(No Model.)

W. O. DANIELS.

LATCHED NEEDLE FOR KNITTING MACHINES.

No. 246,090. Patented Aug. 23, 1881.

Fig. 1.

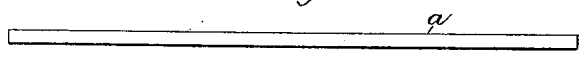


Fig. 2.

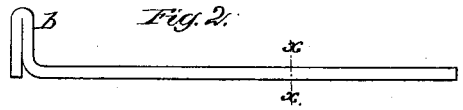


Fig. 3.

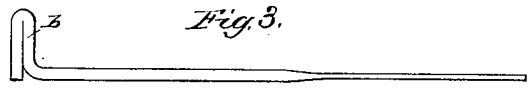


Fig. 4.



Fig. 5.

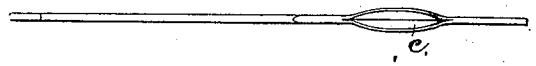


Fig. 6.

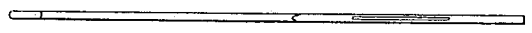


Fig. 7.



Fig. 8.



Witnesses.
Arthur Reynolds.
P. J. Noyes

Inventor:
Wm. O Daniels,
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N. PETERS. Photo-Lithographer. Washington, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM O. DANIELS, OF FRANKLIN FALLS, ASSIGNOR TO DANIELS, PRESCOTT & CO., OF FRANKLIN, NEW HAMPSHIRE.

LATCHED NEEDLE FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 246,090, dated August 23, 1881.

Application filed April 28, 1881. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM O. DANIELS, of Franklin Falls, county of Merrimack, State of New Hampshire, have invented a new and useful Improvement in Latched Needles for Knitting-Machines, of which the following description, in connection with the accompanying drawings, is a specification.

In the manufacture of that class of knitting-machine needles wherein the butt is formed at one and the hook at the other end of a wire it has always been customary to form the latch-receiving grooves by means of a saw.

The object of my invention is to cheapen the manufacture of latched needles of this class, make them stronger, and obviate the injurious effects of fins formed by subsequent finishing, which fins enter and partially close the saw-cuts. A latch-receiving groove formed by a punch will not present these objectionable fins, nor will the blank be weakened as much as by the saw, which removes the metal.

In my experiments I discovered that it was not practicable to make needles of this class by means of a punch, the blank being the same as when to be sawed, for that part of the needle, even when the punched walls were subsequently closed, opposite the pivot of the latch, as described by me in another application for United States Patent, filed April 23, 1881, and No. 31,592, would be thicker than the shank or body of the needle, which is impracticable, because in knitting-machines manufacturers have established certain standard gages or sizes indicating the width of the grooves in the beds of the machines, so that a person ordering needles of a certain gage may always receive needles the shanks or bodies of which will just fill the grooves of the machine-bed. Needles made from the standard sizes of wire by punching would not therefore answer, because, being enlarged near the latch-pivots, they would stick in the grooves of the bed.

In my experiments I ascertained that I could obviate this difficulty by first reducing the needle-blanks cut from standard sizes of wire commonly used from its front end toward its butt or rear end, as far back as the yarn-loops pass in knitting to get under the latches then thrown back or open. This reduction in diameter of the front end of the blank leaves it enough smaller at that part where it is to be punched to form a groove for the reception of the latch that when the said reduced part is punched and subsequently closed up to the latch the external walls of the latch-receiving groove will lie in the same line as the shank or body of the needle, and will readily move in the bed-grooves as the butts are acted upon by the cam-plate. This reduction in diameter of part of the blank before punching enables me to employ standard sizes of wire, and make rapidly and cheaply standard needles which will properly fit the standard grooves of the needle-beds, so that the needles may be actuated by their bent-wire butts extended into the cam-grooves.

Figure 1 represents, in side elevation, a blank for the manufacture of a latched needle; Fig. 2, the blank with one end bent to form the butt; Fig. 3, the blank of Fig. 2 reduced in diameter in accordance with my invention. Fig. 4 shows the reduced blank as flattened at its sides; Fig. 5, a top view of the reduced and flattened blank, showing the latch-receiving groove made in it by a punch; Fig. 6, a similar view, showing the walls of the groove closed for the reception of the latch; Fig. 7, a side view, showing the forward end of the blank as pointed and shaped for the formation of the hook; and Fig. 8 shows the forward end of the blank bent to form the hook, a latch having been also placed on the slot, thus completing the needle.

In the manufacture of latched needles, as herein contemplated, I take a piece of wire of standard size and proper length for the needle to be produced and form from it a blank, *a*, Fig. 1. This blank has its rear end bent as shown in Fig. 2, to form the butt *b*, which enters the groove of the cam which reciprocates the needle in the usual needle-grooves of the needle-bed. The butt having been formed, the blank from the line *x x* to its front end is reduced, preferably by hammering or rolling, as shown in Fig. 3. When knitting the loops of the yarn never pass back on the shanks or bodies of the needles farther than the line *x x*. Next the needle-blank, in the condition of round wire, Fig. 3, is placed under a press and somewhat flattened, as in Fig. 4. Then the flattened blank is placed on an anvil or bed and

subjected to the action of a punch to form the groove *c*, Fig. 5, the walls of the groove so formed being carried out considerably beyond the sides of the body or shank of the flattened blank, which is of just the proper width to fit and slide properly, without sticking, in the standard-sized needle-groove of the needle-bed. Next the blank, grooved, as described, by a punch instead of by sawing, as heretofore done, which removes the stock and injures the metal more than by punching, has a former placed in the groove *c*, and the walls of the blank opposite the groove are closed by a die, as in a machine shown in an application, No. 31,592, for United States Patent, filed by me April 23, 1881, to which reference may be had, the outer portions of the said walls being righted up and placed in line with the flattened side of the shank or body of the needle, so as to readily and easily slide, without sticking, in any needle-bed groove which will receive the standard-sized shank or body of the needle. Next the hole 3 for the latch-pivot (see Fig. 7) is punched, and the front end of the blank is pointed and shaped, as at 5, Fig. 7, prior to bending it over, as in Fig. 8, to form the hook *d*. Then the latch *e* is placed in the latch-groove and held by the pivot *f*, thus completing the needle without sawing, as has heretofore always been the case with latched needles the wire bodies of which had butts formed on them and placed in needle-bed grooves.

Reducing the diameter of the needle-blank, as described, obviates the separate step called "slabbing the needle," common to the old process of sawed needles. Slabbing consists in cutting away the top of the needle shank or body at the rear of the latch-pivot.

I claim—

That improvement in the art or method of making latched knitting-machine needles which consists in reducing the diameter of the needle from a point at the rear of that part of the blank which is to receive the latch-pivot to its front end, then forming a latch-receiving groove in the reduced part of the blank by a punch, closing the walls of the groove until they are placed externally in the same line as the body or shank of the needle at the rear of the said reduced part toward the bent butt of the needle, then pointing the front end of the blank and forming the hook, all substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM O. DANIELS.

Witnesses:

G. W. GREGORY,

BERNICE J. NOYES.