

E. S. Nicholls.

Bending Springs for Hat Brims.

N^o 61,856.

Patented Feb. 5, 1867.

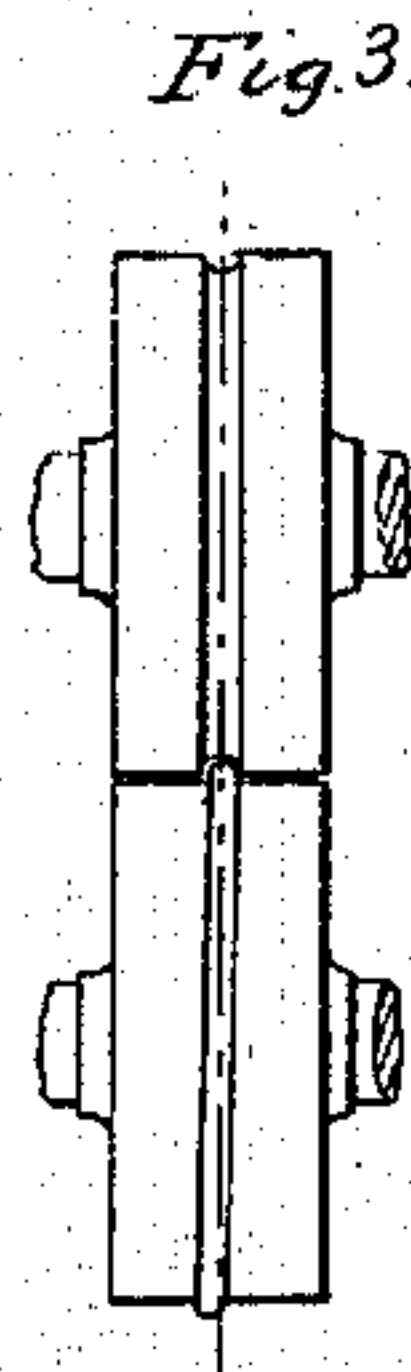
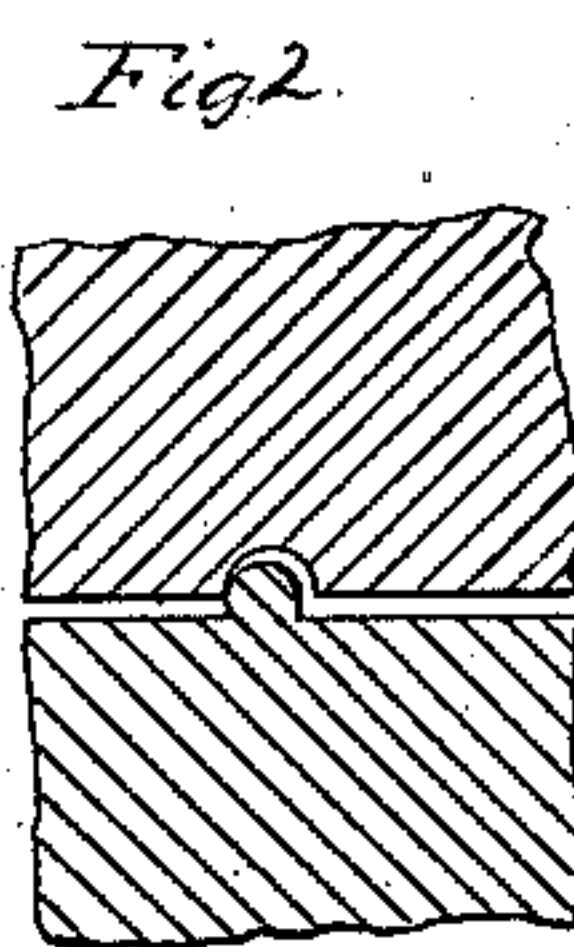
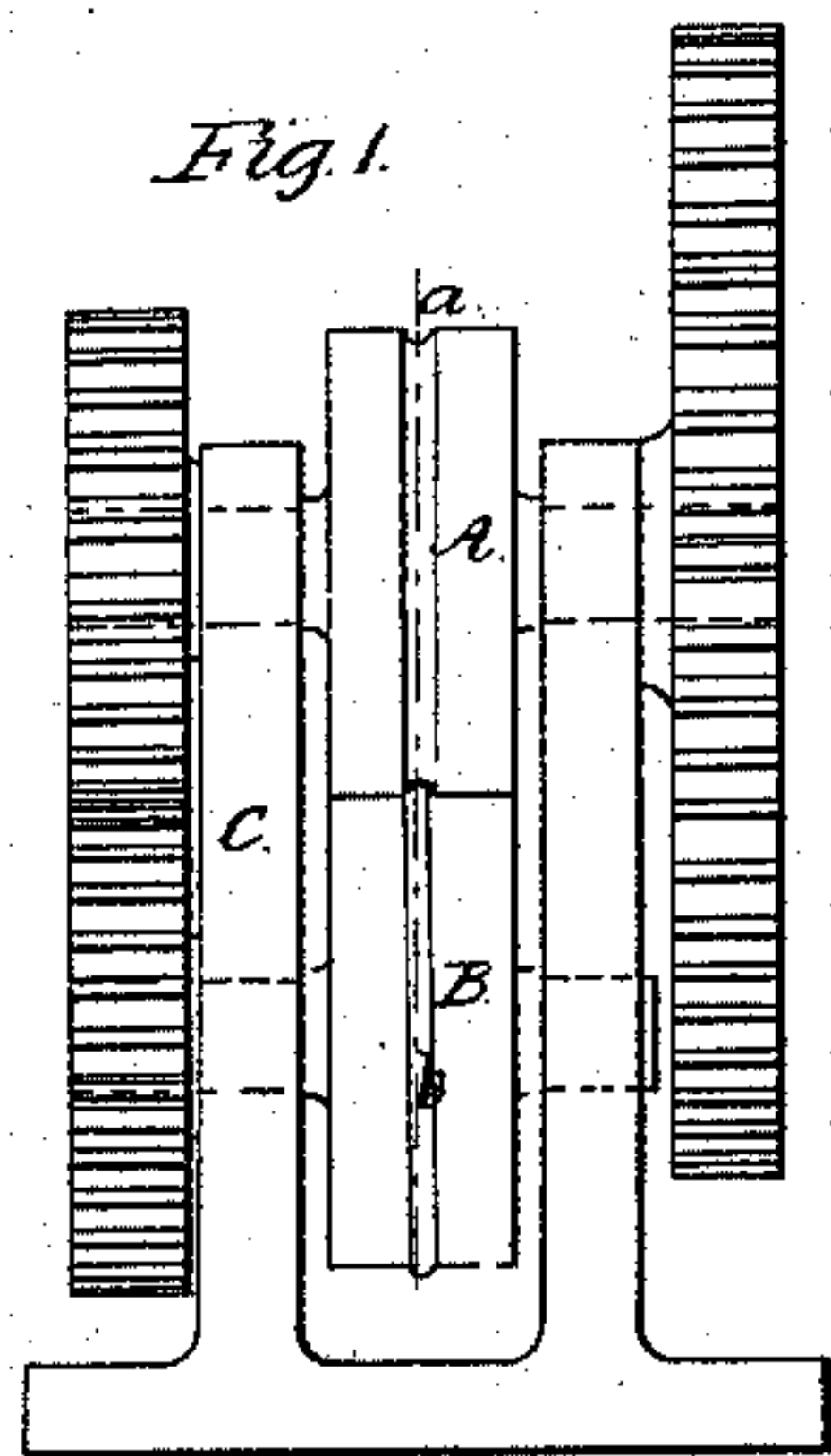
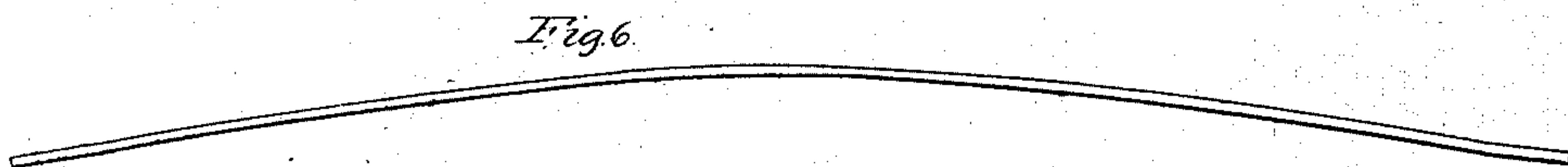
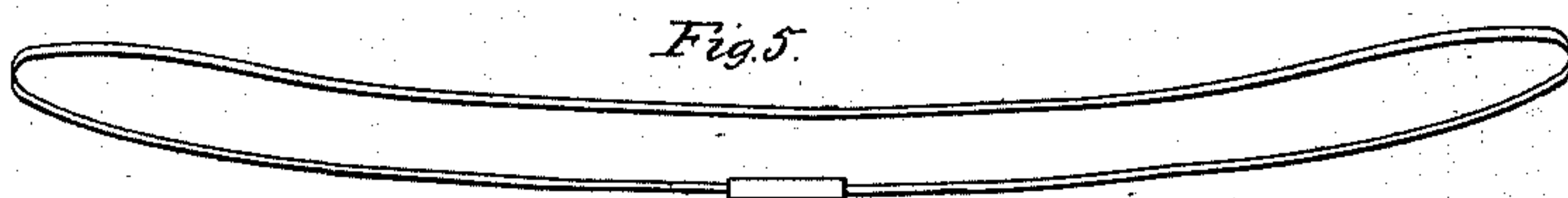
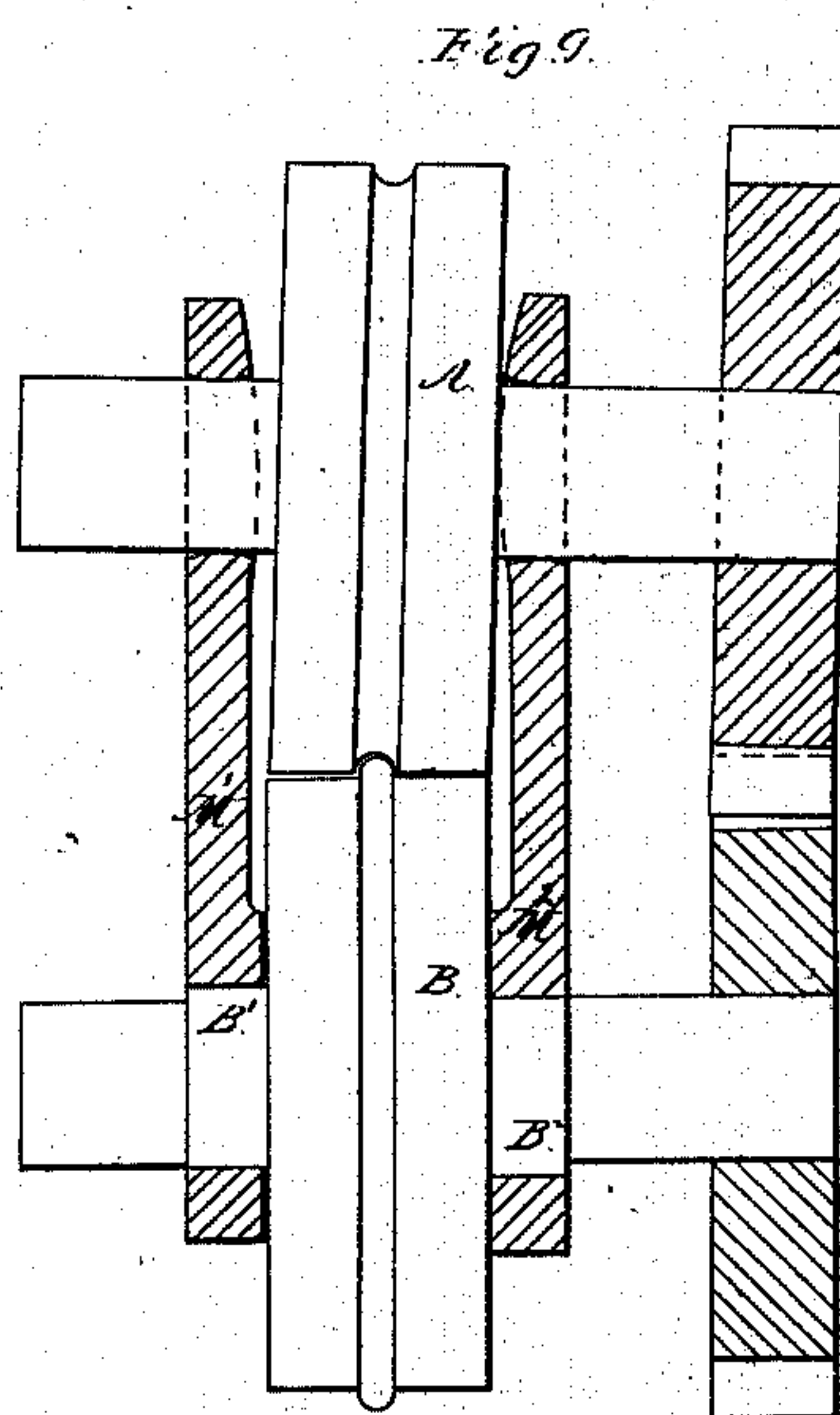
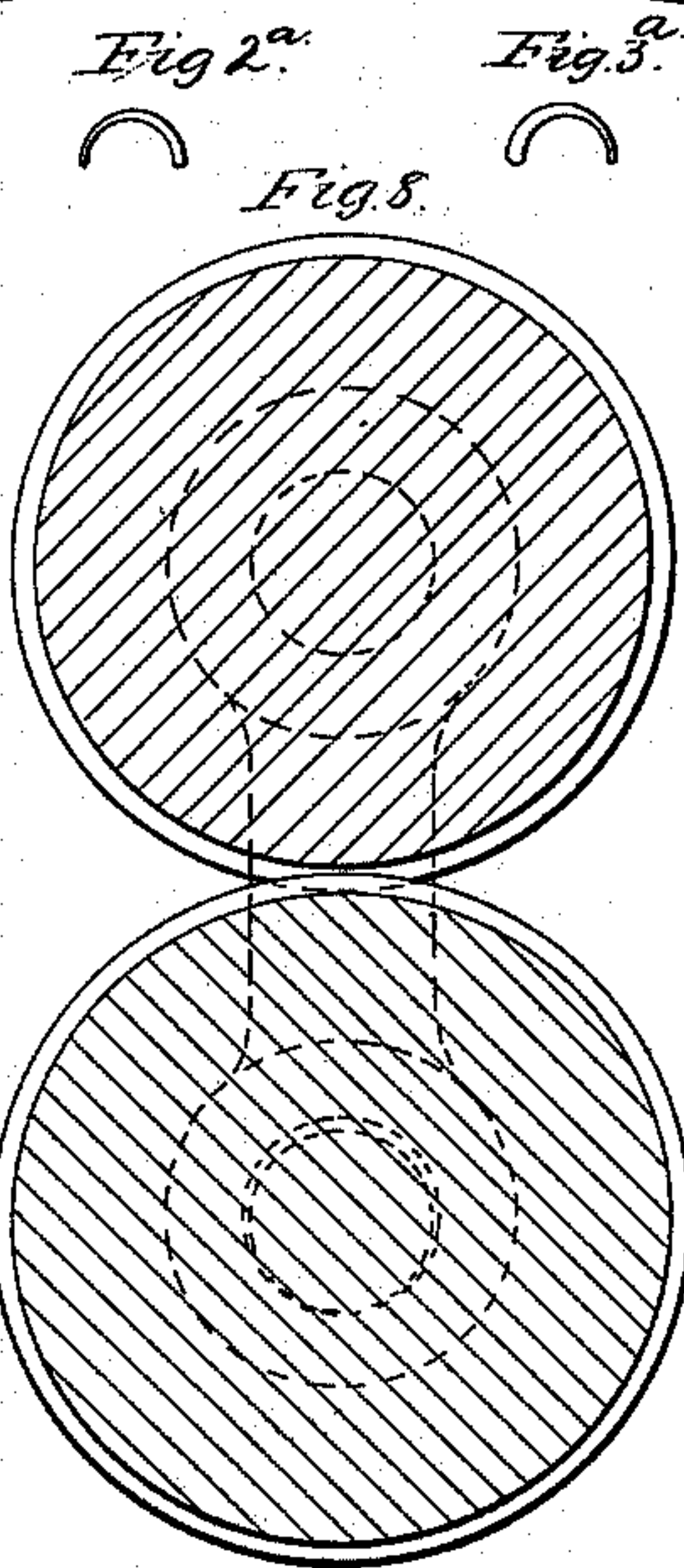
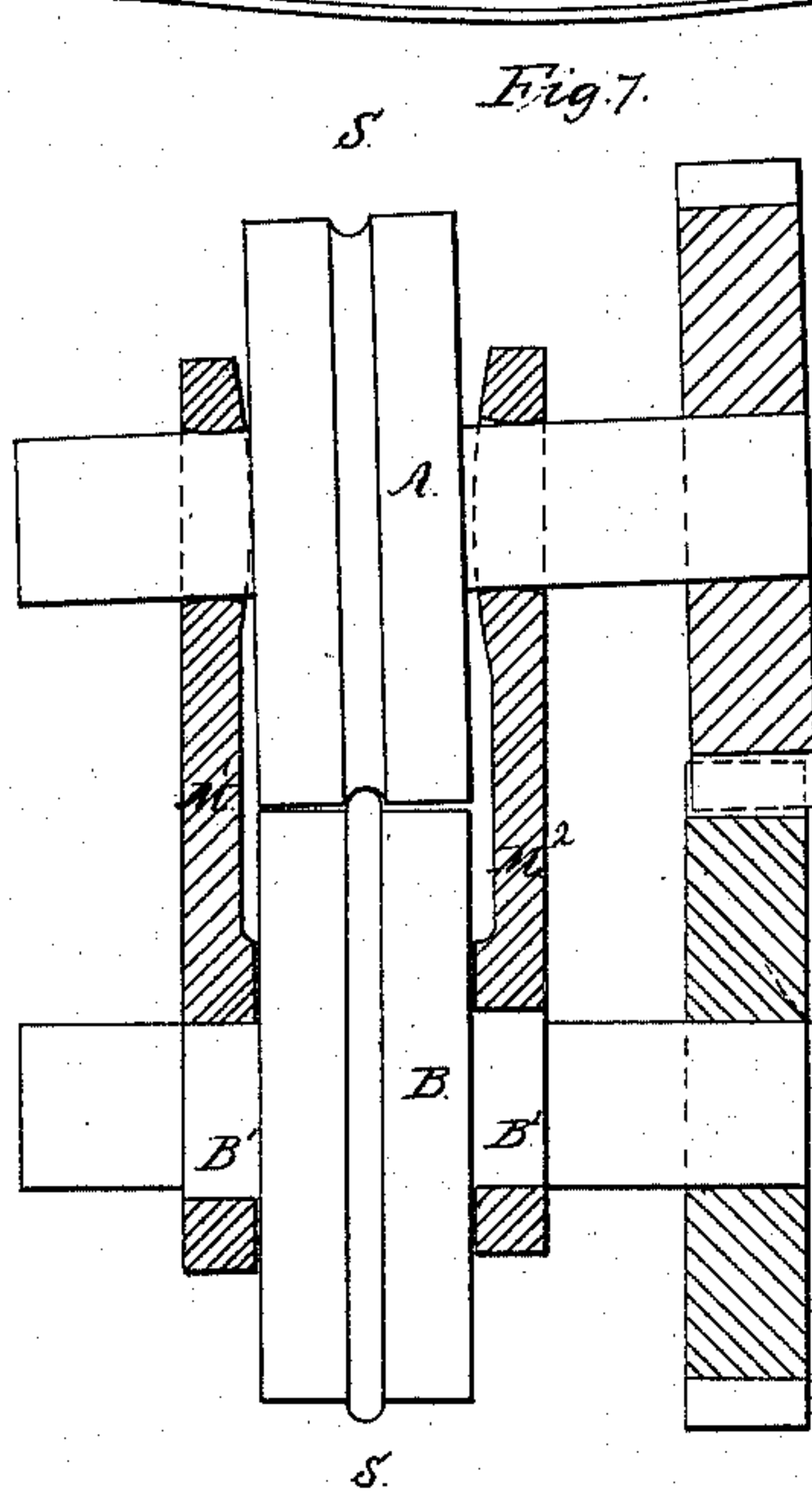


Fig. 4.



Witnesses.
D. W. Sullivan.
W. C. Day.

Inventor.
Emos S. Nicholls.
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United States Patent Office.

ENOS S. NICHOLS, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO J. H. PRENTICE, OF BROOKLYN, NEW YORK.

Letters Patent No. 61,856. dated February 5, 1867.

IMPROVED CURVED SPRINGS FOR HAT BRIMS.

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, ENOS S. NICHOLS, of New Haven, in the county of New Haven, and State of Connecticut, have invented certain new and useful Improvements in Means for Curving the Springs to Sustain the Brims of Hats; and I do hereby declare that the following is a full and exact description thereof. The accompanying drawings form a part of this specification.

Figure 1 is a front view of my machine.

Figure 2 is a vertical section of a portion on a larger scale, with the rolls in the condition represented in fig. 1.

Figure 2^a is an enlarged section of the spring as it is being treated by the machine when in this part of its revolution.

Figure 3 is a vertical section of a portion of my machine with the rolls turned one-half around.

Figure 3^a is an enlarged section of the spring as it is being treated by the machine when in this part of its revolution.

Figure 4 is a view of the spring as it is finally left by the machine.

Figures 5 and 6 are views of the spring after it is bent round and joined in the condition which it will assume in the hat.

The succeeding figures show another form in which the invention may be worked out.

Figure 7 is a central vertical section.

Figure 8 is a cross-section on the line S S in fig. 7; and

Figure 9 is a central section with the rolls formed half around.

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

The drawings represent the novel parts of the machine, with so much of the other parts as seems necessary to indicate their relations thereto. The peculiarities of the machinery and of the spring are somewhat exaggerated in order to make them more plainly apparent in the drawings.

A is the upper roll, and B is the lower roll. *a* is a groove on the upper roll A, and *b* is a corresponding bead on the lower roll B. The rolls should be formed of hard metal in order to endure long usage in treating the springs. The rolls are mounted in bearings in the housing C, and may be geared together, and driven by any ordinary means not represented, so as to draw the spring through both. My rolls are intended for forming the concavo-convex springs described in the patent issued to Smith Collins, dated November 8, 1864. These rolls are intended to perform the finishing operation on the spring. The spring being introduced in a straight condition, it is drawn through the rolls, and is drawn thereby, not uniformly over its whole surface, but more on one edge at one point, and more on the opposite edge at another point. The effect of drawing either edge is to bend the wire, and the alternate drawing on one side and on the other gives the wire a slightly serpentine form. The circumference of each roll is half the length of a spring. It follows that each spring contains two complete bends to the right and to the left. When the spring, thus bent, is formed into a hoop and its ends secured, the hoop is in the right condition for use in a hat, that is to say, it rises opposite the ears and drops at the front and back, so as to correspond with the curvature desired in the hat brim.

Figures 7, 8 and 9, show another mode of arranging the machine to produce a similar result. In this form of the machine the groove *a* and bead *b* are true, that is to say, each lies in a plane which is at right angles to the axis of the roll on which it is mounted. The alternate drawing of the wire on opposite edges, when passed through these rolls, is effected by shifting the position of the axes of the rolls. The axes of the rolls are parallel only a portion of the time. At one period the ends toward the right are nearer together than toward the left. At a subsequent period the ends towards the left are nearer together, and thus they vibrate and produce the desired drawing effect on the spring. There are various means by which such vibrating of the axes can be effected. The drawings represent one of the simplest. The upper roll A, instead of being mounted in fixed bearings in the housing C, is mounted with liberty to rise and sink at each end. The bearings of the roll B are fixed. The shaft of the roll B is provided with eccentrics, B¹ B², which carry stout straps, M¹ M². These straps embrace the shaft of the roll A, and form the bearings by which the roll A is held down with sufficient force to compress and draw the spring. The revolution of the roll B carries the eccentric B¹ down, and the eccentric B² up, during one portion of its revolution, and this induces a corresponding position in the axis of

the roll A. During the other half of the revolution, the eccentrics are in the opposite position, and the roll by correspondingly tilting draws the spring on the opposite edge. The rolls may carry knives or equivalent pieces of steel, set in, adapted to cut off the spring in proper lengths, or to partially cut off the spring so that it will easily break at the proper points to divide up the lengths of spring. In order to curve springs of different lengths, so as to go around hats of different sizes, or with different breadths of brim, I can employ different machines for each size, or I can by adopting the construction shown in figs. 1 and 2, employ tapering rolls, and have a number of the grooves *a* and beads *b*. The grooves at the large end will roll the long springs, and the grooves at the small end will roll the shorter ones. No particular evil results from cutting off the ends within reasonable limits, and reducing the length of the springs by that means. This allows them to be manufactured a little too long, or all of a sufficient length for the largest hoops, and then to be shortened by removing the ends at pleasure.

Having now fully described my invention, what I claim as new, and desire to secure by Letters Patent, is as follows:

Producing a curvature or tendency to curvature in springs adapted for sustaining the brims of hats, by passing them through rolls adapted to draw the edges alternately on one side and the other, substantially as and for the purpose herein specified.

Witnesses:

W. C. DEX,

D. W. STETSON.

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