of rotary fingers 6, grains and seeds are separated from the stem. Small leaves and bran with the help of the blade, 14 formed in the form of an air stream is directed to the exit window 15. The separated seeds fall down through the holes of deck 7.

The grain mixture separated in the decks of the drum and separator by means of a pitched board is placed on the surface of the sieve, sifted by an air stream, which creates a fan 10, is cleaned of stems and bran, accumulated in the auger 9 and immersed in the assembly medium.

In the process of technological operation of the threshing machine, threshing of grains is important, as well as the selection of seeds from the ground mass.



1-feed chute; 2-grain mass; 3-threshing drum; 4-whip; 5-separator rotor; 6-finger working body; 7-separator deck; 8-sieve; 9-grain auger; 10-fan; 11-pitched board; 12-drum deck; 13-intermediate hole; 14-blade; 15-outlet.

Fig.1. Technological scheme of the grain grinder.

The flow of the mass of oilseeds into the threshing machine without getting stuck in the working area depends on the width of the storage compartment. The width of the receiving compartment of the thresher is determined (1,2), respectively, by the volume $q_м$, the incoming mass into the apparatus.

The volume $q_м$ transferred to the threshing machine is determined as follows.

$$q_m = S\omega^2(r_0 + l); q_м = S_д \eta \rho_c V_{уз} B_{т.я}$$

'm Here, S_∂ is the distance between the threshing machine and the deck, m;

$B_{т.я}$ – the width of the gap in the entrance compartment of the threshing machine, m;

η- is the coefficient of total input of the transmitted mass through the gap;

ρ_c- is the mass density of oilseeds, kg/m^3;

$V_{уз}$ -is the speed of the transmitted mass to the threshing machine, m/s.

(1) We will solve the value with respect to W.I, then, will have a value that makes it possible to determine the width of the gap in the entrance compartment of the thresher.

Formula $F_м = m\omega^2(r_0 + l)$;

According to K.Astanakulov's calculations, the speed of the grain mass transferred to the threshing machine will be approximately 0.3-0.4 m/s.

(2) based on knowledge =0.8-0.9 =13-14 m/s;

When = 25-30 mm is equal, taking into account the values =40, 45 and 50 kg/m^3 of the mass density of the transferred oilseeds, a graph of the variability of the gap width in the entrance compartment of the thresher was considered.

Resume

Based on this, the following conclusion can be drawn that the introduction of a grain thresher into production, which is designed to separate oilseeds from the grain mass, will be carried out theoretical calculations in the future.

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