

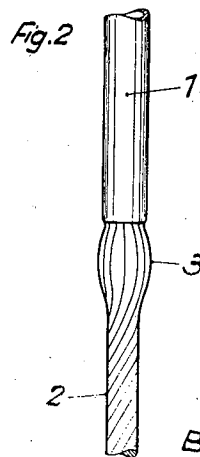
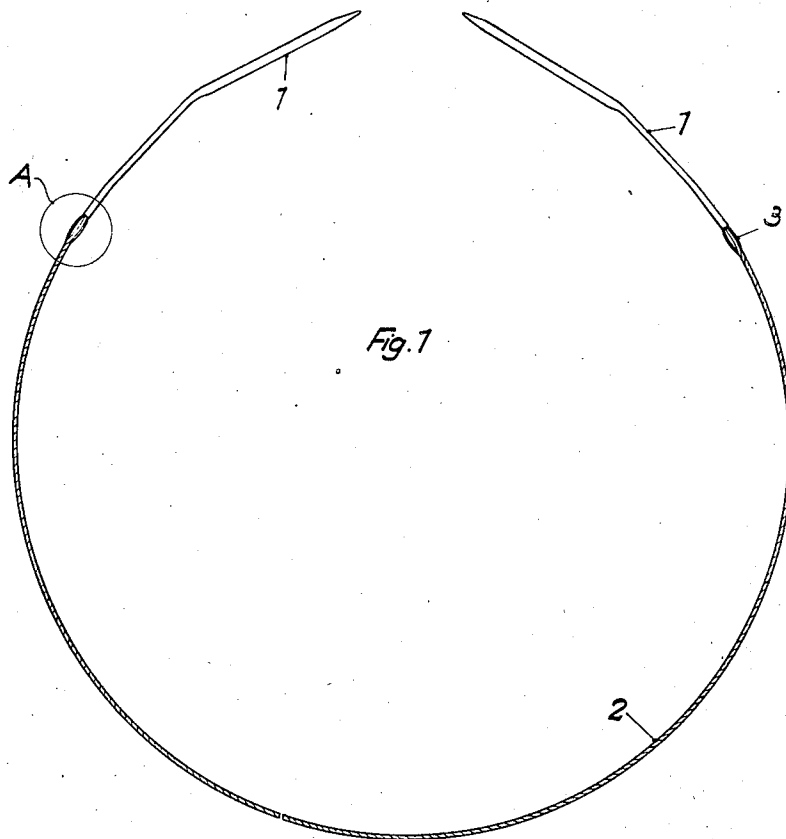
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W. KOHLMANN

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ROUND SHAPED KNITTING NEEDLE AND METHOD OF MAKING THE SAME

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Inventor:
Walter Kohlmann
By
Young, Evers & Thompson
Attorneys

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ROUND SHAPED KNITTING NEEDLE AND
METHOD OF MAKING THE SAMEWalter Kohlmann, Altena, Germany, assignor to
the firm of Joh. Moritz Rump, Altena, Ger-
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6 Claims. (Cl. 66—117)

The invention relates to a round shaped knitting needle, and to a method of making the same, of that known type in which a middle part consisting of wire cord is fixed by pressing or for instance by hammering to the rigid and tubular end parts by which the knitting is effected. The diameter of the rigid end parts is diminished towards the wire cord, thus forming a rather acute step. By this step the transfer of the knitted meshes from the wire cord to the rigid end parts is made difficult as the wool fibres easily stick fast there.

It has already been proposed to eliminate this step by reducing the diameter of the tubular and rigid end parts near the wire cord so much that, at the connecting points between the rigid parts and the wire cord were only unimportant differences between the diameter of the rigid end parts and that of the wire cord. The aforementioned needles were not satisfying in use as the great diminution of the diameter of the rigid end parts caused such a reduction of the thickness of the tubular end parts that very soon damage and destruction took place just at those points where the wire cord is inserted into the tubular and rigid end parts. This was the result of the high stress arising at the connecting points.

A further drawback of aforementioned knitting needles in which a middle part consisting of wire cord is fixed to the rigid and tubular end parts by hammering or pressing is due to the fact that such method of fastening causes a stiffening, or in other words, a diminishing, of the elasticity of those parts of the wire cord which are next to the tubular and rigid end parts, that only at those points of the cord at which the greatest bending stress takes place.

According to the invention this drawback is avoided by furnishing the wire cord over a small distance with globular enlargements at those points where the tubular rigid end parts are fixed. The circumference of such an enlargement is smaller than the greatest circumference of the rigid end parts and equal or greater than the smallest circumference of those end parts. This enlargement of the wire cord must not have exactly the shape of a globe. Preferably it may be produced by turning the wire cord just a little in a direction opposite to the lay of the single wires of the cord after its fastening in the tubular end parts. This turning of the wire cord may be carried out after both sides of the wire cord were clamped fast.

By the enlargement according to the invention a loosening to a certain degree of the cord which

is composed of the single wires takes place. By this fact just at those points being subjected to the greatest stress the elasticity is increased to such a degree that the single wires may yield to the bending stress and a breaking of the wires is avoided.

A further advantage of the invention is given by the fact that a sticking fast of the single meshes is avoided when they are drawn unto the rigid end parts. There is still a little step at the points where the wire cord is inserted into the end parts but this step cannot bring any disadvantage or trouble for the following reasons: The size, that is the circumference, of the meshes is determined by the thickest part of the rigid end parts. On the wire cord the meshes do not keep the annular form. They will be of an elongated shape caused by the weight of the knitted material. If a needle of the hitherto known type is used the meshes will easily stick fast when they are drawn from the wire cord to the rigid part. By the enlargement of the cord at those points where it is inserted into the tubular and rigid end parts the elongated meshes are brought back again to a circular or particularly annular shape which they maintain on the short way over this point to the rigid end parts. Thus a sticking fast of the wool fibres is entirely avoided.

In some cases it may be useful that the wire cord is submitted to a special treatment of the surface at those points where it is enlarged. This may be done for instance by tinning. By this treatment a diminishing of the circumference of the enlarged part of the wire cord, which may take place during knitting, may be entirely avoided.

It is quite understood that the enlargement at the points where the wire cord is inserted into the tubular rigid end parts may be effected in any other suitable manner.

In the attached drawing the invention is shown by way of example:

Figure 1 is a plan view of the round shaped knitting needle according to the invention.

Figure 2 is a plan view on an enlarged scale of that part of Figure 1 which is surrounded by the circle A.

The round shaped knitting needle consists of the tubular and rigid end parts 1 and a middle part of preferably smoothed wire cord 2. The wire cord is inserted in the tubular end parts and fastened by hammering. After the wire cord is fixed in the end parts the enlargement 3 is produced. The circumference of this enlargement

is smaller than the greatest circumference of the rigid tubular end parts. It is very useful to choose such an extension of the enlargement, that the greatest diameter or the greatest circumference of said enlargement is a little greater than the diameter or circumference of the rigid part at those points where the cord is inserted.

I claim:

1. Round shaped knitting needle comprising a middle part of wire cord and rigid and tubular end parts, these tubular end parts being fixed to the wire cord by hammering, said wire cord having enlargements proximately to the points where said tubular and rigid end parts are fixed, said enlargements being globular shaped and extending over a rather small distance, the smallest circumference of the enlargements being smaller than the greatest circumference of the tubular and rigid end parts and equal or greater than the circumference of the rigid and tubular end parts at the fixing points.

2. Method of manufacturing a round shaped knitting needle comprising a middle part of wire cord and rigid and tubular end parts fixed to this wire cord, said wire cord being enlarged after its insertion into the end parts, the enlargement being produced by turning the wire cord in a direction opposite to the direction in which the single wires of the wire cord are laid.

3. A method of manufacturing circular knitting needles of the type having a middle part of spirally wound multi-strand wire cord and tubular end parts, which comprises inserting a tubular end part on each end of the wire cord, and turning the wire cord at each part adjacent its insertion into its tubular part in a direction opposite to the spiral winding of the strands to produce an enlargement of the wire cord adjacent each end of the tubular part.

4. A method according to claim 3, in which the step is added of turning the strands of the enlarged cord portions to strengthen the latter.

5. A method of manufacturing circular knitting needles of the type having a middle part of spirally wound multi-strand wire cord and tubular end parts, which comprises enlarging the wire cord at each part adjacent each end part, and tinning the enlarged cord portions to strengthen the latter.

6. In a circular knitting needle having a rigid end part on each end of a spirally wound multi-strand wire cord, an enlarged portion in the wire cord adjacent each end part being formed of at least a lesser spiral pitch of the strands than the spiral pitch of the strands of the cord between the enlarged portions.

WALTER KOHLMANN.