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FELTING NEEDLE

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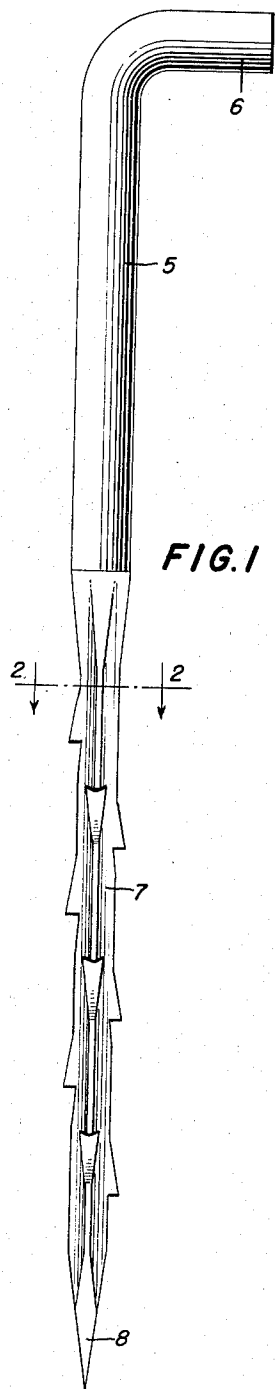


FIG. 1

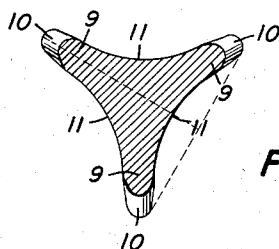


FIG. 2

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## FELTING NEEDLE

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3 Claims. (Cl. 28—4)

The following specification describes in detail an improvement in felting needles. The wide use of synthetic fibers for felting has introduced new problems. These fibers are shorter than natural fibers used for felting. It is also desirable to increase the density of such felting. A definite problem exists also in the size of the holes formed by the conventional felting needles.

A purpose of the present invention is to leave a much smaller impression than is created by needles of the conventional shape of an equilateral triangle.

A further object of the invention is to permit the needle punctures to be spaced closer together, so that shorter fibers can be used and greater density of the pile obtained.

A still further object of the invention is to increase the quantity of fiber carried into the backing fabric by each individual barb of the felting needle.

An incidental object of the invention is to reduce the respective cross-section or diameter of the felting needle without, however, causing any material loss in the needle strength.

Still further it is an object of the invention to increase the sharpness of the barbs by reducing their individual width.

Among the objects of the invention is to facilitate the manufacture of felting needles both as to material and structure.

Other objects of the invention will be evident from the following description of the preferred form as illustrated by way of examples on the following drawings in which:

Fig. 1 is a side view of the improved felting needle, and

Fig. 2 is a cross-section taken on the line 2—2 of Fig. 1.

Briefly described the improved felting needle is given a cross-section which will reduce the size of the hole left in the finished felt, thus permitting the needle punctures to be closer together. At the same time the particular form of the needle increases the quantity of fibers introduced into the backing fabric by each barb. The barbs themselves may be shorter than those in felting needles of the usual cross-sectional shapes.

Referring to the drawings I have shown a felting needle comprising a shank 5. This is usually round in cross-section. At one end the shank has a right angled extension 6 which forms a tang by which the needle is held in the desired position in the frame for the usual felting operation.

The blade proper 7 of the needle terminates in a point 8. The blade 7 is the portion which normally penetrates the backing fabric which is to be felted. The blade 7 first passes through a bat of loose fiber and carries as much of such fiber as is possible into the backing layer or fabric to form a pile.

The blade 7 is made in a modified triangular cross-

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section. In other words, three ribs 9, 9, 9 are formed at equally angular spacing. Each rib has one or a series of staggered barbs 10, 10, 10 which extend radially outward. Each rib is cut away or notched in the usual manner in front of the individual barbs. The barbs on one rib are staggered with respect to the barbs on the adjacent ribs.

An important feature of the improvement consists in providing concave sides 11, 11 between the adjacent ribs. These are produced by cutting or punching appropriate grooves in the needle during manufacture. The grooves form a substantial concavity between the barbs, as is shown by the dotted line connecting the adjacent barbs in Fig. 2.

As indicated in Fig. 2, each rib has a blunt or rounded edge which is substantially semi-circular in cross-section. These edges pierce the fabric backing with minimum tendency to cut or split it. Also the width of the notch remaining in the rib in front of the barb is such as to reduce the likelihood of breaking the fibers.

As a result of this concavity or the formation of grooves, the diametric width of the blade of the needle (see diametric dotted line in Fig. 2) is materially reduced in comparison with the normal altitude of the equilateral triangle connecting the ribs and as indicated by the second dotted line in Fig. 2.

It has been found that making the sides of the needle grooved or concave and giving it a cross-section such as illustrated in Fig. 2, can be done without material loss in strength due to the normal, retained distance between the ribs.

It will also be apparent that by grooving the sides of the needle, the barbs will have less width and thus engage a greater quantity of the short fibers to be felted.

Due to the reduced diametric width of the needle, the needle strokes will cause less displacement of the material in the felted bat or fabric. This will mean smaller holes are made in the material and that needle strokes can be spaced closer together. Consequently a greater amount of felting fiber can be put in position over the area treated.

The use of the particular form of felting needle above described will have evident advantages, as already stated. It will also be apparent that numerous changes in size, proportion and material are possible without departing from the scope of the invention as defined in the following claims.

What I claim is:

1. A felting needle having three angularly spaced ribs having thick rounded outer edges and intermediate fiber-receiving longitudinal recesses and forwardly directed barbs on each rib.

2. A felting needle having three angularly spaced ribs having thick rounded outer edges and barbs on each rib, the needle being longitudinally channeled opposite each rib.

3. A felting needle having a shank of circular cross-section, three equally spaced longitudinal ribs separated by grooves, said ribs having thick rounded outer edges spaced inwardly of the extension of the periphery of the shank, longitudinally spaced barbs on the ribs projecting into the said periphery, said barbs also being rounded in cross-section.

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