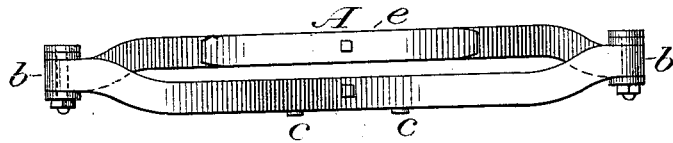
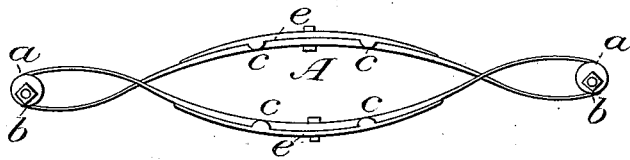


J. H. DENIGER.  
Vehicle-Spring.

No. 212,542.

Patented Feb. 25, 1879.

*Fig. 1.*



*Fig. 2.*

*Attest:*  
*Alfred W. Biers*  
*William H. Green*

*Inventor.*  
*Joseph H. Deniger.*

# UNITED STATES PATENT OFFICE.

JOSEPH H. DENIGER, OF BRIDGEPORT, CONNECTICUT.

## IMPROVEMENT IN VEHICLE-SPRINGS.

Specification forming part of Letters Patent No. **212,542**, dated February 25, 1879; application filed September 21, 1878.

*To all whom it may concern:*

Be it known that I, JOSEPH H. DENIGER, of the city of Bridgeport, county of Fairfield, State of Connecticut, have invented a new and useful Improvement in Wagon-Springs, of which the following is a specification:

My invention is a reversed elliptic wagon-spring, possessing great elasticity, of low construction, thereby allowing the body of the vehicle to sit low on the axle.

The elliptic spring now in use possesses advantages over any other shape, giving greater elasticity; but in order to accomplish this the spring must be made of sufficient stiffness and height to sustain the load without coming in contact, which would endanger the spring.

In placing springs on the axles the head is always uppermost. In my reversed elliptic spring the head is also uppermost, as in the old spring, reversed, because what is ordinarily the top is bent downward and forms the under spring, and the bottom spring the upper one, describing in its shape the figure eight, (8.) This form will allow the two springs

to pass one another without coming in contact, avoiding all danger of breaking by striking together.

In Figure 1, A shows a side elevation of the spring. *a a* are the heads. *b b* are the eyes; *c c*, the solid clips to hold the leaf *e* in position. Fig. 2 shows a plan of the same spring.

A spring thus constructed occupies small space, and has great degree of elasticity without danger of breaking.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

A reversed elliptic spring, describing in its shape or contour a triple loop, the upper and lower sections bent near the heads *a a* and eyes *b b*, sufficient to throw them out of vertical range to prevent interfering, substantially as described, and for the purpose set forth.

JOSEPH H. DENIGER.

Witnesses:

ALFRED B. BEERS,  
LEE D. PHILLIPS.