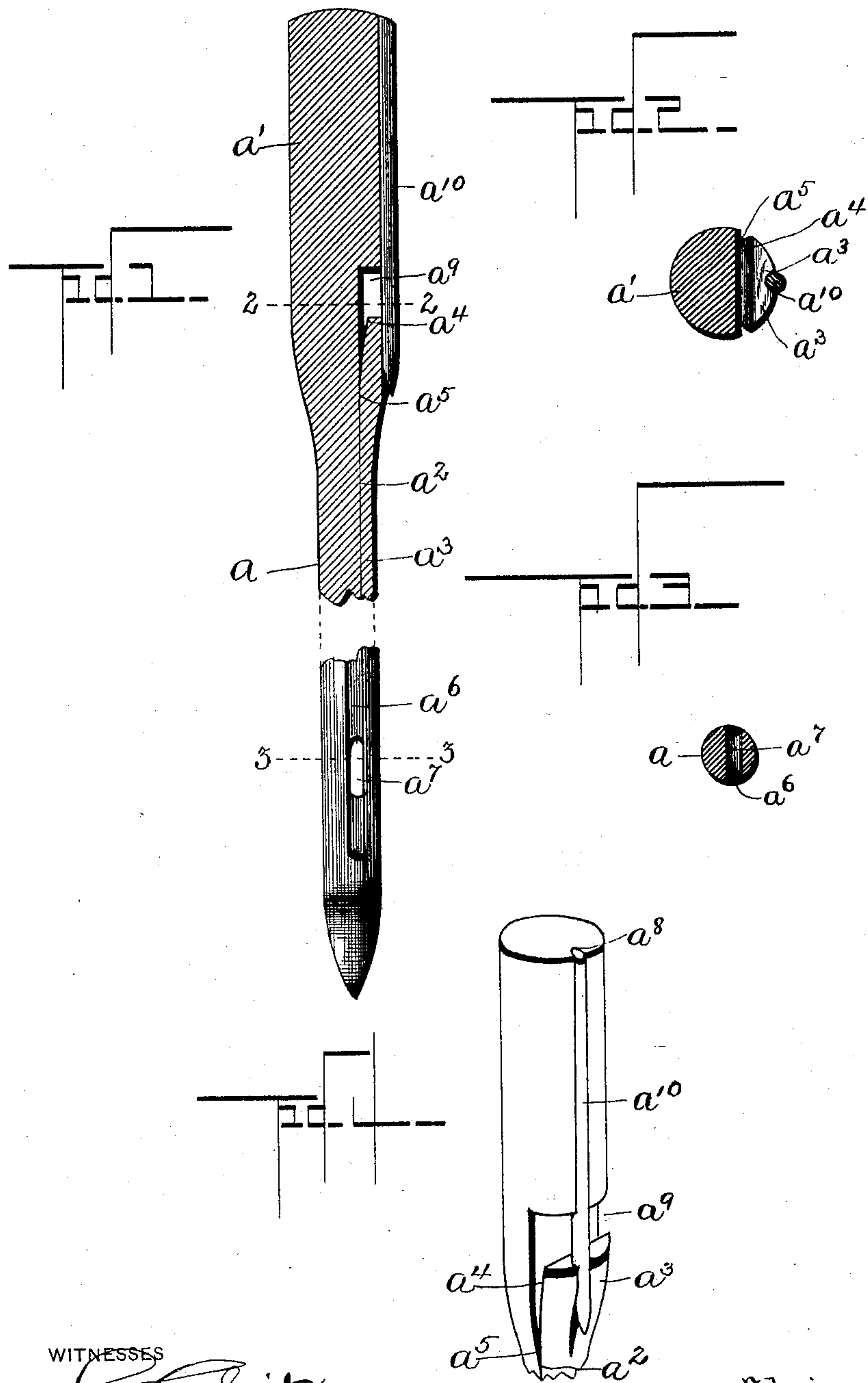


(No Model.)

E. STRAIN.  
SPLIT NEEDLE.

No. 603,822.

Patented May 10, 1898.



WITNESSES

*Horace S. Seitz*

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# UNITED STATES PATENT OFFICE.

EDWIN STRAIN, OF MELROSE, MASSACHUSETTS, ASSIGNOR OF ONE-HALF  
TO HELEN A. BLANCHARD, OF NEW YORK, N. Y.

## SPLIT NEEDLE.

SPECIFICATION forming part of Letters Patent No. 603,822, dated May 10, 1898.

Application filed February 5, 1895. Serial No. 537,401. (No model.)

*To all whom it may concern:*

Be it known that I, EDWIN STRAIN, of Melrose, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Split Needles, of which the following is a specification.

This invention relates to that class of needles in which the body of the needle is longitudinally divided throughout a portion of its length, one of the divisions being a thin and narrow portion, which is integral with the body of the needle and springs therefrom near the point, its upper end being free, so that the thread may be inserted between the upper end of the flexible portion and the body of the needle and carried down between the flexible side and the needle into the eye, the latter communicating with the slit or incision between the flexible side and the body of the needle. A needle of this class is usually provided with a guard to retain the free end of the flexible side in place and prevent it from being bent or sprung outwardly from the body of the needle. My invention has for its object to provide a needle of this class which shall be simple, strong, and durable in its construction, satisfactory in its operation, and adapted to be economically manufactured.

To these ends the invention consists in the improvements which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a side view and part section of the needle enlarged and with a portion of its body broken out to reduce the length of the figure. Fig. 2 represents a section on line 2 2 of Fig. 1. Fig. 3 represents a section on line 3 3 of Fig. 1. Fig. 4 represents a perspective view of the upper end of the needle.

The same letters of reference indicate the same parts in all the figures.

In making my improved needle I prefer to take a blank the body portion  $a$  of which is flattened upon two sides, the flattened sides extending from the point end about to the lower portion of the enlarged shank  $a'$ . In said flattened portion I form a saw kerf or slot, the same extending from a point near the perforating end of the needle upwardly into the lower portion of the enlarged shank  $a'$ .

I then by the use of suitable dies or otherwise reduce the flattened portion of the blank to cylindrical form.

The operation of reducing the flattened portion of the blank to cylindrical form closes the saw-kerf, leaving the body of the needle divided at  $a^2$  into a thicker and a thinner portion, said portions being in contact with each other along the body of the needle and separated from each other by a gradually-widening space at the upper end of the thinner portion, the separating-space gradually diminishing to the junction of the shank with the body of the needle, as shown in Fig. 1, forming an incline  $a^4 a^5$  on the thinner portion or flexible side  $a^3$  of the needle, said incline constituting one side of a thread-receiving mouth. The upper end of the flexible side is enlarged or thickened, owing to the fact that it originally comprised a part of the enlarged shank of the needle.

An elongated thread-receiving groove  $a^6$  is formed in one side of the needle and the usual shorter groove in the opposite side, and in the lower portion of said longer groove I form the eye  $a^7$ , the latter communicating with the slit or incision between the flexible side and the body of the needle, so that the thread inserted between the free end of the flexible side and the needle can be passed down said incision into the eye.

A longitudinal groove  $a^8$  is formed in the shank  $a'$ , the line of said groove being midway between the edges of the flexible side. The groove extends considerably below the upper end of the saw-kerf  $a^2$ , so that its lower portion is in the free end of the flexible side.

A portion of the shank is cut away to form an opening  $a^9$  at the upper end of the saw-kerf, said opening extending from the surface of the needle into the saw-kerf and separating the flexible side from the shank of the needle. In other words, said opening forms the free end of the flexible side, the said opening, together with the saw-kerf previously formed, creating a recess in the lower portion of the shank of the needle, which recess receives the thickened or enlarged upper end of the flexible side. I then place in the groove  $a^8$  a pin  $a^{10}$ , which is formed to snugly fit the groove and is of such length that its lower end



extends across the opening  $a^9$  and enters the portion of the groove  $a^8$  formed in the part that is now the free end of the flexible side. Said pin is attached to the shank by compressing the latter so that the sides of the groove  $a^8$  bind against the corresponding sides of the pin, thus locking the pin to the shank.

The groove in the free end of the flexible side is of sufficient depth to cause such an engagement between the free end of the flexible side and the pin as to prevent the flexible side from being displaced laterally in any direction. The curvature or inclination given to the outer surface of the flexible side at its free end enables the point of the pin, if extended down a sufficient distance, to stand outside of the outer surface of the flexible side sufficiently to form a thread-receiving throat between the flexible side and the point of the pin.

The inclined inner surface  $a^4 a^5$  of the flexible side enables its free end to yield and permit the passage of the thread between the flexible side and the pin  $a^{10}$ , as will be readily seen.

It will be seen that the thickened upper or free end of the flexible side has sufficient metal to enable the pin-engaging groove to be formed in the outer surface thereof without the necessity of bending the end of the flexible side outwardly, so that there are no prongs on the flexible side projecting outwardly beyond the line of the outer surface of the shank, the outer surface of the free end of the flexible side having the same conformation as the outer surface of the fixed parts of the shank of the needle at the same height. As indicated in the drawings, this same conformation gives to the outer surface of the flexible side a curvature in cross-section corresponding with that of the shank of the needle, which is cylindrical at all points. Therefore, owing to the groove  $a^8$  being formed before cutting away at  $a^9$ , the portion of the groove that is in the free end of the flexible side is of such depth that the projecting end of the pin  $a^{10}$  is certain to prevent the springing out of the free end of the flexible side beyond the diametrical bounds of the needle-shank. Consequently there are no portions of the end of the flexible side that can catch under and lift any threads or ravelings of the material being sewed.

By the described mode of operation I am enabled to manufacture the needle economically, the number of operations being comparatively few, owing to the fact that the outer surface of the free end of the flexible side and the pin-receiving groove therein do not require special operations for their formation, the outer surface of the free end of the flexi-

ble side being formed by the same operation that forms the shank and body of the needle, while the pin-engaging groove in the free end of the flexible side is formed by the same operation that forms the pin-securing groove in the shank.

The thread-receiving mouth between the free end of the flexible side and the body of the needle is the result of the operations of slotting and compressing the body of the needle, and therefore does not involve any expenditure of time or labor in its formation.

I claim—

1. A needle having an enlarged shank, a longitudinal slot extending through the needle from the eye thereof to and into the lower portion of the shank, and partially dividing the needle into thicker and thinner portions which are integral with and united by the point end of the needle, a lateral opening from said slot through one side of the shank, said thinner portion being apart from the thicker portion at its upper end and forming a spring and having a groove in the face of its upper end, such upper end having the same conformation as the outer surface of the parts of the shank at the same height, a groove formed in one side of the shank, and a pin secured in said groove and provided at its lower end with a pointed guard arranged to lie in the groove in the free end of the spring, substantially as described.

2. A needle having an enlarged shank, a longitudinal slot extending through the needle from the eye thereof to and into the lower portion of the shank, and partially dividing the needle into thicker and thinner portions which are integral with and united by the point end of the needle, a lateral opening from said slot through one side of the shank, said thinner portion being apart from the thicker portion at its upper end and forming a spring having an inclined inner surface at its upper end and having a groove in the outer face of its upper end, such upper end having the same external conformation as the outer surface of the parts of the shank at the same height, a groove formed in one side of the shank, and a pin secured in said groove and formed at its lower end as a pointed guard arranged to cross the lateral opening and lie in the groove in the free end of the spring, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 27th day of November, A. D. 1894.

EDWIN STRAIN.

Witnesses:

C. F. BROWN,  
A. D. HARRISON.