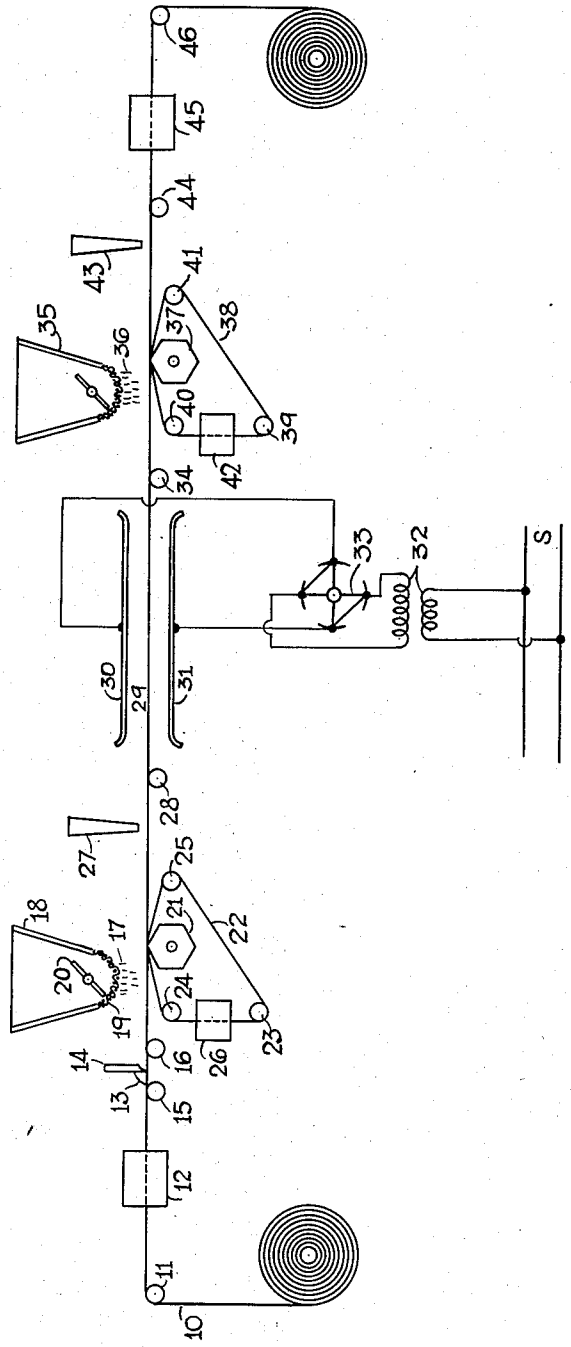
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METHOD OF ATTACHING AND STRAIGHTENING FLOCK

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METHOD OF ATTACHING AND STRAIGHTENING FLOCK

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8 Claims. (Cl. 117—17)

This invention relates to a method of and apparatus for producing flocked pile fabrics.

High voltage electrostatic methods have heretofore been used in the production of flocked pile fabrics, but fabrics so produced, while having a great number of pile fibers per unit area and hence sufficient density of face coverage as well as excellent erectness of pile, have been characterized by deficient anchorage of the fibers to the adhesive with the result that the durability of the fabric has been unsatisfactory. In addition, the great number of pile flock fibers per unit area is undesirable for many purposes, as too great density of the pile face, particularly with straight fibers of equal length, causes stiffness which interferes with the draping properties of the fabric. As it is exceedingly difficult to control the regular deposition of pile forming flock when less than an excess of the amount actually secured to the base fabric is introduced into the electrostatic field or positioned on portions of the base fabric, as by sifting, prior to those portions of the base fabric entering the electrostatic field, prior flocked fabrics were produced which were relatively costly because of the amount of flock used and yet undesirable because of their lack of desired draping quality and softness of appearance.

Beater methods have also been employed in the production of flocked pile fabrics, but in fabrics so produced, while the anchorage of the fiber to the adhesive is good, the erectness of pile and density of coverage is not all that is desired for some uses.

According to my improvements, I overcome these prior difficulties and deficiencies and produce a flocked pile fabric having a desired erectness of pile, density of coverage and excellence of anchorage of fiber to adhesive and hence a fabric which is superior to fabrics produced by either the beater or the high potential electrostatic methods alone or prior combinations of these methods. It will be understood, of course, that wool fibers which are curved or crescent shaped, will not have the erectness of the straighter fibers, but the wool fibers will be oriented to the extent permitted by their shape.

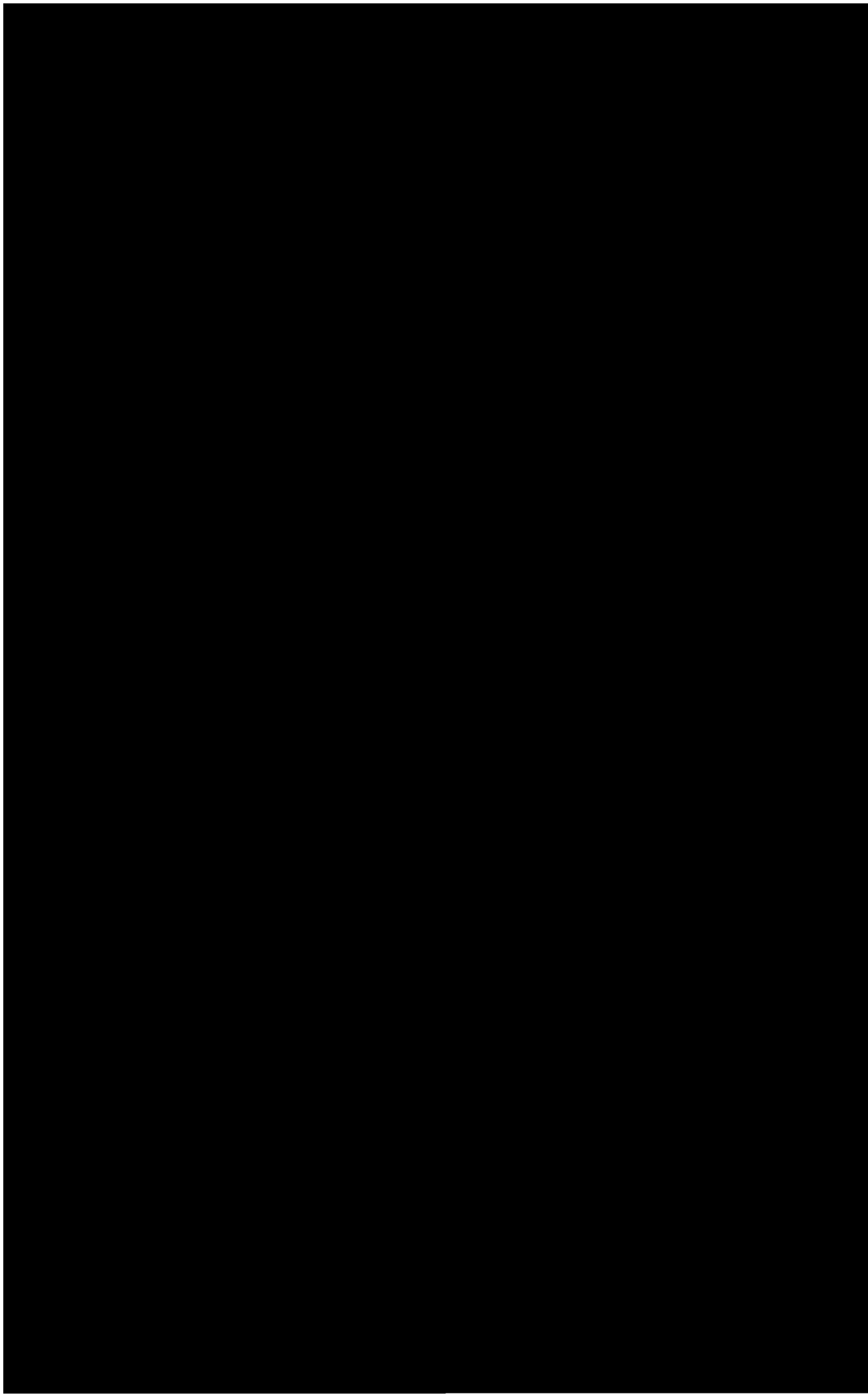
I accomplish the above desirable result by subjecting the adhesively coated base fabric successively to a rapid beater operation and to high potential electrostatic forces. The successive steps of first rapidly beating or otherwise vibrating the fabric upon which fibers have been or are being deposited and then positioning the flocked fabric within a high potential electrostatic field may be repeated as often as and to the extent that is necessary to produce the desired result. During the rapid beating step a low potential electrostatic field may be generated by frictional engagement of the beating means with a material other than the base fabric and/or with the base fabric itself, although beating alone will form a pile face.

The generation of the low potential electrostatic field is not essential to the broad concept of the present improvements and the particular methods will be the subject matter of separate applications. The rapid beating alone will cause the pile forming flock to stand on end in a known manner, although the erectness and density of pile is less than exists in fabrics produced by high potential methods. The beating step, aside from embedding the end of the flock in the adhesive, also uniformly distributes it over the face of the base fabric. The adhesive is not yet set and the pile fibers are adjustable therein, as will be explained. In cases where the adhesive has set it may be treated with a solvent to soften it to tackiness. This latter step is not essential to the continuous process. The loose or excess fibers resulting from the beating step may be removed by a vacuum device or other convenient means.

In the initial operation flock fibers are dropped upon the adhesively coated surface of a cotton or other base fabric which is vibrated rapidly preferably under the beats of a rapidly rotating polygonal bar or bars which may be in actual contact with the back of the base fabric or which may be in engagement with a flexible apron interposed between the beater and the base fabric and in contact with both.

Following the rapid beating and excess flock removal operations or a softening operation, the flocked fabric is placed within a high potential electrostatic field to cause the deposited fibers to assume a more erect position in the adhesive and to thereby create openings into which additional flock may subsequently be dropped. I prefer that the high potential field be used solely for straightening the position of fibers previously applied without additional flock being deposited while the fabric is within the high potential field. Additional flock may, however, be introduced within the field if desired.

Upon removal from the high potential electrostatic field, the flocked fabric is brought into contact with a beating means which may be similar to or somewhat different from that used in the initial step, and during the second beating operation additional flock of the same or different



Having described my invention but desiring to be limited only by my claims, I claim:

1. A continuous method of producing flocked pile fabrics which includes the steps of depositing pile forming flock fibers upon an adhesively coated base fabric, rapidly vibrating the fabric to secure an end of some of the pile fibers to the adhesive so that the secured fibers are distributed substantially uniformly over the base fabric, removing unsecured fibers, causing the secured fibers to assume a more erect position relative to the adhesive before the adhesive has set, and then applying additional flock particles to the adhesively coated side and vibrating the base material.

2. A method of producing flocked pile fabrics which includes the steps of depositing pile forming flock fibers upon an adhesively coated base fabric, rapidly vibrating the base fabric, moving the base fabric and secured pile flock into a high potential electrostatic field to cause the secured fibers to assume a more erect position in the adhesive, moving the fabric out of the high potential field, and then applying additional flock particles to the adhesively coated side and vibrating the base material.

3. In the production of flocked materials, the steps which include providing an adhesively coated base material, rapidly vibrating the base material while applying flock particles to the adhesively coated side, then subjecting the flocked base material to the action of a high potential electrostatic field to cause the particles to assume a more erect position, applying additional flock particles to the adhesively coated side and again vibrating the base fabric.

4. In the production of flocked fabrics, the steps which include providing a base fabric having an adhesively coated face side, vibrating the fabric by beating the back thereof while applying flock fibers to the coated side, then positioning the flocked fabric in a high potential electrostatic field to cause the deposited flock fibers to assume a more erect position, and then again vibrating the fabric by beating the back thereof while applying additional flock fibers to the adhesively coated surface.

5. In the production of flocked pile fabrics, the steps which include providing an adhesively coated base fabric, beating the fabric to vibrate the same and creating an electrostatic field by frictional engagement of the beating means with a material other than the base fabric, depositing flock fibers upon the adhesively coated surface of the vibrating fabric within the electrostatic field to anchor fibers at one end in the said adhesive, passing the flocked fabric through a high potential electrostatic field to cause the anchored fibers to assume a more erect position, and then beating the back to vibrate the fabric and applying additional flock fibers to the face side.

6. A method of flocking an adhesively coated base fabric with flock fibers, which includes the steps of beating the back to vibrate the fabric and generate a measurable electrostatic field, applying flock fibers to the face side of the vibrating fabric within the said electrostatic field, passing the flocked fabric while the adhesive is still soft through a high potential electrostatic field to cause the applied flock to assume a more erect position, again beating the back to vibrate the fabric and generate an electrostatic field and applying additional flock fibers to the face side of the vibrating fabric within the electrostatic field.

7. A method of flocking an adhesively coated base fabric with flock fibers, which includes the steps of beating the back with a rapidly rotating polygonal bar to vibrate the fabric and generate a measurable electrostatic field, applying flock fibers to the face side of the vibrating fabric within the said electrostatic field, immediately thereafter passing the flocked fabric through a high potential electrostatic field to cause the applied flock to assume a more erect position, again beating the back with a rapidly rotating polygonal bar to vibrate the fabric and generate an electrostatic field, and applying additional flock fibers to the face side of the vibrating fabric within the said electrostatic field.

8. In the production of flocked pile fabrics, the steps which include providing a base fabric, drying the base fabric, applying an adhesive coating to the face side, beating the back with a rapidly rotating polygonal bar to vibrate the fabric and generate a measurable electrostatic field, depositing flock fibers upon the coated surface of the vibrating fabric within the said electrostatic field, immediately thereafter passing the flocked fabric through a high potential electrostatic field to straighten the deposited fibers, then again beating the back of the fabric with a rapidly rotating polygonal bar to vibrate the fabric and generate a measurable electrostatic field, depositing additional flock fibers upon the face side of the vibrating fabric within the said electrostatic field, immediately thereafter again passing the flocked fabric through a high potential electrostatic field to straighten the additionally applied flock fibers, and then drying the fabric to set the adhesive.

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