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A. MELLOR ET AL

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FABRIC TREATMENT

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FIG. 1

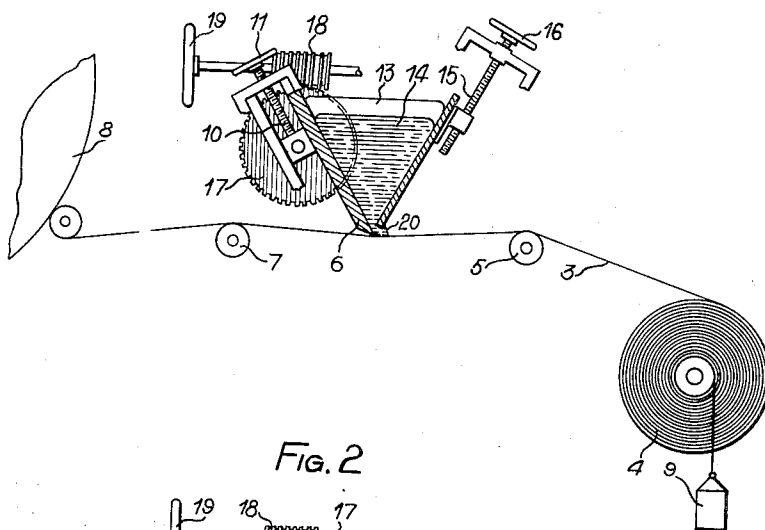
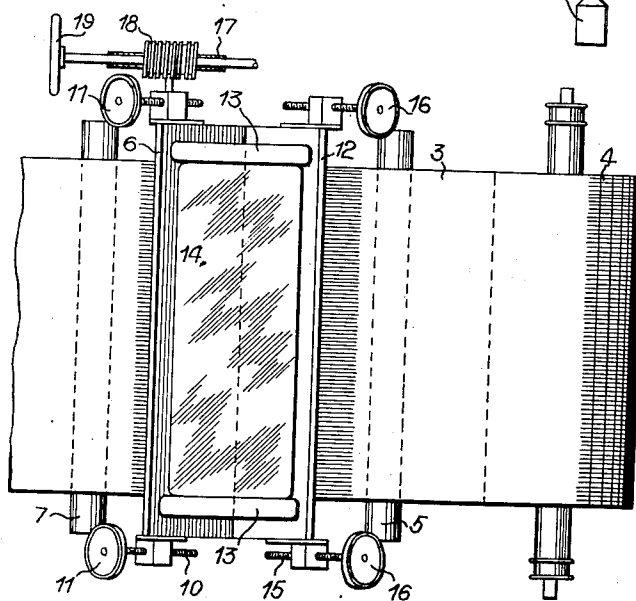


FIG. 2



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FABRIC TREATMENT

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5 Claims. (Cl. 91—53)

This invention relates to apparatus for the coating or filling of textile fabrics, its object being to provide an apparatus that will apply an even coating or filling to fabrics in a simple, expeditious and readily controlled manner.

The apparatus according to the invention comprises a pair of spaced fabric supports and a hopper disposed between the supports, one side of the hopper forming a spreading knife projecting below the level of the supports and the other side of the hopper comprising a plate inclined to the knife and having its lower edge spaced therefrom to form a slot for the passage of the coating or filling material, and means to draw a length of fabric over the supports under tension so as to press the fabric against the spreading knife. The rate of flow of material to the fabric is controlled by the width of the slot between the knife and the plate, so that material is supplied in a regular manner over the width of the fabric, collecting as a small pool or roll in front of the knife and being spread evenly by the knife.

Advantageously, the distance between the lower edge of the plate and the knife is adjustable in accordance with the viscosity of the material to be applied, and is preferably set to provide for a slight excess of material being fed to the fabric, the excess dripping over the edges of the fabric.

The thickness of the applied coating or filling material may be adjusted by regulating the tension in the fabric and the distance through which the fabric is depressed between the supports by the knife, these factors controlling the pressure between the fabric and the edge of the spreading knife. Thus, if a thin layer of coating material is to be applied to the fabric the tension in the fabric will be greater than when a thick layer of material is to be applied. If desired, means may be provided to adjust the angularity of the spreading knife with respect to the fabric in accordance with the type of coating or filling material employed.

The fabric constitutes its own support for the coating material at the spreading point, so that there is not the possibility of the material being applied to the other face of the fabric, as arises when a support is used and the fabric "traverses" slightly across the support during the operation. Further, the total freedom from contact of the face of the fabric with supporting or other means beneath or near to the spreading knife, besides preventing the possibility of "slip" marks being formed on the fabric, permits the

fabric to "give" slightly to any unevenness in its thickness, and so allows very even spreading of the material that has been uniformly fed through the slot in the hopper.

Though the apparatus is applicable to the coating or filling of all kinds of fabric with any desired material, it is of particular advantage in the application of gum fillings to the back of fabrics adapted to be used as linings, enabling the back-filling to be applied evenly and without danger of damaging the face of the fabric.

The invention will now be described in greater detail with reference to the accompanying drawing, in which

Fig. 1 is a diagrammatic side elevation partly in section of an apparatus suitable for the back-filling of lining fabrics; and

Fig. 2 is a plan corresponding to Fig. 1.

Fabric 3 is drawn back uppermost from a roller 4 over a roller 5, under a spreading knife 6, and over a further roller 7 and conducted to a drying device indicated at 8. The tension in the fabric is controlled by weights 9 applied to the fabric roll 4. The height of the lower edge of the knife 6 in relation to the upper sides of the rollers 5, 7 is controlled by means of a screw 10 and hand wheel 11, the sharp edge of the knife pointing in a direction reverse to the motion of the fabric past the knife.

The rollers 5, 7 are spaced at a convenient distance apart, the knife 6 engaging the fabric approximately mid-way between the rollers and depressing the fabric slightly below the level of the upper sides of the rollers. Since the knife 6 projects freely across the direct line between the tops of the supporting rollers, the fabric is pressed against the knife solely by reason of the tension in the fabric.

The knife 6 is inclined with respect to the fabric as shown to form one side of a hopper to contain the gum supply, the other side of the hopper being constituted by an inclined plate 12. Blocks 13 rest on the knife 6 and plate 12 and form the ends of the hopper and so confine the width of the gum supply 14 in accordance with the width of the fabric to be treated. The space between the lower edge of the plate 12 and the knife 6 forms a slot for the passage of the gum to the fabric. The height of the plate 12 and, therefore, the width of the slot, can be adjusted by means of the screw 15 and hand wheel 16 in accordance with the viscosity of the gum. The angularity of the knife 6 may also be adjusted by means of a worm wheel 17 and worm 18 operated by a hand wheel 19.

The gum 14 flows through the slot between the knife 6 and plate 12 to the front of the knife where a pool 20 is formed on the fabric 3, excess gum dripping over the edge of the fabric into vessels (not shown) placed to receive it, and from which it may be poured again into the hopper for re-use. Passage of the fabric past the knife causes the gum to be spread along the fabric by the knife, the arrangement enabling evenness of application to be maintained even in the case of unevenness in the fabric, and even where such unevenness is local and not across the full width of the fabric, since the fabric is free to "give" as any uneven places pass below the knife.

The fabric 3 may be drawn through the apparatus by the drying apparatus 8, which may comprise a plurality of drying cans round which the fabric passes in turn. In order to avoid removal of the filling from the fabric, the fabric should preferably pass over the first can with its coated side outwards (as is shown in Fig. 1), but if it is necessary for the coated side to be inwards on the fabric passing round subsequent cans, a flannel or like covering for these cans is effective in preventing removal of the coating which, of course, has already been dried to a considerable extent while the fabric passes round the first can. The drying apparatus may, however, comprise a single can of large diameter, so that drying is substantially complete after one passage round the can. In this way, danger of the partly dried fabric picking up scales of dried gum from the drying apparatus is avoided. The drying apparatus may be arranged to run in series with a stenter.

What we claim and desire to secure by Letters Patent is:—

1. Apparatus for applying coating or filling

material to a fabric, said apparatus comprising a pair of spaced supports for the fabric, means to draw a length of fabric under tension over the supports, and a hopper positioned between the supports, one side of the hopper forming a spreading knife projecting below the level of the supports so that the fabric is deflected from a straight line between the supports and presses against the knife by reason of the tension in the fabric, and the other side of the hopper comprising a plate inclined to the knife and having its lower edge spaced from the face of the knife at a point remote from the spreading edge of the knife and the line followed by the fabric as it approaches the knife to form a slot above the surface of the fabric for the passage of coating or filling material down the face of the knife and under the plate so as to form a pool of coating or filling material in advance of the plate on the fabric.

2. Apparatus according to claim 1, comprising means to adjust the plate lengthwise towards and away from the face of the spreading knife so as to regulate the width of the slot.

3. Apparatus according to claim 1, comprising means to adjust the level of the lower edge of the spreading knife with respect to the level of the fabric supports.

4. Apparatus according to claim 1, wherein the spreading knife is inclined with respect to the fabric, and wherein means are provided to adjust the inclination of the knife.

5. Apparatus according to claim 1, comprising means to support a roll of fabric to be treated and weights to be applied to the roll to put the fabric under tension.

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