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ADDITIONAL SEED EXTRACTION DEVICE FIXED SAW GENIE IN WORKING CAMERA INVESTIGATION OF RAW MATERIALS

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Abstract: Based on the analysis of the movement of the raw material shaft by theoretical methods, mathematical models expressing the rotation movement of the raw material shaft with the seed release device were developed.

Keywords: saw genie, front fart, working kamera, seeding machine, saw, well grille, fibre, seeds.

Introduction: It is known that the medium fiber cotton fiber is separated from the seed by a sawed fiber separator machine, the long time of hairless seeds separated from the fiber in the working chamber has a negative effect on the productivity of this machine, fiber and seed quality. In addition, hairless seeds are removed through the seed comb.

T has been determined that the long-term persistence of the seed in the cotton field is one of the factors affecting the productivity of the saw gin. Ensuring faster release of germinated seeds from the working chamber of the gin is the main way to increase the productivity of the gin. According to the conducted theoretical and experimental studies, it is possible to increase gin productivity and fiber quality by installing an additional seeding device in the central part of the working chamber [1].

Methods and materials: Among other factors that determine the state of the cotton ball, the distribution of its speed along the walls of the chamber is of great importance. The main goal of the issue is to determine the calculation parameters for improving the parameters of seed germination in the working chamber. To solve the problem, we analyze the cotton flow between two curved walls (L1 and L2). Cotton flow passes easily through the holes. Its movement is mainly influenced by gravity and centrifugal force. For example, it is solved by the small parameter method [2]

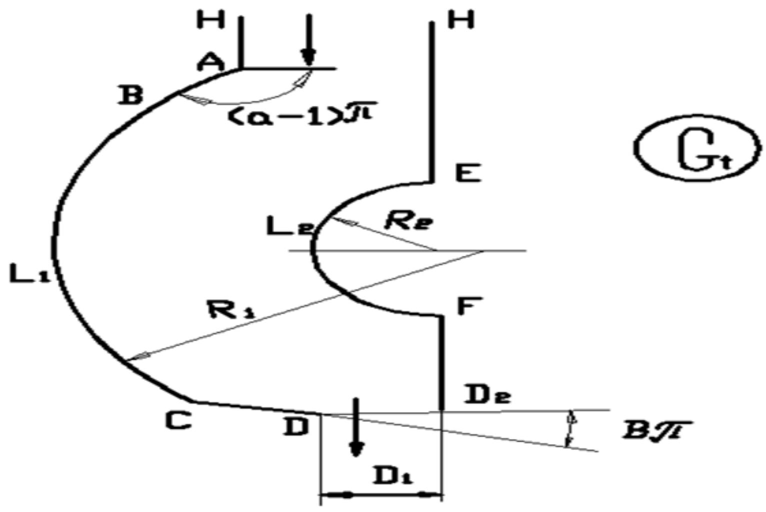

Figure 1. The flow square.

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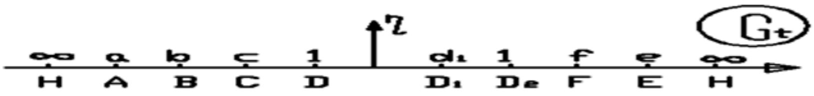

Fig. 2. Konanic region.

Result and discussion: Current potential, we consider its movement to be stable. In this case, taking the upper half-plane of the parametric variable G_t(t=ξ+Lē) as an auxiliary area (Figures 2 and 3), and $\frac{dw}{dt}$=(w= $\varphi + \iota\Psi$)) using the method of separate points for derivative functions of the complex potential, we have the following we will be:

$$\frac{dw}{dt}=-\frac{q_H}{\pi(t-d_1)} \qquad (1)$$

Here $q_H = L_H * V_H$ (m^2/s) (NN) cotton flow rate.

L_n, V_n (NN) cotton flow width and speed at the beginning of the section. (1)

according to the formula (L_1 va L_2), we determine the angular vector of the speed of cotton pieces along the curves using the last dimensional approximation method.

$$\Theta(t)=At+B \qquad (2)$$

With the boundary values of the Zhukovsky function:

$$\omega = \tau + \iota\Theta, = \ln\frac{v}{v} \qquad (3)$$

$$Jm\omega(t)=\begin{cases} (a-1)\pi \ \ pri \ \ \eta = o, -a < \xi < -B, \\ \Theta_1(\xi) \ \ pri \ \ \eta = o, -B < \xi < -C, \\ -\beta\pi \ \ pri \ \ \eta = o, -C < \xi < -1 \\ \theta_2(\xi) pri \ \eta = o, f < \xi < -C, \\ -\frac{\pi}{2pri}\eta = o, -\infty < \xi < -a, 1 < \xi < f \\ ye < \xi < \infty \end{cases} \qquad (4)$$

By introducing a new function, $\omega_1(t)=\frac{\omega(t)}{R(t)}$, $R(t)=\sqrt{t^2}-1$ (4) we will have

Using the Schwarz integral formula, we get the following:

$$Jm\omega_1(t)= Jm\frac{\omega(t)}{R(t)} \qquad (5) \qquad \text{Then:} \quad \Theta_1(\xi)=\frac{[(a-1+\beta)\xi+(a-1)C+B\beta]\pi}{C-B} \qquad (6)$$

$\Theta_2(\xi)=\frac{(2e-f-\xi)\pi}{e-f}$ (7) According to the calculated integral included in formula (4). or the joint complex velocity of the flow $V=e^{-\omega(t)}$ taking into account we get the following :

$\tilde{v}=\sum_{\iota=1}^{G}(I_O^{\iota})^{-1}=\frac{1}{I_O^1*I_O^2*I_O^3*I_O^4*I_O^5*I_O^6}$ (8) Here : $V=\frac{\tilde{v}}{V_O}$,

V_O--flow rate V- cotton velocity from the formula (1) and (8) for the geometric problem $\frac{dz}{dt}=-\frac{L_H}{\pi(t-d_1)}*[\tilde{v}(t)]^{-1}$ (9) originates.

The results of the experiment show that the following factors affect the average time of hairless seeds in the working chamber of the 4DP-130 saw fiber separator. Machine performance (X1), the number of rotations of the auxiliary fertilizer equipment (X2) and the amount of hairless seeds coming out of the auxiliary fertilizer equipment (X3).

Based on the experimental results, its mathematical model is represented by the following formula:

$$Y = 61.7 - 3.58X_2 - 2.27X_3 + 2.65X_1X_2 + 2.85X_1X_3 + 14X_1X_3 + 2.25X_1X_2X_3$$

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where: Y- the average residence time of hairless seeds in the working chamber (seconds).

As can be seen from equation (1), the factors X_2 and X_3, that have the most influence on the average residence time of hairless seeds in the working chamber, and the least influencing factors X_1, X_2, X_3 and thus, using the equation, we calculate the average residence time of the seeds in the working chamber and see its graph (Fig. 2).

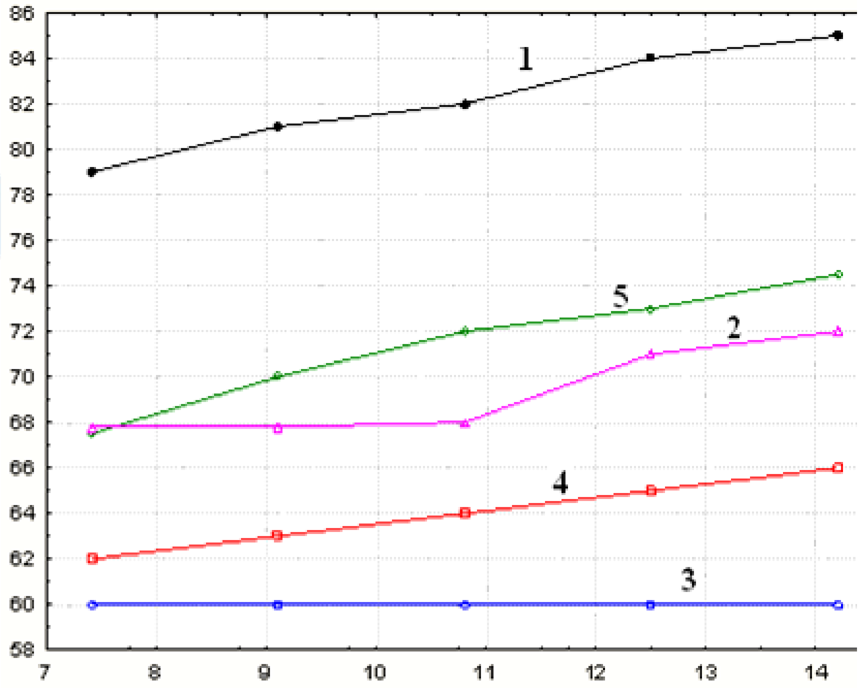
The correlation graph of the average residence time of hairless seeds in the working chamber with the machine performance is drawn. The graph consists of 5 Y=Y(X1) shaped curves. The first curve shows the smallest index of the factors X_2, X_3, and the fifth curve shows the largest index, the rest of the curves are intermediate.

In the second curve, it increases from 67.6 seconds to 68.5 seconds when X_2== 200 rpm, X_3=210 kg.

The third curve does not change when X_2=250 rpm X_3=280 kg.

In the fourth curve, when X_2=300 rpm, X_3=350 kg, it increases from 61.6 seconds to 62.9 seconds. The fifth curve increases from 67.4 seconds to 72.3 seconds when X2 = 350 rpm and X3 = 420 kg.

Standing time of hairless seeds in the working chamber, seconds.



The number of rotations of the auxiliary seeding equipment, revolutions/minute

Figure 2. Correlation graph of the average residence time of hairless seeds in the working chamber of the sawing machine

Graphs of correlation between the number of revolutions of the seeding equipment and the average residence time of hairless seeds in the working chamber are presented (Fig. 3).

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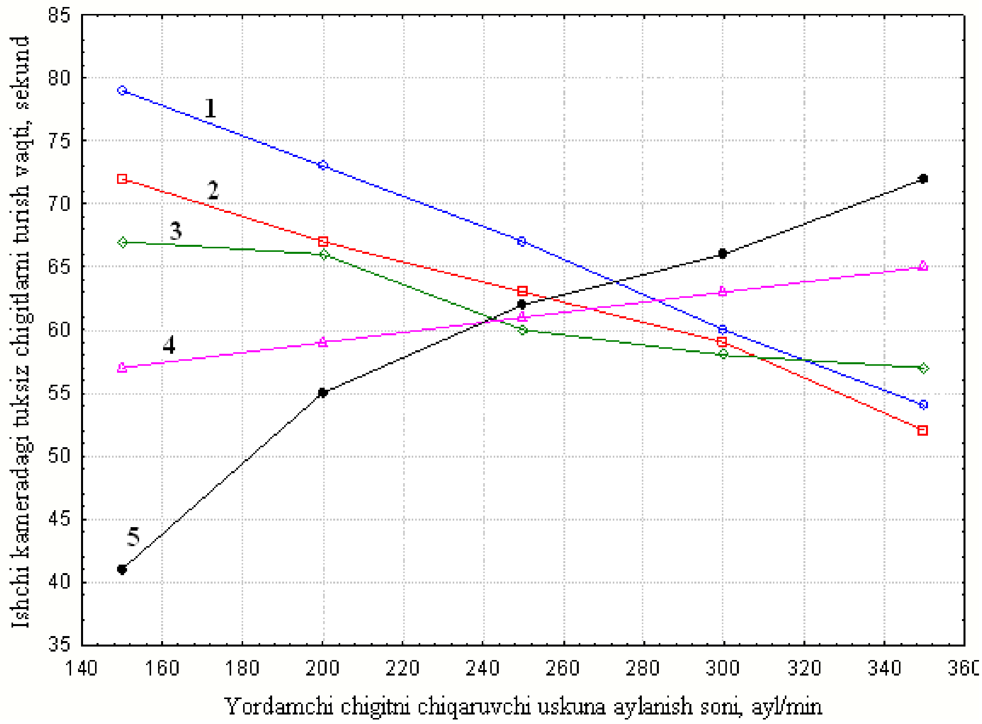

Figure 3. Correlation graph of the average residence time of seeds in the working chamber in the auxiliary seeding equipment

As can be seen from the graph, as can be seen in the first curve, when X_1=7.4 rpm kg/saw-hour, X_3=140 kg, the average residence time of hairless seeds in the working chamber is 54 out of 79.4 seconds, Decreases to 3 seconds. The third curve in line X_1=10.8 kg/saw-hour, X_3=280 kg decreases from 65.3 seconds to 58.1 seconds. In the fourth curve, when X1=12.5 kg/saw-hour, X_3=250 kg, it increases from 58.6 seconds to 63.9 seconds. In the fifth curve, when X_1=14.2 kg/saw-hour, X_3=420 kg, it increases from 52.3 seconds to 72.3 seconds.

Conclusion. According to calculations, the effective seed separation from the working chamber of the saw gin depends on the number of revolutions of the seed separator and the speed at which the depilated seeds are ejected from the device. As a result of the conducted research, the most optimal values of the main factors in the working chamber of the saw were determined.

Based on the production results, the positive change in the composition of the raw material shaft is due to the increase in its rotation speed, as well as the reduction of the time of seed and fiber in the raw material shaft, which causes a decrease in the mass and density of the raw material shaft, and an increase in the level of fiber.

At this point, it can be said that it is possible to increase the productivity of the machine, the quality of fiber and seed, only at the expense of reducing the average residence time of hairless seeds in the working chamber of the sawing machine. It can be concluded from the figures 1, 2, 3 that the best indicator of the average residence time of hairless seeds in the working chamber is X_1=12.5 kg/saw hour, X_2=300 rev/min and X_2= 350 kg It will be.

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THE MULTIDISCIPLINARY JOURNAL OF SCIENCE AND TECHNOLOGY
VOLUME-4, ISSUE-12

LIST OF USED LITERATURE

1. Safarov N. Q., Narmatov E.A. Increasing the productivity and fiber quality of the raw material separator sawn fiber. Development of science and technology. Scientific and technical magazine. 2019 No. 5, 130-133b.

2. Safarov N. Q., Narmatov E.A. The influence of the density of sawdust fiber separator raw material on productivity and fiber quality. Textile problems. Scientific and technical magazine. 2019 No. 3, 17-21b.

3. "Uzpakhtasanoat" Joint Stock Union, "Pakhtatozalash IIChB" OJSC. A handbook on initial processing of cotton. Under the general editorship of F.B. Omonov.T. 2008.416 p.

4. Agzamov M. Snizhenie opushennosti semyan posle pilnogo djinirovaniya. The problem is textiles. 2006 #3. 22-24 str.

5. Mukhammadiev D.M. "Rabochaya kamera pilnogo dzhina". Patent RUz IAP 04761 (issued on 31.10.2013).

6. Kamolovich, D. R., O‘G‘Li, A. N. U., Yusupovich, A. K., & Eshqobilovich, Q. B. (2024). TUKLI URUG‘LIK CHIGITNI SARALASHNING TAKOMILLASHTIRILGAN TEXNOLOGIYASI. Механика и технология, 2(15), 169-175.

7. Абдихамидов, Н. У. Ў., Джамолов, Р. К., Каршиев, Б. Э., & Абдуллаев, К. Ю. (2024). ОПРЕДЕЛЕНИЕ ОСНОВНЫХ ПАРАМЕТРОВ СОРТИРОВОЧНОГО АГРЕГАТА ВОЛОСАТЫХ СЕМЯН ХЛОПЧАТНИКА МЕТОДОМ МАТЕМАТИЧЕСКОГО ПЛАНИРОВАНИЯ. Universum: технические науки, 4(5 (122)), 39-44.

8. Эшқобилович, Қ. Б. (2023). ПАХТАНИ ҚУРИТИШ ЖАРАЁНИНИ ТОЛА ВА ЧИГИТ НАМЛИГИГА ТАЪСИРИ. Механика и технология, (2 (5) Спецвыпуск), 309-315.

9. Eshqobilovich, Qarshiev Baxtiyor, Gulboev Otabek Abdimurod O‘G‘Li, and Narzullaev Fazliddin Shuhrat O‘G‘Li. "QURITILGAN PAXTANI PNEVMATIK UZATISHDA TOLA VA CHIGIT TEMPERATURALARIGA TA’SIRINI TAHLILI." Механика и технология 1 (8) Спецвыпуск (2024): 226-230.

10. Абдихамидов Н.У., Джамолов Р.К., Қаршиев Б.Э., Абдуллаев К.Ю. Саралаш камерага ўрнатилган чигитни доналовчи тароқ мосламасининг параметрларини аниқлаш. Фан ва технологиялар тараққиёти илмий – техникавий журнал. №1/2024, Бухоро-2024й-285б.

11. Қаршиев БЭ П. А. П., Сайидова М. Ҳ. Пахтани қатламда қуритишнинг аэродинамик режимларини аниқлаш тадқиқоти //Фан ва технологиялар тараққиѐти. Илмий-техникавий ва амалий журнал. Бухоро. ISSN. – С. 2181-8193.

12. Parpiyev A. P. et al. Tozalash jarayonida arrali seksiyalardan ajralib chiqqan chiqindi ulushlarini baholash natijalari taxlili //O‘zbekiston to‘qimachilik jurnali. ISSN. – 2010. – Т. 6262. – №. 1. – С. 2022.

13. Каршиев Б. Э., Исматов С. С. РАВНОМЕРНОСТЬ СУШКИ КОМПОНЕНТОВ ХЛОПКА-СЫРЦА //Экономика и социум. – 2023. – №. 9 (112). – С. 485-489.

14. Парпиев А. П., Каршиев Б. Э. РАВНОМЕРНОСТЬ СУШКИ КОМПОНЕНТОВ ХЛОПКА-СЫРЦА //Universum: технические науки. – 2022. – №. 9-2 (102). – С. 51-54.

15. Каршиев Б. Э. и др. Пахтани тозалашга тайёрлаш технологиясининг таҳлили //RESULTS OF NATIONAL SCIENTIFIC RESEARCH. – 2022. – Т. 1. – №. 6.

ISSN: 2582-4686 SJIF 2021-3.261,SJIF 2022-2.889,
2024-6.875 ResearchBib IF: 8.848 / 2024

16. Каршиев Б.Э., Парпиев А.П., Хушбаков А.Н. Анализ температуры, влажности волокна и семян в технологических процессах на хлопкоочистительных предприятиях// INTERNATIONAL SCIENTIFIC AND PRACTICAL CONFERENCE: YOUTH, SCIENCE, EDUCATION: TOPICAL ISSUES, ACHIEVEMENTS AND INNOVATIONS, 2022 Prague, Czech. https://doi.org/10.5281/zenodo.7117865.

17. Қаршиев БЭ П. А. П. Пахта ва уни компонентларини қатламда қуритиш тадқиқоти //ЎзМУ хабарлари. Илмий журнал. ISSN. – С. 2181-7324.

18. Қаршиев БЭ П. А. П., Сайидова М. Ҳ. Пахтани қатламда қуритишнинг аэродинамик режимларини аниқлаш тадқиқоти //Фан ва технологиялар тараққиёти. Илмий-техникавий ва амалий журнал. Бухоро. ISSN. – С. 2181-8193.