

## Working Section for Processing the Furrow Surface of Cotton

**Nurabaev Bakhtyyar Usenbayevich.,**  
Candidate of Technical Sciences, Assistant  
Department of "Mechanization of Agriculture"  
**Tursymuratov Sapar Yeshmuratovich.**  
Basic Doctoral Student of the Department  
"Mechanization of agriculture"  
Karakalpak Rural Institute  
Farming and agricultural technologies

**Abstract:** To treat the hard soil of the furrow surface formed after watering the plants, a battery of plate knives is installed on the ridge: central, right and left. The working section is lowered onto the soil so that the central plate knife of the battery is located on the longitudinal *axis of the furrow*.

**Key words:** Ridge, battery, plate knives, longitudinal axis.

### Introduction

For the processing of cotton row spacing, mainly cultivators KHU-4A and KCU-4B are used. These cultivators have working sections with working organs: floral paws: one-sided; pointed universal; lancet flat-cutting; chisel-shaped; needle disk, etc., which are installed on the bed of the cultivator depending on the type of work performed [1].

### Relevance and production significance of the experiment:

These working sections with these working bodies do not provide high-quality inter-row treatment in the presence of a soil crust formed after precipitation or after watering plants along the furrows with water. After watering the plants, the inner walls of the furrows moistened with water harden and form a solid layer of soil. Tillage of the soil with water a solid surface is complicated, because its resistance increases and naturally more energy is spent on this. All these working bodies in the process of work move the upper hard layer of soil, while forming large soil lumps.

The formation of large soil lumps in the inter-rows leads to intensive evaporation of moisture from the soil and worsens the conditions for performing the following technological operations, for example, weeding, cutting irrigation furrows.

To eliminate these shortcomings, from 5 to 8 working bodies are installed on the ridge of the working section [1].

Practice has shown that an increase in the number of working bodies installed on the cultivator's ridge slightly improves the quality of tillage, but increases the traction resistance of the working section.

To improve the quality of work and reduce traction resistance during inter-row tillage of the soil with a flat and furrow surface, we offer a working section of a simplified design (Fig. 1-5)." The proposed working section of the cultivator contains a ridge, a support wheel, a battery of knives made in the form of plate knives of equal height, having quadrangular holes in the upper part for installing them on a fixed axis with a quadrangular cross-section, the tips of which are curved with a sharp angle  $\alpha$  to the horizontal along the plane of their blade in the direction of the movement of the unit and mounted in front of the soil paw.

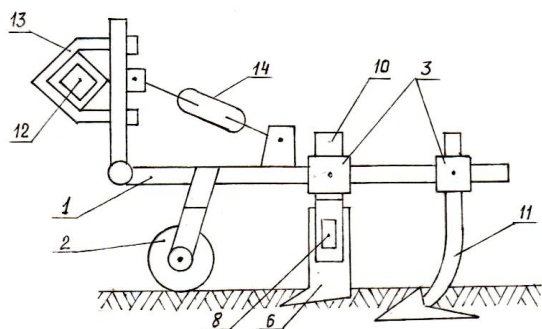


fig.1.

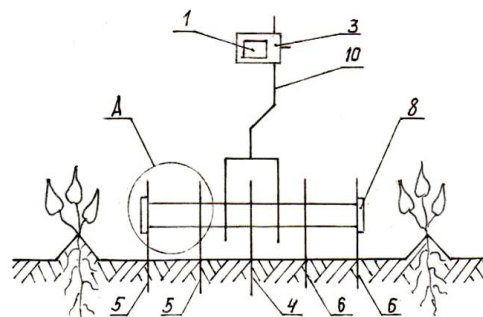


fig.2.

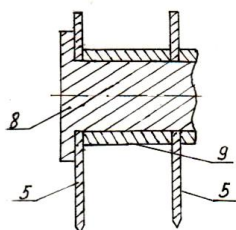


fig.3.

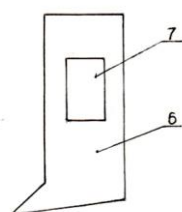


fig.4.

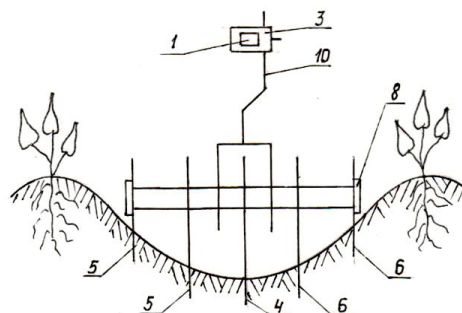


fig.5.

To treat the soil of the furrow surface, the battery of plate knives is made in the form of a central plate knife, on the right and left sides of which plate knives are installed, the height of which is successively reduced towards the ends of the fixed axis.

With this performance of the working section of the cultivator in the process of work, plate knives cut a solid monolithic layer of soil formed after precipitation or after watering plants along the furrows and creates good conditions for tillage by the working body installed behind them and reduces traction resistance.

The proposed working section is presented in the figures: Fig. Fig. 1 - shows a diagram of the installation of a battery of plate knives on the ridge of the working section of the cultivator; Fig. 2 - a battery of equal in height plate knives in front; Fig. 3 - view A from a battery of plate knives in the longitudinal section; Fig. 4 - a plate knife on the side; in Fig. 5 - a battery of plate knives with different heights in front.

The working section of the cultivator consists of row 1 with a support wheel 2, holders of working bodies 3, a battery containing a central knife 4 right 5 and left 6 plate knives, in the upper part of which quadrangular holes 7 are made for installation on fixed axis 8 with a quadrangular cross-section. In this case, the height of the plate knives 5 and 6 may be the same or successively reduced towards the ends of the fixed axis 8. To ensure the stability of the plate knives 4, 5 and 6 in the process of work, thrust bushings 9 with a quadrangular cross-section are installed between them.

A battery with plate knives is attached to row 1 using a fork 10, in front of the main working body (soil-reeling paw) 11. The ridge 1 is attached to the frame of the cultivator 12 by means of a bracket 13. The horizontality of the attachment of the spinner 1 to the cultivator is regulated by a tightening nut 14.

The working section of the cultivator works as follows. For the treatment of solid soil between the rows with a flat surface formed after precipitation, a battery of plate knives 4, 5 and 6 with the same height installed on a fixed axis 8 with a quadrangular cross-section is installed on the ridge 1. The horizontality of the attachment of the spinner 1 to the cultivator is regulated by a tightening nut 14. The working section is lowered onto the soil so that the central plate knife of the battery 4 is located on the longitudinal axis of the row spacing. When the unit moves, knives 4, 5 and 6 easily delve into the soil due to the presence of their angle of attack  $\alpha$  and cut the hard layer of soil with parallel lines, thereby destroying its monolithic. Due to this, good conditions are created for uniform fine-scale loosening of the soil by the working body (soil-reeling paw) installed behind the battery and its traction resistance is reduced.

---

And for the treatment of solid soil of the furrow surface formed after watering the plants on the ridge 1, a battery of plate knives is installed: central 4, right 5 and left 6. The working section is lowered onto the soil so that the central plate knife of the battery 4 is located on the longitudinal axis of the furrow. When the unit moves, the central 4, right 5 and left 6 plate knives easily delve into the soil due to the presence of their angle *of attack*  $\alpha$  and cut the hard layer of soil on the inner surface of the furrow with parallel lines of its axis, thereby destroying its monolithicity. Due to this, good conditions are created for uniform finely lumpy loosening of the soil by the working body (soil-cranking paw) installed behind the battery and its traction resistance is reduced.

### **Findings**

Thus, the proposed working section allows to improve the quality of work and reduces the traction resistance of the cultivator during inter-row tillage of the soil with a flat and furrow surface. In addition, the simplicity of the design allows it to be made in the workshops of farms.

### **Literature**

1. MShawmarova, T. Abdillaev. "I'm not going to let you down," Hessford said. "T.: «Мехнат», 2003-285 с., 53-с, 30-рasm.
2. Patent of the Republic of Uzbekistan. No IAP 05004 Working section of the cultivator / Khadzhiev A.Kh., Auezov O.P., Artykbayev B.P., Baltaniyazov A.S. Bulletin of invention of 27.02.2015. № 2.