Oct. 8, 1968 K. SIEVERS 3,404,660

APPARATUS FOR COATING MOVABLE LENGTHS OF MATERIALS

Filed Sept. 7, 1965 2 Sheets-Sheet 1

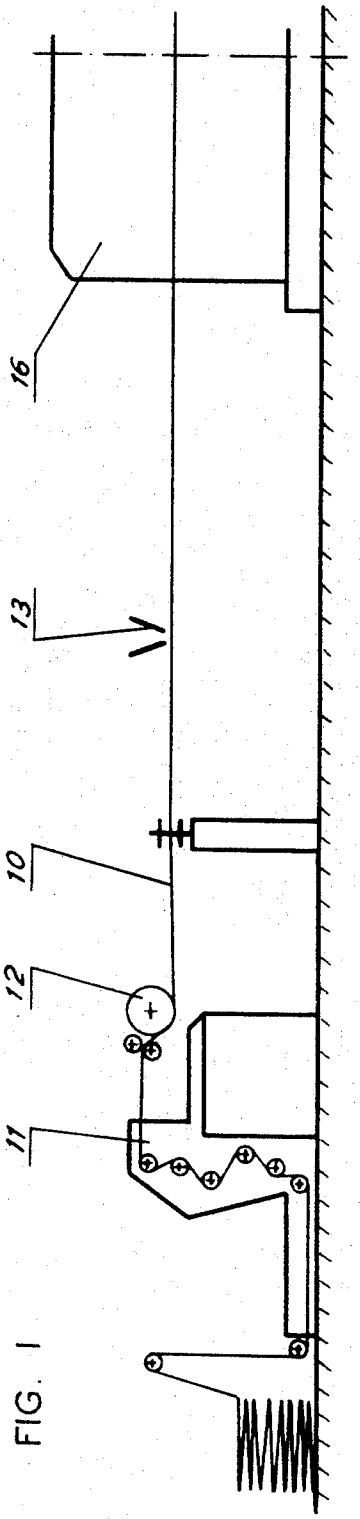


FIG. 1

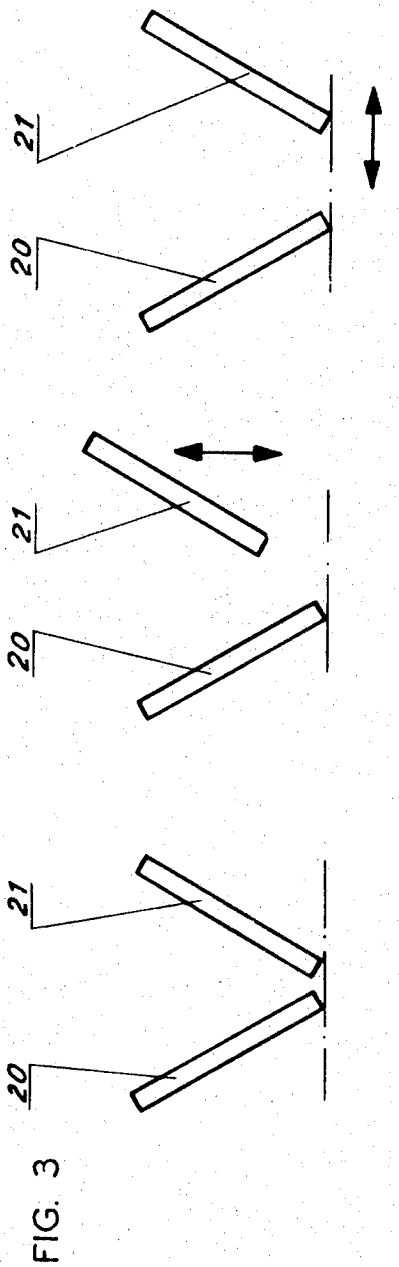


FIG. 3

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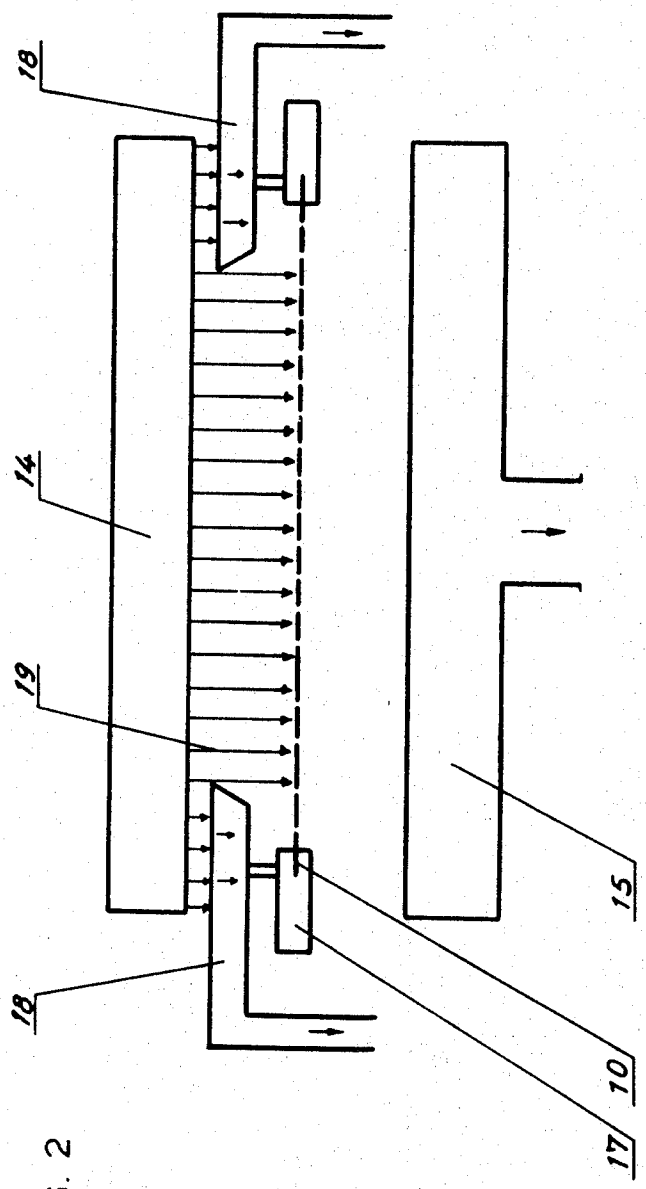


FIG. 2

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APPARATUS FOR COATING MOVABLE LENGTHS OF MATERIALS

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1 Claim. (Cl. 118—34)

ABSTRACT OF THE DISCLOSURE

Apparatus for coating moving lengths of material carried by a stretch frame through a coating zone and a drying zone. Tubs are placed on each side of the coating head between the material and a coating head which feeds a curtain of coating material transversely onto the material. The tubs are connected to the stretch frame such that when the frames are adjusted to accommodate different widths of material, the width of the coating curtain reaching the material will correspondingly be changed.

This invention relates to an apparatus for coating and pasting wide lengths of movable materials by applying a coating mass thereto.

In prior art movable wide lengths of materials were provided with coating pastes, foam masses, gluten, etc., on special coating machines prior to their heat treatment in channeled devices situated behind the coating machines.

Difficulties arise in such plants, particularly for the operator as far as servicing and supervision are concerned, since the inlet section of the coating machine and the inlet section of the channeled device are separated in space. In addition, wide lengths of materials which have weak width stability must be guided to the coating machine with great additional precautionary measures, while this is not necessary for the guiding of the material into the channeled device.

The basic conditions for a uniform treatment of material, best possible utilization of lengths of material and, in the final analysis, a perfect completion of the goods, particularly as far as woven and knitted lengths of fabric are concerned, are attained only by a precisely stretched and guided length. Up to now it was not possible to provide a mechanical transportation of the goods between the coating machine and the channeled device.

It has already been suggested that the drawbacks of the usual manner of coating and guiding lengths of material can be avoided by providing the coating machine with a stretch frame for the coating of a moving length of material. In that case the coating machine must be constructed as a spreading device.

It was found, however, that in case of such spreading devices it is difficult to adapt the doctor roller and the counter roller to the prevailing widths of the material. For this reason the actual use of such devices has been quite limited.

An object of the present invention is the provision of a coating apparatus which will avoid the drawbacks of prior art construction.

Other objects will become apparent in the course of the following specification.

In the accomplishment of the objectives of the present invention it was found that the structural adaptability is much better if the stretch frame is not connected with a spreading device but is combined with a casting device. The casting device which as a rule occupies extremely little space, can be built into the inlet section of the stretch frame, so that the casting device will not require any additional space at all. Preferably, the casting device consists of a casting tub the operative width of which is

adjusted to the width of the material being treated by movable bath-receiving tubs located between the outlet nozzle and the length of the material. The bath-receiving tubs must be connected with hook-carrying ledges which are adjustable in width. To be able to cut off the casting layer effectively, the bath-receiving tubs may be provided with knives upon sides directed to the coating mass. The nozzles of the casting devices may be made adjustable in order to vary the thickness of the layer being poured.

The invention will appear more clearly from the following detailed description when taken in connection with the accompanying drawings showing, by way of example, a preferred embodiment of the inventive idea.

In the drawings:

FIGURE 1 is a diagrammatic side view illustrating a casting device in the inlet section of a stretch frame, in accordance with the present invention.

FIGURE 2 is a diagrammatic end view showing the arrangement of the casting tub and the bath-receiving tubs.

FIGURE 3 is a diagram illustrating the adjustment of the nozzles of the casting device.

As shown in FIG. 1, the length **10** of the material being treated is withdrawn, for example, from a pile and is guided through a device **11** used for stretching and straightening the material to a receiving roller **12** of a stretch frame. The coating of the material thus takes place in an open plane parallel to that of the stretch frame, namely, when the length of material is already held firmly by the tenter hooks or ledge needles of the stretch rails. To effect the coating a casting device **13** is located above the length of material.

As shown in FIG. 2, the casting device consists of a casting gutter **14** located above the material **10** and a lower receiving tub **15** which catches the flow when there is no material between the gutter **14** and the tub **15**. The coating substance **19** emerges from the gutter **14** through nozzles **20**, **21**. Additional bath-receiving tubs **18** are located between the casting gutter **14** and the length **10** of material. The tubs **18** are connected with the ledges **17** carrying the tender hooks. At their ends the tubs **18** are provided with outlet pipes which can be connected to the receiving tub, however, they can be connected to another receiving container which will direct the flow back to the gutter **14**.

When the width of the material being treated is changed, the bath-receiving tubs **18** will follow the shifting of the hook ledges **17** so that the film emerging from the tub **14** will be adapted automatically to the new width of the material.

After the length of material has passed the casting device, it is introduced into a device **16** constituting a drying channel.

A zone heated to high temperature can, if desired, be provided in front of the drying device **16**.

The thickness of the film **19** emerging from the gutter **14** can be regulated by making adjustable the nozzles of the casting gutter **14**. FIG. 3 shows, by way of example, that this can be accomplished by making a part **20** of a nozzle fixed, while another part **21** of the same nozzle can be made movable in a vertical direction.

It is thus apparent that the device **16** constitutes a stretch frame dryer and that the material **10** passes from a stretching and straightening device **11** into the dryer **16** through an inlet section located between the devices **11** and **16** while being guided upon the stretch frame having ledges **17** for the tenter hooks of the stretch frame. The coating is applied during this passage through the inlet section from the top by the casting device **13**.

The apparatus of the present invention makes it possible to enlarge the operational range of a usual stretch frame into a universal apparatus for the coating and heat

treatment of lengths of materials. Therefore, the use of separately placed expensive casting machines can be avoided. Furthermore, the additional space required by a casting machine can be saved, since the apparatus of the present invention can be built into an existing stretch frame without requiring any additional space.

It is apparent that the example described above has been given solely by way of illustration and not by way of limitation and that it is capable of many variations and modifications within the scope of the present invention. All such variations and modifications are to be included within the scope of the present invention.

What is claimed is:

1. In combination with a drying device, a stretch frame having spaced ledge means for moving a length of material longitudinally, and means spaced from said drying device for inserting a length of material into said stretch frame with opposite edges of the material extending between said ledge means and held thereby, a coating device located between said inserting means and said drying device for coating the length of material while it is moved toward said drying device, said coating device being located above said stretch frame and transversely to the direction of its movement, and having adjustable means for providing a vertical curtain of coating substance transversely of the material, a tub located below said stretch frame and directly under said coating device to receive the curtain of said coating substance from said material, and two other tubs, each of said other tubs being located below said coating device and above a separate ledge and attached to said separate ledge such that when the spacing between the ledges is adjusted, the effective width of the coating curtain reaching the material will correspondingly be changed.

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