

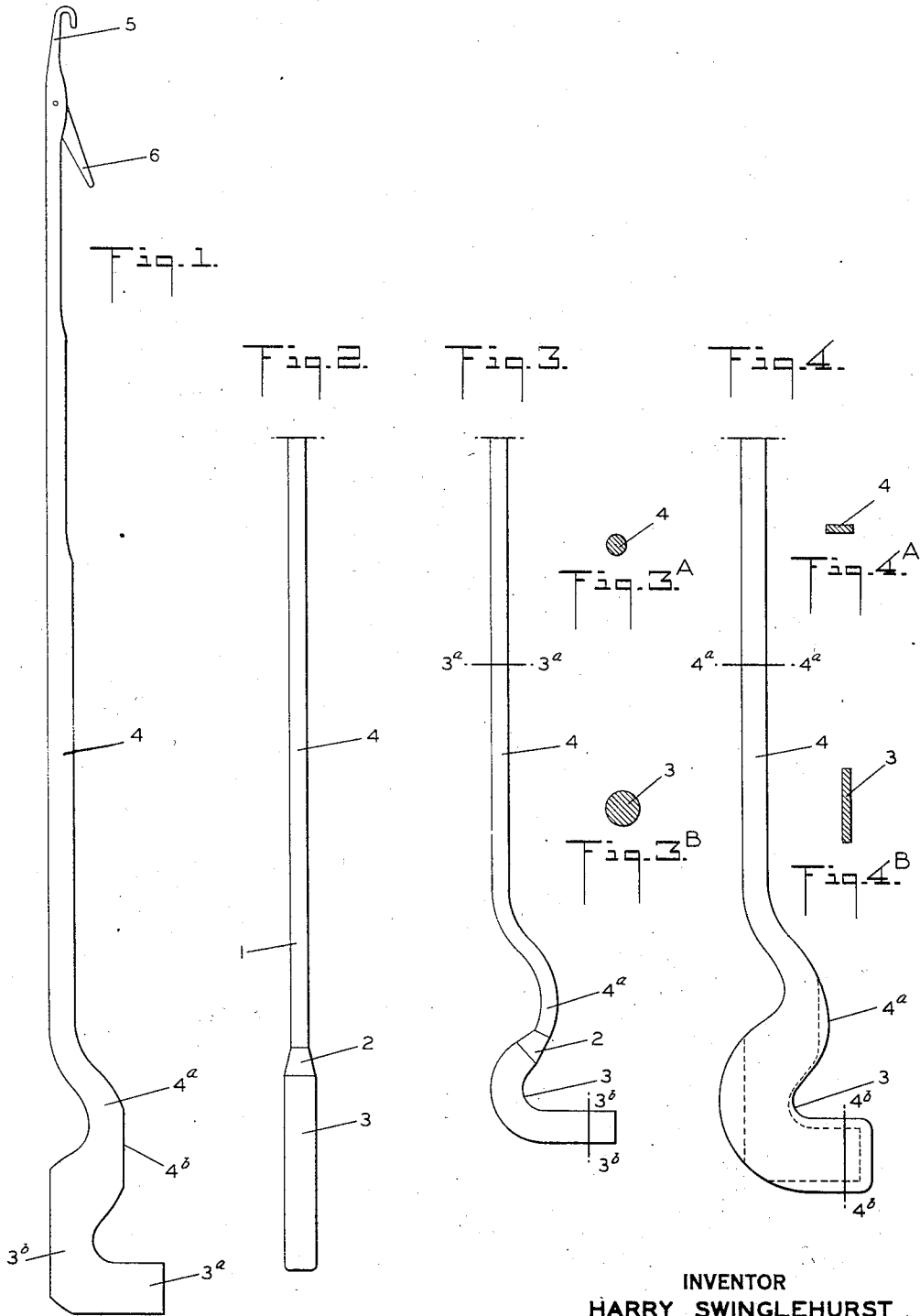
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METHOD OF MAKING NEEDLES

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# UNITED STATES PATENT OFFICE

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## METHOD OF MAKING NEEDLES

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683,227. Divided and this application June 3,  
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### 4 Claims. (Cl. 163—5)

This invention relates to needles for knitting machines in which the needles are independently operated to carry out the knitting operations and more particularly to a needle of improved construction which will retain its proper position in its groove in the needle holder and it is the object of this invention to provide a method of forming such a needle.

In the drawing—

Figure 1 is a view in elevation of a needle constructed in accordance with this invention;

Figure 2 is a partial view of the wire from which the needle of Figure 1 is formed, the wire being shown reduced in diameter above the butt portion and the part of the wire from which the upper part of the shank of the needle is formed being broken away.

Figure 3 is a view in elevation of the wire after the lower portion is bent to form and before flattening;

Figures 3a and 3b are transverse sections taken as on lines 3a—3a, and 3b—3b, respectively of Fig. 3;

Figure 4 is a view in elevation of the wire of Figure 3 after the flattening operation, the lines along which the flattened wire is trimmed to give the finished needle, being shown dotted; and

Figs. 4a and 4b are transverse sections taken as on lines 4a—4a and 4b—4b, respectively, of Fig. 4.

To form the needle shown in the drawing, a wire 1 of the proper diameter for the needle to be made and of sufficient length is reduced in diameter, as at the point 2, dividing the wire into portions of different lengths and diameters, the portion 3 from which the lower end and butt are formed being of the original diameter of the wire while the portion 4 from which the shank is formed is of lesser diameter than the original wire. The portion from which the hook 5 is formed is of least diameter. As the forming of the hook 5 and its latch 6 is carried out in the usual or any suitable manner no description of their making is included.

The portion 3 and the lower part of the portion 4 are then bent, as shown in Figure 3, to form an offset portion 4<sup>a</sup> and to extend the lower part of the portion 3 substantially at right angles to the axis of the body of the wire, the region in which the reduction in the diameter of the wire takes place lying in the bent portion of the shank. The offset formed in the lower part of the portion 4 is in the direction in which the lower part of the portion 3 projects. After the lower portion of wire has been bent to form the wire is subjected to

pressure in a suitable means and flattened to substantially the shape shown in solid lines in Figure 4. In order to ensure the butt and the curved offset portion being of the proper dimensions the diameter of the wire and the lengths of the portions 3 and 4 are such that there is a slight excess of metal at these points after flattening the wire to the proper thickness so that the flattened butt and offset portions may be trimmed to the exact dimensions desired, as shown by the dotted lines in Figure 4, by any suitable means but preferably by dies.

A needle formed as described above has its butt 3<sup>a</sup> formed with the grain of the metal thereof extending at substantially right angles to the grain of the metal of the body or shank of the needle and at the butt there is the flat surface 3<sup>b</sup> in line with the corresponding surface on the stem. There is also provided the offset 4<sup>a</sup> positioned above the butt 3<sup>a</sup> and projecting sufficiently to have the face 4<sup>b</sup> thereof engaged by the adjacent faces of the needle cams, to prevent the butt end of the needle tending to move toward the outer edge of its slot.

The needle is not claimed herein as it is shown and claimed in my co-pending application Serial No. 683,227, filed August 1, 1933, Patent No. 2,010,205, dated August 6, 1935 of which patent this application is a division.

What is claimed is—

1. Steps in the method of forming a needle from a wire blank of uniform diameter comprising reducing the diameter of the blank above the portion from which the butt is formed, bending the blank to form the butt and bending the blank adjacent the butt to form an offset portion comprising sections of different diameters.

2. Steps in the method of forming a needle from a wire blank of uniform diameter comprising reducing the diameter of the blank above the portion from which the butt is formed, bending the blank to form the butt, bending the shank portion of the blank to form an offset portion, flattening the bent blank and trimming the butt portion to a width greater than the width of the flattened shank.

3. Steps in the method of forming a needle from a cylindrical blank of uniform diameter comprising reducing the diameter of the blank except for a portion at one end from which the needle butt is formed, bending the unreduced end portion to provide a portion extending at right angles to the body of the blank and bending the blank in the region of the unreduced end portion to form a portion comprising sections of

different diameters offset in the same direction as the end portion is bent.

4. Steps in the method of forming a needle from a cylindrical blank of uniform diameter comprising reducing the diameter of the blank 5 except for a portion at one end of the blank, bending the portion of unreduced diameter to provide a butt portion extending at right angles to the

body of the blank, bending the body of the blank adjacent the portion of unreduced diameter to form a portion comprising sections of different diameters offset in the same direction as the end portion is bent, flattening the bent blank and 5 trimming the bent portions of the blank to shape.

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