Formulation of the problem. A significant contribution to the development of the theory of cutting edge made VF Semenov, VA Żeligowski, IF Vasilenko, ES Bare, AN Karpenko, LP Kramarenko, NE Reznik and others. learning the process of cutting a variety of crops. The study of static and dynamic cutting engaged in by such scholars as VP Horyachkin, VF Semenov, NE Reznik, AA Iwashko, LP Kramarenko, IF Vasilenko et al.

Kramarenko LP noted that the greater the speed of the knife, the better the process of cut stems as reduced resistance to cutting, and under certain circumstances and disappear ongoing deformation such as crushing, shearing gap. Slowly contacting with stem, blade too zmynaye it and cutting process is complicated, and at considerable speed - hardly deforms it. There advancing current strain - changing the shape of the stem with a knife penetration into the wood.

Analytical and experimental studies of most papers were sent to study critical speed, which provides cutting inertia backwater freely growing stems and cutting of wood. Reducing the weight of the stem offset by an increase in its rigidity while reducing the distance from the attachment to the place of cut.

Analysis of recent research. Kravchenko VV his scholarly work [2] considers the central part elastic oblique stroke, which occurs in the case where the speed of the center of gravity hammer lies on the center line and branches off. In his studies, he suggests that the axle is bent branches will form part of the arc of a circle and be constant from the moment you touch the hammer-branch to its interjection.

The results of theoretical research identified dependence (1) for the components of the displacement rod round section variable stiffness that has significant differences from the results that may be obtained by resistance materials and methods of large deflections of thin rods, and to determine the power that must apply for a specific deflection or stress state in variable section rod sections with some elastic constants [3]. To solve this problem studied plants deviation under the action moving and under a certain applied force.

$$w = \frac{1}{3E\pi r_0^{\,4}(-1+kx)^3} P \times x(-6(y-z)(y+z) + \\ +2x(2x+(-3+kx)(h+k(-y^2+z^2))) + \\ +(3+kx(-3+kx))(y^2+3z^2)\nu - 3r_0^{\,2}(-1+kx)^2(2+3\nu)) \quad (1)$$

This equation can be used in solving problems related to the operation, as well as in the design of forestry workers and other machinery.

Such studies are necessary to ensure optimal geometric parameters and kinematic modes of working of machines for cutting energy quality vegetation.

The purpose of research - Identify the advantages of the method of inertial shock-felling cut during harvesting biomass in Ukraine.

Results. The first collection of biomass plantations planted after making the first growing season. Experiments have shown that there is a close relationship between height and cut the number and size rod that grows during the growing season: the higher cut off the plant, the more it grows shoots and the smaller the diameter and height [1]. At this time, getting the best planting material. Runaways, the first cut at a height of 5-10 cm. In practice, it is better to conduct cutting at 10 cm from the soil surface, because over several meetings biomass from stumps that are formed thickening to be cut again in 7-10 years - do rejuvenate plantations. In one field willow can grow up to 20-30 years. In the third year after the establishment of plantations increase biomass can be up to 31 tons, there is a maximum increase of biomass.

The feature is a dynamic process of cutting resistance rod that is cut off, due to its mass komlevoyi parts. The process of interaction of the working body of the shock inertial cutting of plants you can imagine how dynamic cutting, where the knives by accumulated kinetic energy and engine torque machines cut down the plant.

This mechanism is the most important hub for modular machines, which put forward a number of the following requirements: high performance, low power consumption, design simplicity and reliability. Ability to work in the presence of the cultural area of wood residues, the ability to cut the plants that grow close to each other. Different types of cutting devices with blades group other than technological features and design.

We have developed to simplify the theoretical analysis of the existing classification of knives cutting devices (Fig. 1).

Knives are made of alloy tool steel or and must have sufficient strength and rigidity to support efforts to overcome the shock cutting shoots and comply with the surface of the truncated planting to not further damage restoration plantations. Knives can be the chisel-like symmetrical wedge and asymmetric (Fig. 2), and their mutual combination and arrangement of the rotor relative to the cutting apparatus determines their design.

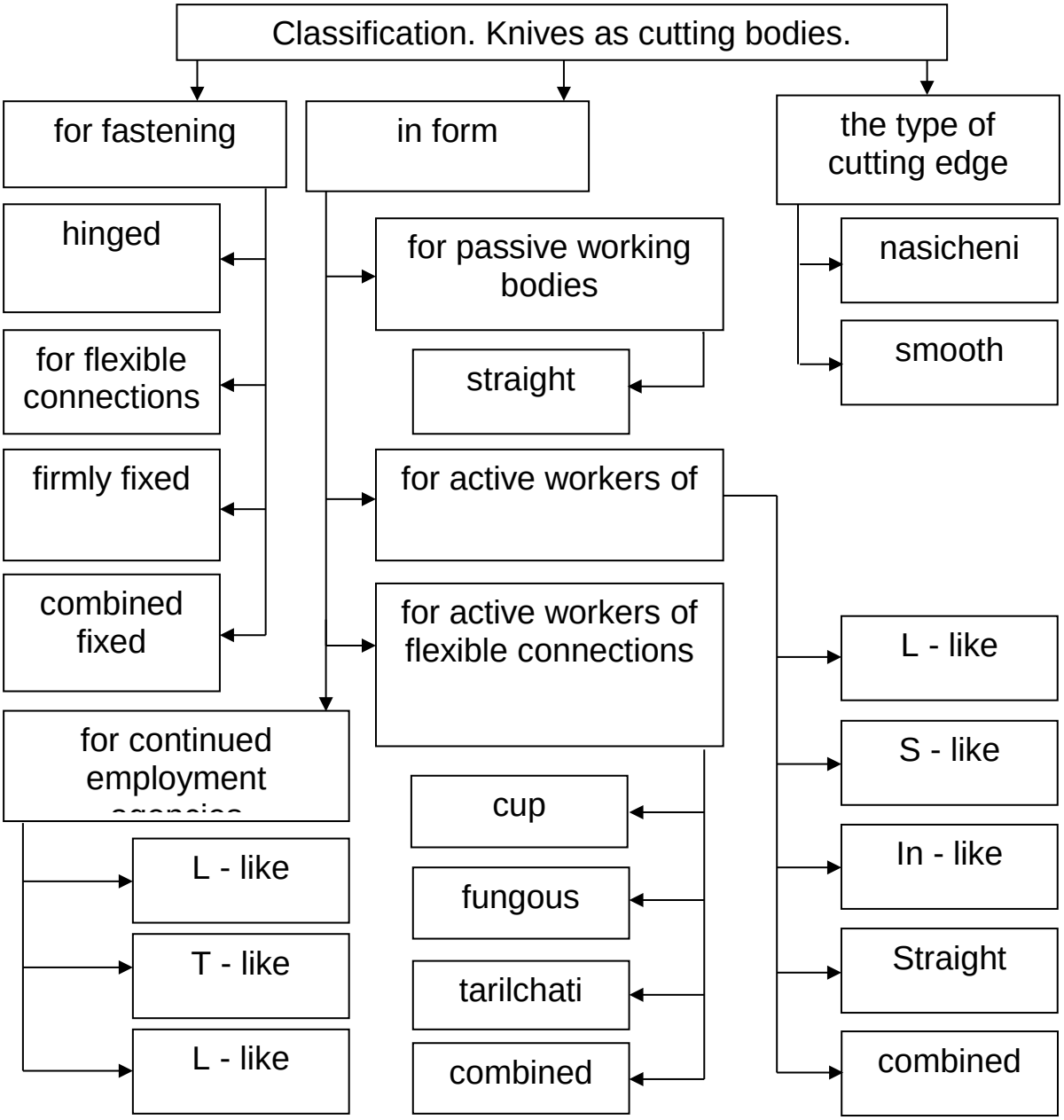
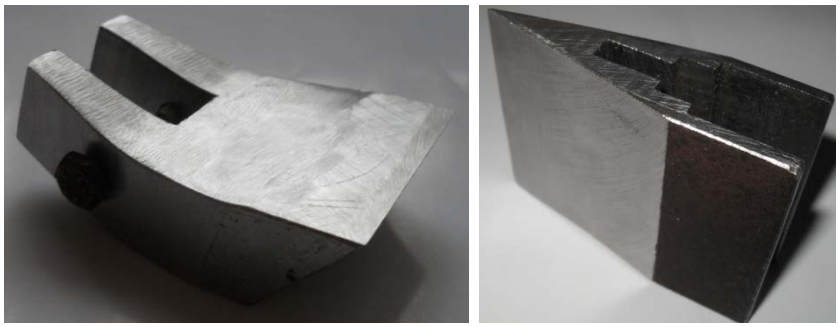


Fig. 1. Classification of knives as cutting.

Advantages of asymmetrical wedge tool-evident. Asymmetrical wedge faces relative trajectory eliminates friction rod that is cut off, the back faces and the need of sharpening. Unlike other methods of cutting wood division occurs without formation of small chips, so no need in the mechanism of removal of fine particles, which greatly simplifies the design of the cutting body and reduces energy costs cutting. Monolithic cutting body is structurally simple form of knife sharpening wedge which at pererizuvanni provides simple moving trajectory as one of the important advantages bezstruzhkovoho cutting - cutting of high wear resistance and lack of secondary cutting process - heating tools and wood.



a b

Fig. 2. Knives: A - asymmetric wedge-cutter; b - symmetrical wedge-cutter.

Almost all machines, the base of which lies in the inertia-felling action of these working bodies are similar in design and differ only in the location of the cutting device on the tractor, the tractor type and type about working body.

Special spreading forest enterprises in Ukraine came chipper rotor corridors RRC-1.5 (Fig. 3). According to statistics, in 57 subordinate enterprises existing 97 modular rotary brush cutters, 94% of whom are RRC-1.5.

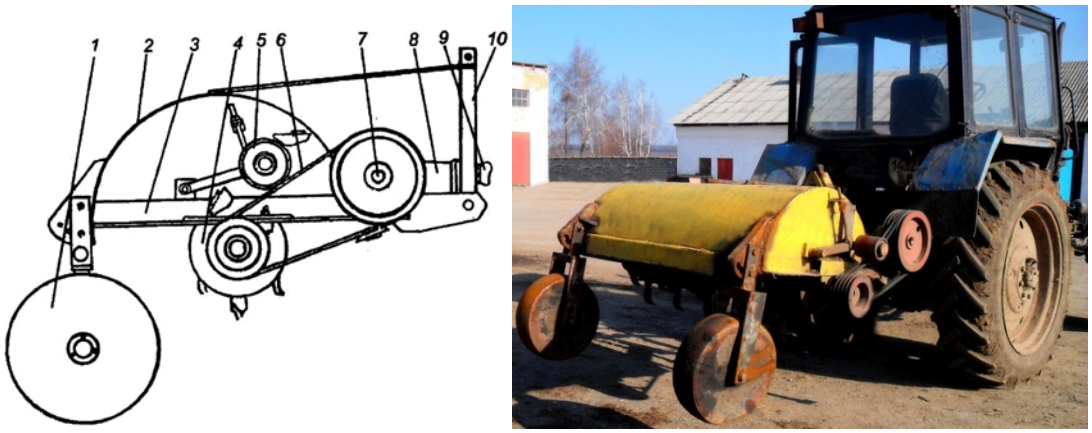


Fig. 3. chipper rotor corridors RRC-1.5: 1 - wheel carts; 2 - guard; 3 - frame; 4 - rotary drum; 5 - a tension roller; 6 - V-belts; 7 - drive mechanism; 8 - conical reducer; 9 - drive shaft; 10 - weights.

The cutting device located behind the chipper while moving tractor. This body of work is much more stable with fluctuations and distortions in the movement of the unit without clogging plant remains, and allows you to adjust the height of cut vegetation. Depending on the diameter of the tree and shrub vegetation you want to cut, rotary brush cutters are certain modes of operation. The only downside is they cut partially crushed material remains in place, there is a need to use additional pick.

The main parts are chipper: frame 3; rotary drum 4, which is a tube with a welded discs, which are mounted in a spiral hammer knives, and driven by the tractor from the rear of GDP; klynopasova transmission belts of 6; drive mechanism 7; conical gear 8; 9 drive shaft and wheel carts 1 by which regulate the cutting of vegetation height of 0.1 to 0.4 m.

Biomass harvesting technology is quite simple. Of GDP due to the drive shaft, conical reducer and V-belts tractor driven rotor with blades attached to it. In front of the tractor, which is close to the plantations, pusher prohynaye plant and thus creates a tense pre-zone, so the creation of critical stress fracture in the next stages require less energy consumption. Then cut biomass falls to the ground. Result of the machine RRC-1.5, which also rejects biomass to cut the zone of cutting machine, compared accurately maintains cutting height, although this gives a little fuzzy cut - Fig. 4.

a b

Fig. 4. Sections of annual and three-year shoots chipper RRC-1.5, and - annual shoots, b - three years.

Prospects and inertia of the method of shock-felling cut during harvesting biomass is as follows. Cutting is a continuous process due to the rotation of the rotor blades placed in a spiral and straight forward movement of the tractor.

Conclusion. Use of the machine rotor unit, equipped with knives, inertial impact, will allow a significant short pulses, it is sufficient for their relatively small size for cutting trees and shrubs power plants. The use of these workers reduces power inputs and also enhances performance through the machine as the machine of continuous action, no wood dust and improves hygiene conditions. Abides by the presence of a high percentage RRC-1.5, which is 94%, based on the enterprises of Ukraine, one could argue about the prospects of research on the basis of this chipper.

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The article yzlozhenы results of research theory stems LINE pro-hyba drevesnыh kustarnykovыh and power machinery plants species and Benefits of application bezstruzhechnovoho rezanyya.

Эnerhetycheskye plants, prohyb stems, udarnoe rezanye.

This paper presents the research the theory of stems lines bending of energy trees and advantages of using chipless cutting wood.

Power plant, bending stem, shock cutting.

UDC 662.767.3

"WET" CLEANING METHODS BIODIESEL

OV Polishchuk applicant *

The necessity of cleaning biodiesel alkaline catalyst. The analysis of "dry" and "wet" cleaning methods

***Supervisor - PhD VA Dubrovin**

biodiesel. Otseneni advantages and disadvantages bubble, aerosol and bulk washing biodiesel.

Biodiesel, washing, drop, bubble mixer, neutralization, methyl ester catalyst.

Formulation of the problem. In connection with the emergence of global energy and economic world crisis, mankind actively searches for alternatives to fossil energy sources. Particular attention is paid to finding substitutes for light petroleum products because no cars, planes, trains, humanity sees its continued existence. Most of the cars, tractors and many other mobile and stationary machines are driven by diesel engines at present, mainly working in the oil diesel fuel, one of which is to substitute biodiesel.

The production of biodiesel using traditional technology to