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Analysis is set out the problems of reliability of machines and pryhotovlenyya razdachy fodder in the agricultural sector of Ukraine. Conducted evaluation of harakternыh otkazov dependence in such regimes and Features uslovyy s operation.

Machine reliability of, refusal, Restoration, INJURIOUS, yznashyvanye.

The paper analyzes the problems of machines for making and distribution of feed in agricultural sector of Ukraine. The conducted estimation of reliability of machines for making and distribution of feed is from the features of terms and modes of their exploitation.

Machine, reliability, failure, restoration, damage, wear.

UDC 631,363

Theoretical models PROCESS grinding grain VALTSEDEKOVOYU Crusher

SE Potapova, Ph.D.

A model of crushing in crusher valtsedekovyh to clarify the physical mechanism of destruction of feed grains.

Grinders of a grain, valtsedekova crusher, grinding process model.

Formulation of the problem. Rational use concentrated feed is essential in of feeding agricultural animals. Without pretreatment efficiency feeding grains sharply reduced. One of the main training methods feed for feeding is crushing.

Grinding - The destruction of the processed material in order to reduce its particle size to the size required for effective use of the products while receiving [5]. When grinding hard surface crumbling shell of grain (it facilitates chewing food, while eating increases it), significantly increases the contact area of the feed particles gastric juice, their nutrients are more readily available and fully used animals. Therefore, the right choice crushing tool is essential.

Analysis of recent research. For grinding grain can be used a variety of grinders, but in agricultural production and feed industry gained widespread use hammer crusher [3, 6, 7]. Compared to most other fodder processing machines are distinguished by simplicity of design and service, wide versatility. But these machines have significant drawbacks, following how big unit costs energy for grinding,much specific metal design,uneven particle size distribution the resulting product with high yield dust fractions and content whole grains the ready product [1, 3]. In this regard important task in developing shredders is to increase their efficiency and reduce energy intensity grinding process.

A significant advantage Roller mills are high uniformity of grinding products with low dust fraction [3]. These machines are convenient and reliable in operation. Odnovaltsevi (valtsedekovi) Crushers Roller crushers advantages besides having besides a simpler design.

Therefore, tools that can provide high quality grinding grain can be roller-machines, including their single drum option - valtsedekovi crusher.

Their constructive simplicity, low cost and low power consumption will be particularly attractive to farmers and private farms.

However, the question of scientific substantiation of main parameters of crushers workflow detail unexplored.

the purpose of research is a refinement of the physical mechanism of destruction of feed grain crusher valtsedekovyh and forming the basis for its rational principles of their workflow.

Results. In our opinion, among the existing design schemes Roller mills [4] for grinding grain feed to obtain high-quality grinding products at low power inputs should be used valtsedekovi crusher.

The main structural elements are valtsedekovoyi crusher (Fig. 1): roller 3, Deck 2 of the guide surface 1, which makes processed raw materials directly to the working gap.

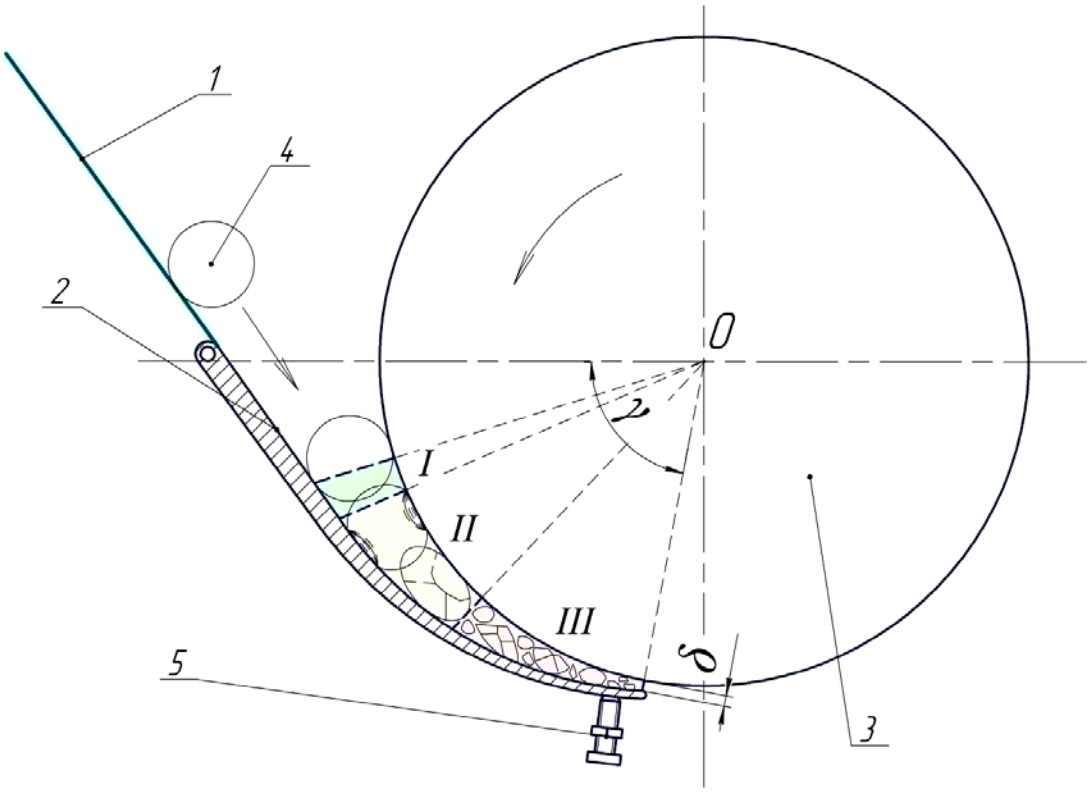

Fig. 1. Model of the process of grinding grain crusher valtsedekovoyu 1 - guide 2 - deck, 3 - roller 4 - seed, 5 - adjusting screw.

The process of grain processing such crusher consists of three successive stages.

The first phase (I) - tightening and elastic deformation takes place from the beginning of focus caused by the action of the crusher working by the time the first cracks corresponding boundary elastic grain.

We can assume that in this phase grain Kika subject to the law in the sense that the power consumption is proportional to the volume or weight of the individual grains.

The second phase (II) - plastic deformation and displacement of individual parts of the grain. Within this phase, grain splits, sometimes plyuschytsya (sealed). After that there is a decisive shift to the third stage (III) - grinding grain into shares, followed by the destruction and deformation of some of its constituent parts. At this time, the formation of new external surfaces with simultaneous viscous-plastic deformation of the material grains. In this first part of the work depends on the molecular forces of cohesion novoutvoryuvanyh surfaces and their characteristics and obeys Rittinhera [2, 5]. The second part of the work (to deformation) depends on the physical characteristics of the grain, the method of focus and speed of action of the latter.

The nature of the process of grinding grain is determined by two variables: the physical structure of grain (depending on the variety, growing conditions and storage) and conditions applying destructive

efforts (depending on the characteristics of workers shredder). So kinematic and geometrical parameters valtsedekovoyi mills such as roller rotation speed, the length of the working area of grinding, which is determined by the length of the deck (deck angle girth roller γ), the value of the output gap δ, profile and slope ryfliv etc play a crucial role.

When mechanical fracture of solids under the influence of external forces in the layers of the body, adjacent to the surface, the formation and expansion of new cracks [2]. A region with a high number of microcracks that Rehbinder calls "prefracture zone." This zone is formed not only the destruction of solids, ie grinding it apart, but in any elastic or plastic deformation. The higher the voltage that occurs when a solid deformation, ie the closer it is to the elastic limit, the more developed part of the body in the deformed zone preliminary destruction, therefore, expressed the brighter the influence of external forces.

During grinding grain crushing process on the performance is affected by many factors. Fully describe the process of crushing, find patterns of its occurrence, its components interact with each other and with the environment is possible when using a systematic approach.

Capturing the angle α grains rollers (Fig. 2) - one of the most important parameters that characterize the first stage crushing process, which depends on the geometric parameters of the job and the size of the processed grain. In operation, a grain crusher radius r centered at O' (R = dE / 2, where dE - equivalent diameter grains) guideline at an angle to the horizontal β falls into the wedge-shaped space between the rollers of radius R (centered at O) and deck, whose value is determined by the size of the input gap Δ. The angle of inclination β guide should not be less than the angle of friction seed on the surface of the deck.

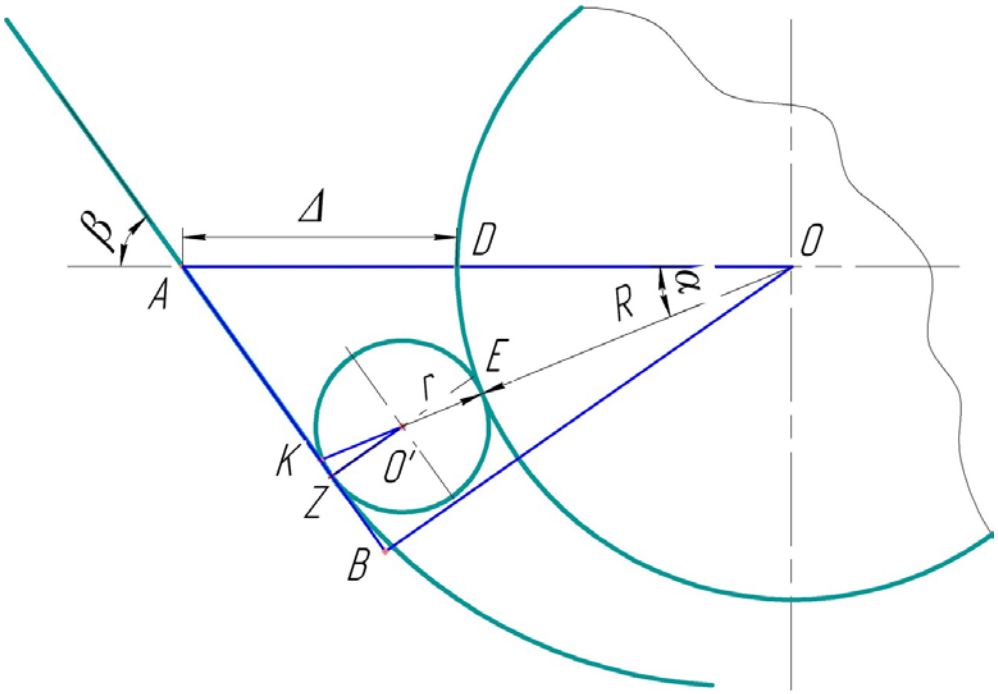

Fig. 2. To determine the angle α depending on the geometrical parameters of the crusher.

Output data:

$$\angle KAO = \beta,$$

$$\angle AOK = \alpha,$$

$$OD = OE = R,$$

$$O'E = r, AD = \Delta,$$

$$\angle OBA = \angle O'ZK = 90°.$$

To determine the angle Capturing α Dependence:

$$\alpha = \arcsin\frac{(\Delta + R)\sin\beta - r}{R + r} - \beta.$$

This equation shows that the angle α depends on the tilting guide β, Seed size r and roller R and the value of the input gap Δ between the rollers and deck.

Conclusion. The theoretical model of grinding grain helps to clarify the physical mechanism of destruction of feed grain mill valtsedekoviy and create the conditions for determining the basic parameters of the proposed machine.

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Proposals process model yzmelchenyya in valtsedekovыh zernodrobylkah for utochnenyya fyzycheskoho mechanism razrushenyya feed grains.

Grinders grain crusher valtsedekovaya model yzmelchenyya process.

The model of grinding process in roll-and-deck crusher has been proposed to clarify the physical mechanism of feed grain's destruction.

Grain grinders, roll-and-deck crusher, grinding process.

UDC 621,873

EXPERIMENTAL STUDY
Transitional regime PUSKU rope winches

YY Serdjuchenko, applicant *

In the article the experimental study of change efforts odnobarabannoyi rope winch. Shows

***Supervisor - Doctor of Science VS Loveykin**

Full-scale models of the scheme established by the registration measuring-equipment methodology of the experiment.

The transitional regime, effort, experiment, measuring and recording equipment.