Oct. 19, 1937. H. A. COOK ET AL 2,096,482

RAWHIDE KNITTING NEEDLE

Filed March 5, 1936

Fig.1.

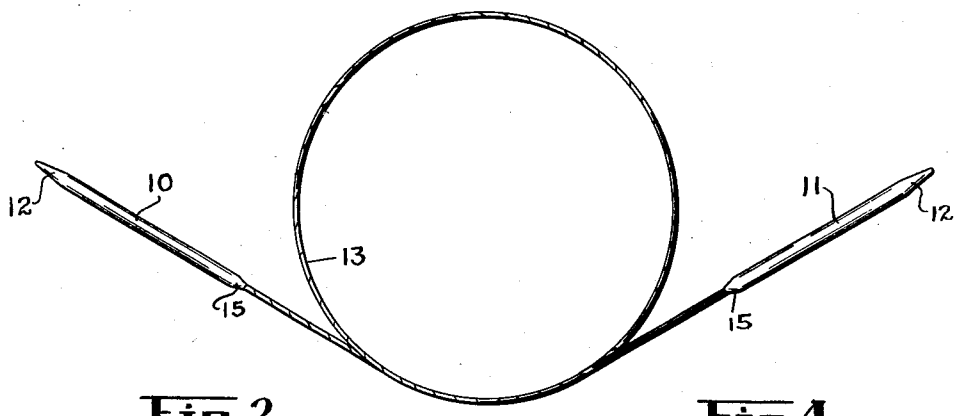


Fig.2.

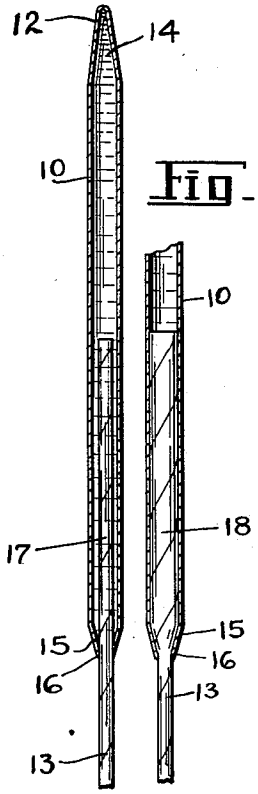


Fig.2A

Fig.3.

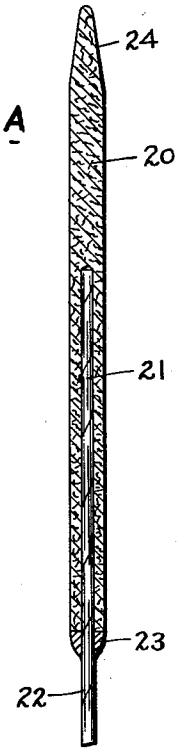
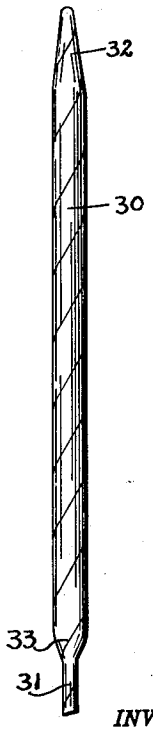


Fig.4.



INVENTORS
Howard A. Cook.
Stanley T. Cook.

BY H. G. Manning

ATTORNEY

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RAWHIDE KNITTING NEEDLE

Howard A. Cook and Stanley T. Cook, Southfield, Mass., assignors to Turner & Cook, Inc., Southfield, Mass., a corporation of Massachusetts

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16 Claims. (Cl. 66—117)

This invention relates to knitting needles, and more particularly to a knitting needle having two rigid end knitting points connected together by a central strand of flexible rawhide.

One object of this invention is to provide a knitting needle of the above nature in which the central connecting strand is of smaller diameter than the end knitting points.

A further object is to provide a knitting needle of the above nature in which the joints between the central strand and the knitting points are smoothly tapered and of a very strong construction.

A further object is to provide a "duplex" knitting needle of the above type, which will be simple in construction, inexpensive to manufacture, easy to manipulate, and very efficient and durable in use.

With these and other objects in view there have been illustrated on the accompanying drawing several forms in which this invention may be conveniently embodied in practice.

In the drawing:

Fig. 1 illustrates a knitting needle embodying the features of this invention.

Figs. 2 and 2A respectively illustrate the appearance of the longitudinal section of a hollow metallic knitting point before and after the end of the central strand has been expanded by swelling to lock it securely within the hollow knitting point.

Fig. 3 is an enlarged longitudinal section of a modified form of knitting point made of vulcanized fibre, and showing the hollow bore in which the rawhide strand is cemented.

Fig. 4 is an enlarged view of the knitting point of a modified form of knitting needle constructed entirely of rawhide.

In the use of previous forms of duplex knitting needles, considerable difficulty has been experienced due to breakage at the joints between the knitting points and the central strand caused by the repeated bending strains to which said joints were subjected. The material being knitted was also quite apt to catch on the abrupt shoulders at said joints when "knitting-off" from one needle on to the other. By means of the present invention, the above and other disadvantages have been eliminated.

Referring now to the drawing in which like reference numerals denote corresponding parts throughout the several views, the numerals 10 and 11 indicate respectively a pair of hollow knitting points which are substantially cylindrical in shape and have the usual conical outer extremities or tips 12. The knitting points 10 and 11 are provided at their rear ends with short tapered ends 15 having interior openings 16 of such a diameter as to snugly fit upon a flexible central strand 13 of rawhide, upon which the article being knitted is adapted to be supported while the knitting points are being used to produce the stitches. The interior diameter of the hollow knitting points is considerably larger than the ends of the original rawhide strand 13 so as to permit the latter to expand by the use of a swelling liquid.

It is also within the scope of this invention to omit the liquid for swelling the end of the rawhide strand, in which case the enlargement of said end will be produced by the application of heat to the exterior of the surrounding knitting point.

In carrying out the features of this invention, a flexible strand 13 of rawhide or material having like physical characteristics will be employed. The rawhide preferably desired for use is taken from India water buffalo hide, which is cut into solid strips of rectangular cross-section and of the desired length. While the strips of rawhide are still wet, they are tightly twisted by suitable means, not shown, until they assume a smooth cylindrical condition, and at the same time are pulled longitudinally to remove practically all of the "stretch" but without removing the elasticity. In this process of twisting, substantially all of the water will be pressed out of the wet rawhide, and the natural glue therein will cement the twisted portions together to form a hard flexible practically waterproof strand. The twisted strands will then be air-dried at a temperature of from 100 to 120 degrees F., after which they will be kiln-dried at a temperature of from 125 to 150 degrees F. The strands will then be ground to a uniform diameter throughout their entire length.

Previous to inserting the strand 13 into the hollow knitting points 10 and 11, a suitable rawhide swelling liquid 14, such as hot water, glue, cement etc., will be placed in said points. After the end 17 of the strand 13 has been inserted into the respective knitting point and comes into contact with the swelling liquid therein, it will swell to the shape 18 as indicated in Fig. 2A, and will completely fill the adjacent interior portion of the knitting point and become securely locked therein. If desired, heat may be applied to hasten the swelling action of the rawhide. After the ends of the rawhide strand 13 have been secured within the knitting points 10 and 11, the central portion 13 of said strand will preferably be treated with a suitable smoothing material, such as "wood

filler", and preferably also with a waterproof finish, such as varnish.

In the form of the invention shown in Fig. 3, a knitting point **20** is shown which is made of hard solid composition material, such as vulcanized fibre. A hole is drilled or otherwise formed in the point **20** of a diameter sufficient to snugly fit over an end **21** of a rawhide strand **22** and to retain it therein by friction. The end **21** of the strand will be secured in place preferably by cement or glue, and an additional amount of said cement is employed at **23** to form an annular fillet at the rear end of the knitting point **20**. After drying, this fillet will be smoothed off to form a flush joint. A suitable tapered end **24** is formed on the tip of the knitting point **20**.

In the modified form of the invention shown in Fig. 4, a knitting point **30** of a knitting needle which is made entirely of rawhide is disclosed. The central flexible strand **31** of said needle is formed as by grinding. A conical point **32** is formed at the free end of each of the knitting points **30** and a short tapered section **33** is formed between each of the points **30** and the central strand **31**.

One advantage of the present invention is that the flexible central strand of the knitting needle will be capable of resisting repeated bending strains and at the same time will be practically immune to changes in atmospheric conditions. The possibility of separation of the knitting points from the flexible central strand by breakage is practically eliminated.

While there have been disclosed in this specification several forms in which the invention may be embodied, it is to be understood that these forms are shown for the purpose of illustration only, and the invention is not to be limited to the specific disclosures but may be modified and embodied in various other forms without departing from its spirit. In short, the invention includes all the modifications and embodiments coming within the scope of the following claims.

Having thus fully described the invention, what is claimed as new and for which it is desired to secure Letters Patent is:

1. In a hand knitting needle, a body portion comprising a single strand of water-proofed hard flexible resilient rawhide, and a knitting point of a diameter larger than said rawhide strand.

2. In a hand knitting needle, a body portion comprising a single circular strand of rawhide, and a hollow enlarged knitting point of different material secured upon one end of said rawhide strand.

3. A hand knitting needle comprising a single hard resilient strand of rawhide twisted into cylindrical shape, and a knitting point of larger diameter secured on one end of said strand.

4. A hand knitting needle comprising a single hard strand of rawhide twisted into cylindrical shape, and a pair of tubular knitting points secured upon the opposite ends of said strand.

5. A hand knitting needle comprising a single hard strand of rawhide twisted into cylindrical shape, and a knitting point having a longitudinal bore in which one end of said strand is inserted, and means in said bore to swell the aforesaid end of said strand to lock it securely in said bore.

6. A knitting needle comprising a single strip of hard rawhide twisted into cylindrical shape, and a hollow knitting point of material having a longitudinal bore in which an end of said strip is fitted, and means to cause adherence of said strip to said point within the bore thereof.

7. In a hand knitting needle, a flexible central body portion comprising a single hard strand of solid rawhide, and a hollow knitting point of vulcanized fibre fitted over one end of said rawhide strand.

8. In a hand knitting needle, a flexible central body portion comprising a single hard strand of solid rawhide, and a hollow knitting point of vulcanized fibre fitted over one end of said rawhide strand and secured thereto.

9. A hand knitting needle comprising a single strand of hard flexible solid rawhide.

10. A hand knitting needle comprising a single strand of hard twisted flexible solid rawhide.

11. A hand knitting needle comprising a cylindrical strand of rawhide, and a tubular knitting point surrounding one end of said strand, said strand being securely locked within said knitting point by the expansion of the end of said strand by the application of heat to said knitting point.

12. A hand knitting needle comprising a strand of hard flexible solid rawhide coated with a wood filler for producing a smooth surface on said strand.

13. A hand knitting needle body comprising a strand of rawhide of cylindrical shape.

14. A hand knitting needle body consisting essentially of hard flexible rawhide.

15. A hand knitting needle comprising a strand of hard flexible solid rawhide.

16. A hand knitting needle comprising a strand of hard flexible solid twisted rawhide.

HOWARD A. COOK.
STANLEY T. COOK.