

C. H. PALMER.

Improvement in the Manufacture of Split-Needles.

No. 114,332.

Patented May 2 1871.

Fig 1.



Fig 2.

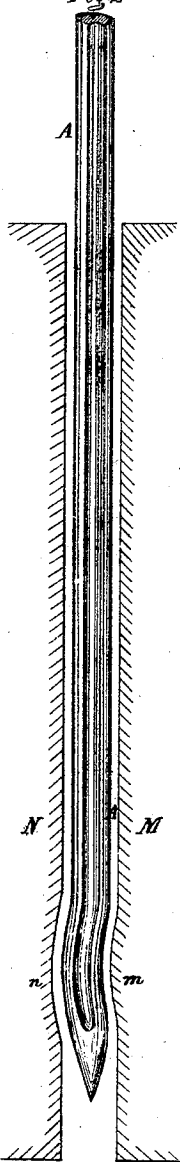


Fig 3.



Fig 4.

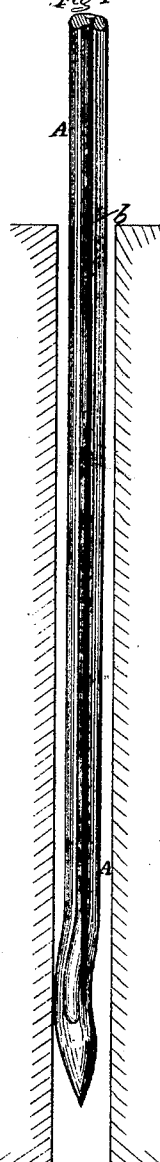


Fig 5.



Witnesses.

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Inventor.

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by his attorney J. D. Sutton

# United States Patent Office.

CHARLES H. PALMER, OF NEW YORK, N. Y.

Letters Patent No. 114,332, dated May 2, 1871.

## IMPROVEMENT IN THE MANUFACTURE OF SPLIT NEEDLES.

The Schedule referred to in these Letters Patent and making part of the same.

### *To all whom it may concern:*

Be it known that I, CHARLES H. PALMER, of New York city, in the State of New York, have invented certain new and useful Improvements in the Process or Method of Manufacture of Split Needles.

What I term split needles, which give promise of being very important in sewing-machine work, allow the thread to be conveniently introduced through a spacious opening above and to be drawn down the length of the needle, springing open the slender steel as it descends until it rests easily in an eye of about the ordinary size in the proper position near the point. The metal is hooked over a little above the eye, so that the thread on being drawn upward by the tension is not likely to be drawn up again into the split.

My invention relates to the means of producing the split. The method heretofore was to saw a crooked kerf. The kerf or saw-track was straight for the greater portion of the distance down the shank, but near the eye it was bent to one side. This operation involved a necessity for peculiar saws and machinery.

I avoid all the difficulties by first crooking the needle, then sawing it with a straight kerf, and afterward straightening the needle again, which latter operation of necessity bends the kerf or split. By this means I am enabled to use circular saws, and can conduct the operation with a degree of simplicity and certainty not before attainable. It renders easy and highly practicable what was before a work of great nicety and difficulty. The proper bending and straightening again involve no difficulty with suitable appliances.

The following is a description of what I consider the best means of carrying out the invention. The accompanying drawing forms a part of this specification, and represents the several parts greatly magnified or increased in size.

Figure 1 is a view of the needle when finished, all the views being greatly magnified;

Figure 2 shows the shank or main body in the bending-grooves in the dies, which, after pressing it, are just opening to release it;

Figure 3 shows the shank thus bent after it has been sawn. The saw-kerf is straight;

Figure 4 shows the shank after it has been introduced into the grooves in the same dies or other dies for again straightening the metal. The dies are just closing upon it to straighten it; and

Figure 5 shows the shank after it has been thus straightened ready to have the eye drilled, and thus to attain, with the aid of the milling and other treatment, at proper stages, as will be understood, the fully perfect condition.

Similar letters of reference indicate corresponding parts in all the figures.

Referring to fig. 1, which represents the finished needle—

A' A' is the branching or bifurcated stout portion which forms the root of the needle, and by which it is firmly secured in the needle-bar by ordinary or any suitable means.

The space B between these bifurcations serves to receive freely the thread in threading the needle, to allow it to be drawn down in the split *b*, which extends the whole length of the shaft or shank A, which forms the body of the needle.

The split *b*, bending to one side near the point C, leads into the eye E on one side, as represented.

Having ascertained exactly the amount of bending to one side which is desired in this saw-kerf or split, I produce two dies adapted to receive the needle between them and to give it an exactly corresponding bend to one side—that is to say, the dies are adapted to bend the whole body of the needle to one side and to make it return again to the central line of the shank before reaching the point. This is effected by giving to one die, M, a rounded protuberance, *m*, and giving to the other die, N, a correspondingly-rounded recess, *n*.

The needle-blank is placed between the dies M and N, and the dies, being pressed forcibly together by a cam or other suitable mechanism, produce in the needle the bend shown at *a* in fig. 3.

In order to allow for the elasticity of the steel, which is liable to retain a less degree of bend than is imparted to it by the dies, I ascertain carefully what amount of excess in the projection *m* and in the recess *n* is necessary over that which it is desired that the needle-blank shall retain after the treatment therein, and in the manufacture of the dies carefully allow for this condition.

The needles, properly annealed and bent in this manner, are afterward subjected to sawing by circular or other saws, and a thin straight kerf is run down the shank from the opening B. At the point *a* this straight kerf necessarily approaches the inside of the curve of the needle. I prefer that it shall extend a little beyond this point; but, however that may be, the end of the kerf must be finished and the metal adjacent entirely removed by the drilling.

Now, having properly kerfed and split the blank, the operation of straightening is performed in the same or another set of dies, taking care to avoid placing the blank in the portion *m* and *n*, and treating it solely in the straight portion. In case the elasticity of the metal shall be found to require it I propose to effect the straightening in dies specially prepared, which shall have very slight swells and recesses placed opposite to those in the dies M N. In other words, the

straightening-dies shall be formed as if intended to impart a very slight degree of curvature in the opposite direction to that in which the needle has been curved. This may not be necessary with ordinary steel in ordinary conditions. The whole object is to leave the needle-blank in a mathematically straight form, and thus leave the split with a crook corresponding to the crook of the needle when the split was formed.

The eye is afterward formed by drilling in the obvious manner. I propose to mill the blank on one or both sides before the splitting is effected. It is desirable, also, to form the blank with an oval or flattened section, in order that the needle may be properly conditioned when finished; but that I have made the subject-matter of another application for patent of even date herewith.

My present invention greatly simplifies the production of the proper form of split, and tends to greatly cheapen this highly-useful style of needle. The needles produced by this method are very exactly uniform.

I claim as my invention—

The within-described method of forming the crooked split—that is to say, the bending of the blank, sawing a straight kerf, and the subsequent straightening of the blank so as to give the proper bend or crook to the split, all substantially as herein set forth.

CHARLES H. PALMER.

Witnesses:

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C. C. LIVING.