USE OF AN IMPROVED BUCKET ON A BULLDOZER

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Abstract:
The article describes the research work on improving the bulldozer wheel for digging hard and frozen soils. Proposals have been made to prevent the problems and excessive expenses that arise in the excavation of hard and frozen soil.

Keywords: knife, dense, bucket, bush, katlovan, material, pour, soil, resource.

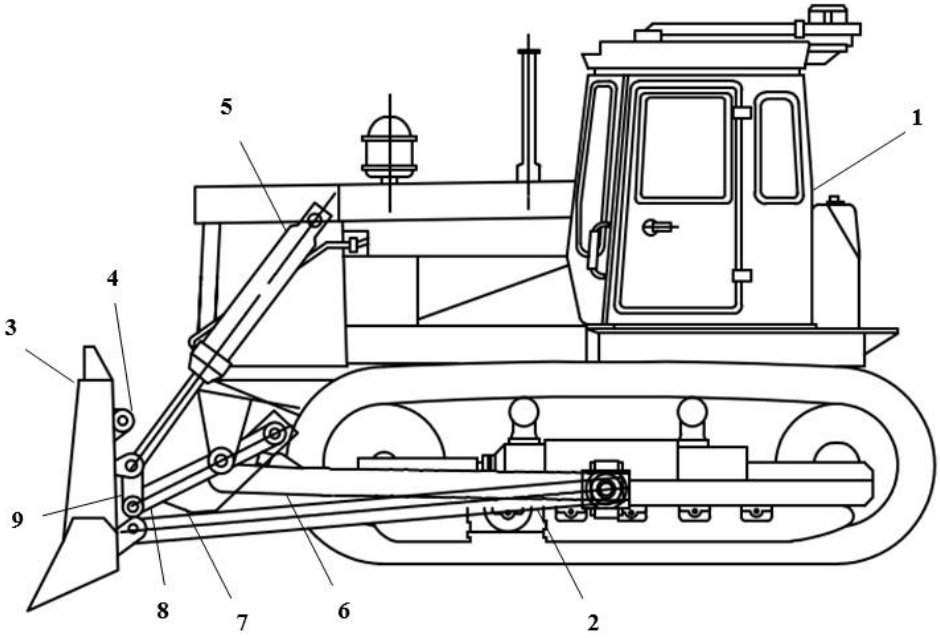
During the years of independence in Uzbekistan, great changes were made in the field of water management. In particular, the water resource management system has been improved, the technical condition of irrigation networks has improved, extensive work has been carried out to improve the land reclamation of irrigated lands and increase their water supply, the introduction of modern water-saving technologies, automated management and monitoring wide attention was paid to establishing a system, diversifying the production of agricultural products. Crops that require a lot of water, such as cotton and rice, have been reduced, and instead of them, the area of grain crops, vegetables and pulses, and orchards and vineyards has been expanded.[1,3]

Our government allocates a lot of money from the state budget for the operation and modernization of water management facilities. Every year in the republic, 5,000 km of main canals, 16,000 km of irrigation and canal networks, about 10,000 hydrotechnical facilities and hydroposts are cleaned and repaired at the expense of water consumer associations and farms. In recent years, 1.5 thousand km of canals, 400 large hydrotechnical structures, 200 pumping stations, 386,000 irrigated lands were reconstructed, and the technical condition of canals and hydrotechnical structures was improved. However, despite this, we are witnessing that there are some inconveniences and excessive expenses for agricultural machinery in the processes of developing new lands and working on uneven, hard soils. As we know, there are different types of soils in our Republic, including hard soils. There are some inconveniences in the process of leveling on hard soils, and a number of machines and equipment are required for the implementation of this process.[6] This, in turn, leads to excessive spending of time and capital. Currently, in the process of leveling hard soils, it is one of the urgent problems of improving the leveling machines in order to increase the work efficiency of the machine, to achieve a reduction in time and capital expenditure. Having studied the problems mentioned above, we developed the project of energy and resource-saving working equipment for bulldozers in the scientific experimental laboratory of the NRU Bukhara Institute of Natural Resources Management "TIIAME" (Fig. 2).

In agricultural work, bulldozers are used to cut soil layer by layer and to transport and push it to certain distances (up to 100-150 m). Bulldozers are a universal machine with high productivity, which can be used for various leveling and cultural-technical (texture formation, excavation and expansion of excavation, leveling of soil without excavation, collection of spilled materials, temporary and permanent closing of irrigation networks, digging pits, cutting and leveling areas into layers, leveling roads, trimming and cleaning the layer of bushes and plants, digging small holes, cleaning rocks, etc.) is used. Bulldozers are widely used, in particular, in raising the canvas of water management systems and canals and collector roads from the side reserves, in the construction of all types of pits, in the construction of open irrigation and melioration networks, and in the leveling of cavaliers. Bulldozers are mainly included in the complex of land digging or reclamation machines in irrigation and land reclamation works, road construction works. More than 40 percent of earthworks in water management and rural construction are carried out with the help of bulldozers. The main

indicators of bulldozers are good mobility, when the volume of work is not large and it can be used in different areas and in different conditions.[5] But one of the main disadvantages they have is that they cannot process hard dense soils. It is necessary to soften the frozen and hard soils in advance. In order to reduce these negative consequences, a special ground softener is installed on the front of the bulldozer.

The proposed device belongs to construction machines. As an additional device, this improved working device is attached to the back of the bulldozer tipper with additional handles, in which push tippers are a continuation of the rotating frame of the blade, located behind the softener and directed to work in the opposite direction. additional device.



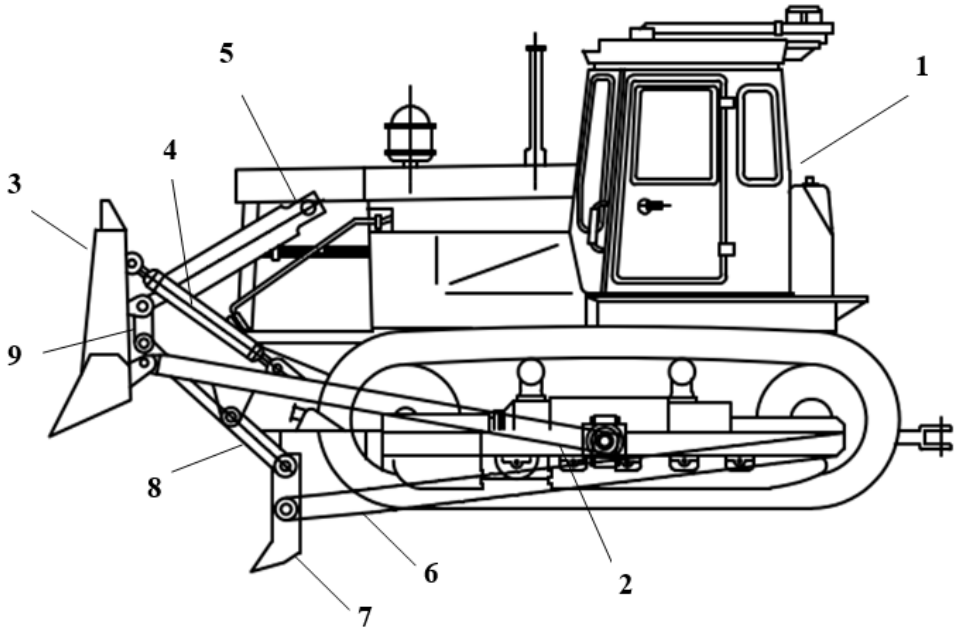
Picture 1. View of the bulldozer with improved working equipment in the transport state.

1-tractor; 2- push beams; 3- tipper; 4- handles; 5- hydraulic; 6- cylinders; frame 6; 7- softening tooth;8- Holder .

Its disadvantages are the lack of a deep softener that softens hard soil and the absence of the need to turn the bulldozer upside down. Closest to the invention in terms of its technical nature and the achieved result, it is considered a softener for frozen and dense soil, including a support machine with bulldozer equipment, a pusher with a blade inside. with tensioners and knife-working equipment and poles; mounted under the frame of the main machine, hinged to the rear of the main machine, kinematically connected to the bulldozer equipment through a

three-joint joint, and its middle link is attached to the frame of the main machine is installed.

Its disadvantage is low reliability, because during operation, the push rods on which the working equipment is installed have compressive and bending forces, which causes excessive stress on the device. In addition, the kinematic connection of the push rods of the softener with the push beams of the bulldozer equipment is carried out with the help of handles bent according to the plan and passing over the movers. It is achieved due to the connection of one extreme joint to the blade and the fastening of the working device. In the other extreme link. Figure 1 shows the softener in the working position of the tipper, general view; Figure 2 - cutting equipment not working.



2 - picture. View of a bulldozer with improved working equipment in working condition.

1-tractor: 2- push beams; 3- tipper; 4- handles; 5- hydraulic cylinders; 6- frame; 7- softening tooth; 8- holder.

The device for softening frozen and dense soil is mounted on a tractor 1, and the bulldozer equipment and softening equipment, consisting of push beams 2, tipper 3, rams 4 and hydraulic cylinders 5 for blade control, including under the main machine Includes 6 built-in push frames. Push frames are kinematically connected with blade 3 through a three-joint joint. It is connected to the tipper 3 through a hinged triple bracket 9, the softening tooth 7 is firmly fixed to the working device, and it is attached to the base machine through the handle 8. The softener works as follows. In order to soften the frozen and hard ground, the

bulldozer equipment is raised to the upper position with the help of hydraulic cylinders 5, the handle 3 connected to the tipper 8, due to its hinged fastening, drives the working device into the ground by giving force to the vertical ear 9. When the tractor 1 is moved forward through the frame 6, the pushing force is transmitted to the ears 9, which interact with the soil and allow to soften the frozen and hard soil layer by layer. The bulldozer equipment is lowered using hydraulic cylinders 5, thanks to ears 9 and front ends. the frames 6 are raised and the softened soil is cleaned layer by layer by moving the main machine forward. The connection of the joint of the working equipment with the blade and the rigid fastening of the working equipment to the other extreme joint 7 allows to reduce the load on the push rods of the softening equipment and more rationally distribute the load to the tipper.

Summary

In the process of processing hard or frozen soils, construction equipment faces a number of problems, and this leads to the additional involvement of special softening machines or equipment. Additional machines, in turn, lead to excessive time consumption and loss of investment. The solution to these problems is provided by one construction machine with the help of the additional working equipment installed on the bulldozer tipper that we offer. A 16% increase in work efficiency was found when compared to the existing bulldozer with the proposed working equipment.

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