Sept. 5, 1944. A. EDDY 2,357,730

METHOD OF HANDLING CLOTH DURING FINISHING

Filed June 10, 1943 2 Sheets-Sheet 1

Fig: 1.

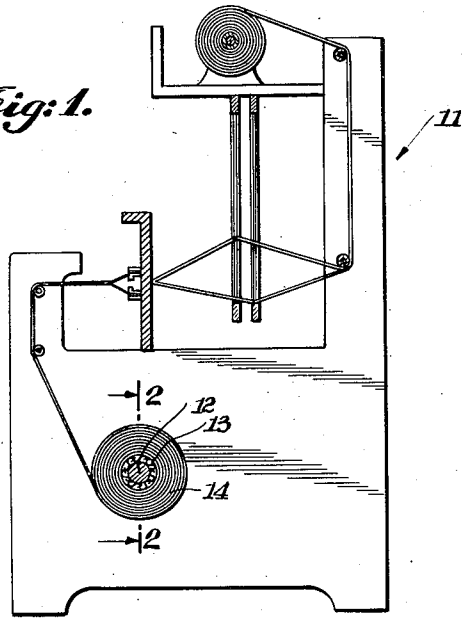


Fig: 4.

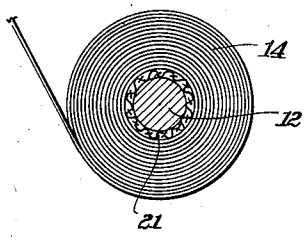


Fig: 2.

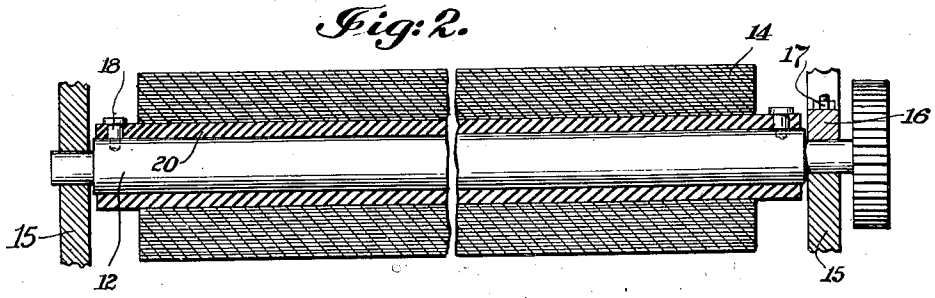
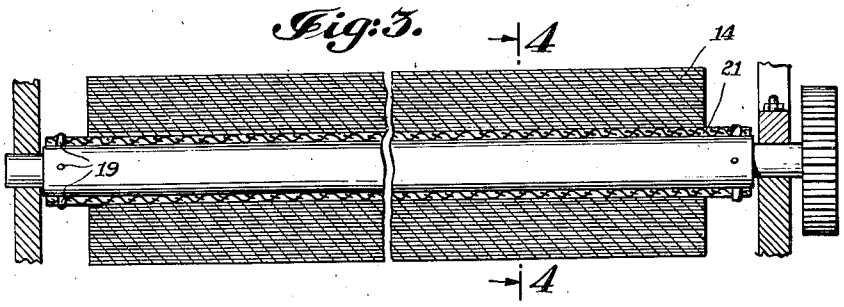


Fig: 3.



INVENTOR.
ARNOLD EDDY

BY Michael S. Adams
his Agent

Sept. 5, 1944. A. EDDY 2,357,730

METHOD OF HANDLING CLOTH DURING FINISHING

Filed June 10, 1943 2 Sheets-Sheet 2

Fig:5.

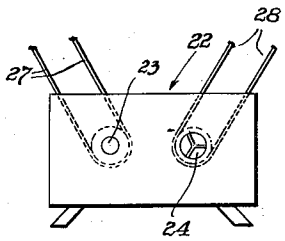


Fig:6.

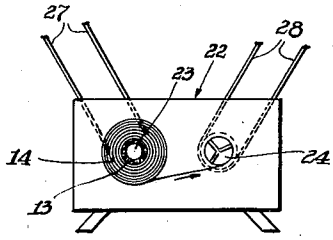


Fig:8.

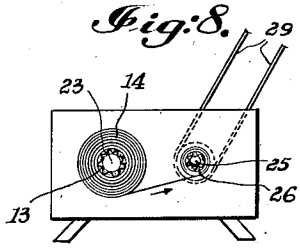


Fig:7.

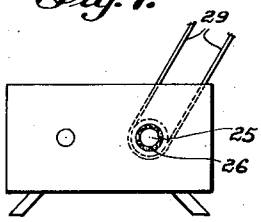


Fig:9.

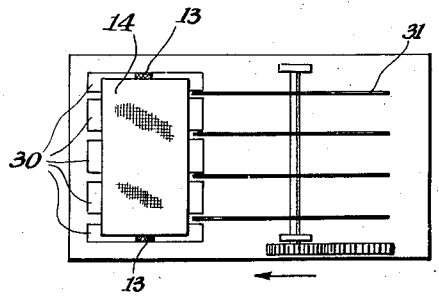
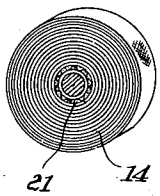


Fig:10.



INVENTOR.
ARNOLD EDDY

BY Michael S. Stahl
his Agent

Patented Sept. 5, 1944 2,357,730

UNITED STATES PATENT OFFICE

2,357,730

METHOD OF HANDLING CLOTH DURING FINISHING

Arnold Eddy, Middletown, Conn., assignor, by mesne assignments, of one-half to Hilda W. Striker, New York, N. Y.

Application June 10, 1943, Serial No. 490,253

14 Claims. (Cl. 26—1)

My present invention relates to processes of weaving, transporting and finishing cloth; my invention furthermore relates to looms, and more particularly to improvements in cloth beams of looms and attachments thereto.

It is an object of my present invention to facilitate transporting and finishing of woven cloth rolls.

It is a further object of my invention to enable finishing of cloth in the shape of a roll without the necessity of transporting the cloth roll from one finishing machine to the other on the cloth beam of the loom.

It is still a further object of my present invention to enable production of ribbon-shaped fabric and finishing of the same in a particularly easy and simple way.

Another object of my present invention consists in new methods for producing gauze which methods are greatly labor saving compared with those used at present.

Finally, it is also an object of my present invention to provide a new cloth beam construction for a loom making removal of the cloth roll from the cloth beam and sliding of this cloth roll onto another beam possible.

With the above objects in view the structural part of my present invention comprises mainly the combination of a cloth beam of a loom with a cloth receiving tubular member arranged slidably upon this cloth beam.

Preferably means are provided for preventing turning and sliding of this tubular member relative to the cloth beam during weaving of the cloth.

This construction enables removal of the woven cloth roll from the cloth beam and introduction of another beam, e. g., the cloth beam of a cloth treating machine into the tubular member upon which the cloth roll is wound up. Thus it is unnecessary to transport during the finishing process the cloth beam of the loom with the woven cloth roll or as it is usually done to unwind the cloth from the cloth beam and to finish it in a very laborious and difficult way while it is piled up in layers lying upon each other. It is evident that all finishing steps, e. g., dyeing, bleaching and drying can be carried out much simpler and quicker if the cloth is wound upon a supporting member and if it is not necessary to spend much time and work to avoid that the unwound cloth layers get into disorder during the finishing process.

What has been said in the preceding paragraph is of particular importance in the process of finishing gauze. In this case unwinding of the gauze after weaving and finishing of the thus unwound gauze is of particular disadvantage, as well known to everybody skilled in this art. It is extremely hard to retain the original structure and shape, i. e., the width of the gauze during finishing, e. g., dyeing, bleaching and drying so that the finishing treatment of gauze is one of the most complicated and laborious processes. It is evident that by the above described structural improvement of the loom on which the cloth, e. g., gauze is woven all these disadvantages can be avoided in a simple and efficient way.

I wish to stress that the cloth receiving tubular member which is arranged in accordance with my present invention on the cloth beam may be made practically of any desired material. However, I would like to note that I prefer to make this cloth receiving tubular member of a flexible material, e. g., plastic, rubber or even fabric. In the last mentioned case I need only a fabric hose of a great length and have to cut before each weaving a new cloth roll a fabric hose portion of appropriate length from the long fabric hose and to slide it upon the cloth beam of the loom. Although it seems improbable, practical experience has proved that such a fabric hose very well serves its purpose, namely it enables removal from the cloth beam of the loom of the woven cloth roll and the fabric hose upon which it is wound up, and sliding of this cloth roll upon another cloth beam by introducing into the fabric hose in the center of the cloth roll another cloth beam, e. g., the beam of a cloth treating machine.

The novel features which I consider as characteristic for my invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings, in which:

Figure 1 is a schematic side view of a loom partly in cross section showing one embodiment of my present invention;

Figure 2 is a longitudinal section through the cloth beam of the loom, a tubular member, and a cloth roll supported by the same, along line 2—2 of Fig. 1;

Figure 3 is a longitudinal section through a cloth beam, a fabric hose, and a cloth roll, showing another embodiment of my invention;

Figure 4 is a cross section through the cloth beam, fabric hose and cloth roll shown in Fig. 3, along line 4—4 of this figure;

Figures 5 to 8 are schematic views of various cloth treating machines needed for the new process proposed by me;

Figure 9 is a cloth cutting machine used in combination with my new process; and

Figure 10 is a ribbon-shaped cloth roll produced in accordance with my present invention.

Having above described the objects and main characteristic features of my present invention in detail, I will explain in the following only the acutal embodiments shown in the drawings. Of course, this should not mean that my present invention is limited to these embodiments.

In Fig. 1 I have shown a loom 11 of usual design; therefore I will not describe it in detail. The only feature in which this loom distinguishes from the conventional ones is that there is arranged on cloth beam 12 a cloth receiving tubular member 13 upon which the woven cloth roll 14 is wound up.

As shown in Fig. 2 cloth roll 12 is arranged in conventional manner between the two side walls 15 of the loom body, rotatably supported by the same. The upper bearing member 16 is secured only by screw 17 or otherwise to the corresponding lower bearing member thereby making it possible to detach this bearing member 17 and to remove cloth beam 12 together with tubular member 13 and cloth roll 14. It should be mentioned that these means for securing and removing the cloth beam do not form part of my present invention as such means are provided in each and every loom of conventional design.

The tubular member 13 provided in accordance with my present invention and clearly shown in Figs. 1–4 is secured to cloth beam 12 in such a manner as to avoid movement of this tubular member relative to cloth beam 12 during the weaving process. This can be obtained by most various means as for instance by screws 18 (Fig. 2) or pins 19 (Fig. 3), arranged at both ends of beam 12.

As mentioned above the tubular member may be made of most different materials: Thus I have shown in Fig. 2 a tubular member 20 made of rubber and in Figs. 3 and 4 a fabric hose 21 serving for these purposes. It is evident that this fabric hose need not be shape-retaining but may be collapsible as also in latter case it enables introduction of a beam into this fabric hose after the same has been removed from cloth beam 12 of loom 11 together with cloth roll 14 wound upon it.

My present invention consists not only in structural improvements of a loom but also in the new processes themselves which are made possible by these structural changes. These my new finishing processes have as main characteristic feature the steps of winding up the woven cloth on the loom 11 upon a tubular member 13 arranged on the cloth beam 12 of this loom, removing after weaving from this cloth beam 12 the woven cloth wound upon the tubular member 13 in the shape of a cloth roll 14 together with the tubular member 13, transporting this cloth roll 14 wound upon the tubular member 13 to a cloth treating machine 22 of the type shown in Figs. 5 and 6, which machine is also provided with a beam 23, sliding the tubular member 13 with cloth roll 14 upon this beam 23, then treating the cloth in the cloth treating machine 22, and thereafter removing tubular member 13 together with cloth roll 14 wound upon it from beam 23 of the cloth treating machine 22 and transporting both tubular member 13 and cloth roll 14 together, wherever required. It is evident that this process is made possible only by the improvements in the loom proposed by me. This process is new and forms also an important part of my present invention.

It should be mentioned that it is possible to remove during the treatment of the cloth in the cloth treating machine 22 the cloth temporarily from tubular member 13 arranged on beam 23 of this machine, e. g., by winding the cloth temporarily upon drum 24 arranged in the machine 22 and rewinding the cloth from this drum upon the tubular member 13 arranged on beam 23. It is evident that in this case only one tubular member need to be provided as during the entire finishing process the cloth roll 14 is permanently wound upon this tubular member 13.

It should, however, be mentioned that in accordance with my present invention I might provide in the cloth treating machine, e. g., in a machine of the type shown in Figs. 7 and 8 a second beam 25 upon which I arrange an additional tubular member 26 as shown in Fig. 7. In this case cloth roll 14 together with the first tubular member 13 is arranged in the same way as described above on beam 23 but it is unwound during treatment from this tubular member 13 and wound upon the other tubular member 26 arranged on beam 25. From this latter beam 25 the cloth roll 14 is then removed together with the additional tubular member 26 wound upon the same.

For purposes of facilitating understanding of the drawing I wish to mention that in Figs. 5 and 7 I have shown the cloth treating machines before start of treatment of the cloth, while in Figs. 6 and 8 I have shown these machines during operation. Furthermore, it should be noted that in these figures the numerals 27, 28 and 29 indicate driving means for rotating the various beams 23 and 25 and the drum 24. It is evident that in the second machine shown in Figs. 7 and 8 no driving means for beam 23 are needed.

I wish, furthermore, to stress the important fact that the treatment steps described above may be repeated as often as necessary and combined in any required way. That means that the cloth roll 14 wound upon the tubular member 13, e. g., fabric hose 21 can be removed from the machine 22 shown in Figs. 5 and 6 and treated on other machines of similar type in the same way as on this machine 22. Thus one of these machines might be a dying machine, another a bleaching machine, still another a dryer. It is only important that during the entire finishing process the cloth roll 13 be always, i. e., during transporting from one of these machines to another and partly also during treatment in these machines themselves, on a tubular member, e. g., on a cloth hose 21 of the type described above.

The same is true for the treatment described in connection with the machine shown in Figs. 7 and 8: also this process can be repeated as often as necessary; it is only important that in each of the machines the cloth roll be unwound from a tubular member 13 and wound upon another tubular member 26 before leaving the machine so that during transportation from one machine to another the cloth roll is always wound upon a tubular member.

Finally, I wish to mention that it is also within the scope of my present invention to combine

treatments with both types of machines into one finishing process. Thus I claim also as my invention processes in which the cloth is treated partly on machines of the type shown in Figs. 5 and 6 and partly on machines of the type shown in Figs. 7 and 8. Naturally, also in these processes the cloth is always wound upon a tubular member when it is transported from one machine to the next.

I wish to mention that in case of tubular members made of relatively soft materials, e. g., card board, rubber or fabric, these tubular members may also be left in the cloth roll 14 when the same is cut into rolls of cloth ribbon as shown in Fig. 9. In this figure the cloth roll 14 together with the centrally arranged tubular member, e. g., fabric hose, not shown in the drawings, is placed on a series of supports 30 and then cut by means of the schematically shown cutting device 31 into a series of ribbon rolls of the type shown in Fig. 10. This latter process step is of the greatest importance in the process of producing gauze ribbons which up to now were produced in an extremely difficult, laborious and complicated way. However, I wish explicitly to stress that also all other process steps and the entire new finishing processes described above are extremely well adapted for treating and finishing gauze and gauze-like material.

It should be mentioned that although I have mentioned above that in the cloth treating machines the cloth is unwound from the tubular member and wound back upon the same or upon another tubular member, in many finishing processes it is possible to finish the entire fabric without unwinding the same at all, i. e., while it is in the shape of a cloth roll wound upon a tubular member. Naturally in this case my present invention is of particular importance as its advantages are the greatest when no unwinding of the fabric during finishing is necessary.

Furthermore, I wish to note that it is also within the scope of my present invention to weave the cloth in the usual way done up to now, i. e., to wind it upon a cloth beam of usual construction without provision of a flexible tube or hose on this beam, and then to rewind the cloth from the cloth beam of the loom on a flexible tube or hose arranged on the cloth beam of a special rewinding apparatus or of a conventional cloth treating machine used in the cloth finishing process. In this case, the cloth is then further treated during the finishing process on the flexible tube or hose upon which it is wound up from the cloth beam of the loom.

It should be noted that it also forms a part of my present invention to arrange a flexible hose or tube on any cloth beam of a cloth finishing machine and thus also the combination of a cloth beam of a cloth finishing machine with a flexible tube or hose arranged on this cloth beam lies within the scope of my present invention.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of cloth treating and finishing machines and in other cloth finishing processes differing from the types described above.

While I have illustrated and described the invention as embodied in processes for finishing cloth I do not intend to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of my invention.

Without further analysis, the foregoing will so fully reveal the gist of my invention that others can by applying current knowledge readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

What I claim as new and desire to secure by Letters Patent is:

1. Method of handling cloth during finishing comprising the steps of winding up the unfinished cloth on a tubular member arranged on a cloth beam, removing said unfinished cloth wound upon said tubular member in the shape of a cloth roll together with said tubular member from said cloth beam, moving said cloth roll wound upon said tubular member to a cloth treating machine provided with a cloth beam, sliding said tubular member with said cloth roll upon said cloth beam of said cloth treating machine, winding up said cloth during treatment in said cloth treating machine upon another tubular member arranged on another cloth beam of said cloth treating machine, removing said other tubular member together with the treated cloth wound upon it in the shape of a cloth roll from said other cloth beam of said cloth treating machine, and moving said tubular member with said treated cloth roll wound upon it together, wherever required.

2. Method of handling cloth during finishing, comprising the steps of winding up the unfinished cloth upon a flexible fabric hose arranged on a cloth beam, removing thereafter from said cloth beam said flexible fabric hose with said unfinished cloth wound upon said flexible hose, moving said cloth roll wound upon said flexible fabric hose to a cloth treating machine provided also with a cloth beam, sliding said flexible fabric hose with said cloth roll upon said cloth beam of said cloth treating machine, winding up said cloth during treatment in said cloth treating machine upon another flexible fabric hose arranged on another cloth beam of said cloth treating machine, removing said other flexible fabric hose together with the treated cloth wound upon it in the shape of a cloth roll from said other cloth beam of said cloth treating machine, and moving said flexible fabric hose with said treated cloth roll wound upon it, wherever required.

3. Method of handling cloth during finishing, comprising the steps of winding up the unfinished cloth on a flexible fabric hose arranged on a cloth beam, removing said unfinished cloth wound upon said flexible fabric hose in the shape of a cloth roll together with said flexible fabric hose from said cloth beam, moving said cloth roll wound upon said flexible fabric hose to a first cloth treating machine provided with a cloth beam, subjecting said cloth roll wound upon said flexible fabric hose on said first cloth treating machine to a procedure consisting in sliding said flexible fabric hose with said cloth roll upon said cloth beam of said first cloth treating machine, removing after treatment in said first cloth treating machine said flexible fabric hose together with said treated cloth roll wound upon it from said first cloth treating machine, moving said treated cloth roll wound upon said flexible fabric hose to a second cloth treating machine in which said cloth also has to be treated, subjecting said cloth roll wound upon said flexible fabric hose on said second cloth treating machine to the same procedure as on said first

cloth treating machine, and repeating this procedure on following cloth treating machines as often as necessary for finishing said cloth.

4. Method of handling cloth during finishing comprising the steps of winding up the unfinished cloth upon a flexible fabric hose arranged on a cloth beam, removing thereafter from said cloth beam said unfinished cloth wound upon said flexible fabric hose in the shape of a cloth roll together with said flexible fabric hose, moving said cloth roll wound upon said flexible fabric hose to a first cloth treating machine provided with a cloth beam, subjecting said cloth roll wound upon said flexible fabric hose on said first cloth treating machine to a procedure consisting in sliding said flexible fabric hose with said cloth roll upon said cloth beam of said first cloth treating machine, winding up said cloth during treatment in said first cloth treating machine upon another flexible fabric hose arranged on another cloth beam of said first cloth treating machine, removing said other flexible fabric hose together with said treated cloth roll wound upon it from said first cloth treating machine, moving said treated cloth roll wound upon said other flexible fabric hose to a second cloth treating machine in which said cloth has also to be treated, subjecting said cloth roll wound upon said flexible fabric hose on said second cloth treating machine to the same procedure as on said first cloth treating machine, and repeating this procedure on following cloth treating machines as often as necessary for finishing said cloth.

5. Method of handling gauze during finishing the steps of winding up the unfinished gauze upon a flexible tubular member arranged on a cloth beam removing thereafter said unfinished gauze wound upon said tubular member in the shape of a gauze roll together with said tubular member from said cloth beam, moving said gauze roll wound upon said tubular member to a first gauze treating machine provided with a cloth beam, subjecting said gauze roll wound upon said tubular member on said first gauze treating machine to a procedure consisting in sliding said flexible tubular member with said gauze roll upon said cloth beam of said first gauze treating machine, removing after treatment in said first gauze treating machine said flexible tubular member together with said treated gauze roll wound upon it from said first gauze treating machine, moving said treated gauze roll wound upon said flexible tubular member to a second gauze treating machine in which said gauze has also to be treated, subjecting said gauze roll wound upon said flexible tubular member on said second gauze treating machine to the same procedure as on said first gauze treating machine, and repeating this procedure on following gauze treating machines as often as necessary for finishing said gauze.

6. Method of handling gauze during finishing the steps of winding up the unfinished gauze upon a tubular member arranged on a cloth beam removing thereafter from said cloth beam said unfinished gauze wound upon said tubular member in the shape of a gauze roll together with said tubular member, moving said gauze roll wound upon said tubular member to a first gauze treating machine provided with a cloth beam, subjecting said gauze roll wound upon said tubular member on said first gauze treating machine to a procedure consisting in sliding said tubular member with said gauze roll upon said cloth beam of said first gauze treating machine, winding up said gauze during treatment in said first gauze treating machine upon another tubular member arranged on another cloth beam of said first gauze treating machine, removing said other tubular member together with said treated gauze roll wound upon it from said first gauze treating machine, moving said treated gauze roll wound upon said other tubular member to a second gauze treating machine in which said gauze has also to be treated, subjecting said gauze roll wound upon said tubular member on said second gauze treating machine to the same procedure as on said first gauze treating machine, and repeating this procedure on following gauze treating machines as often as necessary for finishing said gauze.

7. In the process of finishing cloth, the steps of winding up the unfinished cloth on a flexible hose, moving said cloth roll wound up on said flexible hose to a cloth treating machine provided with a cloth beam, sliding said flexible hose with said cloth roll upon said cloth beam of said cloth treating machine, winding up said cloth during treatment in said cloth treating machine upon another flexible hose arranged on another cloth beam of said cloth treating machine, removing said other flexible hose together with the treated cloth wound up on it in the shape of a cloth roll from said other cloth beam of said cloth treating machine and moving said flexible hose, together with said treated cloth roll wound up on it, wherever required.

8. In the process of finishing cloth, the steps of winding up the unfinished cloth on a tubular member, moving said cloth roll wound up on said tubular member in the shape of a cloth roll together with said tubular member to a cloth treating machine provided with at least two cloth beams, sliding said tubular member with said cloth roll upon one of said cloth beams of said cloth treating machine, unwinding said cloth roll from said tubular member and winding it up on said other cloth beam of said cloth treating machine, unwinding said cloth roll from said other cloth beam of said cloth treating machine and winding it up again on said tubular member, removing said tubular member together with said treated cloth wound up on it in the shape of a cloth roll from said cloth treating machine and moving said tubular member, together with said treated cloth roll wound up on it, wherever required.

9. In the process of finishing cloth, the steps of winding up the unfinished cloth on a tubular member arranged on a cloth beam, removing said unfinished cloth wound up on said tubular member in the shape of a cloth roll together with said tubular member from said cloth beam, moving said cloth roll wound up on said tubular member to a cloth treating machine provided with a cloth beam, sliding said tubular member with said cloth roll upon said cloth roll of said cloth treating machine, unwinding said cloth roll during treatment and thereafter winding the same up again on said tubular member, removing said tubular member together with the treated cloth wound up on it in the shape of a cloth roll from said cloth beam of said cloth treating machine, and moving said tubular member, together with said treated cloth roll wound up on it, wherever required.

10. In the process of finishing cloth, the steps of winding up the unfinished cloth in the shape of a cloth roll on a flexible hose, moving said cloth roll wound up on said flexible hose to a cloth

treating machine provided with a cloth beam, sliding said flexible hose with said cloth roll upon said cloth roll of said cloth treating machine, unwinding said cloth roll during treatment and thereafter winding the same up again on said flexible hose, removing said flexible hose together with the treated cloth wound up on it in the shape of a cloth roll from said cloth beam of said cloth treating machine, and moving said flexible hose, together with said treated cloth roll wound up on it, wherever required.

11. In the process of finishing cloth, the steps of winding up the unfinished cloth on a tubular member arranged on a cloth beam, removing said unfinished cloth wound up on said tubular member in the shape of a cloth roll together with said tubular member from said cloth beam, moving said cloth roll wound up on said tubular member to a first cloth treating machine provided with at least one cloth beam, subjecting said cloth roll wound up on said tubular member on said first cloth treating machine to a procedure consisting in sliding said tubular member with said cloth roll upon one of said cloth beams of said first cloth treating machine, removing after treatment in said first cloth treating machine said treated cloth roll wound up on a tubular member from said first cloth treating machine, moving said treated cloth roll wound up on said tubular member to a second cloth treating machine in which said cloth also has to be treated, subjecting said cloth roll wound up on said tubular member on said second cloth treating machine to the same procedure as on said first cloth treating machine and repeating this procedure, if required, on following cloth treating machines as often as necessary for finishing said cloth.

12. In the process of finishing cloth, the steps of winding up the unfinished cloth on a tubular member arranged on a cloth beam, removing said unfinished cloth wound up on said tubular member in the shape of a cloth roll together with said tubular member from said cloth beam, moving said cloth roll wound up on said tubular member to a first cloth treating machine for treatment, subjecting said cloth roll wound up on said tubular member on said first cloth treating machine to a finishing treatment, removing after treatment in said first cloth treating machine said treated cloth roll wound up on a tubular member from said first cloth treating machine, moving said treated cloth roll wound up on said tubular member to a second cloth treating machine in which said cloth also has to be treated, subjecting said cloth roll wound up on said tubular member on said second cloth treating machine to the same procedure as on said first cloth treating machine and repeating this procedure, if required, on following cloth treating machines as often as necessary for finishing said cloth.

13. In the process of finishing cloth, the steps of winding up the unfinished cloth in the shape of a cloth roll on a flexible hose, moving said cloth roll wound up on said flexible hose to a first cloth treating machine, subjecting said cloth roll wound up on said flexible hose on said first cloth treating machine to a finishing treatment, removing after treatment in said first cloth treating machine said treated cloth roll wound up on a flexible hose from said first cloth treating machine, moving said treated cloth roll wound up on said flexible hose to a second cloth treating machine in which said cloth also has to be treated, subjecting said cloth roll wound up on said flexible hose on said second cloth treating machine to the same procedure as on said first cloth treating machine and repeating this procedure, if required, on following cloth treating machines as often as necessary for finishing said cloth.

14. In the process of finishing gauze, the steps of winding up the unfinished gauze in the shape of a gauze roll upon a flexible hose, moving said gauze roll wound up on said said flexible hose to a first gauze treating machine and after treatment of said gauze roll in said first gauze treating machine removing said treated gauze roll wound up on a flexible hose from said gauze treating machine, moving said treated gauze roll wound up on said flexible hose to a second gauze treating machine in which said gauze also has to be treated, subjecting said gauze roll wound up on said flexible hose on said second gauze treating machine to the same procedure as on said first gauze treating machine, and repeating this procedure, if required, on following gauze treating machines as often as necessary for finishing said gauze.

ARNOLD EDDY.