Jan. 27, 1953 R. SIEVERS 2,626,619

APPARATUS FOR INSERTING HAIR INTO DOLL HEADS

Filed Sept. 10, 1949 2 SHEETS—SHEET 1

Fig. 1.

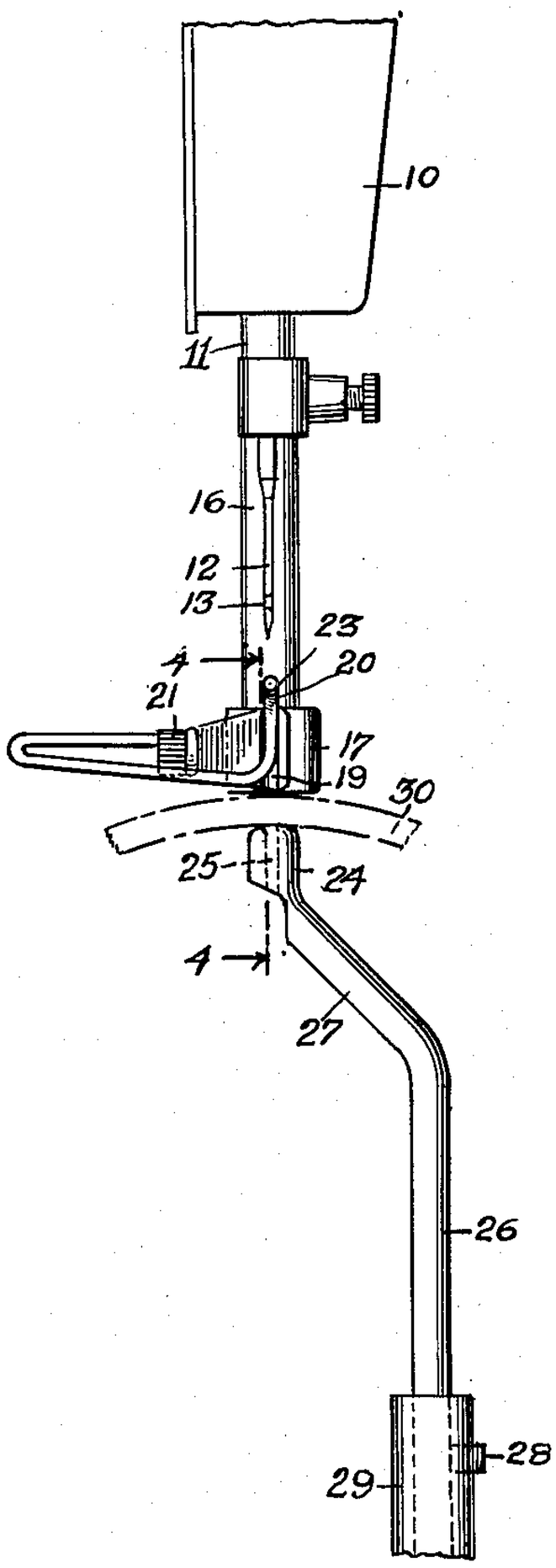

Fig. 2.

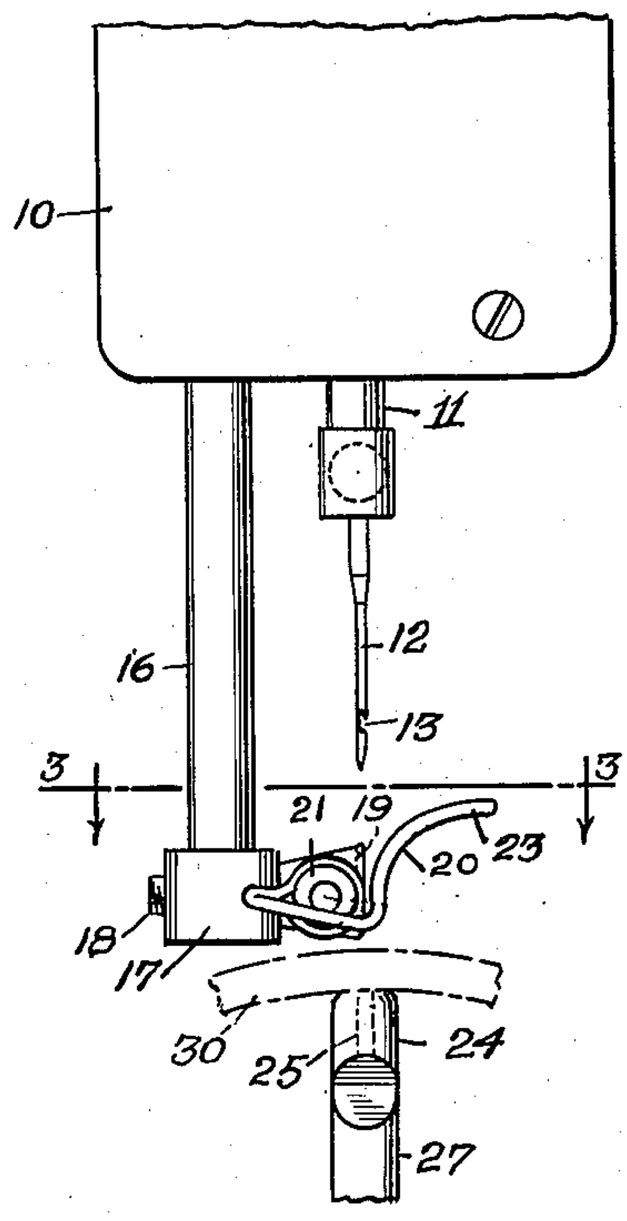

Fig. 3.

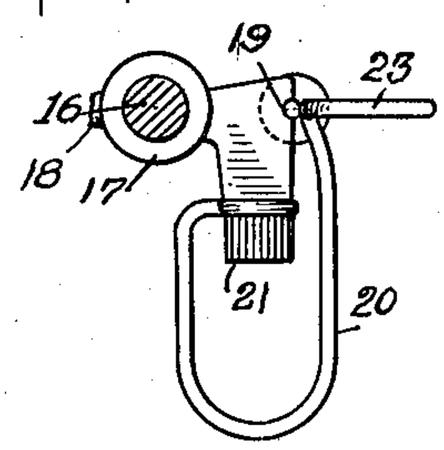

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Fig. 4.

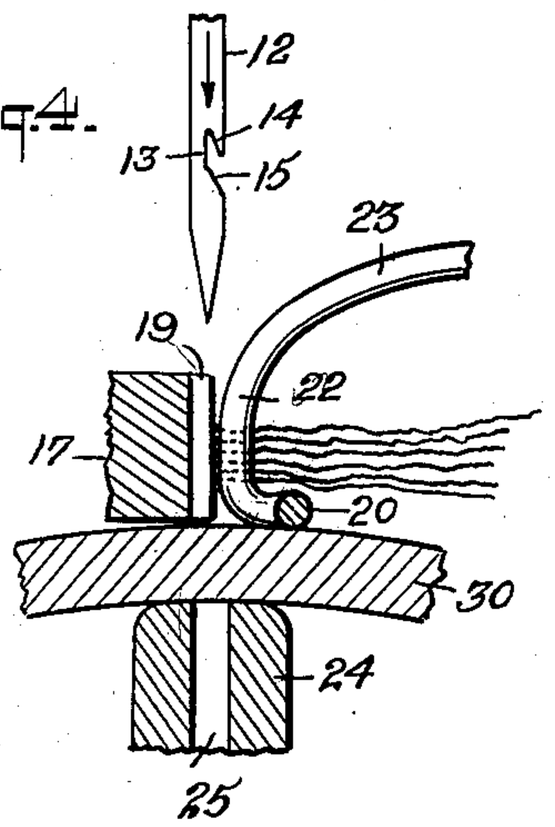


Fig. 5.

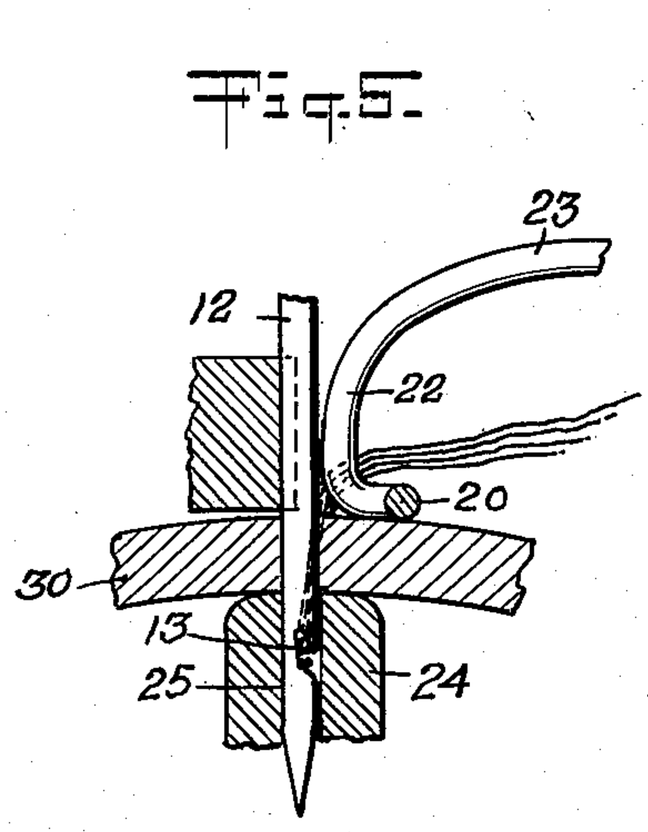


Fig. 6.

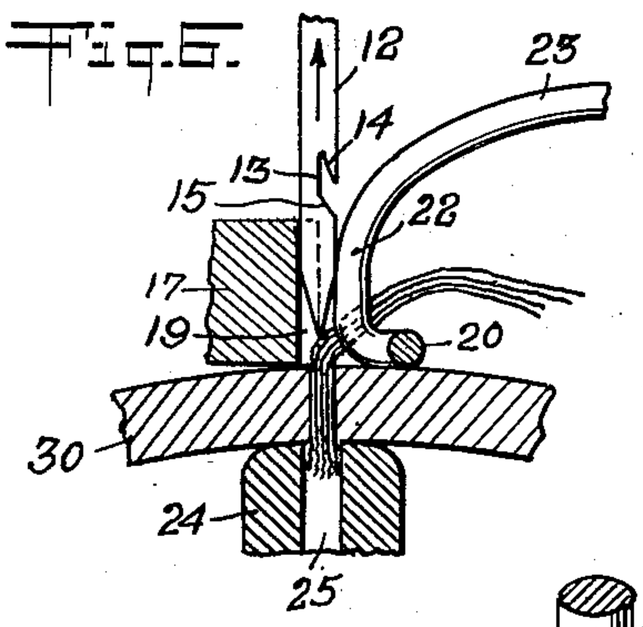


Fig. 7.

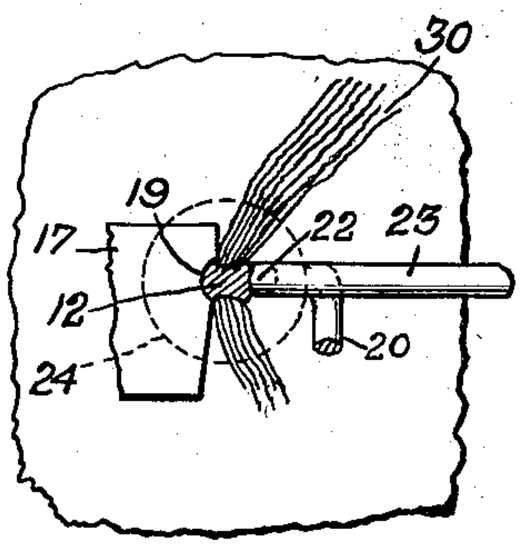
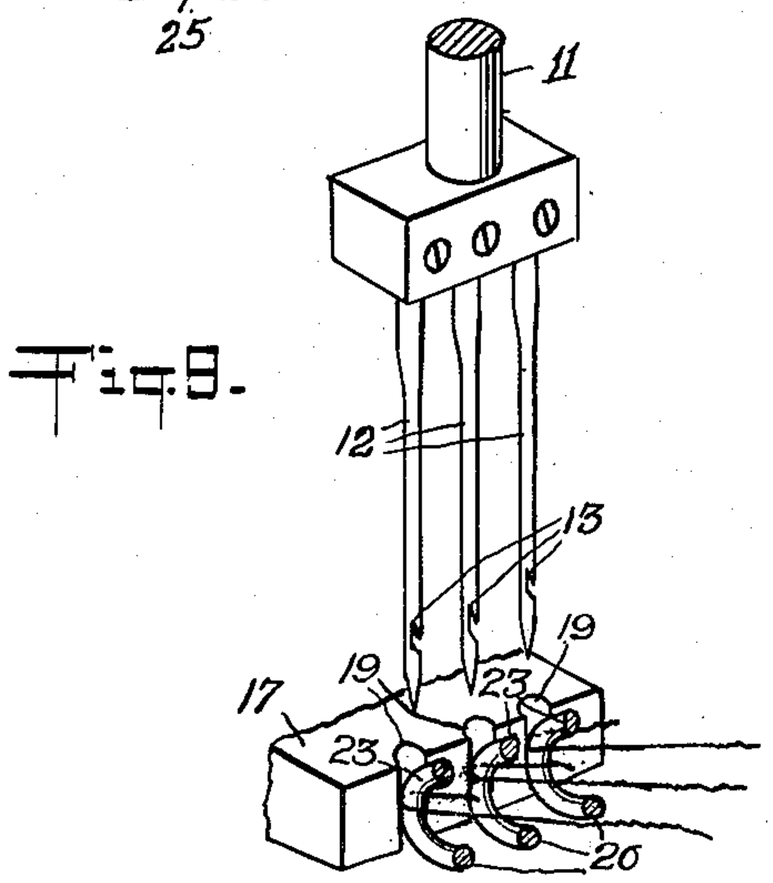
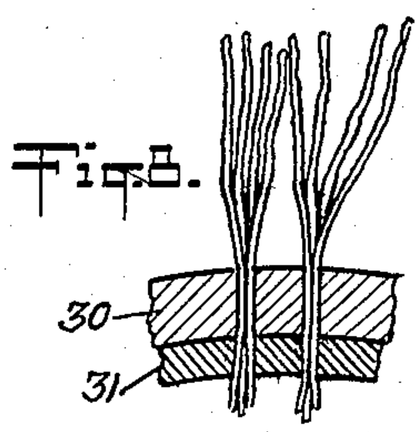


Fig. 8.





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UNITED STATES PATENT OFFICE

2,626,619

APPARATUS FOR INSERTING HAIR INTO DOLL HEADS

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Application September 10, 1949, Serial No. 115,012

7 Claims. (Cl. 132—56)

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This invention relates to new and useful improvements in applying hair to surfaces such as dolls' heads, and involves a novel method and apparatus for achieving this purpose.

A main object of the invention is to apply the hair more uniformly and with greater speed and accuracy than has hitherto been possible.

A further object is to provide a machine which will enable an operator without any particular skill, to operate the machine and achieve the improved results easily and rapidly, thus saving time and labor and money.

Further and more specific objects, features, and advantages will more clearly appear from a consideration of the detailed specification hereinafter set forth especially when taken in connection with the accompanying drawings which illustrate a present preferred form which the invention may assume and which form part of the specification.

Previously, the insertion of hair into surfaces such as doll and manikin heads, has been a hand job involving considerable time and labor, and requiring especial skill.

In brief and general terms, the invention herein as to the method involved, concerns the projection of hair into a surface of plastic or somewhat flexible material by means of a mechanically operated needle having a lateral notch near its lower end. The bunch or group of hairs to be projected into the surface are disposed adjacent the side of the needle above the surface to be thus treated, and resilient means are provided to press the bunch against the side of the needle so that one or more hairs are automatically engaged by the notch in the needle as the needle is moved down, and are passed into the surface, and through the same with the end of each hair extending below the inner surface of the treated head. The flexibility of the treated surface then contracts as the needle is withdrawn so as to grip the portion of hair thus inserted and hold it firmly in place. After the entire surface is thus treated and the hair is thus evenly disposed thereover, the inner surface of the head where the ends are exposed, is treated with suitable adhesive or similar material to firmly bind the loops in position.

The method employed may be stated briefly, as follows:

1. Disposing a surface of flexible material adjacent a laterally notched needle.

2. Advancing the needle toward the surface.

3. Resiliently holding a bunch of hairs against the needle to be picked up by the notch therein.

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4. Projecting the end of a hair through the flexible surface to produce an extended portion on the under side thereof.

5. Withdrawing the needle to allow the surface material to contract on the hairs projected therethrough.

6. Adhesively relating the ends of hair to the under side of the surface.

The apparatus which forms one embodiment of mechanism whereby this method can be put into practice involves a needle having a lateral notch near its lower pointed end, which notch has downwardly sloping walls so as to grip the hair on the down stroke of the needle and release it on the up stroke thereof.

Adjacent the path of the needle is a guide block or element having an open slot in one side to receive the needle. Supported from this block or element, is a resilient pressure member which is resiliently disposed with a portion thereof closely adjacent the open slot in the block, and adapted to press against the needle as it advances along said slot. The upper portion of this pressure member is outwardly curved so as to receive a bunch of hair held with relation thereto, and to hold said bunch closely adjacent the needle so that the notch therein may grasp a hair or two and project an end of its through the flexible material and beyond the under face thereof. When the needle is withdrawn, the material contracts on the hairs and holds them tightly. The under surface of the head or treated member is then treated with adhesive or cement to bind the ends to this surface and form the finished product. Thus the operator without any especial skill can apply hair to the desired surface evenly and in whatever manner he wishes, by merely operating the sewing machine and moving the treated surface under the needle in accordance with the density of application desired. The time and labor and expense thus saved is substantial as compared to the usual previous hand job.

The present preferred form which the herein invention may assume is illustrated in the drawings, of which:

Fig. 1 is a side elevation of the apparatus employing my invention;

Fig. 2 is a side view of the same taken at right angles to Fig. 1;

Fig. 3 is a horizontal section taken on the line 3—3 of Fig. 2;

Fig. 4 is a partial vertical section taken on the line 4—4 of Fig. 1, showing the needle on the way down to grip some hairs;

Fig. 5 is a similar section showing the needle projected through the body of the doll's head with the hairs projecting endwise through the material;

Fig. 6 is a similar section showing the needle withdrawing, leaving some hairs in the body of the doll's head;

Fig. 7 is a plan view of the parts shown in Fig. 5;

Fig. 8 is a section of a portion of the material showing the manner in which the ends are adhesively bound to the inner surface of the material after they have all been inserted as described; and,

Fig. 9 is a perspective view of a gang of needles in use instead of one needle.

Referring now to the specific embodiment of the apparatus which is one form of mechanism which practices this novel method, it is to be noted that we employ a sewing machine of the usual type having the usual head 10 in which is mounted a reciprocating bar 11, supporting the needle 12. This needle is provided with a lateral notch 13, with downwardly sloping top and bottom walls 14 and 15, and this notch is located near the pointed lower end of the needle.

Adjacent the needle bar 11 is disposed the usual presser foot bar 16, which in this case, does not act as a presser foot but is employed in a fixed manner to support at its lower end, a block 17 which is adjustably fixed thereon by means of a set screw 18. This block is provided with a lateral extension having on one face a vertical open slot 19, which is disposed in line with the axis of the needle. Supported also on the block 17, is a curved spring or resilient member 20 held thereon by a clamping nut 21. This curved resilient presser member 20 has an outer portion which is bent to extend, as shown especially in Figures 4, 5 and 6, upwardly in a curved manner alongside the slot 19 as at 22, and its upper end flares outwardly as at 23 so that this flared portion acts as a sort of support and guide for a bunch of hairs which may be disposed and pressed down thereon.

Beneath the block 17 and spaced from its lower surface, is a material-supporting head 24 provided with a vertical aperture 25 disposed in line with the axis of the needle 12. This head is supported on a bar or rod 26, the upper end 27 of which is off-set as shown. The lower end of this supporting rod may be connected to the base of the sewing machine in any desired manner, as by being adjusted by set screw 28 in a sleeve 29, which may be connected to the base of the sewing machine.

Examination of Figures 4, 5 and 6, will show that the curved presser member 22 forms a guide path for the hairs, which is wide and open at the top and gradually narrows down until at the bottom of the portion 22, the hairs are held closely adjacent the needle to be effectively engaged by the notch 13 of the needle 12 and properly passed through the material. The material thus treated is shown at 30 and may be any material through which it is desired to pass ends of hair, but preferably the material is of rubber or other similar flexible materials which are generally used for doll and manikin heads. In this type of material, when the needle descends through it, it will yield somewhat as the needle passes through it but when the needle is withdrawn, the material as shown in Figure 6, will contract and tightly grasp the ends of hair disposed therein.

It is also to be especially noted that the upper

end 23 of the presser member curves upwardly and away from the needle in a direction which is substantially in a plane coincident with the plane of the notch in the needle and of the lateral slot 19 in the block 17. A bunch of hair may be grasped in each hand at the opposite ends thereof and then pressed down along the presser member until it lies as shown in Figure 4, in the narrowest part of the path, thus formed and pressed closely against the slot 19. It is clear that as the needle descends, the notch in it will pick up one or more hairs near the ends thereof and pass this portion down through the material 30 as shown in Figure 5. During this interval, the material of the head yields to permit the needle to pass through but when the needle is withdrawn as shown in Figure 6, the material 30 contracts and holds the end portion tightly in position therein.

The operator may hold the material 30 in his hand and move it between each hair-insertion to permit the hairs to be inserted at whatever density over the surface is desired and with a little practice, this can be done very rapidly so that the time to cover a head or surface evenly and thickly with hairs is greatly reduced and the labor costs also greatly minimized. After the ends are all inserted, the inner surface of the material is coated with suitable cement or adhesive to effectively bind the ends of the hair to the inner surface of the article and thus form a completed article, as shown in Figure 8.

In Figure 9, is shown a modification in which a plurality of needles 12 are employed and a plurality of curved presser members similar to that already described, thus increasing the speed of operation.

While the invention has been described in detail and with respect to the preferred form shown in the drawings, it is not to be limited to such details and forms since many changes and modifications may be made in the invention without departing from the spirit and scope of the invention in its broadest aspects. Hence, it is intended to cover any and all forms and modifications of the invention which may come within the language or scope of any one or more of the appended claims.

What I claim as my invention is:

1. Apparatus for applying hair to the surface of a material which comprises a notched reciprocatory needle to be advanced through the surface of the material, a block having a slot in line with the needle and along which the needle passes as it is advanced to the surface and means disposed adjacent the needle in advance of the material to press hairs against the side of the needle to be picked up by the notch in the needle and advanced into and through the material.

2. Apparatus for applying hair to the surface of a material which comprises a notched reciprocatory needle to be advanced through the surface of the material, said notch formed in the side of the needle near its pointed end, a block having a slot in line with the needle and along which the needle passes as it is advanced to the surface and means disposed adjacent the needle to resiliently press hairs against the side of the needle to be picked up by the notch in the needle and advanced into and through the surface of the material.

3. Apparatus for applying hair to the surface of a material which comprises a laterally notched reciprocatory needle to be advanced through the surface of the material, the walls of said notch being sloped downwardly, a block having a slot in line with the needle and along which the

needle passes as it is advanced to the surface and spring means disposed adjacent the needle to press the hairs against the side of the needle to be picked up by the notch in the needle and advanced through the surface of the material.

4. Apparatus for applying hair to the surface of a material which comprises a laterally notched reciprocatory needle to be advanced through the surface of the material, the top wall of said notch being sloped downwardly, a block having a slot in line with the needle and along which the needle passes as it is advanced to the surface and a curved spring member disposed adjacent the needle to press the hairs against the side of the needle to be picked up by the notch in the needle and advanced through the surface of the material, said spring means curved upwardly and outwardly along the side of the needle to provide an upwardly divergent channel or path to receive the hairs to be pressed against the needle.

5. Apparatus for applying hair to a material surface which comprises a needle having a lateral notch near its lower end with a downwardly sloping upper wall, a block having a vertical slot along which the needle passes as it is advanced toward the material surface, a curved spring member supported on the block and having an end curved up along and parallel to and closely adjacent the slot in the block to press the hairs against the side of the needle, the upper end of said spring member being flared up and outwardly away from the needle to form an upwardly divergent channel or path for the hairs to be introduced thereinto closely against the side of the needle.

6. Apparatus for applying hair to the surface of a material which comprises a plurality of notched reciprocatory needles to be advanced

through the surface of the material, a block having a plurality of slots in line with the needles and along which the needles pass as they advance to the surface, and means disposed adjacent the needles in advance of the material to press hairs against the sides of the needles to be picked up by the notches in the needles and advanced into and through the material.

7. Apparatus for applying hair to a material surface which comprises a plurality of needles each having a lateral notch near its lower end with a downwardly sloping upper wall, a block having a plurality of lateral slots along which the needles pass as they advance towards the material surface, and a plurality of curved spring members suppported on the block, each member having an end curved up along and parallel to and closely adjacent a respective slot in the block to press the hairs against the side of a respective needle, the upper ends of said spring members being flared up and outwardly away from the needles to form an upwardly divergent channel or path for the hairs to be introduced thereinto closely against the sides of the needles.

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