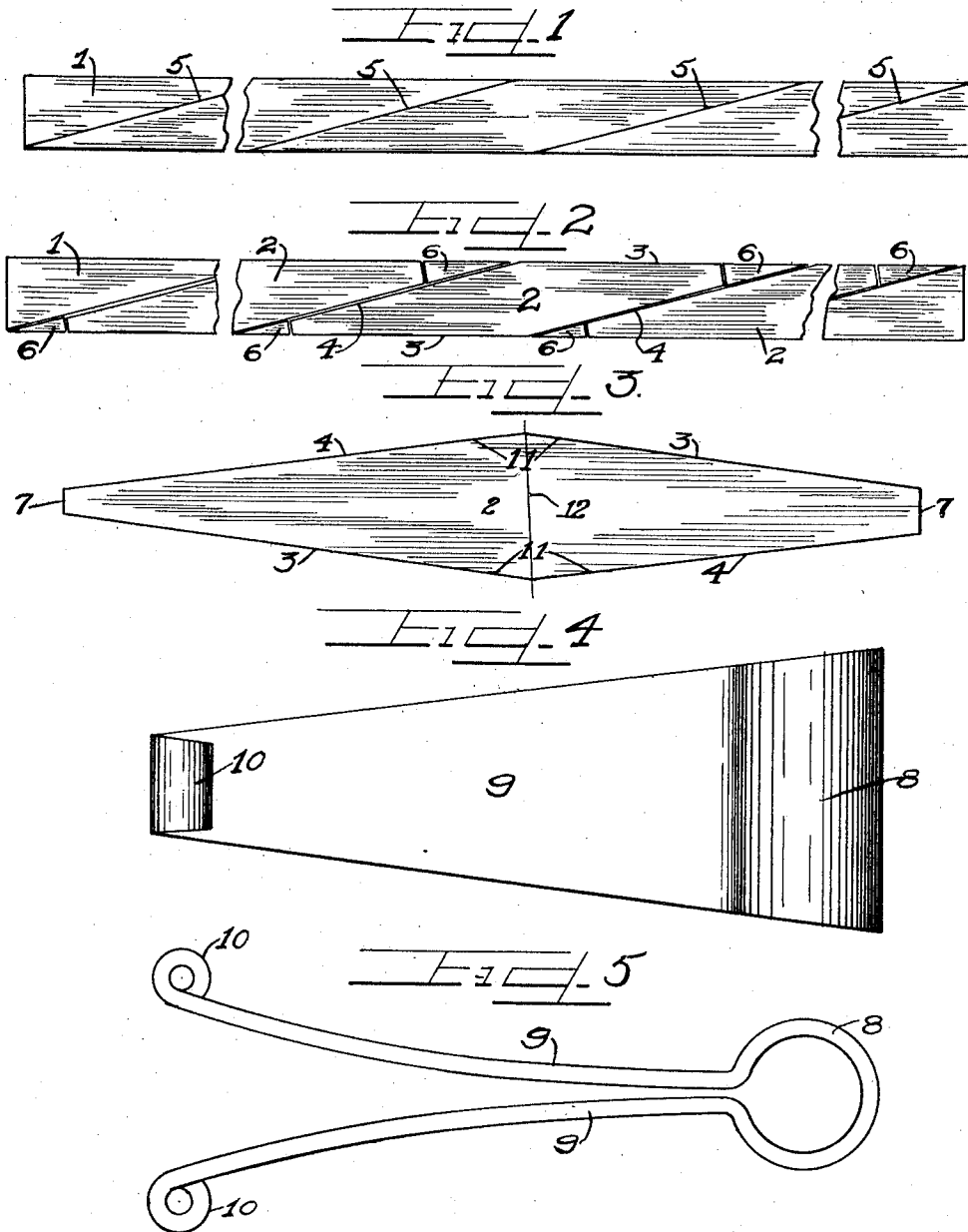


N. SCHACHTER.
METHOD OF MANUFACTURING SHOCK ABSORBER SPRINGS.
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1,331,677.

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WITNESSES
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METHOD OF MANUFACTURING SHOCK-ABSORBER SPRINGS.

1,331,677.

Specification of Letters Patent.

Patented Feb. 24, 1920.

Application filed February 11, 1918. Serial No. 216,526.

To all whom it may concern:

Be it known that I, NATHAN SCHACHTER, a former subject of the King of Roumania, who have declared my intention of becoming a citizen of the United States, and a resident of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Methods of Manufacturing Shock-Absorber Springs; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the numerals of reference marked thereon, which form a part of this specification.

This invention has reference more particularly to a method for the manufacture of plate springs which are particularly adapted to serve as shock absorber springs for vehicles and for similar purposes.

An object of the invention is to provide a method whereby a spring of this character may be manufactured more economically than heretofore.

Another object of the invention is to make the spring in a form which will effectively restrict the movement of the parts so as to move only in the direction in which they are adapted to yield and will provide the desired resiliency, and which may be cut from the stock with a very small percentage of waste.

Another object of the invention is to cut the spring blank from the stock so as to use the edges of the stock as edges of the spring cut therefrom and thereby avoid the necessity of smoothing up or finishing such edges of the spring as the spring is made.

My invention also has other objects which will appear from the following specification and the accompanying drawings.

My invention (in a preferred form) is illustrated in the accompanying drawings and described in the following specification.

On the drawings:—

Figure 1 is a plan view of a strip of stock from which the springs are made, and shows the lines upon which it is cut to make the spring blank.

Fig. 2 is a similar view showing the stock as cut into spring blanks.

Fig. 3 is an enlarged view of one of the spring blanks.

Fig. 4 is a plan view of a shock absorber spring made therefrom.

Fig. 5 is a side or edge view of the shock absorber spring shown in Fig. 4.

As shown on the drawings:—

The reference numeral 1, indicates a strip of steel from which the springs are to be made, and 2, is the spring blank which is cut therefrom. This spring blank is made with the edges 3—3, parallel and the edges 4—4, parallel and the width of the strip 1, is equal to the perpendicular distance between the edges 3—3, so that when the spring blank is cut from the strip, the edges of the strip form the edges 3—3 of the blank. To make the spring blank from the strip 1, the strip is divided along the parallel lines 5 of Fig. 1, into elongated diamond shaped blanks 2, which have the obtuse angles 11, thereof directly opposite. In other words, the line 12 bisecting the obtuse angle 11, at one side of the blank will bisect the obtuse angle 11, at the opposite side of the blank.

The extremities 6, of the blank are then cut off and the edges 4, which resulted from the cutting of the strip into blanks are then smoothed up or finished. The edges 3, however, do not require such finishing, as they are portions of the edges of the strip 1, and this strip is usually provided with the edges thereof smooth or finished suitably so that they may serve as the finished edge of the spring.

The blank is then subjected to operations by suitable dies which shape the center or wide portion of the blank in a somewhat large circular form shown at 8, in Figs. 4 and 5, which is capable of expansion and contraction and the ends 9, are bent outwardly on curved diverging lines as shown in Fig. 5, and the extreme ends thereof bent to form the loops 10, whereby the spring is attached. The circular portion 8, of the spring does not form a complete circle, but there is a gap between the arms 9, adjacent the loop 8, which gap gradually widens toward the outer ends of the arms 9. With this construction, the compression or approximation of the outer ends of the arms 9, acts to contract the enlarged circular portion 8, of the spring until the gap between the inner ends of the arms 9, adjacent the

ring 8, is closed, whereupon the tapered arms 9, then are flexed and because of their divergence on curved lines are caused to contact increasingly closer to the outer ends of the arm and thereby shorten the leverage and increase the resistance until the pressure on the spring is counterbalanced by the increased resistance of the spring.

It is an important feature of this spring construction that the two arms 9, are tapered to their extremities and proportioned so that the loop 8, will be sufficiently strong to offer the desired initial resistance and the tapered arms have such elasticity that after the loop 8 is closed the compression is resisted with gradually increasing force as the point of contact between the arms 9 approaches the outer end of the spring.

If the arms 9 of the spring are of uniform width or improperly tapered, they will not have the desired resiliency to gradually resist the shock but will offer an abrupt resistance when the inner ends thereof are pressed together. The widened center portion or bight of the spring also serves to hold the arms 9 of the spring in the proper relative position for movement to and from each other and prevents twisting or relative movement transversely of their width which might occur if the central portion of the spring was not comparatively wide, and by cutting the strip of stock on diagonal lines into an elongated diamond shaped blank, I am able, without waste of material, to secure the proper taper for the arms of the spring and the wide central portion necessary for a stout resilient shock absorber spring.

While I have shown my spring constructed in a certain form, and produced by performing certain operations, I wish it to be understood that I contemplate various changes and modifications and do not purpose limiting the patent granted hereon otherwise than necessitated by the appended claims.

I claim as my invention:

1. The method of making a plate spring which consists in providing a flat strip of approximately the same width as the spring to be made therefrom, and cutting an elongated diamond shaped blank therefrom so

that the lateral edges of the strip serve as two parallel long edges of the diamond shaped blank.

2. The method of making a plate spring which consists in providing a strip of material of substantially the same width as the spring to be made therefrom, then cutting the strip on parallel diagonal lines into elongated diamond shaped blanks, and cutting off the extremities of the diamond shaped blanks.

3. The method of making plate springs which consists in providing a strip of spring material of substantially the same width as the spring to be made therefrom, then cutting the strip transversely on parallel diagonal lines into elongated diamond shaped blanks so that the edges of the strip serve to form the edges of the blank, and then folding the blank transversely on a line bisecting the opposite obtuse angles of the blank.

4. The method of making a plate spring which consists in providing a strip of material of substantially the same width as the spring to be made therefrom, then cutting the strip transversely on parallel diagonal lines to provide an elongated diamond shaped blank, then cutting the extremities from the blank, then folding the blank along its minor axis so as to have an open circular bight portion with divergingly curved tapered arms extending therefrom.

5. The method of making a plate spring which consists in providing a strip of material of substantially the same width as the spring to be made therefrom, then cutting the strip transversely on diagonal lines to provide an elongated diamond shaped blank, then folding the blank along its minor axis so as to have an open cylindrical bight portion with divergingly curved tapered arms extending therefrom, and folding the outer end portion of the arm to provide attaching means.

In testimony whereof I have hereunto subscribed my name in the presence of two subscribing witnesses.

NATHAN SCHACHTER.

Witnesses:

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