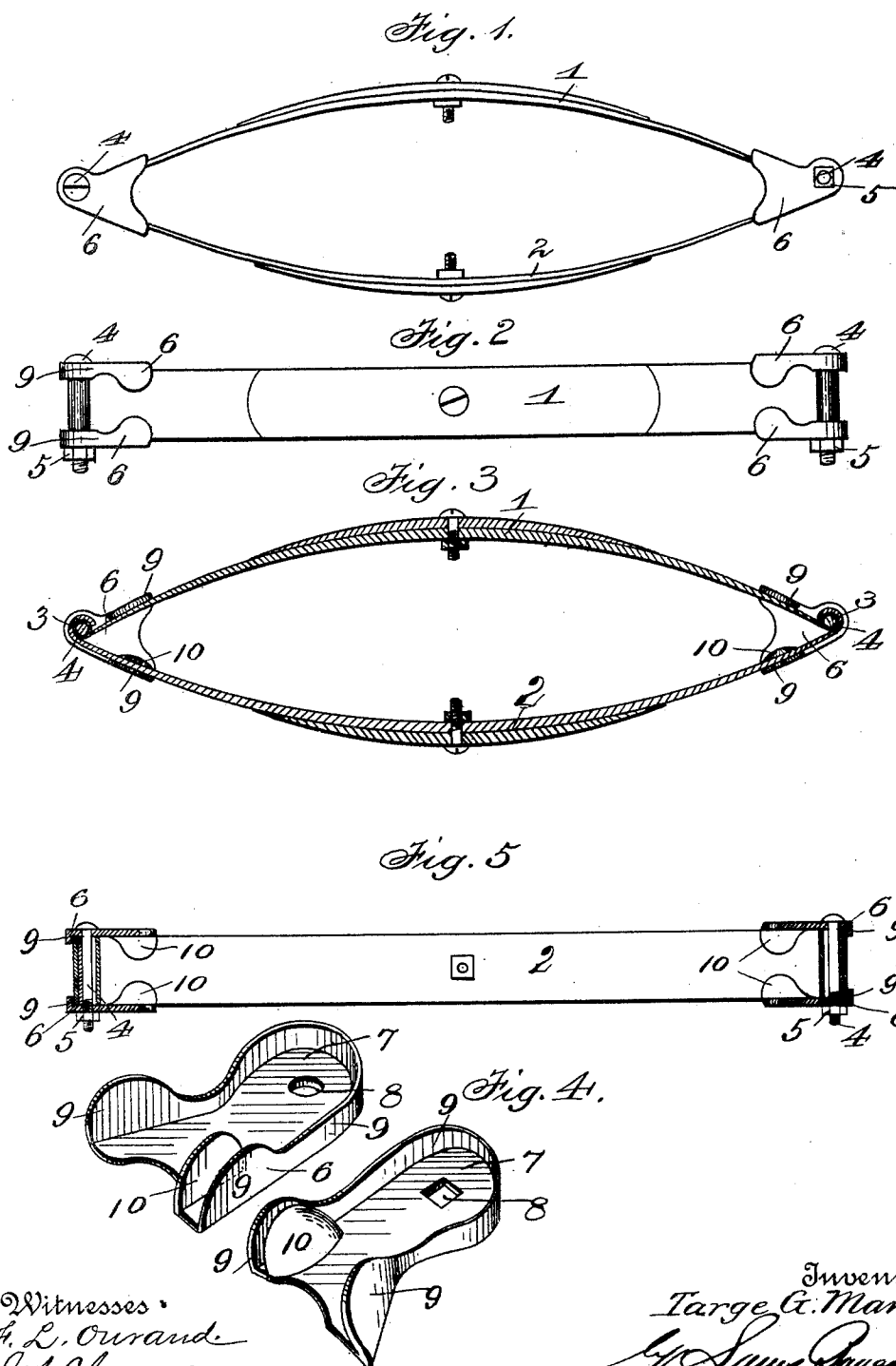


(No Model.)

T. G. MANDT.
ELLIPTIC SPRING.

No. 586,777.

Patented July 20, 1897.



Witnesses:
A. L. Ourand.
J. L. Coombs

Inventor:
Targe G. Mandt
by *Samuel Rogers*
Attorney.

UNITED STATES PATENT OFFICE.

TARGE G. MANDT, OF STOUGHTON, WISCONSIN, ASSIGNOR TO THE T. G. MANDT VEHICLE COMPANY, OF SAME PLACE.

ELLIPTIC SPRING.

SPECIFICATION forming part of Letters Patent No. 586,777, dated July 20, 1897.

Application filed August 4, 1896. Serial No. 601,608. (No model.)

To all whom it may concern:

Be it known that I, TARGE G. MANDT, a citizen of the United States, and a resident of Stoughton, in the county of Dane and State of Wisconsin, have invented certain new and useful Improvements in Elliptic Springs; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to elliptic springs, principally designed for supporting a vehicle-seat, although it may be employed for other purposes to which such springs are applicable.

The object of the invention is to provide such springs with end clips which limit the rebound thereof and thereby lessen the liability of the springs breaking at the ends, and whereby also should the springs break at the ends they will still be held in operative condition.

The invention consists in the novel construction and combination of parts hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of an elliptic spring for a vehicle-seat provided with my invention. Fig. 2 is a plan view of the same. Fig. 3 is a longitudinal sectional view. Fig. 4 is a perspective view of the clips detached, looking from the inside. Fig. 5 is a horizontal section showing the lower leaf of the spring.

In the said drawings the reference-numerals 1 and 2 designate, respectively, the upper and lower leaves of an elliptical spring, the upper leaf being curved upwardly at each end, forming a loop 3, through which passes a headed screw-bolt 4, provided with a nut 5. The lower leaf has its ends bent upwardly around the loop of the upper leaf, as seen in Fig. 3.

The numeral 6 designates the clip, consisting of a plate, preferably made of malleable iron, having a curved outer end 7, formed with an aperture 8 for the passage of the screw-bolt 4. This plate is formed with an inwardly-extending flange 9, which overlaps the side edges of the spring-leaves near the ends and also the edges of the loops. At its

lower inner end the plate is formed with an inwardly-projecting lug 10, which engages 55 over the upper side of the lower leaf. In practice two of these clips are used at each end of the spring, and they are identical in every respect, except that they are rights and lefts or arranged to fit opposite sides of said 60 leaves.

When engaged with the leaves, as seen in Figs. 1, 2, and 3, the bolt is passed through the apertures therein and the nut screwed thereon to hold them in place. One of the 65 clips is shown detached in Fig. 4.

As will be seen by reference to Figs. 3 and 5, the lower leaf near its end is confined between the lug 10 and the lower inner end of the flange 9, which holds it stationary with 70 respect to the plate or clip, while the upper leaf is capable of being compressed and forced away from the opposite end of the flange, but the rebound of the leaf is checked by its coming in contact with the flange, thereby greatly 75 lessening liability of breakage of the spring, which is caused principally by the rebound, and even should the spring be broken near the ends the clips will still hold the same so that they will operate. 80

As will be seen in Fig. 4, the aperture in one of the clips is made angular, and the screw-bolt near its head is made correspondingly angular to prevent it from turning when screwing on the nut. 85

Having thus fully described my invention, what I claim is—

In an elliptic spring, the combination with the end clips arranged in pairs, consisting of the plates formed with inwardly-extending 90 flanges at the outer edges and said plates at the lower sides formed with inwardly-projecting lugs and the connecting-bolts, of the upper spring-leaf having its ends bent around said bolts and bearing against the upper portions of said flanges, and the lower leaf confined between said lugs and flanges and having its ends bent around the ends of the upper leaf, substantially as described. 95

In testimony that I claim the foregoing as 100 my own I have hereunto affixed my signature in presence of two witnesses.

TARGE G. MANDT.

Witnesses:

JIM DOW,
ROBE DOW, Jr.