ISSN: 2350-0328

International Journal of Advanced Research in Science, Engineering and Technology

Vol. 6, Issue 7 , July 2019

Installation of a Cone-Shaped Surface to Increase the Effectiveness of the Seperator

Nodira Rejapova Abdusalom qizi, Muhammadodil Mutalov Olimjon o'g'li, Ulug'bek Rashidov Abdulahad o'g'li, Rustam Muradov Muradovich

Student of Namangan Engineering and Technology Institute
Student of Namangan Engineering and Technology Institute
Student of Namangan Engineering and Technology Institute
Professor of Namangan Engineering and Technology Institute

ABSTRACT: The findings from the separatist study found that the cone-shaped surface of the separator's working chamber would increase its useful surface. As a result, the cleaning efficiency of the separator on small contaminants increases, and the pressure loss in the working cell decreases.

KEY WORDS: separator, cotton, fiber, air velocity, separation camera, vacuum valve.

I.INTRODUCTION

Today, we have examined the efficiency of SX and SS-15A separators used in ginneries, and we have come to the following conclusion: The main drawback of the SX separator is the containment of the canal pipe to the vacuum valve.

Also, the position of the net surface opposite the inlet tube increases the likelihood of the pile's crash. The reason for this is that most of the air is absorbed through the hollow part of the entrance pipe. As a result, the breach of the seeds and the quality of fiber quality will increase. In addition, because of the increased appearance of cotton on the net surface, the possibility of air flares and small foulards flaring increases. The SS-15A separator revealed a 25% overall cotton harvest.

II.THE MAIN PART

According to the preliminary research, a part of the fiber has a large amount of air pressure due to the release of the fiber through the air infiltration and the high aerodynamic resistance. One of the main reasons for these deficiencies is that the construction of the separator net surface is not feasible.

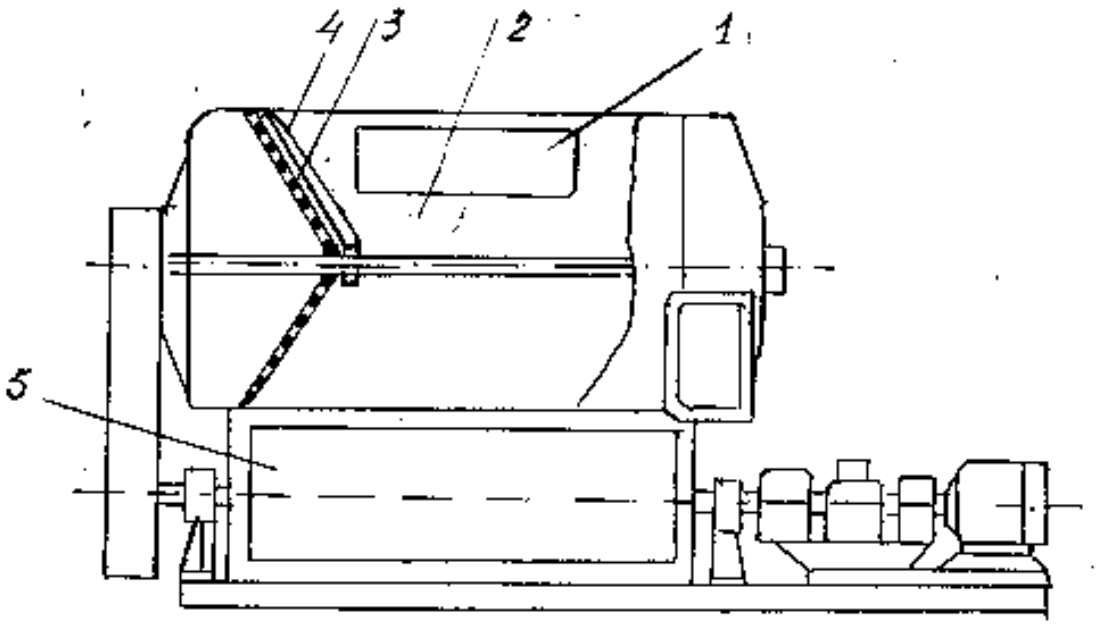
The net surface in the separator's working chamber is irregular and has a circular shape. The perforated hole has a diameter of 6 mm. The sucker enters the vacuum-valve under the effect of its inertia, when it enters into the work cell of the cotton separator.

When the worker gets into the camera, the part of the cotton is closer to the surface, and it clings to that surface. The seeds do not have sutures, but because of the high strength of the cotton padding, the fibers that are not well tied to some seeds are separated from the separation by means of these holes. In addition, the quality of the cotton fiber is disturbed by the lubricant separation of cotton in the net, ie, the slaughtering of cotton seeds. At the same time, excessive loss of air pressure in the separator causes the useful surface of the net not to be large enough.

In order to increase the useful surface of the separator net, a number of scientific research works have been carried out. In one of these cases, a drum mounted on a luggage valve is offered. Drum rotates with lubricant valve and air is absorbed through it. Cotton, which is adhered to the surface of the drum, is separated by an irregular luggage. This modification has some positive effect, but when the separator operates, there are frequent sneezes in the holes due to the inability to clean the inside of the drum.

The change in the level of the cone shape was determined by the change in surface area of air able to absorb air and air velocity through the perforations, as well as the loss of air pressure and the fracture of the fiber.

ISSN: 2350-0328
International Journal of Advanced Research in Science, Engineering and Technology
Vol. 6, Issue 7 , July 2019



Picture 1. Conical spiral separator.

1-input pipe; 2-separation cameras; 3-cone shaped surfaces;
4-lubricant; 5-vacuum valve.

Detachable surface of the separator net can be determined as follows:

$$F_0 = \frac{\pi d_0^2}{4} \cdot Z; \quad (1)$$

Where: d_0 - diameter of net hole, mm; Z - is the number of holes in the net.

Once the surface can be absorbed, we determine the velocity of the air passing through the net:

$$v = \frac{Q_0}{F_0}; \quad (2)$$

where: Q_0 - amount of air, m / s; F_0 - useful surface area, m.

The amount of airflow corresponding to one hole is the total airflow passing through the Q_0 separator, which is equal to the total number of holes in the sand:

$$Q_0 = \frac{1}{2} \cdot \frac{Q_{ум}}{Z}; \quad (3)$$

where: 1/2 - the coefficient indicates the distribution of the airflow to two nasal surfaces. Then you can determine the pressure loss on the surface of the separator net:

$$\Delta P = \xi \frac{\rho \cdot V^2}{2}; \quad (4)$$

(ρ - air intensity, kg / m^3, V - air velocity, m / s ; ξ - local resistance coefficient.

The results obtained by modifying the height of the cone-shaped surface using the above formulas are shown in Table 1. The results show that when the shape of the separator net surface is made in the form of a cone, its height changes the appearance of the substrate surface. Reduction of air velocity leads to a decrease in cotton pressure on the surface of the net.

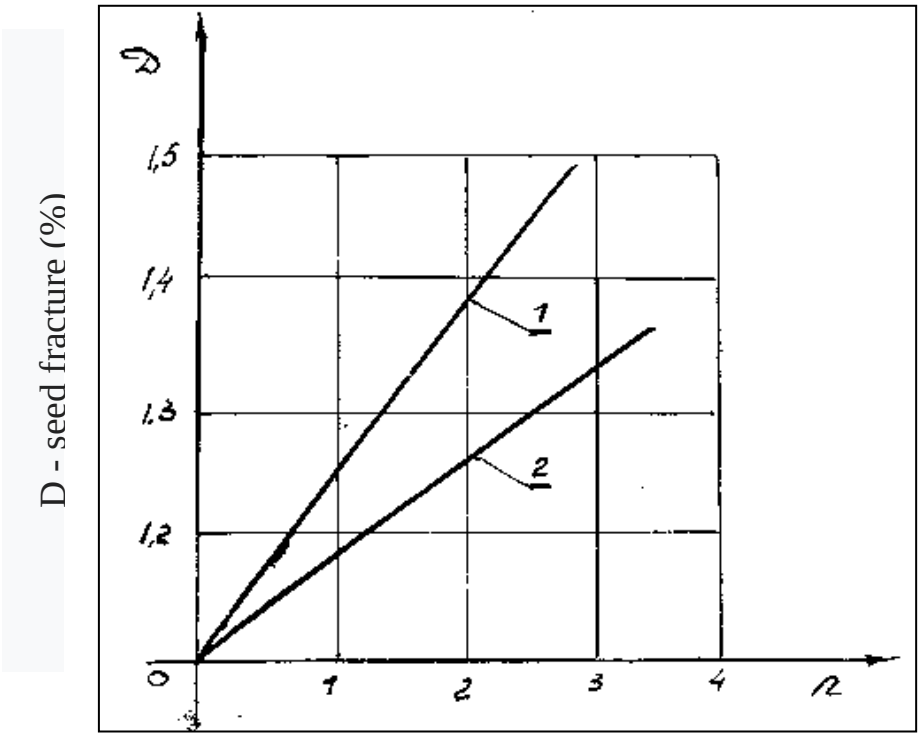
ISSN: 2350-0328
International Journal of Advanced Research in Science, Engineering and Technology
Vol. 6, Issue 7 , July 2019

Air suction surface depends on the speed and pressure of the cone.

Table 1

№	Cone height, **mm**	Air absorbing surface, **m^2**	Air velocity through holes, **m / s**	Pressure loss, **Pa**
1	100	0,283	8,8	385
2	200	0,301	8,2	334
3	300	0,329	7,5	280
4	400	0,364	6,8	230
5	500	0,405	6,1	185
6	600	0,449	5,5	153
7	700	0,497	5,0	124
8	800	0,547	4,5	103

This is a result of a breakdown of the quality of cotton in the separator, which is adhered to the surface of the net surface, which results in a breakdown of seeds and reduces fiber damage.



n – Number of recycling of cotton

Picture 2. The effect of cone shaped surface on seed fracture.

When preparing a cone with a cone, it has been learned through the experience of how it affects cotton quality characteristics. The experimental equipment, which was designed to determine the effectiveness of the cone-shaped surface, has been repeatedly repeated.

ISSN: 2350-0328

International Journal of Advanced Research in Science, Engineering and Technology

Vol. 6, Issue 7 , July 2019

The resulting graphic showed that the cone shape of the cone shaped surface had a great impact on the sacking of the seeds. As a result, it has been established that the cone-shaped surface has been reduced by 2 times as a result of the fracture of seeds in the straight circle surface.

However, the height of the cone increases its chances of meeting with the cotton. In order to reduce this situation, the cotton potters have changed their shape. In this case, the three-dimensional formulation of the net surface is recommended. The results obtained from the above formulas for the recommended surfaces are shown in the table below:

The link between the speed of the surface and the pressure loss that can be absorbed by the form of the inlay surface

Table 2

№	The shape of the masked surface	Air absorbing surface, **m²**	Air velocity through holes, **m / s**	Pressure loss, **Pa**
1.	Sharp cone	1,791	3,8	71
2.	Pellet	1,878	3,2	50
3.	Cylinder	1,937	3,0	44

Calculations based on Table 2 show that the change in the shape of the separator net surface has a significant effect on its efficiency.

III. CONCLUSION

In the separator, which is one of the main elements of the airborne apparatus, the process of air splitting is analyzed by theoretical and practical methods.

The conventional formulation of the net surface on the side of the separator working chamber resulted in a "useful surface" of 20 per cent, cleaning efficiency - by 10 per cent, air fracture - by 0.41 kg (hour).

REFERENCES

1. Jabborov G.J. and so on. Primary processing technology of cotton seeds. // T .: Teacher, 1987.-328 b.
2.Association "Uzpakhtasanoat". Primary processing of cotton. // T. Employment, 2002. -408 b.
3.Lugachev A.E. Increasing the efficiency of cleaning raw cotton through airflow. // Scientific-technical journal "Cotton and grain crops", 1997. №3, 47-48 b.
4.Muradov R. Analyze the scenario with the help of a hipopter-syrtsa v separatore. // J. Хлопковая промышленность, 1980. №4, S.6.
5.Ahmedkhodjaev X.T., Muradov R., Baltabaev S.D. Separator for xlopka-syrtsa. // A.C. Bulletin # 1008287. 1983.
6.Muradov R., Boltabaev S.D. Novoye separator for otdeleniya xlopka-syrtsa ot transportiruyushchego vozduxa. // J. Хлопковая промышленность, 1981, №4. P. 14-15.
7.Muradov R., Mardonov B. Studying the movements of the cotton through the curved shape when separating the cotton from the net. // J. Mechanical Problems, № 6, 1997. S. 51-56.
8.Muradov R. The method of reducing the pumping of the porous surface of the separator. // J. Mechanical problems, №3, 2000. S.77-80.
9.Muradov R., Mardanov BM, Ahmedkhodjaev X.T. Вилиание количества скребков на эффективность работы сепаратора. // J. Хлопковая промышленность. # 2, 1984. S. 21-22.
10.Muradov R,. Mamarasulov X., Sultanov S.Yu. Separator for xlopka-syrtsa. //A.S No. 1509425. The Bulletin. No. 35, 1989.
11.Muradov R., Sarimsakov O. Sh. Separator for xlopka-syrtsa. // A.C. Bylaw No. 1548284. 1990, 1990.