ADHESIVE SUPPLY AND SPREADING ATTACHMENT FOR FABRIC COATING MACHINES

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This invention relates to certain new and useful improvements in an adhesive supply and spreading attachment for fabric coating machines.

The adhesive supply and spreading device disclosed in this application is adapted for association with the apparatus for coating textile fabrics with an adhesive or rubber cement and flocking machine shown in application filed by Harry E. Lea on April 20, 1935, Serial Number 17,527, for the Production of a knitted elastic fabric, disclosed in application filed by Harry E. Lea, on March 28, 1935, Serial No. 13,576.

The primary object of this invention is to provide an adhesive supply and spreading attachment for fabric coating machines wherein the hopper for the adhesive or rubber cement has an adjustable valve or gate to regulate the flow of material from the hopper with the end walls of the hopper adjustable in horizontal directions toward and away from each other for depositing of the adhesive or rubber cement in sausage form and of a length desired in connection with the particular width of the textile fabric to be coated.

A further object of the invention is to provide an adhesive supply and spreading attachment of the foregoing character wherein the spreading attachment includes a non-rotatable cylindrical shaft over which the textile fabric to be coated travels, with a longitudinal groove lengthwise of the upper side of the shaft and having a spreader blade or knife vertically adjustable above the grooved shaft for the spreading of the adhesive or rubber cement and cooperating with the shaft groove to accomplish the even distribution or application of the adhesive or rubber cement to the adjacent face of the knitted fabric with the latter permitted to flex into the shaft groove to compensate for any pressure action by the spreader blade or knife so that the adhesive or rubber cement is merely laid onto the surface of the textile fabric instead of being forced into the interstices thereof as would be obtained by the use of calender rolls.

With the above and other objects in view that will become apparent as the nature of the invention is better understood, the same consists in the novel form, combination and arrangement of parts hereinafter more fully described, shown in the accompanying drawings and claimed.

In the drawings:

Figure 1 is a fragmentary front elevational view of the adhesive supply and spreading attachment for fabric coating machines showing the rack and pinion devices for opening and closing the flow gate of the hopper for the adhesive or rubber cement;

Figure 2 is one end elevational view of the supply and spreader attachment showing the hand lever for operating the flow gate of the hopper, the supporting shaft for the knitted fabric longitudinally grooved at its upper side with the spreader knife above the shaft groove and the device for effecting vertical adjustment of the spreader knife;

Figure 3 is an opposite end elevational view of the supply and spreading attachment; and

Figure 4 is a vertical cross-sectional view taken on line 4—4 of Figure 1.

Referring more in detail to the accompanying drawings, the adhesive supply and spreading attachment for fabric coating machines comprises a frame structure having perpendicular end frame members of similar construction, each including a pair of vertical standards 10 and 11 with the upper ends connected by a cross bar 12 and further connected intermediate their ends by a cross bar 13. The end frame members are connected by longitudinally extending head bars 14, while parts of the apparatus to be presently described also constitute connecting devices between the perpendicular end frame members.

A hopper for the adhesive or rubber cement is supported on the frame structure and as shown more clearly in Figures 2, 3, 4 and 5, is in alignment between the standards 10 of the end frame members and is of an adjustable character, the hopper including a pair of end walls 15 with the forward vertical edges thereof positioned substantially midway between the standards 10 and 11 with the lower inclined edges thereof engaged with the sliding gate 16 of the hopper that is operable to control the flow of adhesive or rubber cement from the hopper. The slide gate 16 is guided in its movement by the guide members 17 secured to the standards 10, while the spreader blade or knife 18 constitutes the vertical front wall of the hopper. The lower edge of the inclined slide gate 16 of the hopper is bevelled for flat engagement with the adjacent face of the spreader knife 18 and is adjustable toward and away from the spreader knife by devices to be presently described to regulate the flow of adhesive or rubber cement from the hopper.

A non-rotateable shaft 19 extends longitudinally of the frame structure and is supported on the cross bars 13 and the upper side of the shaft 19 is provided with a longitudinally extending groove 20 disposed directly beneath the lower edge of the spreader knife 18, the textile fabric being passed through the groove 20 to be coated with the adhesive or rubber cement.
to be coated being fed over the shaft 18 beneath the spreader knife 18 and further guided in its movement by the roller 21.

The operating means for the sliding gate 16 include a shaft 22 extending longitudinally of the frame structure at the outer side of the sliding gate and is rotatably supported at its ends in bearings 23 carried by the frame standards 10. A series of spaced rack bars 24 is secured to the outer lower side of the sliding gate 16 near the rack bar 24 are engaged by pinions 26 fixed to the shaft 22, one end of the shaft carrying a ratchet wheel 26 engaged by a pawl 27 carried by a standard 10 and also a hand lever 28 for the manual rotation of the shaft 22 and operation of the pinions 26 for effecting sliding movements of the gate 16.

A spreader knife 18 is vertically adjustable relative to the shaft 18 and is movable between guide members 29 and 30, the latter being broken away as at 30a with a brace bar 31 for the spreader knife carried thereby and movable in the cut away portion 30a. The devices to effect vertical adjustment of the spreader knife 18 include blocks 32 secured to opposite ends of the upper edge of the spreader knife 18 with a rod 33 rising from each block 32 and passing through an opening in the cross bar 34 secured at its ends to the standards 10 and 11 of the end frame members. A coil spring 35 surrounds each rod 33 between the block 32 and cross bar 34 and the upper end of rod 33 is threaded as at 36 for the threaded motion of the wheel nut 37. The wheel nuts 37 are movable over the threaded ends 36 of the rods 33 for raising the spreader knife 18 against the tension of the springs 35, the latter normally acting to hold the spreader knife in its lowermost position.

The end walls 15 of the hopper are adjustable toward and away from each other to accomplish the discharge from the hopper of the adhesive or rubber cement of a width comparable with the width of the knitted fabric to be coated and as shown more clearly in Figures 1 to 4, a shaft 38 extends longitudinally of the frame structure with the ends thereof oppositely threaded as at 33 and engaged with threaded collars 40 fixed in openings in the end walls 15. The shaft 38 is journaled in bearings in the end frame members and one end of the shaft is provided with an operating wheel 41 as shown in Figures 1 and 2. Upon rotation of the shaft 38, the end walls 15 of the hopper are moved toward and away from each other to regulate the width of the hopper relative to the knitted fabric to be coated. Means is associated with the discharge mouth of the hopper and adjustable lengthwise thereof for positioning in alignment with the end walls 15 for confining the opposite ends of the adhesive or rubber cement fed from the hopper and comprises a rod 42 supported at its ends in the standards 10 of the end frame members slightly below the shaft 18 with a pair of angle arms 43 pivoted and slidably mounted thereon and having their free ends overlying the shafts 18 and supportingly engaged with the lower edge of the slide gate 16 as shown in Figures 2 to 4.

A valve 45 having a transverse slot therein is rotatably mounted in the valve casing 45 and is adapted to be operated by the handle 46 carried by one end thereof as shown in Figures 1 and 2. The knitted fabric 47 to be coated as shown in Figure 4, passes over the shaft 18 and roller 21 and the adhesive or rubber cement in the hopper is spread onto the fabric under control of the sliding gate 16. The knife 16 effects spreading of the adhesive or rubber cement over the knitted fabric 47 without exerting any appreciable pressure on the coating material or fabric with the result that the adhesive or rubber cement is merely laid onto the surface of the fabric. The edge of the spreader knife 18 is disposed directly over the longitudinal groove of the hopper by the slotted portion 19 of the shaft 18 so that the fabric is allowed to flex at the points where engaged by the spreader knife to eliminate any pressure effect. Knitted fabrics of different widths may be coated with the adhesive or rubber cement by moving the end walls 15 of the hopper toward or away from each other and the thickness of coating of the adhesive or rubber cement is regulated by vertically adjusting the spreader knife 18.

From the above detailed description of the invention, it is believed that the construction and operation thereof will at once be apparent, and while there is herein shown and described the preferred embodiment of the invention, it is nevertheless to be understood that minor changes may be made therein without departing from the spirit and scope of the invention as claimed.

I claim:

1. In an adhesive supply and spreading attachment for fabric coating machines, a frame structure, a hopper and spreader knife carried thereby, a grooved shaft beneath the spreader knife over which the fabric is adapted to pass, the spreader knife constituting the forward wall of the hopper, guides for the opposite side edges of the spreader knife carried by the frame structure, and a tensioned screw adjusting device for the spreader knife associated with the frame structure and upper end of the spreader knife.

2. In an adhesive supply and spreading attachment for fabric coating machines, a frame structure, a hopper and spreader knife carried thereby, a grooved shaft beneath the spreader knife over which the fabric is adapted to pass, the spreader knife constituting the forward wall of the hopper, guides for the spreader knife, and a tensioned screw adjusting device for the spreader knife associated with the upper end thereof, and including a threaded rod projecting upwardly from the spreader knife, a cross rod through which the rod extends, a coil spring on the rod between the cross bar and upper end of the spreader knife for normally forcing the latter in a downward direction and a nut threaded on the upper end of the rod to effect vertical adjustment of the spreader knife.

3. In an adhesive supply and spreading attachment for fabric coating machines, a frame structure, a hopper and spreader knife carried thereby, a grooved shaft beneath the spreader knife over which the fabric is adapted to pass, the spreader knife constituting the forward wall of the hopper, guides for the spreader knife, and a tensioned screw adjusting device for the spreader knife associated with the upper end thereof, the bottom wall of the hopper being inclined and adjustable to vary the position of its lower forward edge relative to the lower edge of the spreader knife, end walls for the hopper ad-
justable toward and away from each other, a shaft extending longitudinally of the frame structure and arms pivotally and slidably mounted on the shaft and adapted to supportingly engage the bottom wall of the hopper in line with the adjusted end walls.

4. In an adhesive supply and spreading attachment for fabric coating machines, a frame structure, a hopper and spreader knife carried thereon, a grooved shaft beneath the spreader knife over which the fabric to be coated is adapted to pass, the spreader knife constituting the forward wall of the hopper, guides for the spreader knife, and a tensioned screw adjusting device for the spreader knife associated with the upper end thereof, and including a threaded rod projecting upwardly from the spreader knife, a cross bar through which the rod extends, a coil spring on the rod between the cross bar and upper end of the spreader knife for normally forcing the latter in a downward direction and a nut threaded on the upper end of the rod to effect vertical adjustment of the spreader knife, the bottom wall of the hopper being inclined and adjustable to vary the position of its lower forward edge relative to the lower edge of the spreader knife, end walls for the hopper adjustable towards and away from each other, a shaft extending longitudinally of the frame structure and arms pivotally and slidably mounted on the shaft and adapted to supportingly engage the bottom wall of the hopper in line with the adjusted end walls.

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