

**TECHNICAL SPECIFICATIONS OF COLOSSNIC GLASSES IN CLEANING FROM
SMALL POLLUTION**

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Abstract

The article presents the results of studies of the influence of the distance between different grates on the efficiency of cleaning equipment. It is known that during the cleaning process, the distance between the grates of the grate affects the cleaning efficiency of the equipment.

Keywords: Cotton, cotton fiber, cleaner, feeder, peg drum, mesh surface, temperature, humidity, clogging.

Introduction

Many scientists have conducted research on improving the working parts of cotton cleaning equipment from fine impurities [1-6], and they studied the effects of the shapes, speeds, spacings and operating modes of the working parts, as well as the temperature and humidity parameters of cotton on the cleaning efficiency and cleaning efficiency of the cleaner [7-10].

Research Methodology

Based on the studies conducted to determine the effect of different variants of grates on the cleaning efficiency, we consider the spacing of grates in grates.

In the studies, five different variants of grates were prepared and research was conducted. In the grate of variant 1, the grate thickness was 5 mm and the height was 25 mm, the grate spacing was 5 mm, and the working edge of the grates was made with a radius of 3 mm. Colossians pile-plate drum was placed parallel to the axis of circular symmetry. In the 2nd variant, a circular columnar grid with a diameter of 10 mm and an interval of 5 mm was used. In the 3rd variant, a circular columnar grid with a diameter of 8 mm and an interval of 5 mm was used. In the 4th version of the column grid, a steel plate and round column columns were used in a mixture. In this case, 10 pieces have a thickness of 5 mm, a height of 25 mm, and the distance between columns

A steel plate with a working edge of 5 mm and a radius of 3 mm and 10 round grids with a diameter of 10 mm and an interval of 5 mm were used. In the 5th option, a steel plate with a thickness of 5 mm, a height of 25 mm, a distance between the columns of 5 mm and a radius of

the working edge of the columns, and 10 circular columns with a diameter of 8 mm and an interval of 5 mm were used.

The distance between the columns of the column grids was adjusted to 4, 5 mm, and the performance of the equipment was 3, 5 and conducted at 7 tons/hours.

Analysis of research results. Research results it is presented in tables 1÷2.

Table 1. The effect of cleaning the spacing of the columns in the grids with columns on the efficiency (spacing 4 mm).

т/р	Variants of Colossian types	Cleaning efficiency, %						The amount of cotton in the dirt, %
		Π=3 tons/hour		Π=5 tons/hour		Π=7 tons/hour		
		I variety	III variety	I variety	III variety	I variety	III variety	
1.	1- option	41,01	43,4	39,74	41,33	36,99	39,67	-
2.	2- option	32,4	34,53	30,73	32,33	28,47	29,93	-
3.	3- option	33,9	36,18	32,62	34,15	29,17	31,74	-
4.	4- option	35,73	37,91	34,38	36,19	31,63	33,5	-
5.	5- option	37,36	39,61	36,32	37,72	32,73	35,73	-

Analyzing the results in Table 1, when the spacing of the grates in the grates is 4 mm, the work productivity is 3 tons/hour, and when processing grade I cotton raw material, the cleaning efficiency of the grate in option 1 is 41.01%, the grate in option 2 is 32.4%, the grate in option 3 is 33.9%, the grate in option 4 is 35.73%, and the grate in option 5 is 37.36%. When processing grade III cotton raw material, the cleaning efficiency of the 1st variant of the grate is 43.4%, 34.53% for the 2nd variant of the grate, 36.18% for the 3rd variant of the grate, 37.91% for the 4th variant of the grate, and 39.61% for the 5th variant of the grate. No cotton pieces were observed in the impurities separated during the cleaning process. When the cleaning equipment has a working capacity of 5 and 7 ton-hours, the cleaning efficiency of the 1st variant of the grate grill when processing grade I cotton raw materials is 39.74 and 36.99%, 30.73 and 28.47% for the 2nd variant of the grate grill, 32.62 and 29.17% for the 3rd variant of the grate grill, 34.38 and 31.63% for the 4th variant of the grate grill, and 36.32 and 32.73% for the 5th variant of the grate grill. When processing grade III cotton raw material, the cleaning efficiency of the 1st variant of the combed screen is 41.33 and 39.67%, the 2nd variant of the combed screen is 32.33 and 29.93%, the 3rd variant of the combed screen is 34.15 and 31.74%, the 4th variant of the combed screen is 36.19 and 33.5%, and the 5th variant of the combed screen is 37.72 and 35.73%.

When the productivity increases from 3 tons/hour to 7 tons/hour, the 1st variant of the combed screen is installed on the cleaner, and the cleaning efficiency of grade I cotton raw material decreases to 4.02% and to 3.73% for grade III cotton raw material. With the installation of the 2nd variant of the grate, the efficiency in cleaning the first grade of cotton and the third grade of cotton is reduced to 3.93% and 4.60%. With the installation of the 3rd variant of the grate,

the efficiency in cleaning the first grade of cotton and the third grade of cotton is reduced to 4.73% and 4.44%. With the installation of the 4th variant of the grate, the efficiency in cleaning the first grade of cotton and the third grade of cotton is reduced to 4.10% and 4.41%. With the installation of the 5th variant of the grate, the efficiency in cleaning the first grade of cotton and the third grade of cotton is reduced to 4.63% and 3.88%.

Table 2. The effect of cleaning the spacing of the columns in the grids with columns on the efficiency (the spacing is 5 mm).

τ/p	Variants of Colossian types	Cleaning efficiency, %						The amount of cotton in the dirt, %
		Π=3 tons/hour		Π=5 tons/hour		Π=7 tons/hour		
		I variety	III variety	I variety	III variety	I variety	III variety	
1.	1- option	46,35	48,81	44,86	46,59	42,52	45,04	-
2.	2- option	39,53	41,74	37,85	39,66	35,48	37,29	-
3.	3- option	40,24	42,94	39,07	40,97	35,84	38,67	-
4.	4- option	41,32	43,58	39,69	41,72	37,35	39,08	-
5.	5- option	42,78	45,11	41,53	43,06	38,36	41,18	-

Analyzing the results in Table 2, when the spacing of the grates in the grates is 5 mm, the work productivity is 3 tons/hour, and when processing grade I cotton raw material, the cleaning efficiency of the grate in option 1 is 46.35%, the grate in option 2 is 39.53%, the grate in option 3 is 40.24%, the grate in option 4 is 41.32%, and the grate in option 5 is 42.78%. When processing grade III cotton raw material, the cleaning efficiency of the 1st variant of the grate is 48.81%, 2nd variant of the grate is 41.74%, 3rd variant of the grate is 42.94%, 4rd variant of the grate is 43.58%, and 5th variant of the grate is 45.11%. No cotton particles were observed in the impurities separated during the cleaning process. When the cleaning equipment has a working capacity of 5 and 7 ton-hours, the cleaning efficiency of the 1st variant of the grate grill when processing grade I cotton raw materials is 44.86 and 42.52%, 37.85 and 35.48% for the 2nd variant of the grate grill, 39.07 and 35.84% for the 3rd variant of the grate grill, 39.69 and 37.35% for the 4th variant of the grate grill, and 41.53 and 38.36% for the 5th variant of the grate grill. When processing grade III cotton raw material, the cleaning efficiency of the 1st variant of the grate grate is 46.59 and 45.04%, the 2nd variant of the grate grate is 39.66 and 37.29%, the 3rd variant of the grate grate is 40.97 and 38.67%, the 4th variant of the grate grate is 41.72 and 39.08%, and the 5th variant of the grate grate is 43.06 and 41.18%.

When the productivity increases from 3 tons/hour to 7 tons/hour, the 1st variant of the grate grate is installed on the cleaner, and the efficiency in cleaning grade I cotton raw material decreases to 3.83% and to 3.77% for grade III cotton raw material. With the installation of the 2nd variant of the grate, the efficiency in cleaning the first grade of cotton and the third grade of cotton decreases to 4.05% and 4.45%. With the installation of the 3rd variant of the grate, the efficiency in cleaning the first grade of cotton and the third grade of cotton decreases to 4.40% and 4.27%. With the installation of the 4th variant of the grate, the efficiency in cleaning the first grade of cotton and the third grade of cotton decreases to 3.97% and 4.50%. With the

installation of the 5th variant of the grate, the efficiency in cleaning the first grade of cotton and the third grade of cotton decreases to 4.42% and 3.93%. During the cleaning process, the content of cotton fragments in the composition of the impurities separated during the cleaning process was 3% in the cleaner with a grate of the 1st variant, and up to 13%, 10%, 10% and 8% in the grates of the 2nd; 3rd; 4th and 5th variants, respectively. Also, when the grates were inspected after the cleaning process, cases of clogging of cotton fragments with seeds were detected in these grates.

When the productivity increased from 3 tons/hour to 7 tons/hour, the efficiency of cleaning the 1st variant of the grate in the cleaner with a grate of the 1st variant decreased to 3.76% in the first type of cotton raw material and to 3.87% in the third type of cotton raw material. With the installation of the 2nd variant of the grid, the efficiency of cleaning the first type of cotton and the third type of cotton is reduced to 4.0% and 4.44%. With the installation of the 3rd variant of the grid, the efficiency of cleaning the first type of cotton and the third type of cotton is reduced to 4.41% and 4.35%. With the installation of the 4th variant of the grid, the efficiency of cleaning the first type of cotton and the third type of cotton is reduced to 3.92% and 4.44%. With the installation of the 5th variant of the grid, the efficiency of cleaning the first type of cotton and the third type of cotton is reduced to 4.42% and 3.99%. Conclusion. Taking into account the spacing of the grates, which have the highest cleaning efficiency, and the inclusion of cotton particles in the composition of the dirt, it is recommended to conduct pilot tests in the production of grates with a spacing of 5 mm.

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