

## COPY RIGHT



ELSEVIER  
SSRN

**2021 IJIEMR.** Personal use of this material is permitted. Permission from IJIEMR must be obtained for all other uses, in any current or future media, including reprinting/republishing this material for advertising or promotional purposes, creating new collective works, for resale or redistribution to servers or lists, or reuse of any copyrighted component of this work in other works. No Reprint should be done to this paper, all copy right is authenticated to Paper Authors

IJIEMR Transactions, online available on 24th April 2021.

Link: <https://ijiemr.org/downloads/Volume-10/Issue-4>

**DOI: 10.48047/IJIEMR/V10/I04/84**

Title: **Of THE POLYMER COMPOSITION ON THE MATERIALS TO BE SEATED AND FEATURES OF THE EXPERIMENTAL INSTALLATION IN THE SEWING MACHINE**

Volume 10, Issue 04, Pages: 419-422

Paper Authors:

**Behbudov Shavkat Husenovich<sup>1</sup>, Rakhimova Gulora Pirnazarovna<sup>2</sup>, Matchanova Gulrukh Hayitmatovna<sup>3</sup>**



USE THIS BARCODE TO ACCESS YOUR ONLINE PAPER

To Secure Your Paper As Per **UGC Guidelines** We Are Providing A Electronic Bar Code

## Of THE POLYMER COMPOSITION ON THE MATERIALS TO BE SEATED AND FEATURES OF THE EXPERIMENTAL INSTALLATION IN THE SEWING MACHINE

Behbudov Shavkat Husenovich<sup>1</sup>, Rakhimova Gulora Pirnazarovna<sup>2</sup>,  
Matchanova Gulrukh Hayitmatovna<sup>3</sup>  
Bukhara Engineering and Technological Institute<sup>1</sup>  
Urgench State University<sup>2,3</sup>

**Abstract:** The article provides a diagram of a device for applying a polymer composition to the stitches of stitched materials, presents the results of experiments on measuring the breaking strength of stitches in tarpaulin materials. And also a diagram of an experimental installation for sewing tarpaulin canvases has been translated.

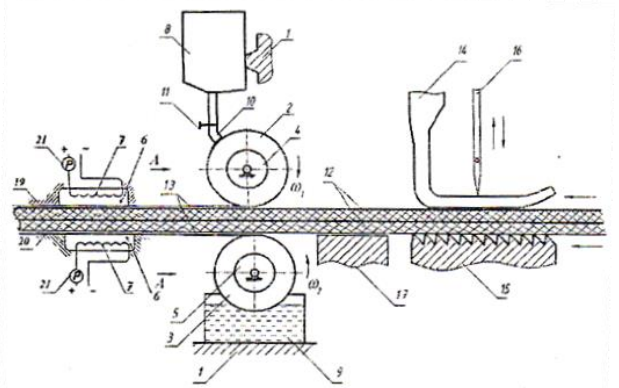
**Keywords:** Sewing machine, polymer composition, stitching, fabric, application, strength, tarpaulin, breaking strength.

### Introduction

In the proposed design of the device containing two rotating rollers covered with a porous material, the rollers are installed on the body of the sewing machine on both sides of the sewing parts behind its presser foot and a toothed rack and are interconnected by an overlapping belt transmission, the liquid polymer composition supply system contains an upper bath connected to surface of the upper roller through a feed tube with a feed regulator, and a lower bath installed under the working platform of the machine, into which the lower roller is partially immersed [1,2].

The main disadvantage of the known designs is the low reliability due to the absence of the process of the essence of the applied polymer coating on the seams of the materials being ground

To increase the reliability and strength of thread connections in garments made from fabrics of movable structures, namely, to reduce the spreading of threads in the seams by fixing the fabric structure in the seam area with a polymer-composite material while reducing labor intensity and multistage processing of the product, as well as due to modern embroidery applied polymer composition on the seams of the materials to be ground and the design of the device with forced drying of the coating immediately after its application has been improved [3].



Pic. 1. A device for applying a polymer composition to clothing items

The device works as follows. When sewing, the parts 12 are pressed by the foot 14 against the toothed rack 15 and the needle plate 17. The fabric is advanced by the stitch amount by the toothed rack located in the slot of the needle plate. The rack feeds materials only under the needle 16, and the direction of movement of materials when sewing is set by the worker. When the needle 16 and the shuttle (not shown in the drawing) interact, a shuttle stitch is formed.

Further, the materials to be sewn fall under the mutually rotating upper 2 and lower 3 rollers mounted on shafts 4 and 5 connected to the body of the sewing machine 1. In the process of moving fabrics from the upper bath 8 through the feed tube 10, the polymer composite enters the porous surface 18 of the upper roller 2 and is applied to the upper fabric

in the form of a film 13. The supply of the polymer composition is regulated by means of the regulator 11. The polymer composition 13 is applied to the lower layer of the fabrics being ground by means of the lower roller 2, which also has a porous surface 18 and is partially recessed in the solution of the polymer composition in the lower Tray 9. In the process of stitching, the polymer composition is applied in a strip 15-20 mm wide, so that the seam is in the center of the strip. The applied polymer coating 13 is immediately dried by using the shade 7 installed in the casings 6.

A prototype of the device was made, in which the stitches of the stitched materials were tested.

The tests were carried out on prototype and serial sewing machines and compared the results. During the testing of the experimental sewing machine with a new device for applying the polymer composition to the fabric, there were no failures, there were no skipped stitches at high speed operating conditions [4]. In fig. 2 shows a general view of a sewing machine worn with a device for applying a polymer composition to the stitches of materials to be sewn.



a - front view

b - the process of applying the polymer composition on the lines

Fig. 2. General view of a sewing machine worn by a device for applying a polymer composition to the lines of sewn materials

Production tests on a prototype sewing machine were carried out at different speed modes and on different materials. The studies carried out have shown that the density of the connection of the upper and lower threads of the two-layer material corresponds to the norm of the transverse direction.

Table 1 shows the average value of the results obtained from selected samples with a replication of 25 pieces.

Table 1  
The results of measurements of the strength of the fabric on a tensile testing machine

| Coating            | Without emulsion coating |        | With PVC emulsion |        | With selean emulsion |        |
|--------------------|--------------------------|--------|-------------------|--------|----------------------|--------|
| Material tarpaulin |                          |        |                   |        |                      |        |
| Khaki SKPV         | 68,8                     | 15%    | 96,6              | 20%    | 109,4                | 15%    |
| Small PV           | 62,4                     | 21%    | 72,8              | 17,4 % | 90,4                 | 18,4 % |
| Large OP           | 42,4                     | 14,4 % | 48,4              | 14,4 % | 49,2                 | 14,2 % |

When carrying out experimental measurements to improve the accuracy of measurements and eliminate extraneous interference, the parameters were measured in idle running of the machine without load. To control the quality of the seam, the samples were tested for breaking load on a device with a replication of 50 samples from each type of fabric of article 11292SKIV, Khaki tarpaulin, 11292PV small, 11293OP large. To test the strength of fabrics on a tensile testing machine, a sample 40 cm long and 3 cm wide was made, 10 samples of each version from Khaki materials (small tarpaulin and large tarpaulin).

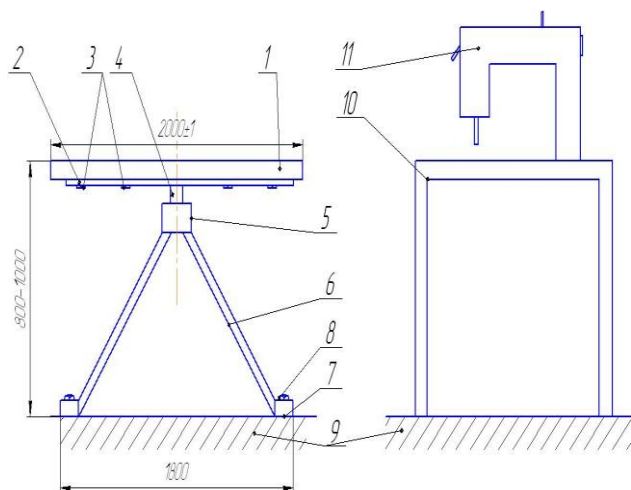
With the required sizes of awnings for sheltering cotton riots, the sizes of awnings in the aisles of a square measuring 8m by 7m with a total area of 54 m<sup>2</sup> to 64 m<sup>2</sup> are mainly used, which will allow covering part of the riots with the subsequent connection of individual parts of the awnings into a common one.

With known values of the density of the tarpaulin material, let us say 11292SKIV, Khaki tarpaulin, 11292PV small, 11293OP large square meter of fabric can reach up to 400 grams and the total weight of the tarpaulin can be, depending on the type of material in the aisles, from 24 kg to 35 kg, which significantly complicates the technology sewing and joining fabrics to each other on sewing machines. Therefore, in production at cotton factories, in most cases, hand-sewn awnings are used in

violation of the sealing technology. As you know, for sewing tents with large areas, special devices and devices are used on sewing machines, so we were faced with the task of developing technology and devices for sewing tents from tarpaulins.

To ensure the continuous operability of the sewing machine and the technological process of sewing tarpaulin cloths, a feeding platform should be designed on rotating supports with a table with a table diameter of 2000 mm and installed close to the table by a sewing machine.

The diagram of the proposed design of the table and sewing machine is shown in Fig. 3.



*Pic 3. Diagram of an experimental installation for sewing tarpaulin canvases.*

- 1- rotating table, 2- table frame, 3- stiffening ribs, 4- rotation axis, 5- controlled electric drive, 6- table stands, 7- anchor bolts, 8- fastening legs, 9- base, 10- sewing machine table, 11- sewing machine.

2-

The experimental setup includes a TYPICAL sewing machine with standard parameters set by the factory. This sewing machine has a mechanism for moving the needle and rail and is a walking type of sewing machine designed for sewing heavy, dense materials. The sewing machine is double-row, the spacing between the lines is 6mm.

Also, to measure the parameters of the machine and the technological process, measuring elements and devices for applying a composite material at the junction of the materials to be sewn were installed on the sewing machine [5, 6].

## Conclusions.

A new effective Device for applying a polymer composition to clothing details has been developed. It was revealed that the use of polymer coatings on stitches in tarpaulin materials leads to an increase in the breaking strength of the stitches up to  $(1.2 \div 1.6)$  times in comparison with the strength of stitches without a coating. Developed an experimental installation for sewing tarpaulin canvases

## Literature:

1. V.V. Veselov, I. D. Gorbunov, I. V. Molkova. A device for applying a liquid-phase polymer to cuts of cut parts. Proceedings of universities. Textile industry technology. - 2007, No. 3. 97-99.
2. VV Veselov, GV Kolotilova. Chemicalization of technological processes of sewing enterprises: Textbook / Edited by V.V. Veselov. - Ivanovo: IGTA, 1999.
3. Tashpulatov S.Sh., Dzhuraev A.D., Israilova B.G., Behbudov Sh.Kh. Patent.uz FAP00917 dated 04/11/2013 A device for applying a polymer composition to the worn parts of clothing.
4. Mansurova M. A., Djuraev A. D., Behbudov Sh. H., Tashpulatov S. Sh. Mathematical model of dynamics of device for applying polymer composition on grind parts of the clothes. European Sciences review Scientific journal No. 11–12 2016 (January – February) 129-131
5. Safronova I.V. Technical methods and measuring instruments in the clothing industry. M., "Light and food industry", 1993

6. Ermakov S.M. Mathematical theory of the optimal experiment [Text] / SM Ermakov, AA Zhiglevsky. -M.: Nauka, 1987.

7. Behbudov Sh.H., Mustafoyev K.I., Bozorova F.M., A.R.Amonov. "Analysis of studies of the angular movement of the lever rails in sewing machines" International journal of advanced research in science, engineering and technology. Vol. 7, Issue 4, April 2020. ISSN:2350-0328. India-2020

8. Behbudov Sh.H., Mustafoyev K.I., Bozorova F.M., A.R.Amonov. "Kinematic analysis of a closed lever-articulated mechanism for moving material of a sewing machine" International journal of advanced research in science, engineering and technology. Vol. 7, Issue 4, April 2020. ISSN:2350-0328. India-2020

9. Behbudov Sh.H., A.Dj.Djurayev., A.R.Amonov., D.X.Qodirova. "Teoretiko-experimental method of definition of parameters of the roller with the rubber plug of the device for drawing of the polymeric composition on lines of sewed materials" International journal of innovative technology and exploring engineering. ISSN:2278-3075, Volume-9 Issue-1, November 2019.

10. Behbudov Sh.H., A.R. Amonov., N.U. Latipova., M.Zh. Shodmonova. "Influence of the reduced stiffness of the elastic roller sleeve and the worn-off parts of clothing on the natural frequency of vertical vibrations of the rubber roller axis" Internauka Scientific journal No. 6 (88) February 2019. Part-1, Moscow.