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Abstract.*In Article pryvedeny results of research éksperymentalnykh of columns of reinforced concrete circular cross-section on poperechnyy uzhyb s preliminary cogging and without preliminary cogging, an increase nesuschey been detected abilities of columns with preliminary cogging 43.7%.*

Keywords: trials, concrete, Constructions

Annotation.*In paper the results of experimental studies of reinforced concrete columns of circular cross section on the transverse bending with advanced compression and without compression, there was an increased carrying capacity of the column with the preliminary compression by 43.7%.*

Key words: test, concrete, construction

UDC 631.23

DESIGN FEATURES OF MODERN Soshnikova seeders AND COMPLIANCE Precision Agriculture

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Abstract. *A two-phase system for Soshnikova method of planting crops with automated control certain depth of seeding, which ensures even distribution of seed in the soil and optimal conditions for seed germination.*

Keywords: sowing, automated control, two-phase method schilynoutvoryuvach sowing, pressing disc set seed distribution, precision agriculture

Formulation of the problem. Planting is one of the most important operations for growing crops. The quality, method and timing of planting depends on the uniformity and speed of germination, further development, and eventually harvest and crops. Of particular importance

is played by the quality of sowing the transition to precision farming technology [1].

Machines for sowing must perform distribution and incorporation seed accordance with the optimum amount of light, heat, moisture and nutrients. These requirements are mainly due to the level of soil fertility, moisture, provide nutrients, and planting method.

Analysis of recent research. The main requirement for sowing is to provide the necessary space each individual power plant. Dan condition can be done at a certain seed placement along the line in addition, contributes to a better care of the crops in the maturation culture. It is equally important requirement is to ensure uniformity of occurrence of seeds in the soil depth, and seed quality fertilizers. These and other ahrovymohy mainly design and determine the domestic and foreign sowing machines and their working organs [2, 3]. To ensure the quality of planting at a high level - is not an easy task, because the seeds of a single variety is different in shape and size, which affects the quality of its distribution along the line and the depth and deviation from the straight position.

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The purpose of research. Creating optimal conditions for the growth and development of plants with seed Soshnikova by developing a two-phase system for seeding method with automated control certain depth of seeding.

Results. Questions improve the quality of seeding at sowing involved in many domestic and foreign researchers and manufacturers of agricultural machinery. For example, the company is trying to ensure uniformity GaspArdo depth course Shovel in soil by setting restrictive flange in place of the conclusion of the seed (Fig. 1), which should guarantee a uniform field cultivation even in areas with a rough surface. Different diameter restrictor determines the depth of seeding. Limiters set of cast iron, to increase pressure, and of steel, to reduce pressure on the soil.



Fig. 1. The drill coulter Gigante manufacturer GaspArdo.

Vaderstad Tempo sivaltsi to apply the so-called system copy "Walking" tandem (Fig. 2). When hitting one support wheel on stone, another proportion drops to reduce the lifting section twice. Support wheel drive and equipped with adjustable seed cleansing drives.

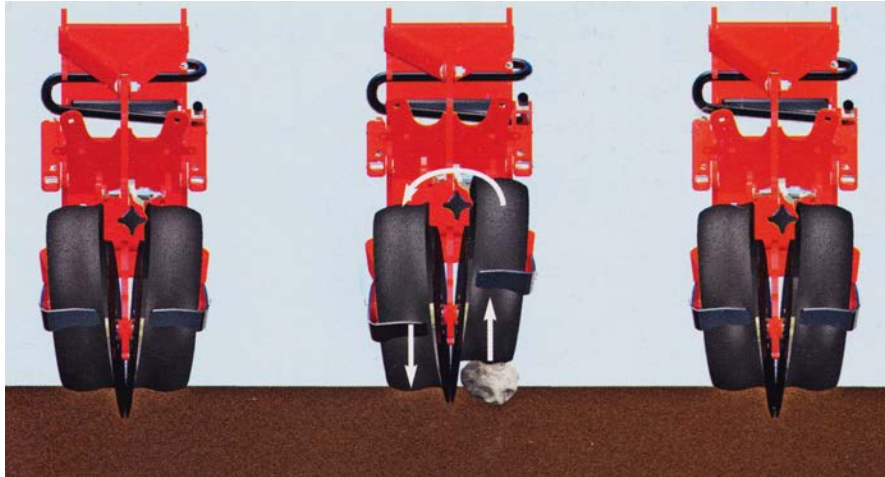


Fig. 2. Shovel Drill Tempo producer Vaderstad.

These steps to improve slightly improve the quality of education notch, but do not meet modern requirements in full. The mechanism of restricting flange requires time-consuming to change the depth of seal flange restrictive. "Walking" at running tandem forms a barrier seed bed twice milkishe altitude obstacles, leading to uneven stairs in the fall in the seed furrow hang at different heights and not in contact with the ground. Germination occurs randomly. Germs that can not catch up behind the leaders and still suffers harvest.

For pressing seeds to the bottom groove known manufacturer Great Plains drills equip their sled Keeton, which additionally fixed tube of liquid fertilizer (Fig. 3 a) or clamping wheel (Fig. 3, B).

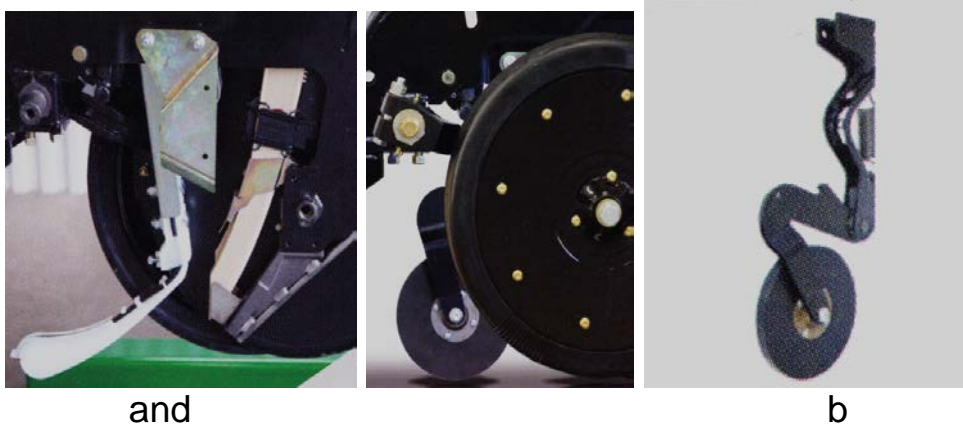


Fig. 3. Working bodies for pressing seeds to the bottom groove from producer Great Plains.

Similar sled Keeton Seed Firmer (Fig. 4) uses and Precision Planting. Thin plastic guide extends to the bottom of the furrow and presses the seed which departs from the seed tube to the bottom of the V-shaped grooves. So Keeton Seed Firmer records seeds at the correct depth and creates a reliable seed contact with the soil. The disadvantage of such systems is that they are only pressed against the bottom seed furrow. The bottom of the furrow, in most cases the use of shovels different from equidistantly line to the surface of the field. An important and responsible task during sowing is wrapping and sealing the seed bed. For this there is a large variety of employment (Fig. 5 - Fig. 8).

The disadvantage of these rollers is not provided clamping force regulation as a reaction to the change of the hardness of the soil along the length of the string. The result is uneven compaction of soil around the seeds within the same field and the uneven depth of seal that can follow the leaded parts of plants (Fig. 9).



Fig. 4. sled Keeton Seed Firmer from Precision Planting.

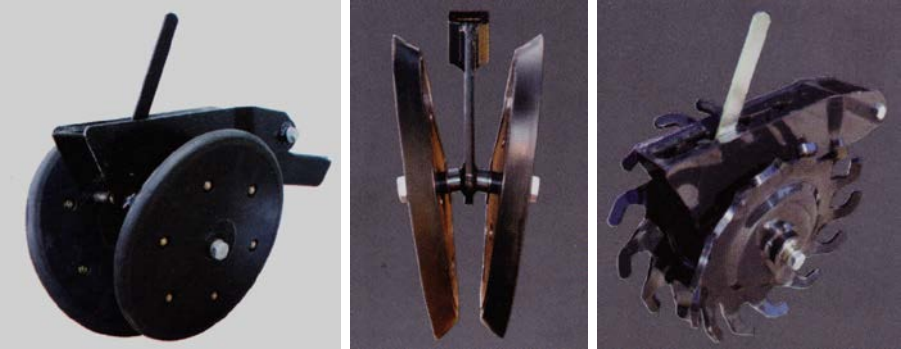


Fig. 5. Shovel elements seeders Great Plains.



Fig. 6. Wrapping up drills working bodies of JSC "Todak."



Fig. 7. Elements of Soshnikova seeders "Monos".



Fig. 8. Elements of sowing Soshnikova Prosem.



Fig. 9. The result of uneven depth of seeding.

Insufficient clamping force leads to the fact that the root system of plants is poorly developed. Seals root in turn arise when there is excessive clamping force, creating mechanisms drill during sowing. Seals causes a number of negative factors: reducing the number of germs that come down; increase plant stress and reduce development and leaf of the plant as a whole; improper germination results in delayed pollination of plants in dry years with hot summers.

To ensure a sufficient hollow shovels in the ground using various kinds of paging sections. In the simplest version installed springs press section to the surface of the soil. To increase the clamping force range springs replace pneumatic or hydraulic cylinders.

The system Row-Pro (Fig. 10) includes a pneumatic cylinder connected to the parallel suspension arms section is managed by the controller. The sensor is installed on the support wheel Shovel defines the load, after which accordingly adjusts the pressure in the cylinder, in order to equalize the load on each individual drill sections. System Air Force (Fig. 11) of Precision Planting intended for automatic measurement and control of clamping force. Air Force keeps drill at the ideal height and controls the minimum required pressure on the ground, providing the same depth of seeding the field with a different density.

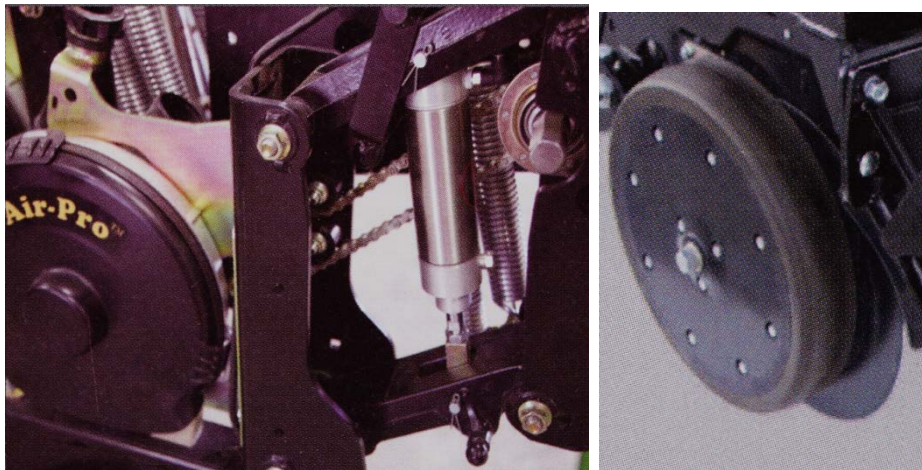


Fig. 10. The system Row-Pro.

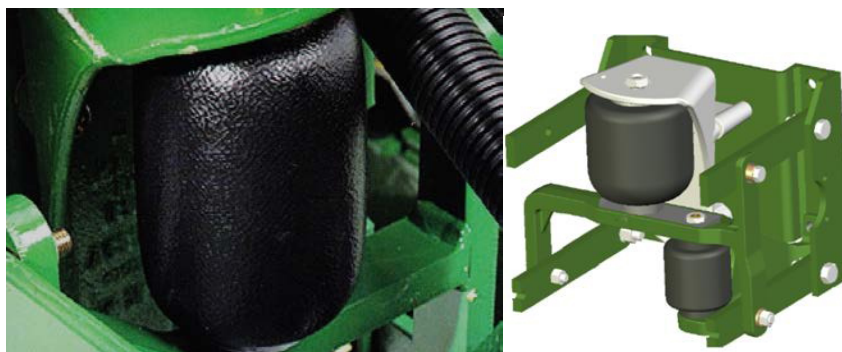


Fig. 11. The system of Air Force.

The principle of the Air Force is that the sensors measure weight relative to the reference section of the wheel and the controller calculates the excess or lack of weight, which will be offset by rubber actuators that are installed in each section. The disadvantage of these systems is that their work is controlled by coulter depth course not the final depth of seeding.

To implement the task set Soshnikova system for planting crops (Fig. 12), consisting of a disc schilynoutvoryuvacha 1, where the limiting fixed flange 2 which is hinged by means of rods 3 and 4 springs attached to the frame 5. Spring adapted to clamping force adjustment screw using a pair of handle 6 and 7. Consistently, a longitudinal axis, the progress of the unit (indicated by arrow) after schilynoutvoryuvacha set the guide 11 seeds, with adjustable height, which is a continuation nasinnyeprovoda or sowing device (FIG. not shown). After guides seed 11 via leash 9 and supports 16 fixed pushing drive 17, the depth of the course is regulated mechanism that contains copy sled 10 propped spring 12, whose position is fixed by means of an inductive sensor 18, control unit 8, a compressor 13, distributor 14, actuators 15.

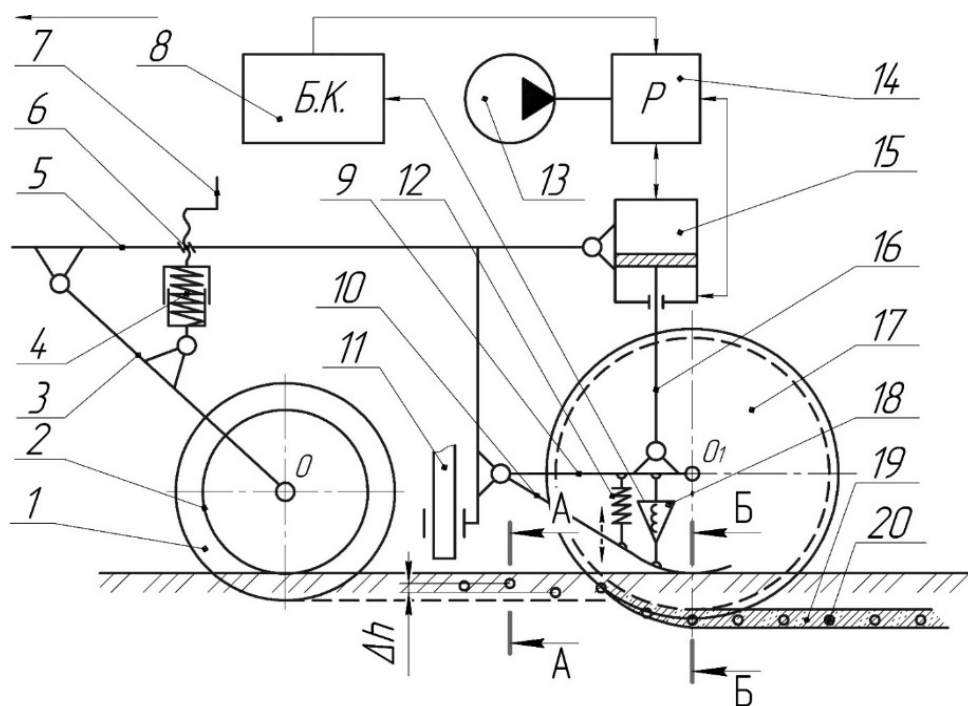


Fig. 12. Scheme Soshnikova system for planting crops with the mechanism of regulation and stabilization of course pushing the disc in depth.

Schilynoutvoryuvach 1 made in the form of wedge-shaped disk knife, which should provide a form of cracks on the surface of the field, that seed fell 20 free zaklynyvalos to it and closer to the bottom. [4] Nasinnyenapryamnyk 11 is at the top of the cone, which gradually turns into a cylinder and is designed to connect nasinnyeprovodu or sowing machine. The value nasinnyenapryamnyka section 11 provides seeds free passage 20 without jamming and deceleration. The outer diameter smaller than the width nasinnyenapryamnyka 11 schilynoutvoryuvacha 1 in position restrictive setting possible flange 2 at a minimum depth of cracks. The lower part nasinnyenapryamnyka 11 has a slanting cut from

top to bottom in the direction of the unit to prevent clogging his ground, and the bottom edge of the course set below the lower edge of the tail flange 2 to avoid getting past the seed slot.

Pushing drive 17 obliqueness is 3-5 °, which ensures minimum friction forces on its soil sidewalls. Lunch disk made in the form of a cylindrical trough, which provides a cutting width of soil from the walls and cracks indentation seeds at a given depth. Control unit 8 has electronically adjustable preset seeding depth 20.

Soshnikova described system for planting crops is as follows. When moving the drill toward the arrow (Fig. 12), schilynoutvoryuvach cuts and shifts the ground forming a gap through which the seed comes nasinnyenapryamnyk. In the cleft is samozaklynyuvannya seed gap between the side walls (Fig. 13, section A-A) without rolling. This seed depending on the size zaklynyuyetsya in the cleft at different depths Δh (Fig. 12). Pushing the drive, moving the holes, cuts wet soil from the walls, sleeps seed and presses it to the desired depth Hz (Fig. 13, section B-B), thus forming a continuous strip of compacted soil 19 seeds which reliably recorded at three planes and secure movement of working bodies (Fig. not shown) that perform wrapping grooves remaining after pushing passage of the disc.

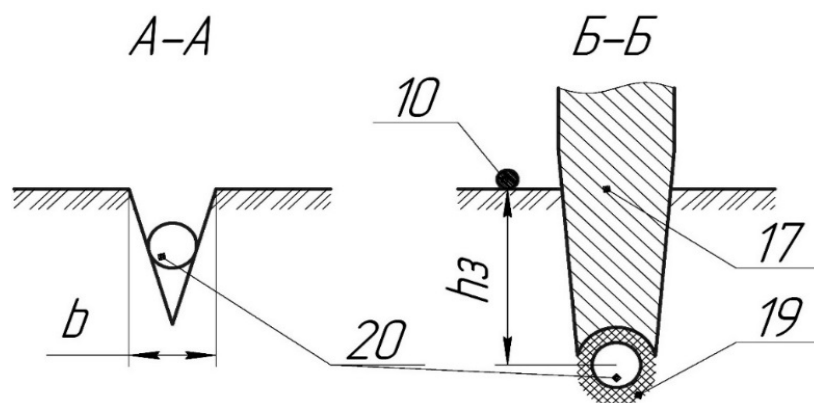


Fig. 13. CROSS SECTION: AA, BB.

Regulation and control of certain depth wrapping is performed through small inertial sled, driven by the band that was formed after the passage of the tail flange schilynoutvoryuvacha, and the lowest point of copying sled is in the vertical plane of the lowest point of pushing the disk copies inequalities field and transmits vibrations to the sensor inductive type that is connected to the control unit, which is formed on an exit control signal distributor, which is formed in accordance with the established depth handle wrapping and the position of the sled. Distributor switch delivers compressed air from the compressor in a particular cavity actuators that move the pushing disc so that the depth Hz, is always the same [5].

To confirm the efficiency and operation of research workflow Soshnikova system design scheme was composed and conducted computer simulations using software Mathematica 9.01.

Conclusion. The proposed system Soshnikova for sowing crops indentation allows the seeds to a given depth through the soil, which reduces injury seeds and ensures incorporation into the soil of any seed that is a prerequisite for designing seeders for sowing as grain and row crops. Not broken even distribution of seeds along the line, which provides a seeding device and is reduced to a minimum spreading seeds sideways relative to the center line of the line. Soshnikova system provides a set depth placement of seed in equidistantly line from leveling the field surface hardness and dimensional change of surface irregularities field of dense seed contact with the soil layer across its surface.

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Abstract. *Presented soshnykovaya two-phase system for the preferred method vyseva selskohozyaystvennyh cultures with avtomatyzyrovannym regulation zadannoy hlubyny zadelky semyan, something obespechuyvaet vysokuyu accuracy apportionment semyan in the soil, and most sozdaet pryblyzhennyye for optymalnym terms for proyzrastanyya semyan.*

Keywords: sowing, automatic regulation, dvuhfaznyy Way Seva scheleobrazovatel, vdavlyvayuschy drive zadannoe ALLOCATION semyan, tochnoe zemledelye

Annotation. *Created the coulter system for the two-phase method of planting crops with automatic regulation given seed depth that provides a predetermined sowing distribution of seeds in the soil, and creates the most approximate to optimum conditions for growing seeds.*

Key words: sowing, automatic control, two-phase method of sowing, making the slit, pressed disk, a predetermined the distribution of seeds, precision farming

UDC 621.4.007

ANALYTICAL MODEL MECHANISM rehabilitation machines for Forestry WORKS AND ITS USE

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Abstract. *The article presents the results of justification analytical model of the mechanism of recovery machines Forestry works and its use.*

Keywords: model, recovery efficiency

Formulation of the problem. State machine elements mechanisms for Forestry work (further - cars) changes during its operation in close relationship with each other.

Analysis of recent research. To further happened terminological confusion briefly on some of the terms we use during diagnostic analysis mechanism [1, 2].

When we understand the mechanism as a qualitative assessment of the ability of an object to perform specified functions in the design. Property

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object determines its ability to perform specified functions, called state parameters. If a general assessment of the mechanism to take its main output signal, then its value will directly or indirectly affect so active status options [3]. However, in each mechanism is a group of state parameters [4]. What no effect on the value of primary output, while at the same time determine the performance of individual units mechanism. These parameters have the name passive [5]. As active. So passive state parameters can be regulated than largely determined by the nature of their impact on the mechanism. For this purpose, diagnostic signals occurring during operation mechanism and perceived special instrumentation [6, 7].

Getting diagnostic analysis of the object, you must first define its main output signal [8, 9]. For tractor engine, for example, such a signal is