July 7, 1953 L. SPENCER 2,644,324

KNITTING NEEDLE

Filed July 14, 1948



FIG. 1

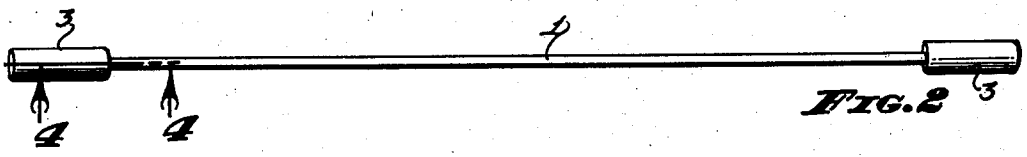


FIG. 2

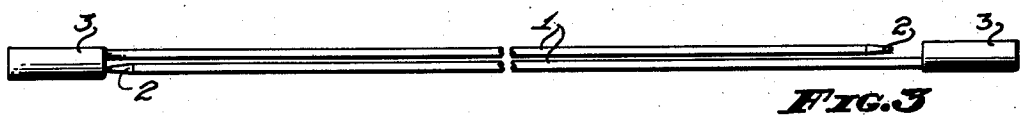


FIG. 3

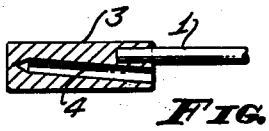


FIG. 4

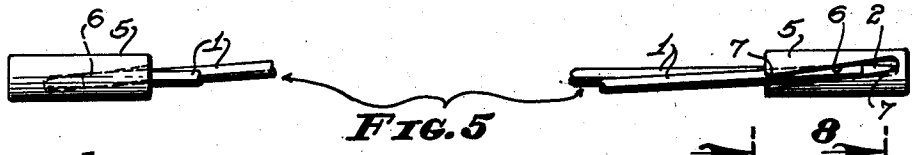


FIG. 5

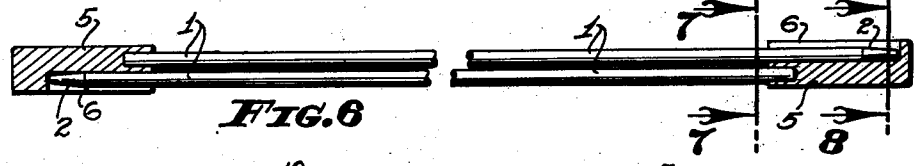


FIG. 6

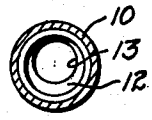


FIG. 11

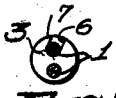


FIG. 7



FIG. 8

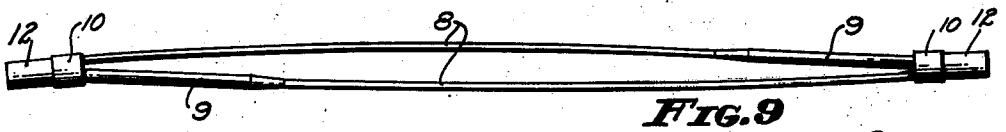


FIG. 9

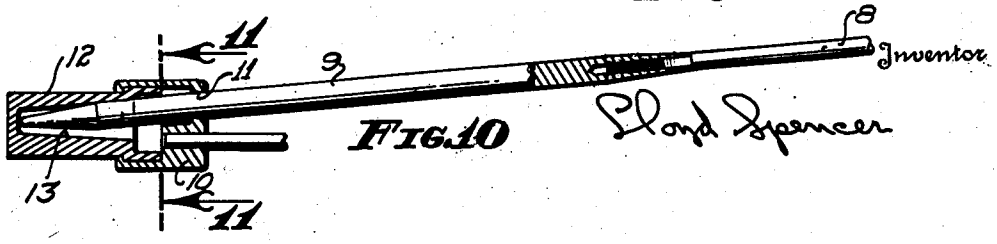


FIG. 10

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2,644,324

KNITTING NEEDLE

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9 Claims. (Cl. 66—117)

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My invention relates to knitting needles and included in the objects of my invention are:

First, to provide a knitting needle so arranged that a pair of needles may be joined together with the point of one needle removably held and covered by the end of the other needle so that not only are the points guarded or capped, but also the needles are restrained against accidental separation.

Second, to provide a knitting needle of this character wherein a biasing or bending force on each needle shaft is employed to effect a friction grip on the point thereof when fitted in the head of the mating needle.

Third, to provide a knitting needle which in one form, employs an angularly disposed channel in the needle head to receive the point of the mating needle in such a manner that the needle point is snapped or sprung laterally in place.

Fourth, to provide a knitting needle which may be arranged with a shaft of small diameter and a knitting tip or point of larger diameter, and so arranged that tips of different diameters may be interchangeably attached to the shaft and be held in the needle head.

With the above and other objects in view as may appear hereinafter, reference is directed to the accompanying drawings, in which:

Figure 1 is an elevational view of one form of my invention showing a pair of knitting needles joined together.

Figure 2 is an elevational view at right angles to Fig. 1.

Figure 3 is a view similar to Fig. 1 showing the knitting needles separated.

Figure 4 is an enlarged longitudinal sectional view thereof taken through 4—4 of Fig. 2.

Figure 5 is a fragmentary elevational view of a modified form of knitting needle, a pair being shown joined together.

Figure 6 is a fragmentary longitudinal sectional view thereof.

Figure 7 is a sectional view thereof taken through 7—7 of Fig. 6.

Figure 8 is a sectional view thereof taken through 8—8 of Fig. 6.

Figure 9 is an elevational view of a further modified form of my knitting needle showing a pair joined together.

Figure 10 is an enlarged fragmentary sectional view thereof.

Figure 11 is a transverse sectional view of the needle head taken through 11—11 of Fig. 10 with the mating needle omitted.

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Reference is first directed to Figs. 1 to 4 inclusive. Each knitting needle here shown includes a shaft 1 preferably of metal and provided with a pointed end 2. A head 3 cylindrical in form is press fitted or otherwise secured to the other end of each shaft 1. The head is preferably formed of plastic material, but may be of light weight metal. The head is attached eccentrically to the needle shaft preferably with its axis parallel thereto. A deep socket 4 is formed in the head. The socket 4 is angularly related to the needle shaft and the axis of the head 3, its entrance being located diametrically opposite from the point of attachment of the shaft and of sufficient diameter to receive slidably the mating needle shaft.

The angular relation of the socket 4 is such that when the point of one needle shaft is inserted in the socket of the mating needle head the two shafts are caused to bow as shown in Fig. 1. An angle between four and eight degrees is sufficient depending upon the stiffness of the needle shaft due to its length and diameter. The bias force thus produced provides sufficient friction to resist separation. The depth of each socket 4 is substantially greater than the tapered points of the needle shafts so that the walls of the sockets bear on the cylindrical portions of the needle shafts.

It should be observed that to facilitate entrance of the two needle points in their respective sockets, one is slightly longer than the other. However, it is important that the sockets be sufficiently deep that the cylindrical shanks of both needles enter a substantial distance to provide adequate bearing.

It has been found particularly satisfactory to make the shafts of aluminum and the heads of a plastic such as acetate butyrate as the coefficient of friction between these materials appears to aid in assuring proper retention of the needle shafts.

Reference is now directed to Figs. 5 through 8 inclusive. The construction herein illustrated is similar to the first described structure, except that in place of the sockets 4, the modified heads 5 are provided with longitudinally directed substantially helical slots 6. The slots define an angle with the axis of the head of between four and eight degrees depending upon the stiffness of the needle. The slots or channels 6 are preferably "right" and "left" pitch so that both channels cannot be brought into parallelism with the shafts or shanks 1 by twisting the needles.

The channels are directed radially inward

from the surface of the head so that the angle of the channels is less at their radially inner ends than at the surface of the head and thus form, in effect, overhanging shoulders 7. With this arrangement the ends of the shafts may be placed over the channels and caused to snap into place accompanied by bowing of the shafts. The needle shafts are best separated by endwise movement.

Reference is now directed to Figs. 9 to 11 inclusive. In this construction, the shafts 8 are relatively small in diameter and preferably formed of steel. One end of each shaft is threaded to receive a tip member 9 of light metal such as aluminum or of plastic. The tip members may be arranged in interchangeable sets of different diameters.

Cup shaped head members 10 are provided. In the base end of each head member is an offset or eccentric opening for pressfit connection to a needle shank, or other securing means may be employed. Also formed in the base end of each head member is an opening 11 of sufficient diameter to receive any of the needle tips 9 comprising the interchangeable set. The cupped end of each head member is adapted to receive the flanged end of a cap member 12 and the rim of the cupped end is crimped over the flange so that the cap member is journaled. The cap member is provided with an eccentric socket 13 which may also be tapered. The location of the socket is such that it may receive the extremity of a tip member inserted through the opening 11 and, by turning the cap member the desired biasing strain is applied to cause the shafts to bow and produce a locking effect similar to the first described structures.

Having thus described certain embodiments of my invention, I do not desire to be limited thereto, but intend to claim all novelty inherent in the appended claims.

I claim:

1. A knitting needle, comprising: a shaft pointed at one end; a head member secured eccentrically to the unpointed end of said shaft, said head having an opening at one side of said shaft; a cap journalled in said head member and having an eccentric socket adapted as said cap is rotated to vary its lateral displacement relative to said opening, said opening and socket adapted to receive the pointed end of a shaft of a mating needle and apply a biasing force thereon when a pair of needles are thus joined.

2. A knitting needle comprising: a shaft pointed at one end; a head secured at the other end of said shaft and having a lengthwise opening at one side of said shaft, said head being divided into relatively rotatable parts, there being an aperture in one part and an eccentric socket in the other part of said head defining jointly said opening, said opening adapted to receive and slidably cover the pointed end of a mating needle shaft whereby, when a pair of knitting needles are joined, each in the head of the other, said needle shafts are caused to bow and thereby bind in said openings so as to secure the pair of needles together.

3. A knitting needle comprising: a shaft pointed at one end; a head including a first part fixed to the opposite end of said shaft, and a second rotatable part, said fixed part having an aperture and said rotatable part having a socket, said aperture and socket defining an opening adapted to receive and guard the pointed end

of a mating shaft, said socket being eccentric whereby when a pair of said needles are joined, each shaft in the head of the other, and said second part is rotated, a biasing force is applied to said shafts to restrain withdrawal.

4. A knitting needle head, comprising: a first member adapted to be fixed to a knitting needle shaft; a second member rotatably joined to the first member; the first member being apertured, the second member having a socket; said aperture and socket adapted to receive the pointed end of a second knitting needle shaft, and relatively movable to secure said shaft.

5. A knitting needle head, comprising: a first member adapted to be fixed to a knitting needle shaft and having an aperture laterally offset from said shaft; a second member rotatably joined to said first member and having a socket eccentric to said aperture; said socket and aperture defining an opening adapted to receive the pointed end of a mating shaft, said eccentric socket on rotation adapted to apply a biasing strain on said mating knitting needle.

6. A knitting needle set comprising: a pair of knitting needle shanks of different length; a head for each knitting needle shank, each defining a socket disposed in angular relation to its knitting needle shank and adapted to receive and cover the pointed end of the mating knitting needle shank; the depths of the sockets in said heads and the relative lengths of the knitting needle shanks being such that when the longer knitting needle shank bottoms in the socket in the head of the shorter knitting needle shank, the shorter knitting needle shank penetrates into the head of the longer knitting needle shank a depth beyond its pointed end; said sockets, adapted when said knitting needle shafts are inserted therein, to exert a biasing force tending to bow said knitting needle shanks and thereby retain the same; said knitting needle shanks being formed of metal having sufficient elasticity as to straighten when said knitting needles are separated, and said heads being formed of plastic material to provide a frictional grip on said knitting needle shanks.

7. A knitting needle as set forth in claim 6, wherein: each of said sockets is accessable from one axial end only of the head in which it is formed.

8. A knitting needle as set forth in claim 6, wherein: each of said sockets is accessable from the side as well as one axial end of the head in which it is formed.

9. A knitting needle as set forth in claim 6, wherein: each of said heads comprises two relatively rotatable parts, and the socket therein is defined jointly by an inner socket portion formed in one of said parts and an aperture in the other part, said shanks being secured in the apertured parts of said heads.

LLOYD SPENCER.

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