

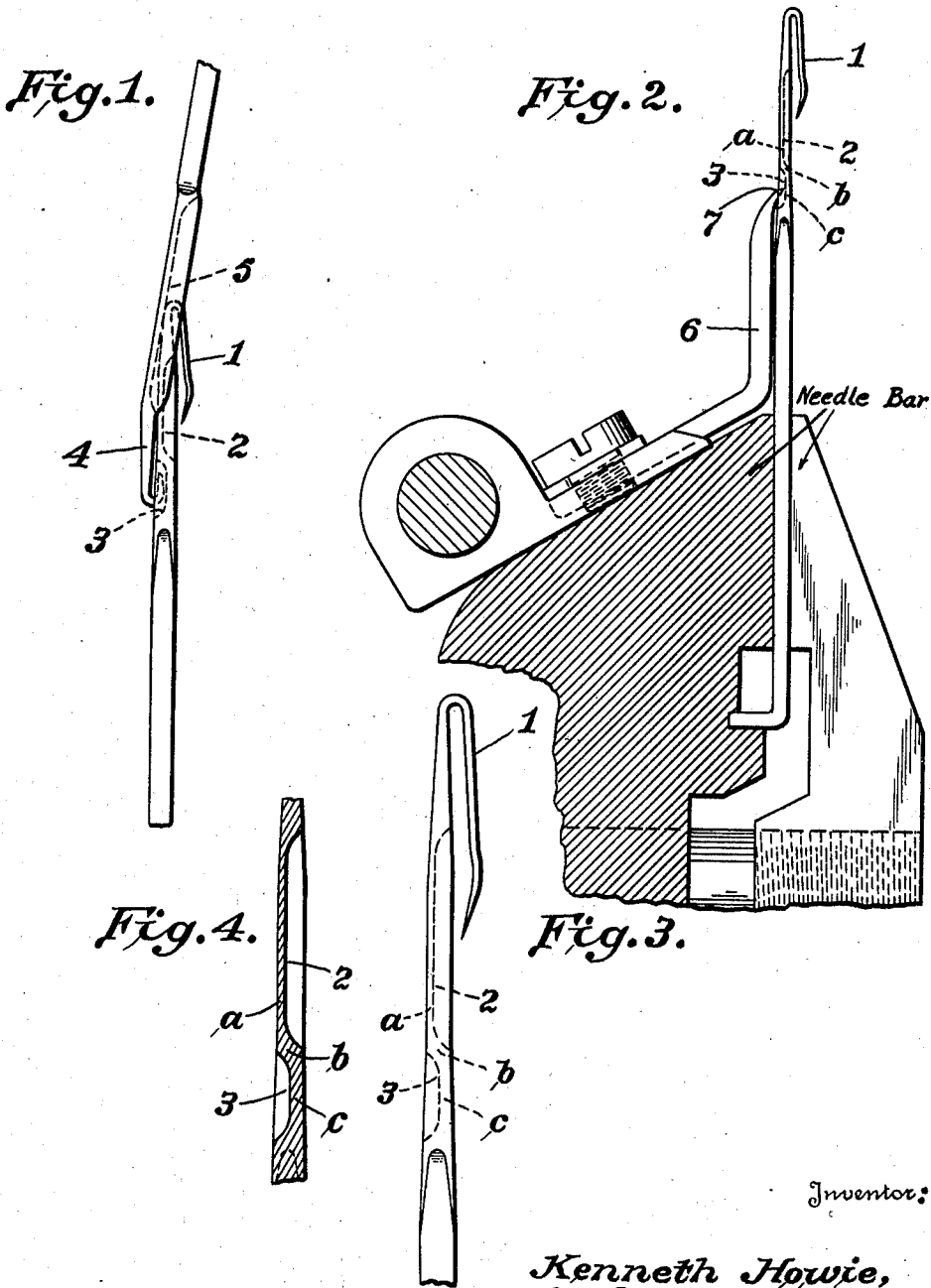
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SPRING BEARD KNITTING NEEDLE

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# UNITED STATES PATENT OFFICE

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## SPRING BEARD KNITTING NEEDLE

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6 Claims. (Cl. 66—119)

The invention consists of a spring beard knitting needle having an eye or recess in its back to cooperate with implements for various purposes, such, for instance, as turning welts, enlarging needle wale loops, or in actions involving the transfer of loops.

As is well known, spring beard needles are adapted to the manufacture of the finest gauges of fabrics and being, therefore, of comparatively delicate construction, which characteristic is accentuated by the fact that they are recessed on their beard sides, it has not been proposed hitherto, so far as I am aware, to provide them with an eye or recess in the back thereof to enable other implements to cooperate therewith.

So much of a spring beard needle as involves the present invention is shown in the accompanying drawing, in which

Figure 1 is a view of that portion of a spring beard needle which carries the spring beard and so much of the stem thereof as is necessary to illustrate the invention, said view also including a part of an implement employed for placing loops on the needles, as for instance, in turning the welt, as disclosed and claimed in application for letters patent of the United States filed by me December 28, 1937, Serial No. 182,115.

Fig. 2 is a view of the improved needle with part of the well known needle bar, and also part of a cooperating implement for enlarging the loop made by the needle, such, for instance, as disclosed and claimed in application for letters patent of the United States filed by me January 10, 1938, Serial No. 184,329.

Fig. 3 represents so much of a needle as embodies the present improvement.

Fig. 4 is a longitudinal sectional view of that portion of the spring beard needle which in addition to the recess of substantially ordinary form on the beard side is provided with the new recess on the rear face of the needle, i. e., that face which is opposite to that along which the beard extends.

The improved needle is of the spring beard type having the usual form of spring hook or beard 1, the usual eye 2 under the beard and extending below the level of the lower end of the beard, the usual stem portion, with a butt of ordinary or other form, by which the needle is held in the needle bar designated in Fig. 2 or operated by suitable cam means of any desired type.

At the back of the needle, i. e., the side which is opposite to that upon which the spring beard lies, a recess or eye 3 is provided. This eye or recess is spaced apart from the end of the needle

carrying the hook, and it is located below the level of the lower end of the hook or beard and also below the level of the lower end of the eye on the front or bearded side of the needle, and thereby it may be said to be staggered in relation to the front eye or recess. It is adapted in depth and length to receive the end of an implement which, as shown in Fig. 1, may be a welt hook 4 for placing loops on the needles of the needle row, as, for instance, in welt turning. These welt hooks, like 4, may be mounted in a bar as in usual practice manipulated by hand or operated by automatic means, or the implement may be a transfer point for taking the loops from the needles and replacing them on the same or adjacent needles.

Said welt turning or other implements are recessed at 5 to receive the upper ends of the needles.

In Fig. 2, an implement 6 has an end or point 7 to imbed itself in the eye 3 in the back of the needle, the main portion of said implement lying along the stem of the needle below the rear eye so that the loop formed by the needle will be enlarged, for instance, as disclosed in said application Ser. No. 184,329.

It will be noticed that the eye in the back of the needle is spaced apart from the upper end of the needle and is so located that it will cooperate with the implements shown in Figs. 1 and 2, one of which, i. e., the welt hooks, cooperate with that portion of the needle lying above the level of the eye, and at another part of the fabric said eye cooperates with the loop enlarging implement lying below the level of the eye. The portion of the back edge or surface of the needle lying above the supplemental eye is smooth and unbroken throughout, to the upper nose or point of the needle.

Spring beard needles are employed where the material is of finest gauge, say, as an example, thirty-six needles to the inch.

I am enabled to employ the eye in the back of the needle because it is spaced apart from the upper end of the needle and substantially in its entirety at a level below that of the eye in the front side of the needle.

The structure involving the front and back eyes does not involve changing the form or dimensions of the needle, for a given gauge, over spring beard needles of ordinary construction. Contributing to this is the location of the small eye in the back of the needle in staggered relation to the eye or recess in the front of the needle whereby the wall at a defining the bottom of the front recess is left

of full thickness and of the same length as the corresponding part of the ordinary spring beard needle.

It will be noticed further that in both the forms or uses of the invention as disclosed herein, engagement of the implement with the spring beard needle takes place by a relative movement of said needle and implement in a direction substantially transversely to the longitudinal axis of the needle, whereby the hook of the implement shown in Fig. 1 and the point of the cooperating implement shown in Fig. 2, when immediately engaging the supplemental eye, has a direction of movement substantially at right angles to the back edge or surface of the needle, the requirement for such a movement being due to the fact that the back of the spring beard needle, above the level of the said supplemental eye, is of the ordinary form with its surface intact and smooth throughout.

In the above description, I have used terms as though the needles were positioned upright as in full fashioned knitting machines in general use. This terminology is employed, however, for convenience, it being obvious that the specific position of the needle, upright or otherwise, is not relied on for patentability of the needle itself.

The location of the eye 3 in the rear side of the spring beard knitting needle enables technical effects to be attained not otherwise possible. For instance, it renders it possible to produce loop enlargement by dealing with a loop already formed and on the needle, instead of dealing with the amount of yarn initially measured off by the sinkers. In enlarging a previously formed loop, the enlarging finger 6 penetrates it and thereby yarn is borrowed from the already formed loops on the adjacent needles. This enlargement, however, is not permanent, because, in the process of applying the usual finishing treatment to the goods for marketing, the yarn which has been borrowed from the adjacent already formed loops on adjacent needles is restored thereto, so that no enlarged loops remain in the fabric, and a smooth appearance is presented to the observer. In the second process above mentioned, i. e., initially measuring off an extra amount of yarn to

be subsequently formed into an enlarged loop, the extra amount of yarn remains in the loop and does not disappear when the finishing treatment of the fabric takes place. By remaining permanently in the fabric, it detracts from the appearance of the fabric. In this latter process, the auxiliary finger over which the extra amount of yarn is measured off by the sinkers is, of necessity, located on the beard side of the needle. The auxiliary finger 6 of the present improvement is located on the rear side of the needle, as is also the eye to receive the point thereof for penetrating a formed loop on the needle.

I claim:

1. A spring beard knitting needle for forming fabric loops having the usual eye or recess in its front side to receive the spring beard, and an eye or recess in its back edge to receive a cooperative implement.

2. A spring beard knitting needle according to claim 1 in which the recess in the back thereof is spaced from the beard carrying end of the needle.

3. A spring beard knitting needle according to claim 1 in which the back of the needle above the eye or recess therein presents a smooth unbroken surface.

4. A spring beard knitting needle according to claim 1 in which the eye or recess in the back of the needle is spaced from the beard carrying end, and is staggered in location relative to the eye or recess in the beard side of the needle.

5. A spring beard knitting needle according to claim 1 in which the eye or recess in the back of the needle is located below the level of the recess in the beard side of said needle.

6. In combination, a spring beard frame needle for forming loops in a full fashioned knitting machine, having the usual eye in its front side for receiving the point of the spring beard, and an eye in its rear side for receiving the end of a cooperating element, and a needle bar to which said spring beard needle is affixed, with the eye in its rear side permanently exposed for receiving said cooperating implement.

KENNETH HOWIE.