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# COMPARISON OF RELIABILITY ROBOTYRIZALNOHO APPARATUS STRYHALNYH machines ISU-200

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*The comparative assessment of the reliability of cutting devices stryhalnyh MSU200 machines and developed, rotary type.*

***Reliability, operating time, cutting, machine, knife, comb, clamp mechanism drive.***

**Formulation of the problem**.In modern practice, shearing animals, particularly sheep used stryhalni machines (for example, mso-77B, MSU-200A), Fig. 1 than cutting device which performs reciprocating motion. This pattern of movement creates a number of drawbacks. So, full stop knife each course in extreme positions causes energy loss, reducing vibration and durability of cars, reducing the quality of haircuts. In connection with the award-feasibility arises to improve the process, technical shearing and compared their effectiveness and reliability in practice.

Fig. 1. Investigated stryhalni machines: from right to left: N1J-GM01-76, ISU-200 MSO77V stryhalna machine and rotary type.

**Analysis of recent research.** The proposed stryhalna machine [1] (Fig. 2 and Fig. 3), a rotary disc cutting machine type. The mechanism of transmission is mounted in a casing which is connected to the motor. Cutting edge blade made teeth disk in the form arc eccentric circles, or logarithmic spiral, which ensures uniform cutting critical moment. In known designs of machines [2-5] comb attachment directly to the body, which complicates the regulation and control of the relative comb knife, cutting removal and installation of steam during exacerbations.

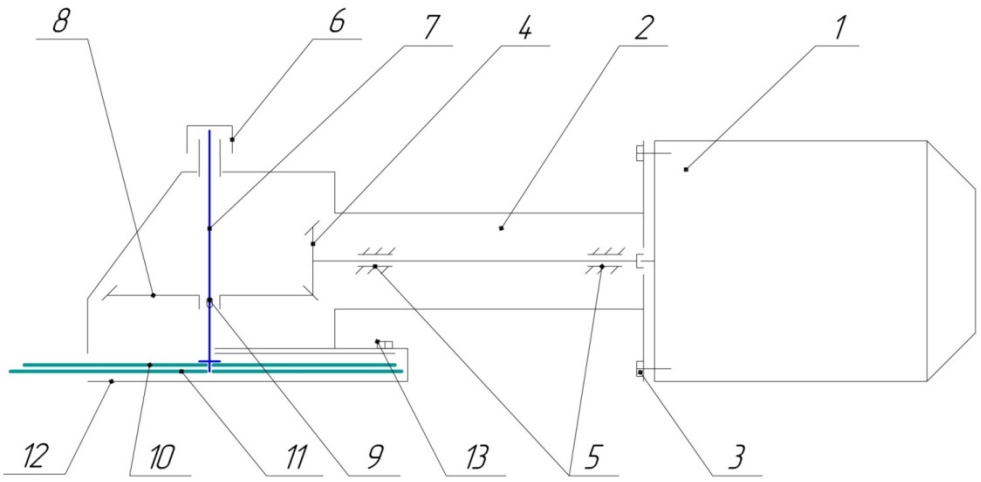


Fig. 2. Schematic diagram of the rotary-type machine stryhalnoyi 1 - motor, 2 - body 3 - screws 4 - tapered shaft gear 5 - bearings, 6 - clamping head 7 - axle 8 - conical wheel 9 - key, 10 - Coulter, 11 - comb, 12 - foot, 13 - screws.

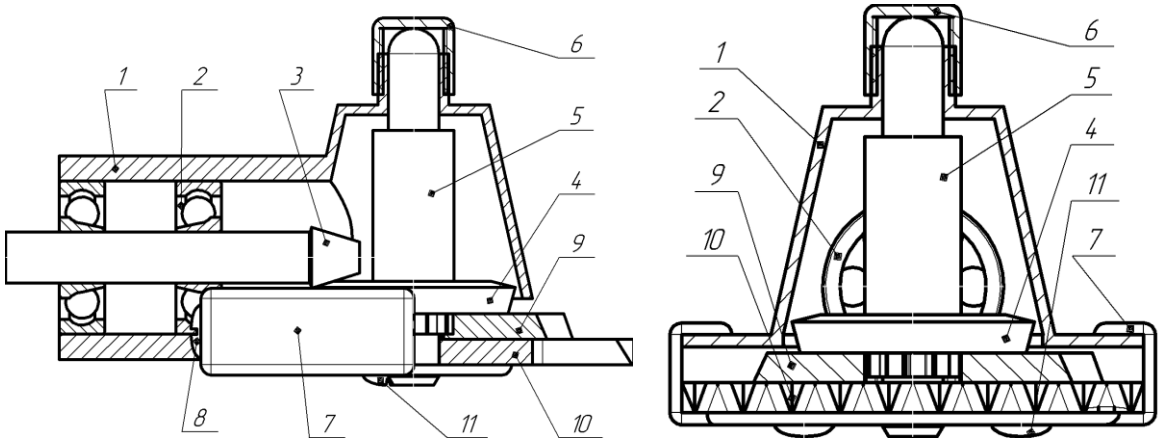


Fig. 3. General view stryhalna rotary machine type.

We have developed a machine in which between the body and comb set retaining plate Fig. 3, guides 10, in which the latter is connected on one side of the body, and the other side is a guide comb and fixed them on the cross displacement, in addition, has a thrust bearing retaining plate (recess) 8, which includes pin axis blade.

**The purpose of research** improvements in cutting and reliability stryhalnoyi cutting machine and its staff in particular.

**Results.** Assessment of the reliability of the developed cutting disk apparatus conducted under production conditions tested according to the procedure established [6]. NM TΣ test plan in which both N test objects (cutting pairs). After each failure object, its reduced (perezatochuyut) test after completing all objects on the total test time or TΣ operating time (to the total number of sheep or to break) [7].

For reliability index number of goals made, ostryzhenyh a cutting apparatus to failure - blunt (in the period to perezatochuvannya knife and comb). To get more appropriate results cutter working four days, Fig. 4. The first day ostryhayuchy hrubosherstyh Sokolsky sheep breeds, in order to adapt to the size and center of gravity stryhalnoyi machines rotary type. The next day ostryhayuchy fine-wool sheep breeds Prekos, to configure operating parameters of the cutting machine according to the characteristics of wool. On the third day stattyevovikovi clipped 2 groups with 32 goals - sheep producers (weight 7080 kg) And bright (weight 45-55 kg). Four days clipped and 2 groups of 31 head - annual sheep (40-50kg) And annual ewes (35-42 kg).

Fig. 4. Production testing at the GP DG "Hontirivka" IT NAAS of Ukraine.

So stryhalnoyu rotary machine type was ostryzheno, as part of the experiment, 126 heads of fine-wool (Merino) lambs and breeds polvars Prekos 2 days. The results of industrial research presented in Table. 1 and Fig. 5.

***1. Operating hours for couples perezatochuvannya cutting ISU-200 and rotary.***

| name mashynky-number stryhalya-Number of cutting couples | number perezatochuvannya | | | | | | | | | | Finished | Σ in pairs | Σpo shearer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | |
| MSU-I-1 | 11 | 12 | 9 | 10 | 11 | 9 | 9 | 11 | 12 | 9 | 10.3 | 103 | |
| MSU-and-2 | 5 | 7 | 8 | - | - | - | - | - | - | - | 6.7 | 20 | 222 |
| MSU-and-3 | 9 | 7 | 8 | 11 | 10 | 9 | 12 | 11 | 11 | 11 | 9.9 | 99 | |
| MSU-II-1 | 8 | 9 | 11 | 7 | 9 | 9 | 8 | - | - | - | 8.7 | 61 | |
| MSU-II-2 | 9 | 11 | 8 | 9 | 12 | 10 | 8 | 9 | 7 | - | 9.2 | 83 | 215 |
| MSU-II-3 | 7 | 8 | 8 | 7 | 9 | 9 | 8 | 8 | 7 | - | 7.9 | 71 | |
| MSU-III-1 | 8 | 6 | 7 | 8 | 8 | 7 | 8 | 7 | - | - | 7.4 | 59 | |
| MSU-III-2 | 8 | 7 | 7 | 7 | 6 | 7 | 9 | 8 | - | - | 7.4 | 59 | 141 |
| MSU-III-3 | 4 | 6 | 8 | 5 | - | - | - | - | - | - | 5.8 | 23 | |
| Rotary | 57 | 69 | - | - | - | - | - | - | - | - | 63.0 | 126 | 126 |
| | 126 | 142 | 74 | 64 | 65 | 60 | 62 | 54 | 37 | 20 | 8.1 | 704 | 704 |

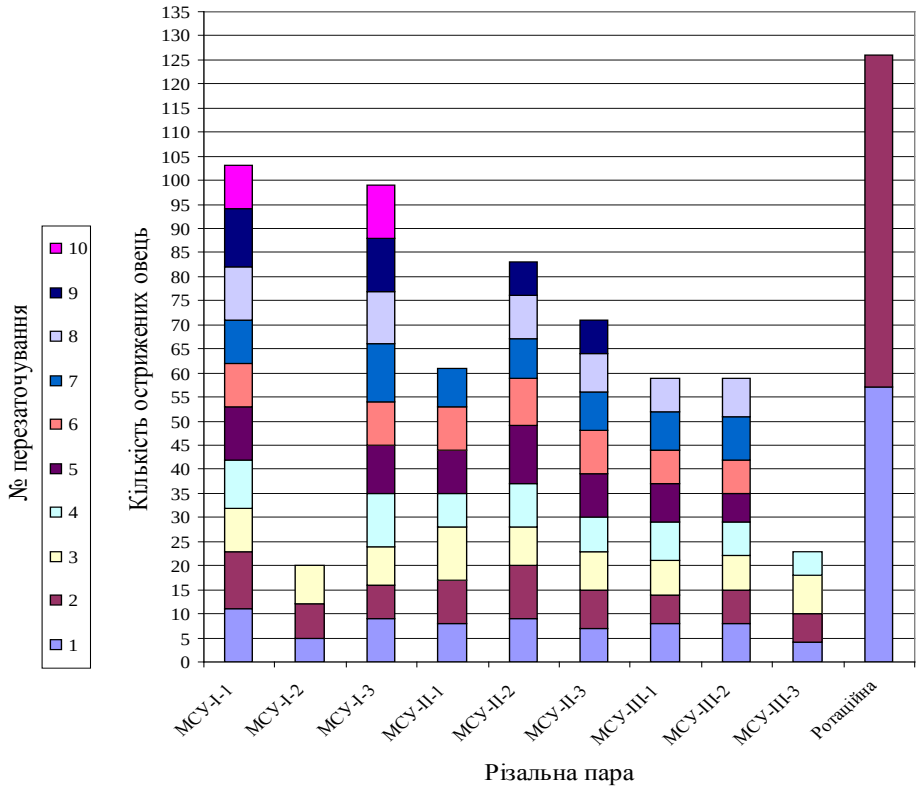


Fig. Figure 5. The operating time to failure (blunt-perezatochuvannya) cutting couples.

Analysis of the tabular data showed that the time between developed cutting steam, 7.7 times more than cutting pairs ISU-200. This is due to the nature of the rotating movement of the knife, pinning reduction efforts and choice of wear-resistant material cutting pair. That in turn confirmed the adequacy of theoretical assumptions when

assessing the reliability of the cutting device in the process of manufacturing research.

**Conclusion**. As a result of resource test cutting apparatus stryhalnoyi rotary type machines in a production environment found that the time to failure (blunt-perezatochuvannya) developed cutting pairs 7.7-8 times greater than cutting a pair of ISU-200.

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*Presented Comparative evaluation of reliability of Cutting machines apparatov stryhalnыh MSU200 and razrabotannoy, rotatsyonnoho type.*

***Reliability of, narabotok, cutting, machine, apparatus working cutting tools, knife, hrebenka, drive.***

*The comparative estimation of reliability of cutting devices - sheep shtaring machines MSU200 and developed, rotational type is presented.*

***Reliability, operating time, hairstyle, machine, cutting device, knife, comb, drive.***