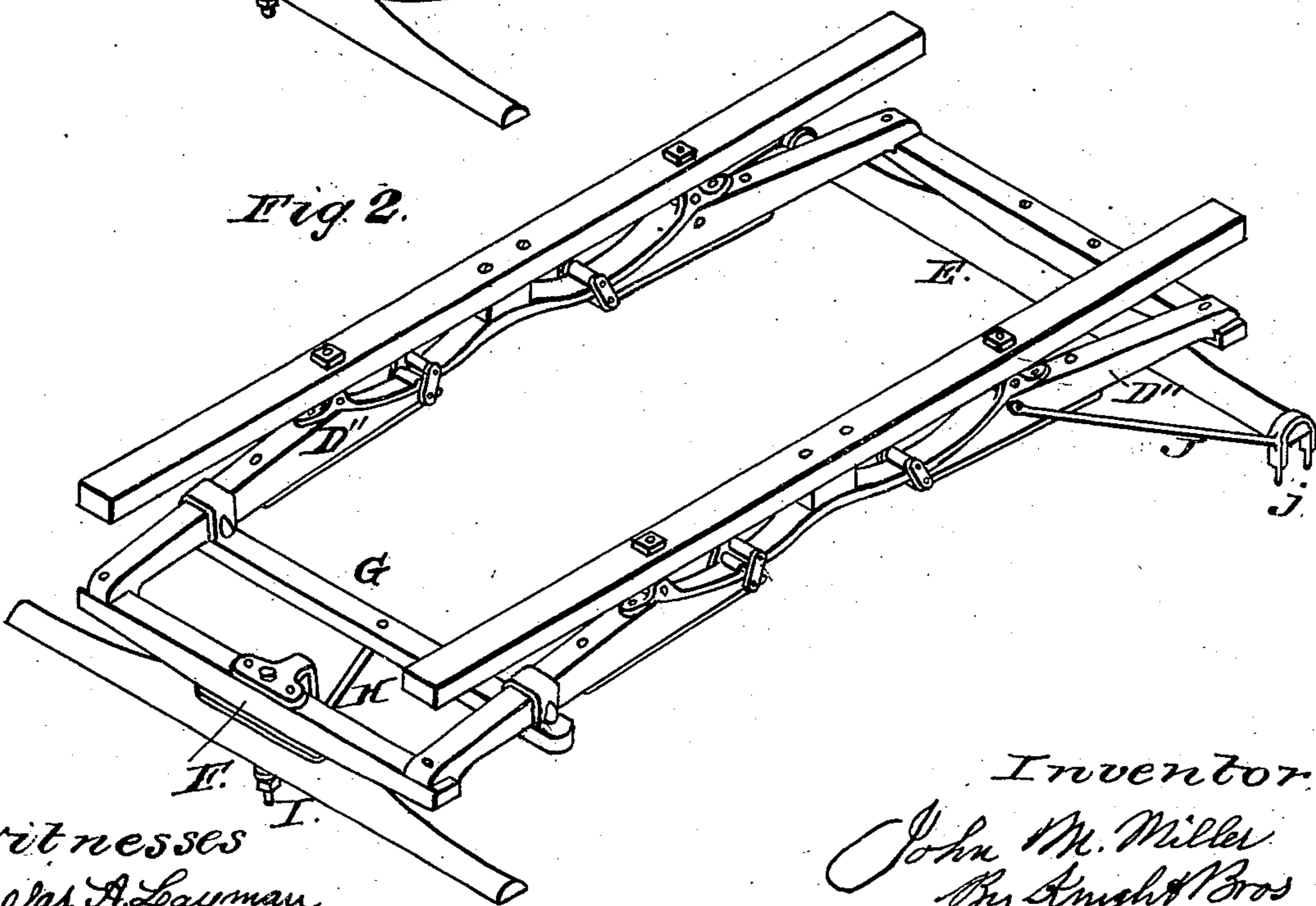
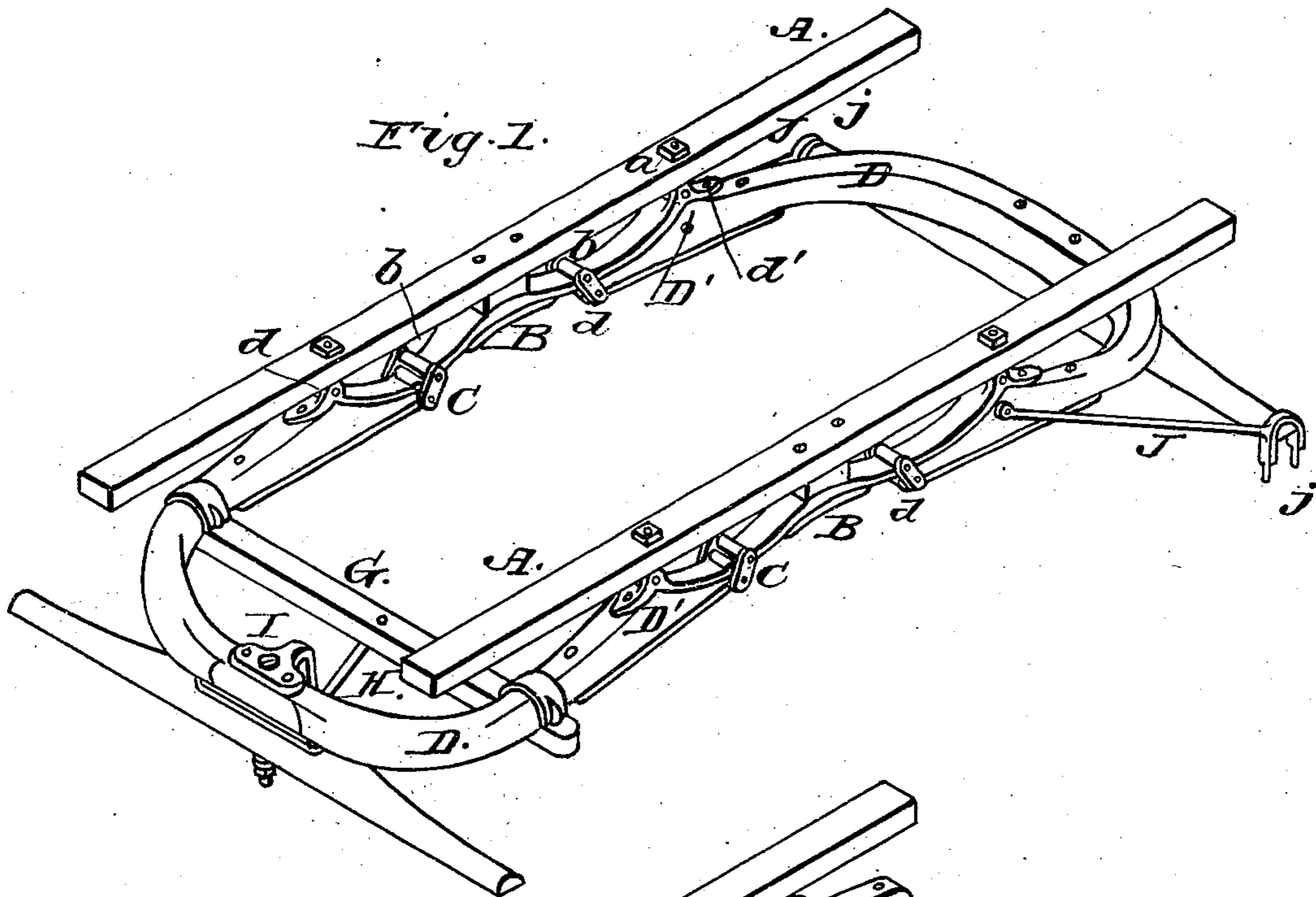


J. M. MILLER.  
Carriage Spring.

No. 85,323.

Patented Dec. 29, 1868.



Witnesses  
Jas. A. Layman  
Saml. Knight

Inventor  
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By Knight Bros  
Atlys.

# United States Patent Office.

JOHN M. MILLER, OF CINCINNATI, OHIO.

Letters Patent No. 85,323, dated December 29, 1868.

## IMPROVEMENT IN CARRIAGE-SPRINGS.

The Schedule referred to in these Letters Patent and making part of the same.

*To whom it may concern:*

Be it known that I, JOHN M. MILLER, of Cincinnati, Hamilton county, Ohio, have invented a new and useful Improvement in Spring-Carriages; and I hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

This invention relates to improved coupling-devices between the axles or axle-beds and the carriage-body, and consists chiefly in what I denominate rocking spring-bars which are, on each respective side, connected to the said axles or axle-beds at one point, and at another point to a single spring fastened to each body-sill, the said bars also being fulcrumed to the sills between the points named.

Figure 1 is a perspective view of my improvement.

Figure 2 is a perspective view showing a modification of the same.

A are the body-sills of a spring-carriage, and B are springs attached to the lower sides of the said sills, near their mid-lengths.

The spring B may consist of as many plates as desired, and the ends of the upper plate are furnished with eyes *b* for the attachment of the links C that serve to connect the spring to the inner ends of the rocking spring-bars D, which bars are furnished with suitable eyes *e* for the said connection.

Each spring-bar D has upon its upper side a projection, D', which carries one part of a hinge, *d'*, by which, and the other part *a* of the hinge, the said spring-bar is fulcrumed to the sill.

Each spring-bar may, as in fig. 1, consist of a single bar bent into a somewhat semicircular form, and having both ends hinged to the sills, and linked to the springs, as before explained, or there may be substituted for each of such curved bars two pieces D'', more or less straight, and which pass directly from the spring-coupling and fulcrum-hinge to the hind axle or axle-bed E, or the head block or bolster F at the fore end, as seen in fig. 2. In either case, a stay-bar, G, is attached transversely to the lower side of the spring-bar or bars at the fore end of the carriage, and from the middle of this stay-bar extends a rod or plate, H,

which serves as a stay to the king-bolt I, whose lower end passes therethrough.

The device, as shown in fig. 1, requires no head-block, the most forward part of the curved spring-bar serving to receive the king-bolt, and to lie immediately upon the axle or axle-bed, as the case may be.

J are oblique brace-bars extending from clips *j* upon the hind axle to the spring-bars D, to which they are connected, at or near the fulcrum-point of the said bars.

It will be seen that in this device perches are dispensed with, and consequently that there is no unyielding connection between the fore and hind axles, below the springs, so that this arrangement allows great flexibility, allowing a wheel to pass over an obstacle, without causing much movement in that part of the carriage adjacent thereto. It will also be seen that as there is no inflexible connection between the two axles, the carriage will not be exposed to the frequent strain which is inseparable from an arrangement where the fore and hind parts are connected by perches mortised firmly to the hind axle and the head-block of the fore axle.

This arrangement is exempt from the side strain upon the spring-attachments, which forms so great an objection to the use of the common or elliptical spring.

My device allows a spring of great power and compactness to be used, as the play of the springs is very inconsiderable in proportion to the movement of the axles, or the ends of the body in relation thereto.

This connection I consider to be lighter, for the freedom of movement given to the carriage-body, than any other known to the "trade."

I claim herein as new, and of my invention—

The rocking spring-bars D, fulcrumed to the body-sills, and connected at their outer parts to the axle or axle-beds, and at their inner ends to central springs B attached to the body-sills.

In testimony of which invention, I hereunto set my hand.

Witnesses:

JOHN M. MILLER.

GEO. H. KNIGHT,

JAMES H. LAYMAN.