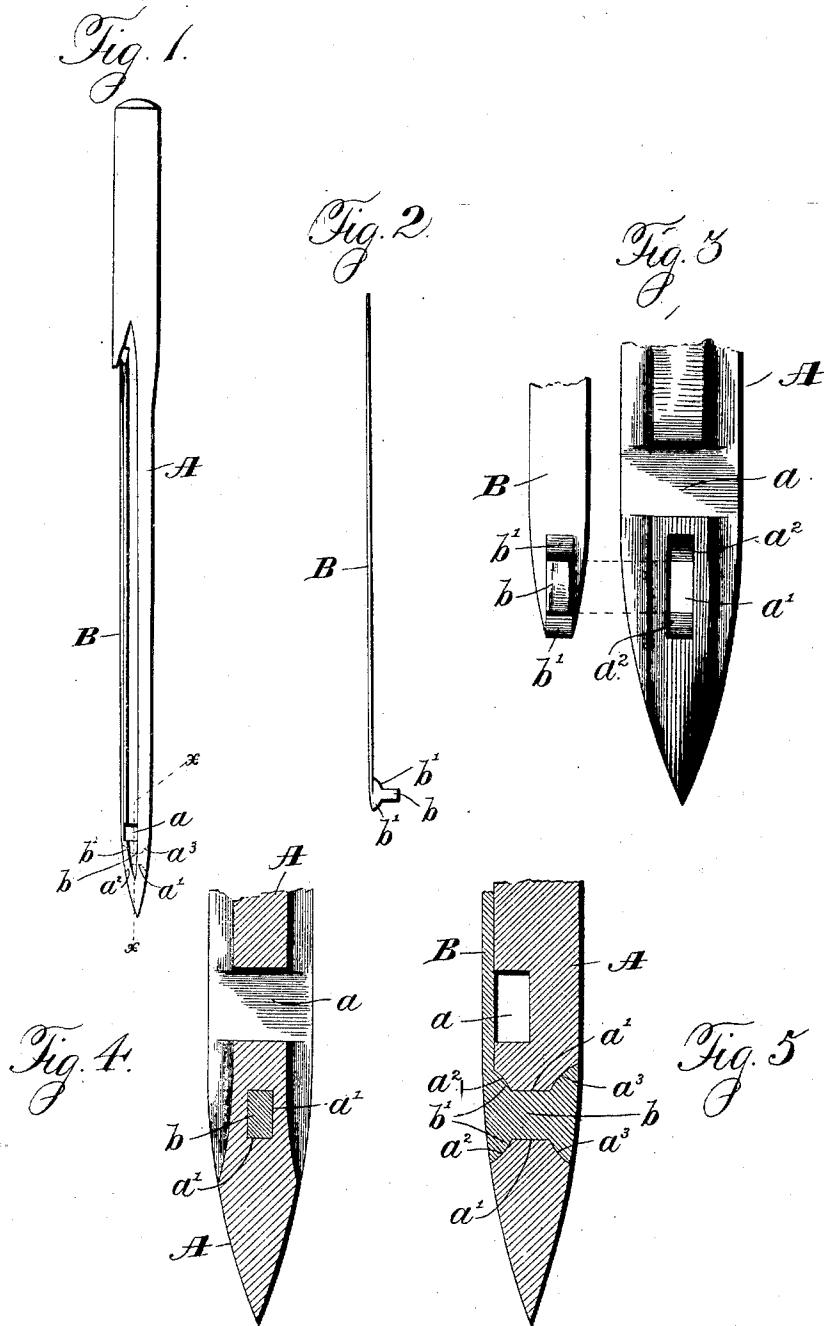


(No Model.)

E. J. HALL.
ART OF MAKING NEEDLES.

No. 503,476.

Patented Aug. 15, 1893.



Witnesses:
Jas. C. Hutchinson
Henry C. Hazard.

Inventor
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UNITED STATES PATENT OFFICE.

EVA J. HALL, OF STILLWATER, MINNESOTA, ASSIGNOR TO THE ST. CROIX MANUFACTURING COMPANY, OF HUDSON, WISCONSIN.

ART OF MAKING NEEDLES.

SPECIFICATION forming part of Letters Patent No. 503,476, dated August 15, 1893.

Application filed March 26, 1892. Serial No. 426,583. (No specimens.)

To all whom it may concern:

Be it known that I, EVA JENNIE HALL, a citizen of the United States of America, residing at Stillwater, in the county of Washington, and in the State of Minnesota, have invented certain new and useful Improvements in the Art of Making Quick-Threading Sewing-Machine Needles; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 shows a view in elevation of a quick threading sewing machine needle with the eye closing spring attached or fastened in place, in accordance with my improved process; Fig. 2, a similar view showing the eye closing spring before it is secured to the needle body; Fig. 3 a detail view on an enlarged scale of the lower end of the needle and spring separated from each other; Fig. 4, a view showing on an enlarged scale a section of the lower part of the needle, on line *x, x*, of Fig. 1, and Fig. 5, a similar view of a longitudinal section on a plane at right angles to that of the section shown in Fig. 4.

Letters of like name and kind refer to like parts in each of the figures.

The object of my invention has been to provide an improved process of making quick threading sewing machine needles, in which there is an eye-closing spring attached to the needle-body, and to this end my invention consists in the process, as hereinafter specified.

Heretofore, quick threading sewing machine needles have been made with open sided eyes and eye-closing springs attached to the needle body or point below the eye, and extending up past the latter, so as to normally close the open side of the same, while being adapted to allow the passage of a thread down between it and the needle body, to and into the eye. In making such needles, great difficulty has been experienced in fastening the spring firmly and securely to the needle point, so that it is not liable to become detached or broken off during continued use of the needle. Welding and brazing have been tried, but, because of the necessarily very small contacting surfaces on spring and needle point, and because of the tempering and hardening

of the point, which is necessary to make the needle point serviceable and durable, such methods have been difficult to apply, requiring the employment of very skilled labor, and even then not producing a junction between spring and needle body which could always be relied upon to stand during ordinary use of the needle. It has been with the special purpose of overcoming or avoiding the above noted difficulty, in the way of manufacturing quick threading needles with eye-closing springs, that I have invented the process covered by this application.

In carrying out my process, the needle body A, having, above its point, the notch *a* forming the open-sided eye, situated to one side of a longitudinal line through said body, is provided with a passage *a'* below and extending in a direction at right angles to such eye, as shown in the drawings. This passage, preferably, of the shape shown, having enlargements or recesses *a²*, *a³*, at its opposite ends, is made by cutting two longitudinal grooves on opposite sides of the needle body, by means of small circular slotting or grooving saws, and then punching an opening through between the groove buttons. The cutting through of the outside surface or skin, and removal of portions of the needle body, makes such punching easy to be performed. The shape of the passage *a'* is such, that, in cross section, it is oblong, with its longest diameter in line with the axis of the needle body. While it is shown as rectangular in cross section, it is not necessarily so, but can have any other shape, but its transverse width should be small in comparison with the thickness of the needle body, so as not to materially weaken the latter. The body is then tempered and straightened in the way familiar to manufacturers of needles.

The eye-closing spring B is formed or provided with a tongue *b*, to be passed through the passage *a'*, such tongue being preferably made in one piece with the rest of the spring. This desired end can be easily secured by striking a portion of the spring, from which the temper has been drawn, in suitable dies, arranged to give the tongue the required shape. As shown in the drawings, said tongue has at its base, a web *b'* extending longitudi-

nally with reference to the spring, and adapted to fit in the groove or recess a^2 , for a purpose to be set forth hereinafter. When the spring is to be secured in place, the tongue is passed through passage a' , and then is headed down, its outer end on the side of the needle body away from the spring, being expanded and driven down into the groove or enlargement a^3 , until its outer surface is flush with or below the periphery of the needle body. The needle, with the spring thus securely fastened in place, is to have its point ground in the usual way. It will be observed that, with my process, the needle body can be tempered and finished, at least as far as the grinding, before the spring is attached, a thing which is not possible where the spring is to be attached by welding, as heretofore.

For the accommodation of the spring shank, the side of the needle body above, and for a short distance below the eye, can be slabbed off or flattened slightly before or after the tempering. In the latter case the slabbing can, of course, be done by grinding.

The joint between the spring end and needle body is of the strongest possible kind, cannot be broken or detached, save by a breaking of the tongue b , and is one which can be readily and easily made without the necessity of the employment of skilled labor. With the passage a , of the shape described, having its greatest diameter longitudinal with reference to the needle body, the tongue b headed down to fill it, and the web b' and enlargement on the outer end of the tongue fitting the longitudinal grooves or recesses a^2 and a^3 , respectively, obviously, the spring will not only be held most strongly attached to the needle body, but will be held longitudinally in line with the latter.

Having thus described my invention, what I claim is—

1. As an improvement in the art of making quick threading sewing machine needles, the process which consists in making an opening through the needle body independent of the eye in the same with an enlargement on one side of the body in the form of a longi-

tudinal groove along the same, providing the eye closing spring with a tongue, passing the latter through the opening in the needle body, and heading its outer end down into the enlargement at the farther end of the opening, so as to make an oblong head fitting and extending along within the enlargement and having its outer face flush with or below the periphery of the needle body, substantially as and for the purpose specified.

2. As an improvement in the art of making quick threading sewing machine needles, the process which consists in making in the needle body an opening independent of the eye, with enlargements at its opposite ends in the form of longitudinally extending grooves, providing the eye-closing spring with a tongue and a longitudinally extending web, passing such tongue through the opening in the needle body so as to bring the web into engagement with the groove on the spring side of such needle body, and heading down the outer end of the tongue into the groove on the farther side of the body so as to form an elongated head engaging such groove, substantially as and for the purpose described.

3. As an improvement in the art of making quick threading sewing machine needles, the process which consists in cutting longitudinal grooves in opposite sides of the needle body, punching through between the bottoms of such grooves, an opening having its largest diameter parallel with the axis of the needle body, providing the eye-closing spring with a tongue, passing the latter through the opening in the needle body, and heading it down so as to make it fit said opening and form a head engaging the groove on the side of the needle body away from the spring, substantially as and for the purpose described.

In testimony that I claim the foregoing I have hereunto set my hand this 24th day of March, A. D. 1892.

EVA J. HALL.

Witnesses:

NEWEL H. CLAPP,
BELLA C. RANKIN.