

(No Model.)

D. M. SMYTH & J. R. REYNOLDS.

NEEDLE FOR BOOK SEWING MACHINES.

No. 387,744.

Patented Aug. 14, 1888.

Fig. 1.

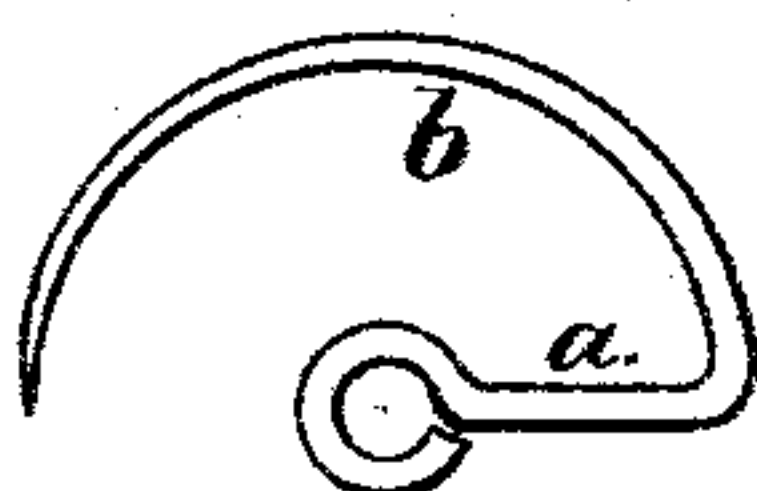


Fig. 2.

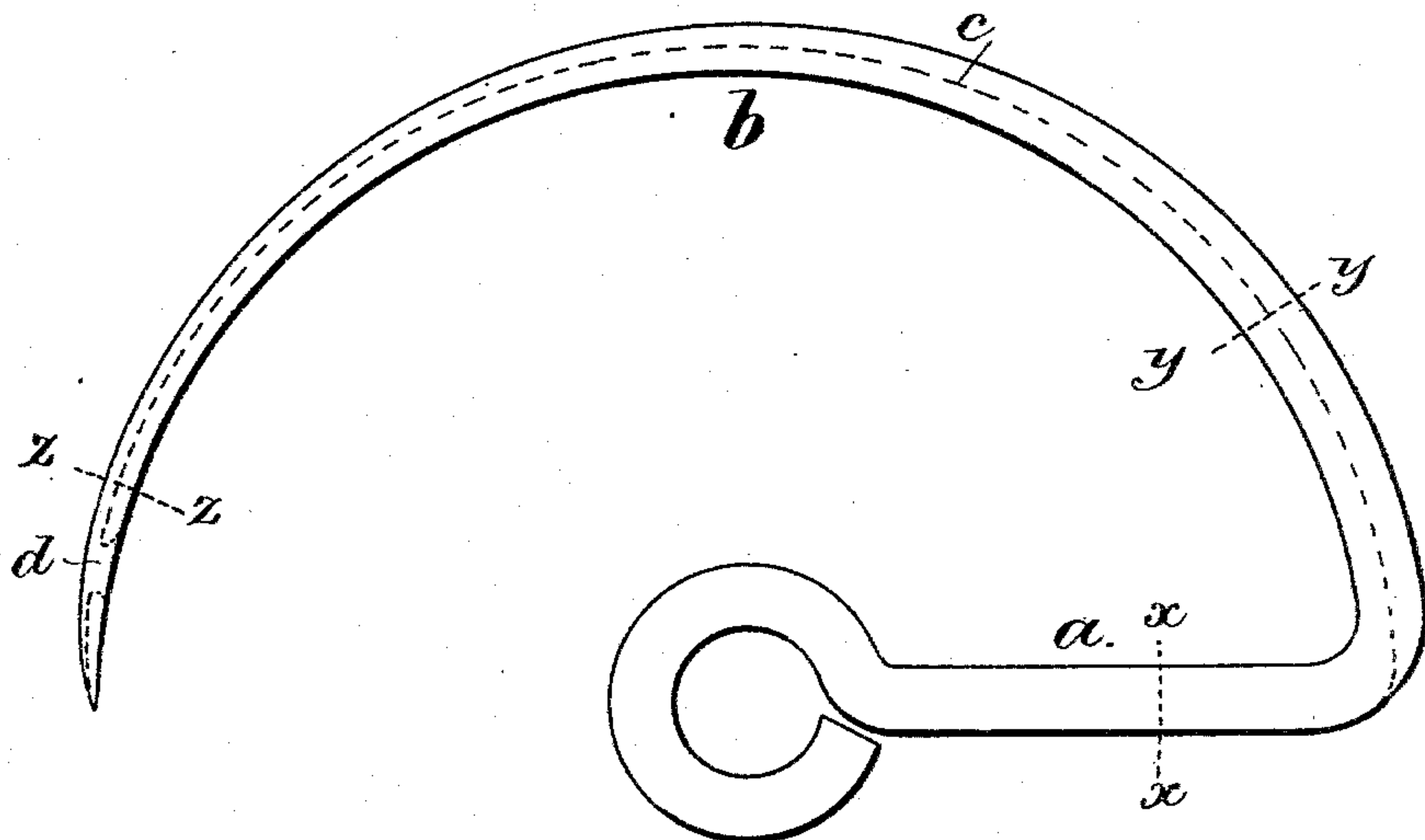


Fig. 3.



Fig. 4.

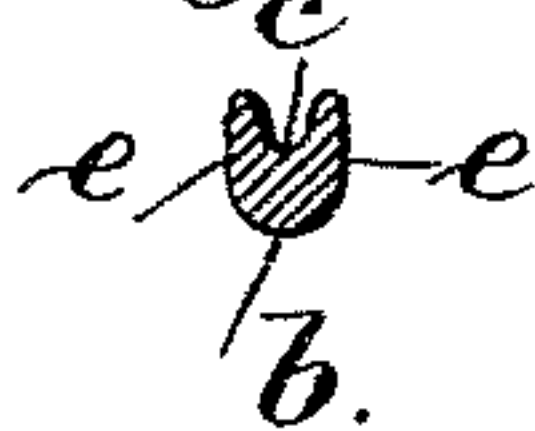
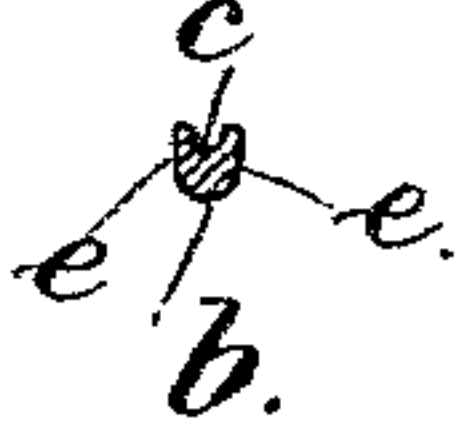


Fig. 5.



Witnesses,

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UNITED STATES PATENT OFFICE.

DAVID McCONNELL SMYTH, OF NORTHWOOD, NEW HAMPSHIRE, AND JOHN R. REYNOLDS, OF HARTFORD, CONNECTICUT, ASSIGNORS TO THE SMYTH MANUFACTURING COMPANY, OF HARTFORD, CONNECTICUT.

NEEDLE FOR BOOK-SEWING MACHINES.

SPECIFICATION forming part of Letters Patent No. 387,744, dated August 14, 1888.

Application filed February 15, 1888. Serial No. 264,146. (No model.)

To all whom it may concern:

Be it known that we, DAVID McCONNELL SMYTH, of Northwood, in the county of Rockingham and State of New Hampshire, and JOHN R. REYNOLDS, of Hartford, in the county of Hartford and State of Connecticut, have invented an Improvement in Needles for Book-Sewing Machines, of which the following is a specification.

Letters Patent have been granted to David McConnell Smyth and the Smyth Manufacturing Company, assignees, for book-sewing machines in which semicircular eye-pointed needles are used, and a reference is hereby made to Patents Nos. 220,312, 250,987, 338,000, and others, to illustrate the book-sewing machine and the manner in which our present improved needle can be used. We do not, however, limit the use of our improved needle to any particular book-sewing machine.

The semicircular needles heretofore made use of have been formed from round wire grooved upon the outer surface of the semicircle, and the wire has been bent to occupy a radial position and received into a hole through the rock-shaft, or formed with an attaching eye.

In practice we have found that the needle and its shank are liable to bend or spring, especially in cases where the point of the needle comes against the unperforated paper, or where the perforation or saw-cut is not large enough to allow the needle to pass freely.

The object of our present invention is to strengthen the needle without rendering it necessary to increase the sizes of the saw-cuts or perforations, or to increase the width of the groove in the sheet-holding arm, through which the needle passes. With this object in view we make use of needles formed of heavy wire flattened so that the needle is greatly increased in strength; but the thickness of the needle is maintained, so that it will pass freely through the grooved sheet-holding arm, and we make the needle widest at the base, so that it will resist the bending or springing action and adapt the needle to passing through the obstruction often presented by the paper of the signature, and the arm which is connected to the rock-shaft is sufficiently large and strong to withstand the strain to which it is subjected.

In manufacturing these improved needles

we take steel wire that is sufficiently large to form the shank *a* either straight or in the form of an eye, and bend the same into an arc of a circle, *b*, the shank occupying the radial position, as shown. The groove *c* is cut in the periphery of the semicircle and throughout nearly its entire length, and the eye pierced, as at *d*. The sides of the needle are removed, as at *e e*, to flatten the wire and render the needle as thin as that heretofore used in book-sewing machines; but the needle is much stronger and stiffer in consequence of the greater width thereof. We also find it advantageous to taper the needle widthwise, so that it will be narrowest at the point and broadest at the shank, the outer edge of the needle being the arc described from the center of the rock-shaft and the inner edge being a slight inclination to the same.

The needle is properly pointed and polished; and I remark that the bending operation may be performed either before or after the grooving and the shaping of the metal to flatten and taper the same.

In the drawings, Figure 1 is an elevation of the improved needle. Fig. 2 is a similar view considerably magnified. Fig. 3 is a section at the line *x x*; Fig. 4, a section at the line *y y*, and Fig. 5 a section at the line *z z* in larger size.

We claim as our invention—

1. The semicircular book-sewing needle grooved at *c* in the periphery of the semicircle and throughout nearly its entire length, and the eye pierced at *d* and with the sides flattened at *e e*, substantially as and for the purposes set forth.

2. The semicircular book-sewing needle having a shank, *a*, a peripheral groove at *c* of nearly the length of the semicircle, flattened sides at *e e*, and tapered gradually from the shank to the point, substantially as set forth.

Signed by D. M. SMYTH this 15th day of September, 1887, and by J. R. REYNOLDS, this 3d day of February, 1888.

DAVID McCONNELL SMYTH.

JOHN R. REYNOLDS.

Witnesses to D. M. S.:

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