

R. CROCKER & J. DIEHL.  
VEHICLE SPRING.

Patented Oct. 18, 1887.

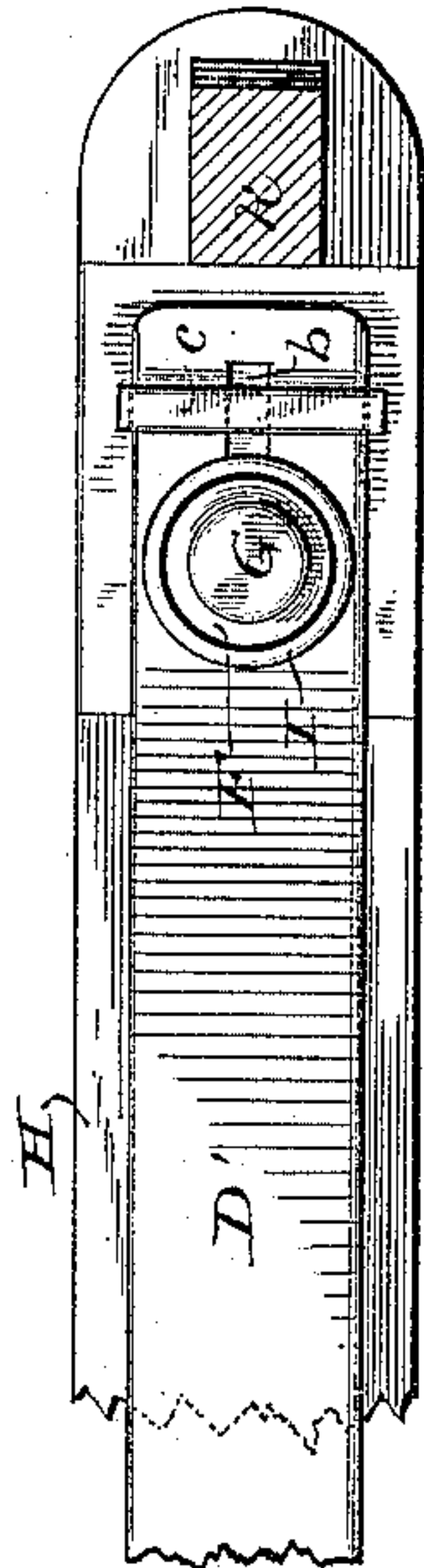
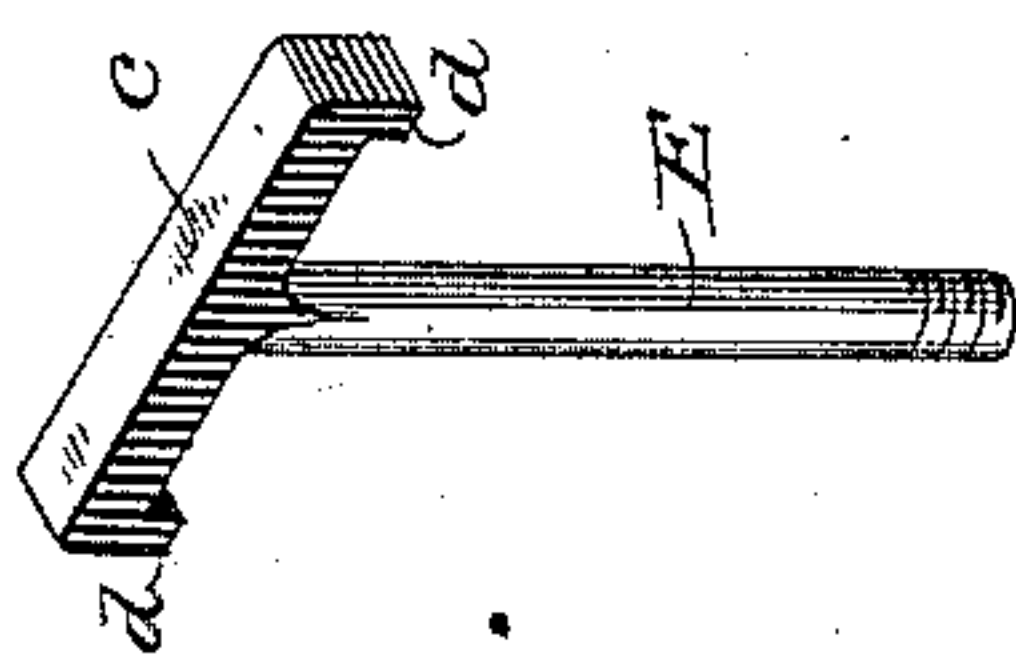


Fig. 2.



3. *ditto*

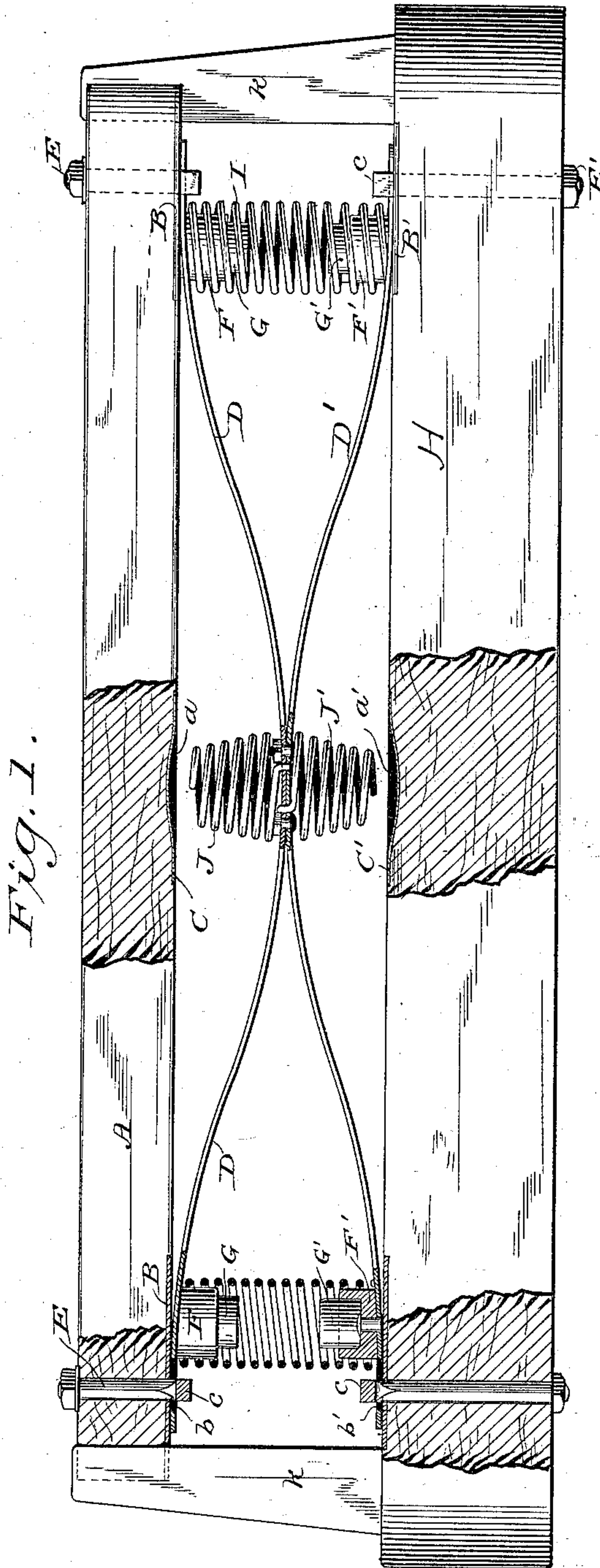


Fig. 1.

Witnesses:

Geo. W. Young,  
N. E. Oliphant

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 John Diehl  
 By Stout & Underwood  
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# UNITED STATES PATENT OFFICE.

RICHARD CROCKER, OF MAZOMANIE, AND JOHN DIEHL, OF FRANKSVILLE,  
WISCONSIN.

## VEHICLE-SPRING.

SPECIFICATION forming part of Letters Patent No. 371,825, dated October 18, 1887.

Application filed May 10, 1887. Serial No. 237,671. (No model.)

*To all whom it may concern:*

Be it known that we, RICHARD CROCKER, of Mazomanie, in the county of Dane, and in the State of Wisconsin, and JOHN DIEHL, of Franksville, in the county of Racine, in said State, have invented certain new and useful Improvements in Vehicle-Springs; and we do hereby declare that the following is a full, clear, and exact description thereof.

Our invention relates to vehicle-springs; and it consists in certain peculiarities of construction and combination of parts, to be hereinafter described with reference to the accompanying drawings and subsequently claimed.

In the drawings, Figure 1 represents a side elevation, partly in section, of our vehicle-spring in position on a wagon-bolster; Fig. 2, a plan view of a portion thereof, and Fig. 3 a detail perspective view of a clamping-bolt.

Referring by letter to the drawings, A represents a bar, to the ends of which, upon the under side thereof, are secured rub-plates B, and centrally secured to said under side of the bar is another plate, C, preferably provided with a concave depression, *a*. Passed through the extremities of bar A and slots *b* in the ends of a semi-elliptic spring-section, D, are bolts E, that have cross-heads *c*. The cross-heads *c* of the bolts E bear upon the spring-section D and have their ends *d* bent at right angles to come over against the edges of said spring-section and bear upon the rub-plates B. Riveted or otherwise suitably secured to the ends of the spring-section D adjacent to the slots *b* therein are recessed lugs F, in which are fitted rubber or other suitable buffers, G. Bolted or otherwise suitably secured to the spring-section D is another semi-elliptic spring-section, D', having its ends provided with slots *b'* and recessed lugs F', and in the latter are fitted rubber or other suitable buffers, G'. The slotted ends of the spring-section D' are secured to a vehicle-bolster, H, by means of bolts E', similar to the ones E above described, and fast to the ends of the bolster upon its upper side are rub-plates B', while another plate, C', is also fastened to the center of said bolster and provided with a concave depression, *a'*.

Interposed between the spring-sections D D' are spiral springs I, that fit around and are

held in place by the opposing lugs F F' on said spring sections. Centrally secured to and projecting from opposite sides of the spring formed by the united sections D D' are conical spiral springs J J', the free ends of which impinge against the concavities *a a'* in the plates C C' when more than ordinary strain comes upon said spring, thereby increasing the resistance to such strain.

We have shown our spring as secured to the bolster of an ordinary wagon, and consequently recessed the ends of bar A to fit the standards K on said bolster; but it will be understood that the spring is applicable to any style of vehicle, and in some instances the recesses in the ends of said bar may be omitted.

While we have shown and described the two spring-sections D D', it is obvious that for a light spring we may omit the former section and bolt the latter to the center of bar A without departing from the spirit of our invention.

By the construction above described we provide an extremely simple spring that can be readily manufactured at a comparatively low cost, and which is not only applicable to the vehicle-body, but may also be utilized as a seat-spring on some styles of vehicles.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A vehicle-spring comprising a bar, a continuous semi-elliptic spring-section having slotted ends, suitable bolts for securing the ends of the spring-section to the vehicle-bolster, and spiral springs interposed between said ends of the spring-section and those of the bar, substantially as set forth.

2. A vehicle-spring comprising a bar, a continuous semi-elliptic spring-section having slotted ends, suitable bolts for securing the ends of the spring-section to a vehicle-bolster, spiral springs interposed between said ends of the spring-section and those of the bar, and an intermediate spiral spring secured to said spring-section, substantially as set forth.

3. A vehicle spring comprising a bar, two oppositely-arranged and centrally-united spring-sections having slotted ends, suitable bolts passed through the slots to loosely connect the spring-sections with the bar and a



vehicle-bolster, and spiral springs interposed between the opposing ends of said spring-sections, substantially as set forth.

4. A vehicle-spring comprising a bar, two oppositely-arranged and centrally-united semi-elliptic spring-sections having slotted ends, suitable bolts passed through the slots to loosely connect the spring-sections with the bar and a vehicle-bolster, spiral springs interposed between the ends of the spring-sections, and another spiral spring arranged to project from the center of each spring-section, substantially as set forth.

5. A vehicle-spring comprising a bar, two oppositely-arranged and centrally-united semi-elliptic spring-sections having slotted ends, and spiral springs interposed between the ends of the spring-sections, in combination with bolts provided with cross-heads having right-angular ends and passed through the slots in said spring-sections to secure the latter to the spring-bar and vehicle-bolster, substantially as set forth.

6. A vehicle-spring comprising a bar, two semi-elliptic spring-sections having slotted ends, lugs secured to the opposing sides of the spring-sections adjacent to the slots therein, and spiral springs having their ends fitted around the lugs, in combination with suitable bolts passed through the slots in said spring-sections to secure the latter to the spring-bar and vehicle-bolster, substantially as set forth.

7. A vehicle-spring comprising a bar, two semi-elliptic spring-sections having slotted

ends, recessed lugs secured to the opposing sides of the spring-sections adjacent to the slots therein, buffers seated in the lugs, and spiral springs having their ends fitted around the lugs, in combination with suitable bolts passed through the slots in said spring-sections to secure the latter to the spring-bar and vehicle-bolster, substantially as set forth.

8. A vehicle-spring comprising a bar having rub-plates secured to its ends upon the under side thereof, another plate centrally secured to said under side of the bar, and two oppositely-arranged and centrally-united semi-elliptic spring-sections having slotted ends, in combination with a bolster having rub-plates secured to its ends upon the upper side thereof, another plate centrally secured to said upper side of the bolster, spiral springs interposed between the ends of the spring-sections, a spiral spring arranged to project from the center of each spring-section, and suitable bolts connecting the respective spring-sections to the bar and bolster, substantially as set forth.

In testimony that we claim the foregoing we have hereunto set our hands, at Franksville, in the county of Racine and State of Wisconsin, in the presence of two witnesses.

RICHARD CROCKER.  
JOHN DIEHL.

Witnesses:

B. DIEDRICH,  
J. H. SUMMERTON.