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Training on the Pneumatic Work with Petroleum Patients within the Preliminary and Practical Way

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Abstract--- *The article describes the change in cotton density transmitted during pneumatic pipe transfer in time unit, ie irregularity of transmission, movement of the cotton lining to the pneumatic tube and the pipe movement and its movement in the piped wavy traverse and the collision with the pipe wall. In order to minimize negative impacts on cotton quality, it has been argued that it is best to transfer cotton at a reasonable rate, in the plain corresponding to the center of the pipe and at the same speed as the current flow rate.*

Keywords--- *Cotton, Pneumotransport, Pipe, Transmission Failure, Shock, Transmit a Principle.*

I. INTRODUCTION

At the moment of the beginning of the technological process of cotton-ginning enterprises, mechanized delivery of cotton to the system of air transport is carried out using the RBX brand-defrosting machine. The robbery of the RBX was investigated at the Namangan Ginnery. RBX breaks the straw with the help of a rolling mill, giving the cotton a horizontal tape. In turn, it passes through the air-carrying pipe. There is a possibility that the stinging machine can climb up and down, with a drill ridge. This option increases the effectiveness of garbage disposal. The process of transferring cotton from the stubborn carriages is carried out in two stages in the scheme. In the first, a stinging machine can move along the length of the stump and break it down about 6 meters. The distance between the horizontal ribbon and the grass is 5 meters.

In the second stage, the strawberries will be able to transmit the remaining 8 meters across the width of the grove. At the same time, the horizontal ribbon is fitted to the landing ground of the cotton.

II. THE MAIN PART

At the beginning of technological process cotton ginning plants are delivered to the cotton pneumatic pipeline in a manual or mechanized way. Handwashing is a life-threatening and serious physical activity. According to the analysis, the handover of cotton to the pneumatic transport is 0.6 man-hours. This means that 4-5 people will be busy during this 8-hour working time. The stinging of the machine will make up to 3 workers, at the same time, the workers will be relieved of the danger and heavy physical labor. As a modern method, we mainly focus on the method of destroying cotton piles.

Mechanized handling is carried out using RP, RBA, RBX-10 stubbing machines. Figure 1 provides a scheme for the mechanized transfer of cotton technology [1,2].

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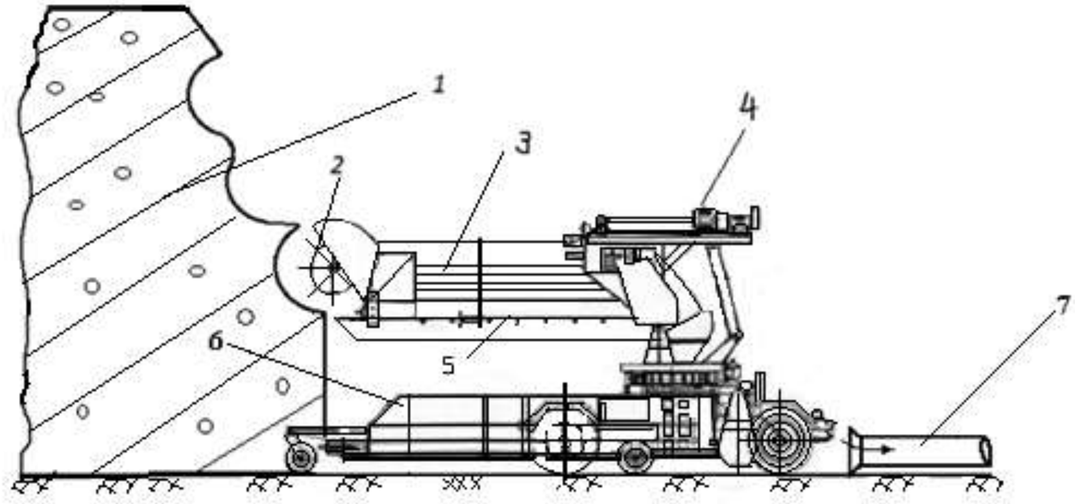

Picture 1: Scheme of Technology of Cotton Transfer in Mechanized Mode

The stinging car breaks the straw 1 by means of the paddle 2 and transfers the cotton to the horizontally belt conveyor 6. In turn, the pumping station for cotton pumps extends to 7 years. The rattling machine has the possibility to go up and down with the rugged rack 2 axle 3 with the heel 5. Such an opportunity would spoil cotton from the strangers and increase the efficiency of transmission. The process of transferring cotton from a stubborn car can be carried out in one or two modes in the designated scheme. In the first one, the stinging machine is located in the middle of the short side of the stern, moving forward along the longitudinal axis, breaking the stump into the longitudinal, top-down, left-to-right, or right-left-to-left, throwing straw into horizontal layers, the tape carrier moves it to the auxiliary horizontal transporter 6 by means of a tape carrier which extends to the picker, to the side of the cotton picker. This carrier puts the cotton on the pneumatic tube 7. After breaking one-storey stalks, the baton is bathed in the next layer of the cotton sheath and shakes it, breaking that layer. When the chambarak gets to the point of extremes, its stakes are immersed in the next floor and are broken down. In the same way, after breaking down the bottom of the stack, the rider stepped forward and the rug was raised from the top of the grass and stepped down to the bottom of the stack, and the rider stepped forward, and the process continued until the end of the storm.

In the second variant, in the first pass, the car moves down to the side of the stump, and moves forward along the stomach side. At the same time, the sprayer will be able to break up about 6 meters of the stump and transfer it to the pipe. The distance between the horizontal tape carrier and the grass is 5 meters. In the second passage, the car is arranged in the grass area to disassemble the rest of the stomach and, as before, moves along the longitudinal lenght and breaks the grass into the horizontal layers, from the left to the right, top to bottom, from the left to the right, or from the right edge to the left.

Sometimes, when the saddle is broken, the upper part of the stump spins itself and breaks down and prevents the rake from falling. In these cases, the rider pulls back and picks up the sacked cotton shafts, and then moves forward and retrieves the next layers.

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The use of a rider requires a great deal of expertise and expertise from the operator. Highly skilled operators can break the straw evenly in a relative fashion and do not allow the sting to spoil itself. However, the destruction of the straw can be caused by its poor formation or other cause. Therefore, it is necessary to always be prepared for such a situation.

Horizontal carrier lengths up to 7 meters. Its main task is to direct the cotton from the carrier at the time the truck driver moves forward or backward and guiding the pneumatic truck into the mouth. If it were not, then it would be necessary to extend or shorten the pipe even when the drummer was toppled. The rider can move forward or backward until the horizontal carrier is up to its length. For this purpose, the rider must be moved along one line along the length of the stack, parallel to the horizontal transporter. However, after spinning off the horizontal length of the carrier, it will not be possible to leave the cotton to its destination, and will adjust the horizontal transporter to the next part of the stack, as far as possible. Then it is fitted to reinforce the accessory part of the pipe through the extension or lifting of the pipe to receive the cotton from the horizontal carrier.

In the second pass, the rider is set back and set to break the remaining 8 meters across the width of the cotton pitch, breaking the rest of the straw and passing it to the pipe. At the same time the horizontal band carrier will be installed on the landing ground of the cotton.

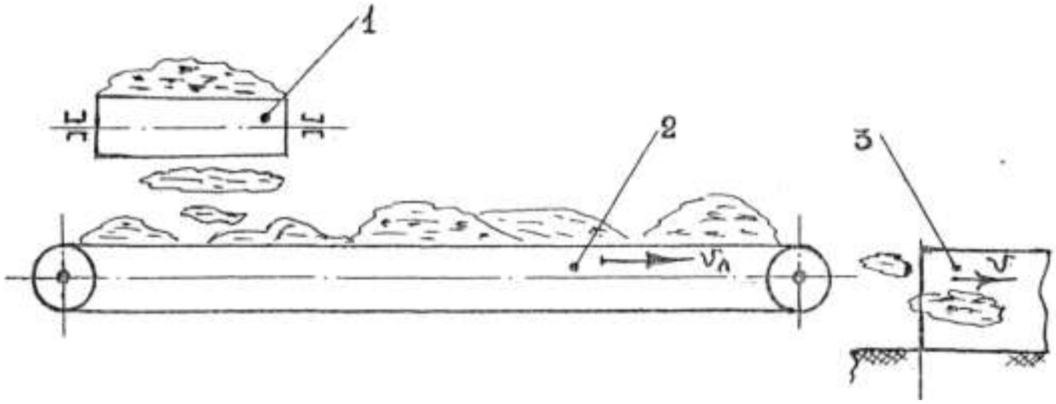
When manually breaking the stomach, the cotton pipe is transmitted to the pipe in the form of large puppies, very unevenly. Therefore, due to the unevenness of the transfer when handling cotton, there are frequent occurrences of cotton picking on the pipe pit, stove and separator. In the case of sturgeon damage, the cotton is relatively straightforward, but there are also cases of cotton jams on the pipe bed, slab and separator. This is due to the fact that mechanically-oriented cotton transplantation has not been met even at a reasonable level. The main disadvantages of the mower in literature are the negative effects of cotton on the initial quality of cotton and the transfer of cotton from large to large layers, resulting in uneven delivery of cotton to the air pipelines [3]. Accordingly, our research in this area is aimed at studying and eliminating the causes of these failures.

III. LEARNING THE NON-RECESSION IN THE TRANSFER OF COTTON TO THE PNEUMATIC PIPE

As it is known, the technology of processing raw materials at the cotton-ginning enterprise starts with stinging. The unevenness of transferring cotton to the production is determined by the size and density of the cotton pieces transmitted over time. The mass of cotton transmitted in the small unit time (eg 1 h) varies greatly amplitude. In order to evaluate the degree of damage and the characteristics, it is necessary to use the roller to operate in an operating mode and to determine the change in the flow of cotton bulk transmitted thereon.

It is well known that when the rider of the drummer breaks the straw and throws the cotton to the horizontally belt transporter, it is distributed in the form of low-altitude scattered cotton balloons from the places where the density is high and thus is transferred to the cotton pipe unevenly. This leads to a change in the air pressure pulsation at the start of the pneumatic transport pipeline, the loss of great pressure, and the overflow of the air duct [4,5].

After examining the state of the cotton harvested by the judge, we came to the following conclusion. Freza picks cotton out of the stump with its stakes, extends it to the tape and distributes it unevenly over the cotton tape. As a result, an uneven transfer of cotton to the airborne pipe will occur. A detailed scheme for the study of this situation was developed and developed at the Namangan Grain Treatment Plant 3 (Figure 1). This airborne device comprises a stubborn and horizontal tape device (2) and air handling apparatus (3) having groove tape device (1). The horizontal ribbon is mounted along the deflection line.



Picture 2: An Experimental Device Scheme Designed to Study the Non-conformity of Cotton Delivery

1-channel tape; 2-horizontal banding device; 3 cotton pipe transporting cotton

The method of research is as follows: the length of the horizontal carrier, parallel to the deflection line, which was prepared for the research, was divided into 10 equal zones. The linear velocity of the movement, the width and length of the tape, the dimensions of the area, the weights for cotton weighing. The outlet of the transporter is designed to direct the material directly to the pipe. An airborne device separator and fan, horizontal carrier and wrecking unit are installed in accordance with operating regulations. During the research, strawberries and separators are regularly monitored, paying particular attention to the process of cotton transfer. After 60 minutes, the stubborn and horizontal tape was stopped simultaneously. At the same time, the length of the ribbon forms the surface of cotton. This spread describes where the transmitted material is being transmitted.

The split was divided into pieces on the horizontal ribbon on the surface.

Each piece was weighed and the weight of the cotton was determined separately and generalized for each piece.

The experiment was repeated 3 times.

The debt index was developed according to a special methodology:

$$S = \sqrt{\frac{\sum_{l=1}^{n}(k_i - k_{cp})}{n-1}} \qquad (1)$$

Here is the: S-dispersion of the material density along the tape surface;

$k = \frac{m}{F_л}$ - criterion that corresponds to the appropriate size of the material weight; cotton weight on the m-band;

$F_л$ - area of the tape plot; n-is the number of nodes (n = 10).

The signal strength of the device depends on the mass of cotton on the tape, using the following formula:

$$П = 3{,}6\frac{m \cdot V_л}{L} \qquad m/c \qquad (2)$$

where: m - mass of cotton on the tape, kg; *Vл* -speed of the lane, m / s; *L* - Length of the tape, m.

The results of investigating the uneven transmission of cotton to the air transporter.

Table 1

Indicators					
Type and grade of cotton	**humid condition%**	**Volume density kg/m³**	**Production productivity t / h**	**Comparative density dispersion kg/m²**	**Disturbances within 1 hour**
C6524 II type hand picking	9,5	66,6	9,7	1,61	$1^г$
	9,5	75,6	9,5	2,33	$1^г$
	9,5	83,4	9,97	2,74	$2^г$, 1^c
C6524 II type machine picking	11,2	69,2	9,2	2,11	$2^г$
	11,2	74,4	9,1	2,62	$1^г$
	11,2	89,7	9,8	3,06	$4^г$, 2^c

Note: Column 7 shows the number of clicks: g-pipe (cataract), c-separator chamber.

1- As it is seen from the table, the unevenness of cotton during transmission is high. This indicator increases depending on the volumes of cotton and the high moisture content. This is due to the excessive concentration of cotton from the stubble. The crushing machine can not afford it at the required level. Observations have shown that, in the case of high uncertainty, the cotton pockets on the ribbon surface have large density and weight and, when entering the pipe, block a certain part of the entrance. If the pieces enters the pipe in such a way, it will generate a large aerodynamic shade behind it during transportation. The air pressure in this zone is considerably lower, and then the pipe falls down the bottom of the pipe without having to get the required aerodynamic force. Here, the aerodynamic forces are joined by the resistance force that is generated by the cotton patch being drawn on the inner surface of the tube and the pipe access part is locked.

During the study, one hour of tuberculosis at low moisture and small volumes of cotton was observed twice in the introduction, once in the separator chamber. At high humidity and volumetric density four times in the entrance to the pipe, and 2 times in the separator chamber.

The adverse effects of seperator chambers are particularly noticeable. Depending on the degree of fatigue, the average time spent on the separator is 25 minutes. This can also lead to breakage of the separator lubricant, and additional time may be required to replace it. In addition, when the separator's camera is clogged with cotton, the worker chamber is filled with cotton. This is neglected during production. As a result, only a few cotton will be pumped with air. The rest fall on the slab stone collecting bunker.

It can be concluded that the above-mentioned factors need to be minimized in cotton production. This will increase the efficiency of all the elements of the airborne device and the equipment that constitutes the technological chain of cotton processing.

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It is necessary to develop the theoretical framework to conduct research on the airborne device. This will require a more thorough investigation, which will fully expose the clash of cotton to all working bodies of the airborne device. On the basis of this, it is possible to improve the design of the device elements.

IV. Theoretical Analysis Of Cotton Transfer Process

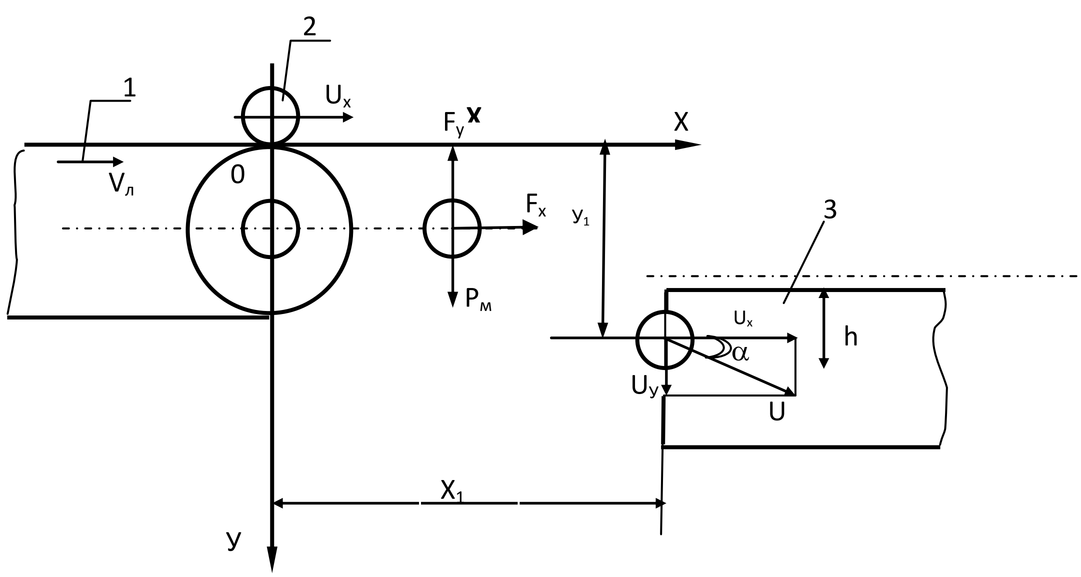
Air transport is a ventilator-generated air pressure in the device, representing the moving air particles in the pipe and the stream of solid particles and particles moving along by aerodynamic resistance and frictional forces. Concentration of air and cotton mixture in transportation of cotton through the air significantly impact on the nature of transport.

When the material moves through a straight line pipe, the forces of the inertia and the forces of the resistance are almost unchanged. At the same time, the transmitting of cotton to the airborne pipeline axis creates favorable conditions for transportation.

The lack of theoretical designs for the selection of favorable conditions for pipe transfer puts the problem of theoretical study of the process of transferring the cotton to the air transport equipment pipe. The solution of this issue will ensure a moderate air flow.

4.1 Learning about the Cotton Tube and its Movement Inside It

Use the ribbon trim in the transfer of cotton to the air handling unit (Figure 2).



Picture 3: Transferring the Cotton to the Air Transporting Device through the Ribbon Device

1-horizontal banding device; 2-cotton pieces; 3-pipe.

Let's look at the movement of the cotton lining on the plane of XOU. First, place the coordinate on the contact point with the cotton lint.

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Belt and impact strength are affected by the strip cut from the ribbon. The equation of motion will be as follows:

$$\begin{cases} m\dfrac{dU_x}{dt} = -F_x \\ m\dfrac{dU_y}{dt} = -F_y + P_м \end{cases} \quad (3)$$

Where m is the mass fraction, in kg; U_x,U_y-The velocity of the coordinate axis of the parent unit.

$$F_x = k_n U_x; \;\; F_y = k_n U_y, \quad (4)$$

In this case: F_x, F_y - aerodynamic forces against the coordinate axes of the axis; $P_м = mg$ - weight; g - the rate of free fall; k_n -is the aerodynamic resistance coefficient of cotton fiber.

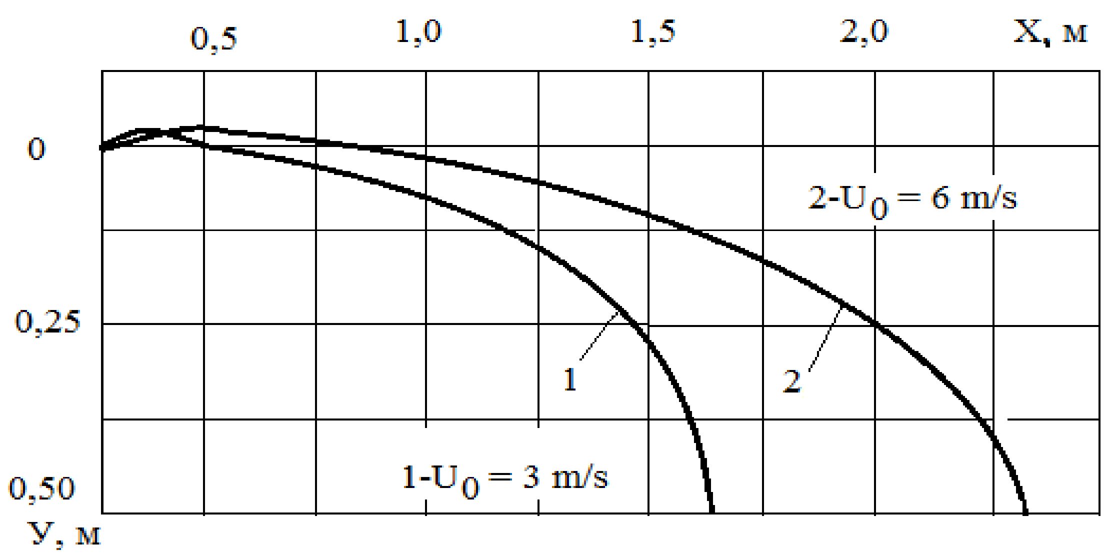
By putting the equation of equilibrium and producing the system, we obtain the following:

$$\begin{aligned} \frac{dU_x}{dt} &= -\frac{k_n}{m}U_x \\ \frac{dU_y}{dt} &= -\frac{k_n}{m}\left(U_y - \frac{mg}{k_n}\right) \end{aligned} \quad (5)$$

(5) equations - x, y - coordinate axes provide the velocity of the cotton bulb. As a result of one-time integration of solutions, resulting in the removal of time from solutions, we take the rule of change of movement of cotton $y = y(x)$:

$$y = -\frac{m^2 g}{k_n^2}\cdot\left[\ln\left(1 - \frac{k_n \cdot x}{mU_{x_0}}\right) + \frac{k_n \cdot x}{mU_{x_0}}\right] \quad (6)$$

According to this law, we are building a cotton timetable (Figure 3) separated from the ribbon.



Picture 4: Trajectory of Movement of Cotton to the Pipe

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Figure 3 depicts the motion trajectory of the cotton lining before coming to the air transport pipe. As can be seen from the graph, after the separation of the ribbon from the ribbon, the trajectory operates in a circular motion, at small starting speeds, with a smaller velocity through the tube, at a great speed.

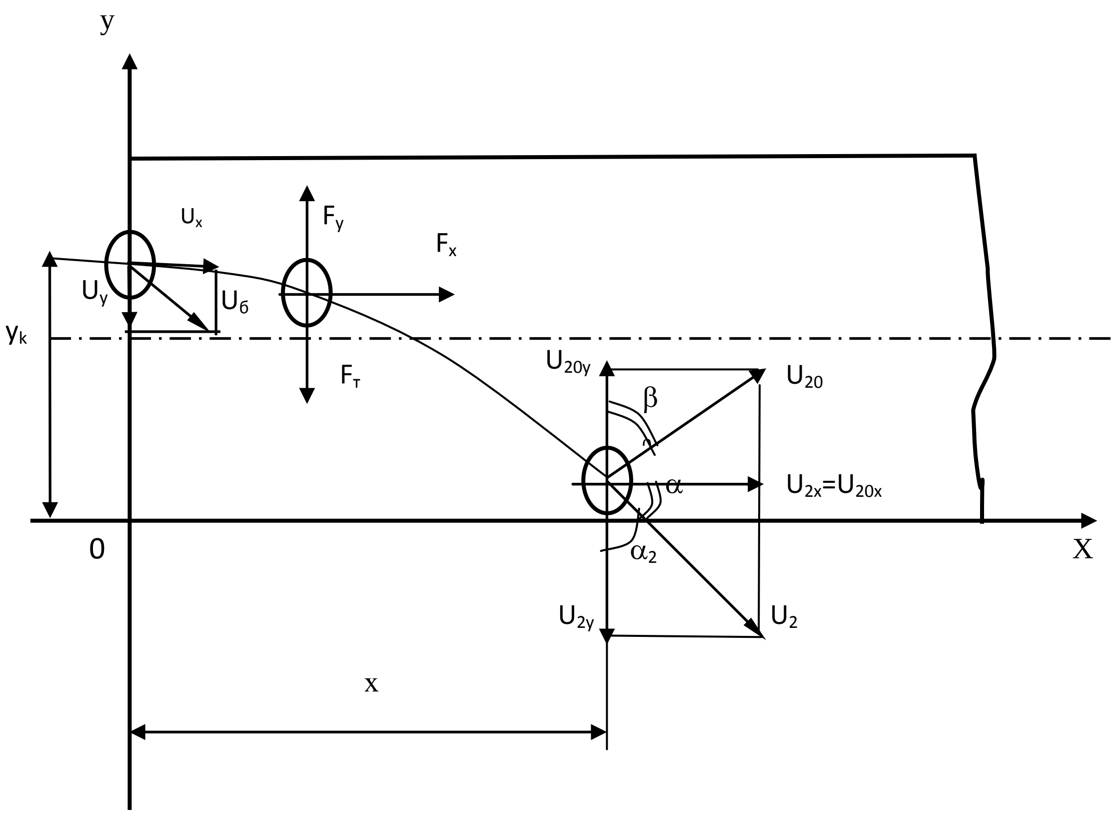
4.2 The Movement of Cotton in the Pneumatic Pipeline

At the time of studying cotton movement in the pipe suction section, we first place the coordinate at the beginning of the pipe for convenience. Let's assume that the motion of the incision occurs between the two infinite walls:

$$y=0 \quad \text{and} \quad y=d.$$

Let's assume that during the meeting with the air flow, the cotton part has an absolute velocity and that it operates at a certain angle relative to the axis of the pipe. Then the equation of motion is as follows:

$$\begin{cases} mx'' = -k(x'-V) \\ my'' = ky' - mg \end{cases} \tag{7}$$



Picture 5: Pipe Pipe Movement

$U_x = \dfrac{dx}{dt}$ ва $U_y = \dfrac{dy}{dt}$, we integrate the system with t = 0. My decision is as follows:

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$$\begin{cases} x = \dfrac{m}{k}(U_H \cos\alpha - U)(1 - e^{-\frac{k}{m}}) + Vt \\ y = -\dfrac{m}{k}(U_H \sin\alpha - \dfrac{mg}{k})(1 - e^{\frac{k}{m}}) + \dfrac{mg}{k}t + y_1 \end{cases} \quad (8)$$

This system of equations determines the trajectory of the location of the raw cotton.

At a certain distance from the known (X), it collides with the inner wall of the pipe and throws upwards under impact.

From the diagram of Figure 4, we find the following equation:

$$tg\alpha = tg\left(\frac{\pi}{2} - \alpha_2\right) = ctg\alpha_2 \quad \text{ёки} \quad tg\beta = \frac{ctg\alpha_2}{n} \quad (9)$$

where: - recovery coefficient.

Based on analytical calculations, we determine the rate of post-strike cotton lining and the coordinate axis:

$$\begin{cases} U_x == (U_{20x} - V)l - \dfrac{k}{m}(t - t_1) + V \\ U_y = \left(U_{20y} - \dfrac{mg}{k}\right)l\,\dfrac{k}{m}(t - t_1) + \dfrac{mg}{k} \end{cases} \quad (10)$$

$$\begin{cases} \mathrm{X} = \dfrac{m}{k}(U_{20x} - V)\left(1 - l - \dfrac{k}{m}(t - t_2)\right) + V(t - t_2) \\ \mathrm{Y} = \dfrac{m}{k}\left(U_{20y} - \dfrac{mg}{k}\right)\left(1 - l\,\dfrac{k}{m}(t - t_2)\right) + \dfrac{mg}{k}(t - t_2) \end{cases} \quad (11)$$

where: $U_{20x} = (U_n \cos\alpha_1 - V)\dfrac{k}{m}t_2 + V \qquad U_{20y} = U_{20x} x \cdot tg\beta$

The equations (10) and (11) determine the state of the first pair at the tube wall. At the same time it reaches a critical point and goes down. If the critical point of vertical coordinates is larger than the diameter of the pipe, then the lumen will hit the upper wall. It can be determined by the equation (10) and (11) with the equation of the next state. Only changes are made, taking into account the starting speed after the shock .

(11) is a graphical representation of the change of the trajectory of the cotton tube along the length and length of the cotton tube

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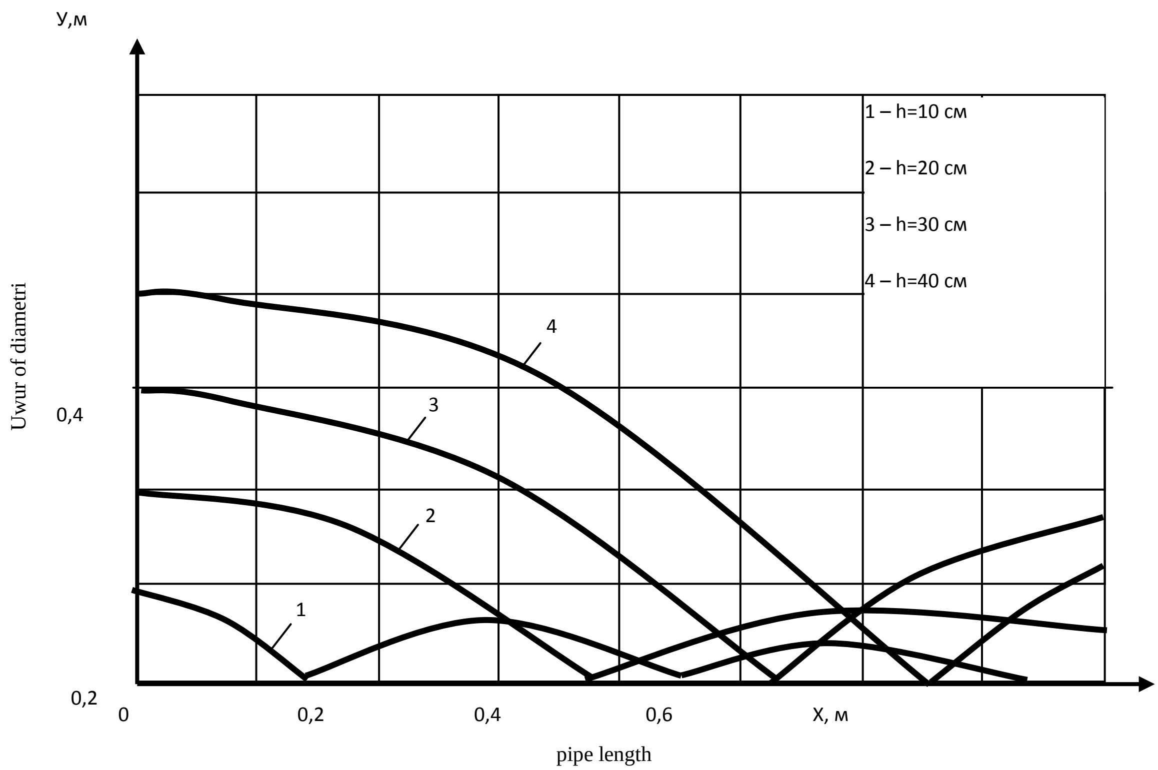

Picture 6: The Trajectory of the Pipe's Motion

is closer to the distance, with relatively fast and low amplitude. In either case, after the crushing of the cotton pipe several times, its tremor is gradually diminished. We tested it in the acoustic tests: the noise level in the part of the cotton pipe is the highest, after 6-8 meters the noise decreases dramatically and the cotton starts to move smoothly. However, noise increases when the elements of the pipe (such as shells, splits), and as part of a tile. After a certain distance noise decreases. This indicates that the cotton pipes are impacted intensely by the pipe walls. Defects in cotton seeds, such as flax clamps, are caused by this impact.

These studies show that when transferring the cotton to the pipe, it should be transmitted at a pinnacle of the pipe and as high as possible (the velocity at which the velocity is equal to or less than the velocity at which the air flow is present). Then, the cotton is inferior to the inner wall of the pipe, with less amplitude and smaller impact, and not negatively impacting the initial quality of the cotton.

V. CONCLUSIONS

1. During the transfer of cotton to the pneumatic pipe, there is a high degree of change in the transmitted cotton density, which means the high level of signal strength.
2. The unevenness of cotton during the transfer to the pneumatic pipe has been shown to have an increased gravity of the cotton-specific density dispersion along the transport line, with its high values in terms of cotton pumping, pumping and separator equipment. This indicates the need to develop technology to extend cotton to a pneumatic pipe..

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3. During the pipe movement of the cotton lump, it was found that the pipe moves through the wave rota- tion and the collision with the pipe wall. The greater the speed of air and cotton, the faster and more intense the shock.
4. In order to minimize the impact of cotton on the inner wall of the pipe with a smaller, larger amplitude and smaller impact, and to minimize the negative impact on cotton quality, it is desirable to transfer cotton directly to the center of the pipe and to the velocity at which the air flow is present.

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