

June 23, 1936.

J. H. GRAHAM

2,045,267

KNITTING NEEDLE

Filed Jan. 12, 1934

Fig. 1.

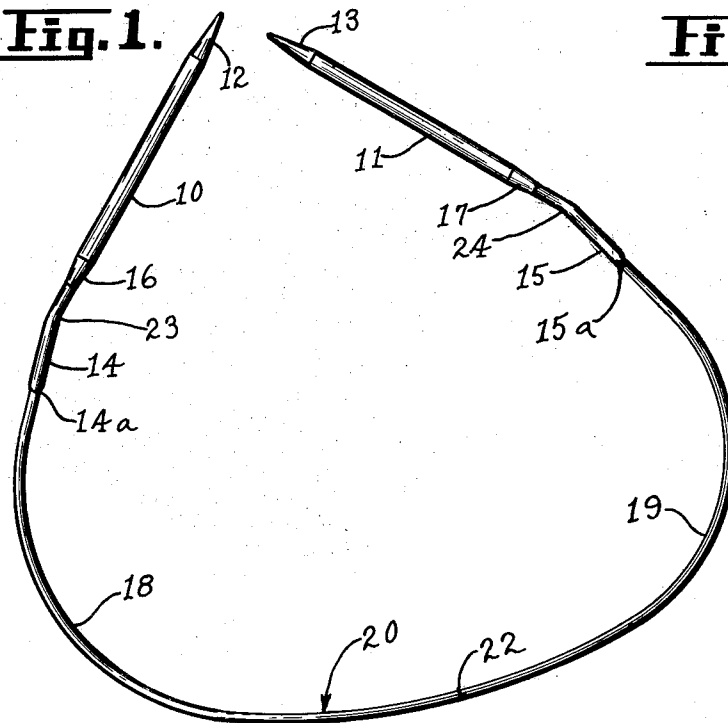


Fig. 6.

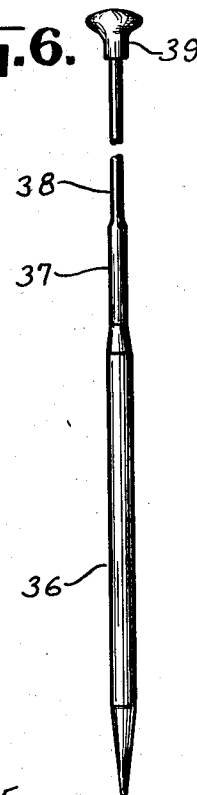


Fig. 2.

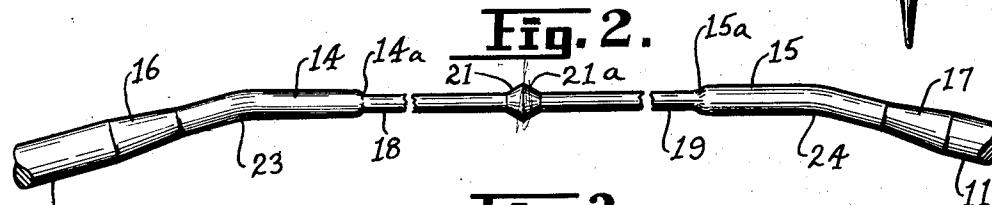


Fig. 3.

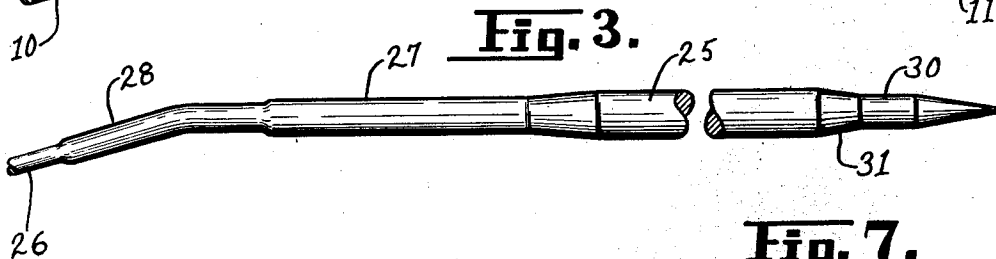


Fig. 4.

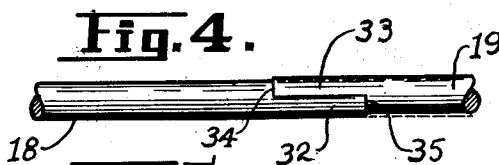


Fig. 5.

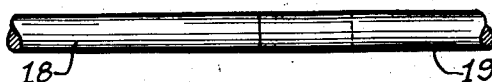
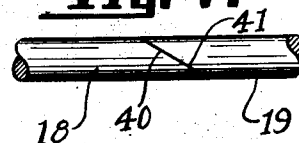


Fig. 7.



INVENTOR
James H. Graham

BY
H. G. Manning
ATTORNEY

UNITED STATES PATENT OFFICE

2,045,267

KNITTING NEEDLE

James H. Graham, Torrington, Conn.

Application January 12, 1934, Serial No. 706,330

3 Claims.. (Cl. 66—117)

This invention relates to "duplex" hand knitting needles, and more particularly to an elongated needle having two enlarged cylindrical knitting points connected together by a flexible central strand of smaller diameter.

One object of this invention is to provide a knitting needle of the above nature in which the reduced central strand is formed from two sections welded together at the center.

A further object is to provide a "duplex" needle of the above nature in which each enlarged knitting point is connected to the reduced central strand by a stepped intermediate "take-off" section to facilitate the sliding of the work over the take-off section.

A further object is to provide a knitting needle in which the tip of the cylindrical point is stepped to avoid the dropping of stitches from the article being knitted.

A further object is to provide a "duplex" knitting needle of the above nature which will be simple in construction, inexpensive to manufacture, easy to manipulate, compact, ornamental in appearance, 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 the invention may be conveniently embodied in practice.

In the drawing:

Fig. 1 represents a perspective view of the first form of duplex knitting needle as it appears when in position for use.

Fig. 2 is an enlarged fragmentary side view of the same as it appears before the excess metal at the central butt-welded joint has been removed.

Fig. 3 is a fragmentary view of a modified form of needle showing a triple stepped section between the enlarged point and the reduced connecting strand, and also a stepped tip on the end of the point.

Fig. 4 is a side view of a modified form of the invention, in which a lap-welded joint is used for connecting the central ends of the flexible strand.

Fig. 5 is a plan view of the same.

Fig. 6 is a view of a further modified form of the invention as applied to an ordinary straight knitting needle.

Fig. 7 is a side view of a still further modified form of the invention in which a scarf-welded joint is used at the center of the flexible strand.

This application is a continuation in part of a copending application by the same inventor

bearing the Serial No. 671,123, filed May 15, 1933.

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 relatively large stiff knitting points which are substantially cylindrical in shape and have their outer ends 12 and 13 conically tapered as shown.

The inner end of each cylindrical knitting point 10 and 11 is provided with a reduced cylindrical section 14, 15, which is integrally joined to said point 10, 11, by a short frusto-conical section 16, 17, located therebetween.

The inner end of the reduced section 14, 15, in turn, is connected by a rounded shoulder 14a, 15a, to a still further reduced section 18, 19. The sections 18 and 19 when joined together constitute a flexible connecting central strand 20 of the complete duplex knitting needle.

In the manufacture of the knitting needle, it is preferable to start with wire of the diameter of the cylindrical points 10, 11, and to produce the several steps by successive reductions by turning, forming, or swaging with suitable rolls or dies. A pair of the needle sections thus formed may then be united by connecting the inner ends of the flexible strands 18 and 19 permanently together to form a single unit, by welding. As shown in Fig. 2, prior to the welding operation, the ends of the strands 18 and 19 are preferably swaged or otherwise formed to produce enlarged heads 21 and 21a which may then be abutted and welded in the usual manner to form a butt-welded joint. The excess metal of the heads 21 and 21a may later be removed by grinding and polishing to produce a smooth flush joint 22, as shown in Fig. 1. It will be understood, however, that the welding of the joint 22 may be accomplished without the use of a head, within the spirit and scope of the invention.

If desired, each of the reduced sections 14 and 15 may be slightly bent at intermediate positions, as indicated by the numerals 23 and 24 in Figs. 1 and 2, at a small angle to facilitate the knitting process.

In the modified form of the invention illustrated in Fig. 3, a cylindrical needle point 25 is shown connected to a flexible connecting strand 26 of smaller diameter by means of two progressively reduced sections 27 and 28 respectively, to produce three steps, instead of two steps, as in the first form of the invention.

The smaller section 28 is bent at an angle in a similar manner to the angular sections 23, 24. In order to prevent accidental dropping of stitches

from the needle point, the tip of the needle point 25 is provided with a stepped reduced section 30 preferably connected to the cylindrical point 25 by a frusto-conical portion 31.

5 One advantage of connecting the needle points to the flexible central strand by one or more progressively reduced sections is that it permits the work to slide more easily on and off of the points when "knitting-off" from one needle point to the
10 other, and also when removing the completed knitted article from the duplex needle.

In Figs. 4 and 5 is shown a modified form of welded joint for connecting the inner ends of the flexible strand sections 18 and 19 to produce a
15 "duplex" needle, the joint being accomplished by "lap" welding. The inner ends of the strands 18 and 19 are each provided with substantially semi-cylindrical extremities 32 and 33 having shoulders 34 and 35, said extremities 32 and 33 being
20 adapted to be interfitted before the welding operation. The height of the semi-cylindrical section 32, 33 is preferably slightly greater than half the diameter of the respective strands 18 and 19, so that when the ends 32 and 33 are interfitted,
25 said strands 18 and 19 will be out of axial alignment, but will be forced into alignment during the welding operation by the opposed pressure of the dies, as shown by the dotted lines, in Fig. 4. After the welding has taken place any fin or
30 irregularities formed by the welding operation may be removed by grinding and polishing to produce a smooth joint between the two strands, as indicated by the dotted lines.

In Fig. 6 the invention is shown embodied in
35 a "straight" knitting needle. A cylindrical knitting point 36 is connected by a double stepped portion 37 to the reduced needle shank 38, the latter being provided with the usual form of end head 39 which serves as a handle and also to prevent the work from slipping off.
40

In Fig. 7 is illustrated a further modified form of welded joint wherein the inner ends of the

strands 18 and 19 are cut on an angle to produce a pair of elliptical faces 40 and 41 which may be abutted and welded in the usual manner to produce a scarf welded joint.

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 that the invention is not to be limited to the specific disclosures, but may be modified
10 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
15 is claimed as new and for which it is desired to secure Letters Patent is:

1. In a knitting needle, a body member having a cylindrical working section, a sharpened conical tip and an intermediate cylindrical section of
20 smaller diameter than said working section, said intermediate section having the same diameter as the base of said tip and being joined to said working section by a tapered frusto-conical section.
25

2. In a knitting needle, a central flexible cylindrical section, a pair of cylindrical working sections of larger diameter than said central section, and a pair of pointed tips having cylindrical sections of smaller diameter than said
30 working sections, the cylindrical portions of said tips serving to prevent accidental dropping of stitches from the needle.

3. In a knitting needle, a flexible cylindrical section, an enlarged cylindrical working section having a cylindrical tip of smaller diameter than
35 said working section, said tip having a pointed extremity, the cylindrical portion of said tip serving to prevent accidental dropping of stitches from the needle.
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JAMES H. GRAHAM.