ISSN: 2350-0328
International Journal of Advanced Research in Science, Engineering and Technology
Vol. 7, Issue 6 , June 2020

Development of Resource-Saving Technology of Natural Fiber Cleaner

S.Elmonov, I.Suvonqulov

Doctor of Philosophy, Department of general technical sciences and technologies, Samarkand State University, Samarkand, Uzbekistan
Candidate of Technical Sciences, Department of general technical sciences and technologies, Samarkand State University, Samarkand, Uzbekistan

ABSTRACT: The article presents the scheme and principle of operation of the wool fiber cleaner from plant matter. On the basis of solving the problems of oscillations of the grate on elastic supports with various forms of resistance from the wool being cleaned. Justified the necessary system parameters

KEY WORDS: wool, fiber, vegetable impurities, cleaner, spiky drum, saw cylinder, grate, elastic support, oscillation, rigidity, amplitude, frequency, regularity, effect**..**

I.INTRODUCTION

In the design of the cleaning unit, the sections for cleaning the fibrous material from small and large debris alternate sequentially [1]. The small litter cleaning section includes pegboard drums, a mesh surface under them, and the large cleaning section contains saw cylinders and grates under them. The main disadvantage of this design is the low cleaning effect and high damage to the fibers due to repeated mechanical actions of the working bodies on the fibrous material, including the wool being cleaned from plant impurities. The problem of cleaning wool fibers from plant impurities is not well studied, and the existing technology does not meet modern requirements [2]. In this regard, we have developed an improved design of the working bodies of the fiber material (wool) cleaner [3...6].

In the recommended design, the fibrous material (wool) with impurities enters through the conveyor 2 and the grooved feed rollers 3, 4 to the pegboard drum 5. the Pegboard drum drags wool fibers through the mesh surface 6, the selected weed impurities fall into the heat sink through the holes of the mesh surface 6. In this case, the loosened wool falls on the surface of the saw cylinder 7. the Brush roller 8 provides a uniform layer of wool and threads the fibers into the space between the teeth of the saw cylinder 7. The teeth of the saw cylinder 7, grabbing the hair on the wool, carry them through the grate 9, which vibrate due to elastic pads 10, while providing additional isolation of weed impurities from the wool [4]. However, large plant impurities remain in the wool and continue to move with the saw cylinder 7.

These large admixtures of plant origin (burrs, prickles) are beaten off by the knocking roller 11 and separated from the wool captured by the teeth of the saw cylinder by the rollers. Wool fibers captured by the teeth of the saw cylinder are removed from the teeth and transferred to the fiber trap 19. Isolated large vegetable impurities, knocking down the roller 11, have a sufficient percentage of wool fibers. In order to separate these fibers from large plant impurities, they enter the surface of the working drum 13. wool Fibers are captured and pressed to the surface of the working drum 13, due to its surface made of a composite material RCM (rubber-coated material). Wool fibers stuck to the surface of the drum 13, are pulled to the fixed blade 14, and a large vegetable impurities separated from the fibres of wool at the edge of the stationary knife 14 and pick roller 15 and is discharged into screw 17.

ISSN: 2350-0328
International Journal of Advanced Research in Science, Engineering and Technology
Vol. 7, Issue 6 , June 2020

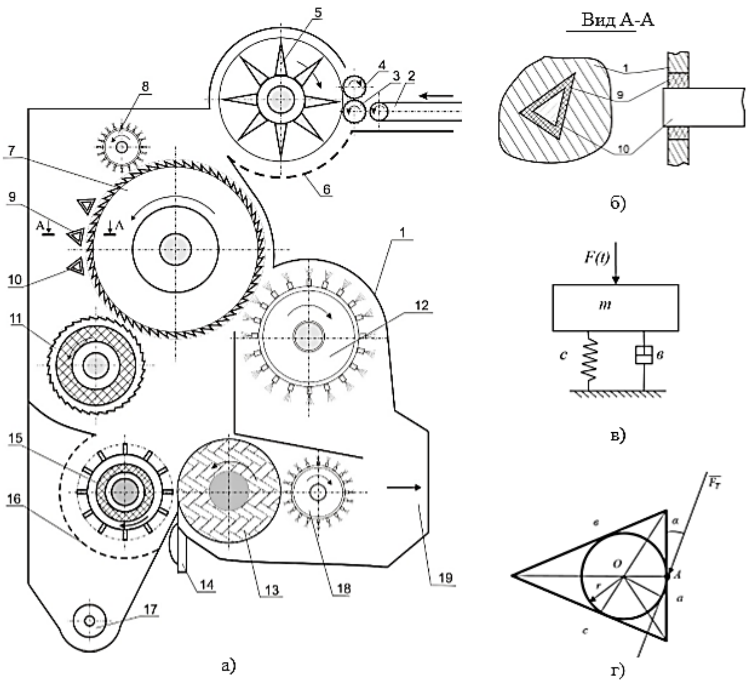
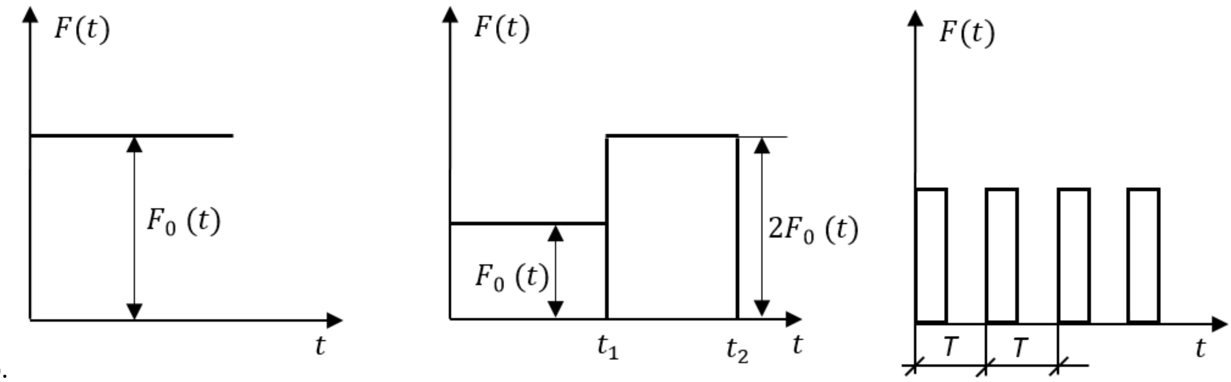


Fig. 1 shows the wool cleaner from plant impurities, where a) - the General scheme of the cleaner; b) – the layout of the three-sided grate on an elastic support; C) - the calculation scheme for calculating the vibrations of the grate.

A large part of the vegetable matter is part wool fibers are pulled a pick roller 15 through the screen surface 16 and re-enroll in the working area. Wool fibers from the working drum 13 are removed by brush rollers 18 and removed to the fiber drain 19. To ensure the necessary quality of cleaning wool from plant impurities, it is important to study the vibrations of three-sided grates on elastic supports. Fig. 1-b shows the design scheme of a three-sided grate on elastic supports for calculating its vibrations. In this case, the grate is represented as a single-mass oscillating system, perturbed by the impact of the cleaned wool. At the same time, depending on the feed of wool on the grate, various forms of disturbing forces can act: - with a uniform feed of wool, the load will be constant: F(t)=P (Fig. 2-a); - when combined-two consecutive loads applied, the feed of wool can be stepped: F1 (t)=P0 and F2 (t)=2P2 (Fig. 2-b); - when wool is received in concentrated lumps, that is, with a perturbing force in the form of single pulses, F2(t)=2P2 at x0=x(0); x0 = x(0) (Fig. 2-b).



a) b) v)

Fig. 2

These disturbing forces are shown in Fig. 2 in the form of graphs. The differential equation describing the vibrations of a three-sided grate on elastic supports at an arbitrary perturbing force from the cleaned wool has the form:

ISSN: 2350-0328
International Journal of Advanced Research in Science, Engineering and Technology
Vol. 7, Issue 6 , June 2020

$$\ddot{x} + 2n + P_0^2 y = \frac{1}{m_k} F(t) \quad (1)$$

where, $P_0^2 = \frac{c}{m_k}, \quad 2n = \frac{в}{m_k}$

c, в - coefficients of rigidity and dissipation of the elastic support of the grate, m_k - weight of the wool cleaner grate.
The General solution (1) can be obtained using the Laplace transform and the method given in the paper [6].
The General solution (2) for $x_0 = x(0), \dot{x}_0 = \dot{x}(0)$, has the form:

$$x = x_0 cosP_0 t + \frac{\dot{x}_0}{P_0} sinP_0 t + \frac{1}{m_k P_0} \int_0^t F(\tau) sinP_0 (t - \tau) d\varepsilon \quad (2)$$

In solution (2), the last integral is called the verified function F(t) and $sinP_0 t$ [6,7]. In this case, F(t) is a first-order Delta function $\delta(t)$, и $x_0 = 0; \dot{x}_0 = 0$.
It should be noted that the force of action of a portion of wool on the flat surface of a three-sided grate occurs at an angle γ (see Fig. 1G.). in this case, the force leads to a moment relative to the center of the inner circle of the triangle, which is determined from the following expression:

$$M_c = \frac{2Sr F_T}{a + в + c} \quad (3)$$

where, F_T is the cross-sectional area of the three-sided grate, *r*-is the radius of the circle inscribed in a triangle, a,b,c are the lengths of the sides of the three – sided grate. In this case, the angle of deflection of the grate due to the deformation of the rubber support relative to its center will be:

$$\varphi = \frac{2Sr F_T}{(a + в + c) \cdot c} \quad (4)$$

where, c- is the stiffness of the elastic rubber sleeve in a circular direction.
Therefore, it can be noted that the three-sided grate in the process of cleaning wool from plant impurities will fluctuate not only along the x-axis, but also in a circular direction.
If the wool is fed evenly to the cleaning zone, the technological load will look like (see Fig. 2. a):

$$F(t) = F_0(t) = P \quad (5)$$

Under initial conditions, the speed and movement of the three-sided grates of the wool cleaner will be equal to zero:

$$t = 0, x_0 = 0; \dot{x}_0 = 0$$

Then you can easily get:

$$x = \frac{P}{mP_0^2} - \frac{P}{mP_0^2} cosP_0 t \quad (6)$$

Taking the derivative of (6) in time we have:

$$\dot{x} = \frac{dx}{dt} = \frac{P}{mP_0} sinP_0 t \quad (7)$$

In the initial period when the cleaner wool without technological load grate will be moved to them for an "x" under the weight of the triangular grate and the stiffness of the elastic rubber support, while $x_{ст}$. According to (7), it follows that when a sudden application of the technological load from the cleaned wool, the movement of the three-sided grate will be twice as large relative to the action of the weight force:

$$x_m = \frac{2P}{m\left(\sqrt{\frac{c}{m}}\right)^2} = -\frac{P}{c} = 2X_{ст} \quad (8)$$

VI. CONCLUSION AND FUTURE WORK

Conclusions. An effective scheme for cleaning wool fibers from plant impurities is proposed. The character of wool vibrations in various forms of interaction between wool and the grate is studied and the system parameters are justified. Development of an effective scheme for cleaning wool fibers from plant impurities. The character of wool vibrations in various forms of interaction between wool and the grate is studied and the system parameters are substantiated.

ISSN: 2350-0328
International Journal of Advanced Research in Science, Engineering and Technology
Vol. 7, Issue 6 , June 2020

In order to detect and prevent spammers in social networks several methods have been proposed and developed by many researchers. During our survey it is seen that spam detection in social networks using Decision Tree, SVM, Random Forest and Naïve Bayesian approaches is highly effective and a combination of spam prevention filters will give higher accuracy. In this paper, we showed that spam on social networks is a problem. The proposed methodology aims at providing an efficient classification framework for predicting and monitoring the spammer.

Future work involves to implement a new SVM Kernel which has enlarged dataset for classifying messages which have non-English words and spam messages which are encrypted.

REFERENCES

[1]. V.M.Janpaizova, A.Djuraev, S.M.ElmonovB.P.Torebaev, M.K.Nurseitova Rationale for the parameters of wool cleaner vegetative imprurite // International Research Journal, №7, Ekaterenburg 2015, 3
8-41.
[2]. С.М.Элмонов и др. МашинадляочисткишерстиотрастительныхпримесейПатентРес. Узб.позаявке № FAP 01015 Бюлл № 7, 2015 г.
[3]. A.Djuraev, S.Elmonov. New construction cleaner fiber material // European science review № 5–6 2017 May–June p.81-83. Vienna 2017
[4]. А.Джураев, С.М.ЭлмоновОбоснованиепараметровколосниканаупругихопорахустройствадляочисткашерстиотрастительныхпримесей // Проблематекстиля. Ташкент. 2018 г. №3. С.79-86.
[5]. Dzhuraev, A., Tashpulatov, D.S., Elmonov, S.M. Effective technology of natural fiber cleaner from impurities on elastic supports and justification of grate parameters // IzvestiyaVysshikhUchebnykhZavedenii, SeriyaTeknologiyaTekstil'noiPromyshlennosti 2018.
[6]. Dzhuraev, A., Tashpulatov, D.S., Elmonov, S.M. Development of resource-saving technology of a natural fiber cleaner from vegetable impurities and justification of grate parameters on elastic supports // IzvestiyaVysshikhUchebnykhZavedenii, SeriyaTeknologiyaTekstil'noiPromyshlennosti 2018