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EVALUATION OF PROSPECTIVE STRUCTURAL AND ARRANGEMENT ELEMENTS OF HARVESTER

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The design of the reaper and the inclined conveyor of the combine harvester remains true to the traditions of combine harvesting, in which they acted and act as the main working body, which provides the process of cutting and feeding bread mass in the thresher with the desired mode. Therefore, to improve the production characteristics of the entire combine, it is necessary that the technological conveyor "reaper-inclined conveyor" work with high technological reliability under different conditions and modes. It is necessary that the combine can clearly and quickly control the reaper and provide uninterrupted power to the threshing drum of the thresher throughout the working day.

Conditions for harvesting bread in Ukraine have a wide range of features related to weather and climatic conditions, selection of varieties. This is mainly due to the main features of the design of the reaper, technical parameters and modes of operation.

Traditionally, combines of different classes use a six-bladed reel with a one-way eccentric mechanism. To reduce the material consumption of the rake is equipped with plastic double teeth; for convenience of maintenance each pair of teeth is fixed by one screw.

The positive elements of the design, which are reflected in recent developments, include an electric remote drive (using a special design of the motor) variator to change the speed of the reel. To ensure the operational control of the technological process - the lifting of the bread mass and the continuous supply to the cutting machine - the reaper must be equipped with a hydraulic system of horizontal removal of the reel and its vertical lifting.

The mechanism of a drive of a knife plays an important role in maintenance of the necessary mode of cutting of a knife - high frequency of working moves, silent work and absence of vibration. The efficiency of work of all reaper depends on its design, technical reliability and an operating mode.

An important and traditional element of the harvester is the spiral auger of the inclined conveyor channel. For work on long-stem breads it is desirable to use between the cutting device and the screw of the cross conveyor which promotes the best receipt of bread weight to the screw.

The operation of the combine on different backgrounds and modes requires high technological reliability of the auger design. Therefore, the combine auger should be equipped with an additional finger mechanism along its entire length, depending on the position of the auger - relative to the bottom of the platform and the condition of the bread mass - these fingers are automatically adjusted in height (departure).

Many hours of work of the combine combines its reaction, attention. Clarity and reliability of work of the combine stop before the fact of dependence on stable height of a cut of a reaper (especially in difficult relief conditions). Recent developments and improvements in the design of the reaper in this direction have led to the emergence of copier hydromechanical systems. A similar device of the type "Land-Control" is expedient in reapers of combines of the Slavutych, Lan series.

This device provides automatic copying of the field surface and adjustment of the cut height in the range of 50-200 mm.

The device includes a number of sensors, which with the help of mobile mechanical copiers "feel" the profile of the field surface and transmit the relevant information through a potentiometric system to the solenoid valve, designed to adjust the height of the cut stem. For clearer control, depending on the characteristics of the culture and working conditions, you can adjust the sensitivity of the whole system. When the working conditions of the harvester are not critical and there is no need to work in automatic mode, the system allows you to work in manual mode.

A significant problem is working on the slopes. At the same time unsatisfactory working conditions are caused not only for the header-header. In solving this problem, the automatic leveling system has successfully proven itself, which allows you to change the slope of the header up to 20% relative to the combine and thus compensate for the existing slope (slope) of the field surface. There is a special switch on the instrument panel of the cab to control the tilt compensation system, and the accumulators provide alignment in accordance with the configuration of the earth's surface.

One of the ways to technically solve the problem of efficient loading of the thresher (especially when working in high feed mode) is the use of reapers with a significant width of capture. This is evidenced by the data of technical characteristics and the results of operation of combine harvesters of different classes. At the same time, the solution of one technical problem gives rise to another: the overall transport width of the combine increases and significantly exceeds 4.4 m (regulated by paragraph 8.4 of 12.2.019 System of Occupational Safety Standards). A number of combine companies to solve this problem offers a "broken" design of reapers and adapters. The use of such a technical solution allows:

- reduce the material consumption of the combine (by excluding from the set of the combine transport cart);

- bring the transport dimensions of the combine in accordance with the current requirements of the SSBP;

- to reduce unproductive expenses of time and by that to increase operational indicators of use of the combine.

It is worth noting the completion of the design of the grain harvester with additional channels-trays to expand the functionality of harvesting sunflower seeds for grain. The use of such an adapter, in comparison with the traditional one, allows to significantly reduce capital investment in the technological process per unit of work performed.