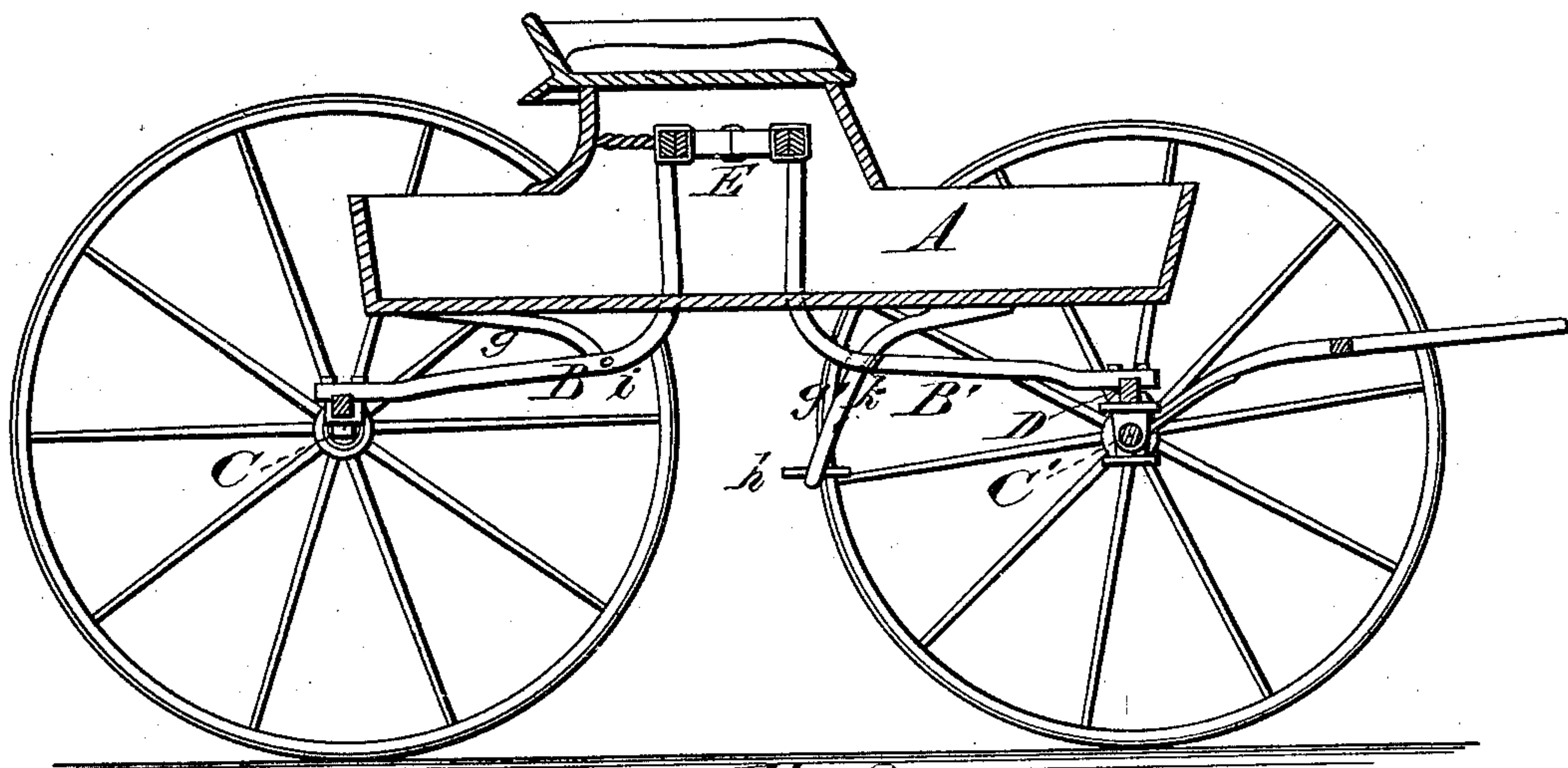


J. C. HEATER.  
LIGHT-CARRIAGES.

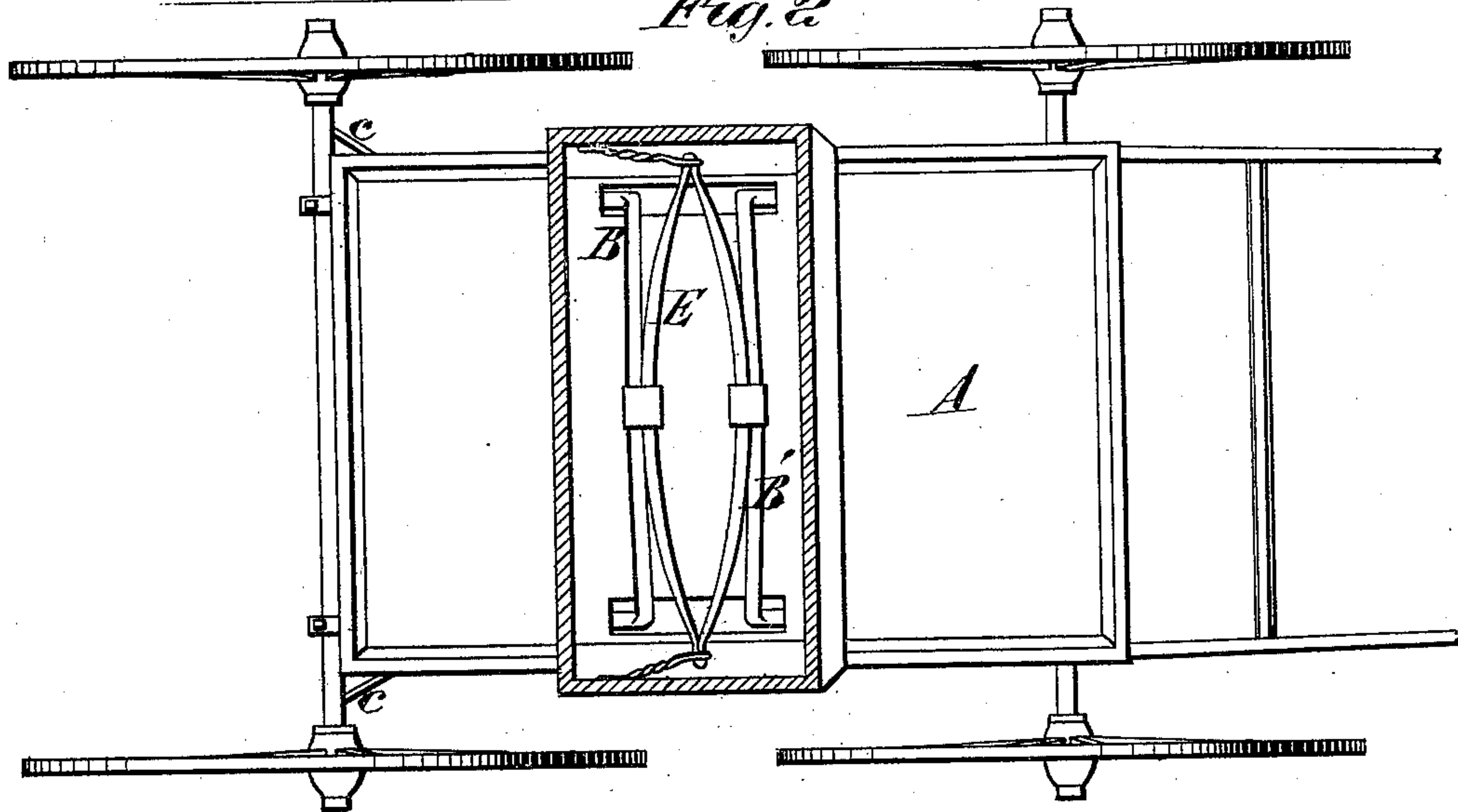
No. 176,956.

Patented May 2, 1876.

*Fig. 1*



*Fig. 2*



WITNESSES

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LIGHT-CARRIAGES.

No. 176,956.

Patented May 2, 1876.

Fig. 3.

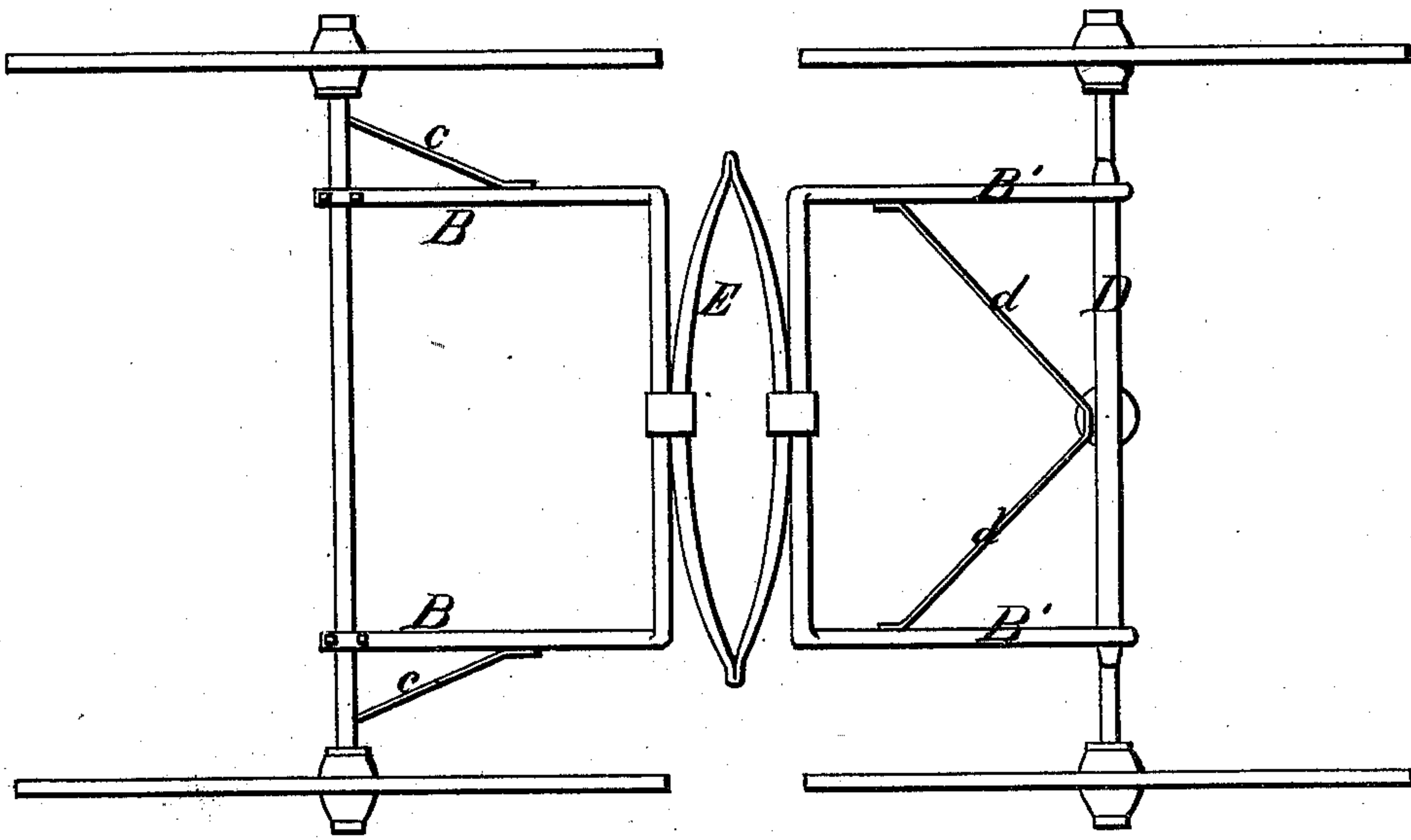


Fig. 4.

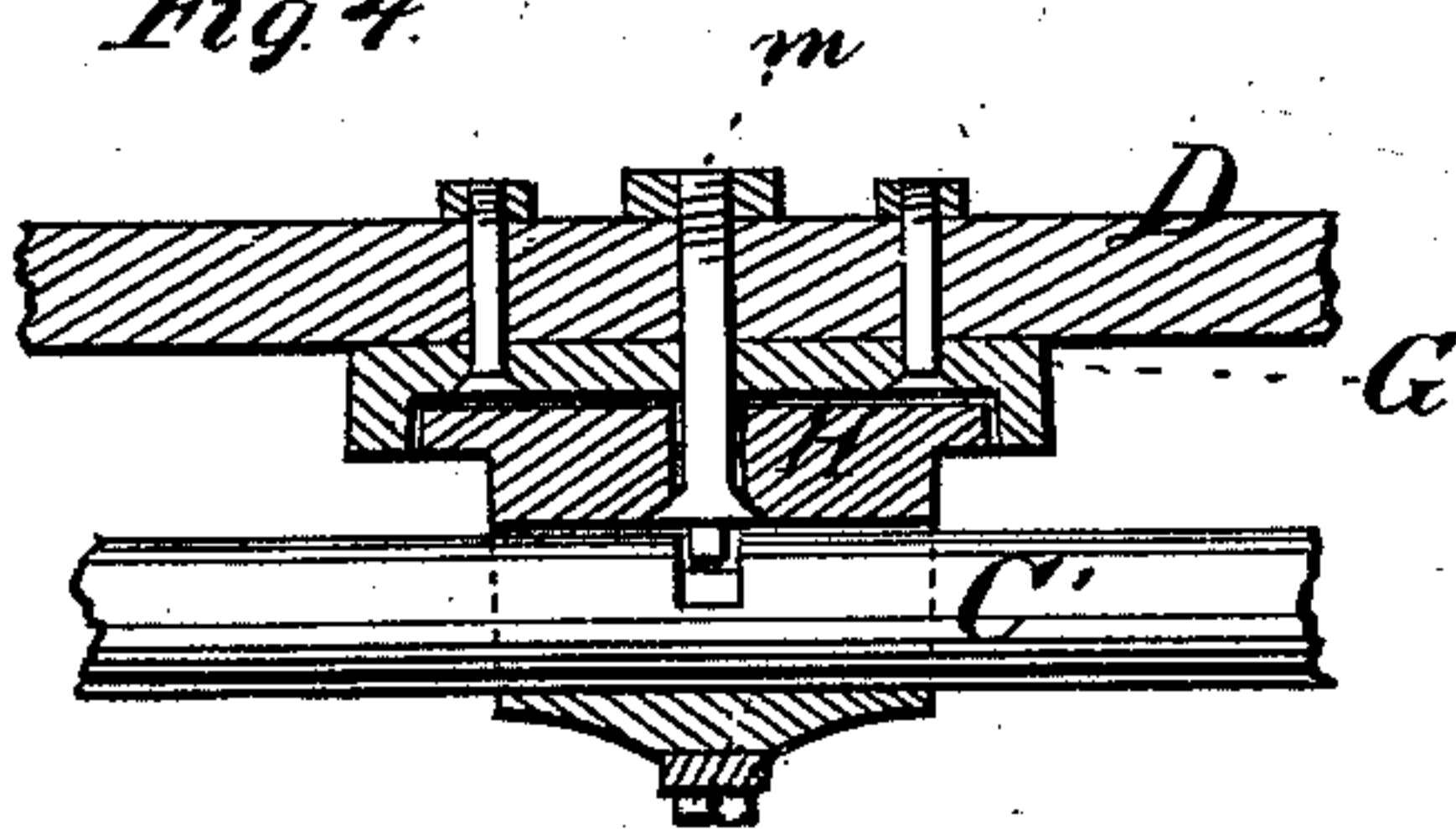


Fig. 5.

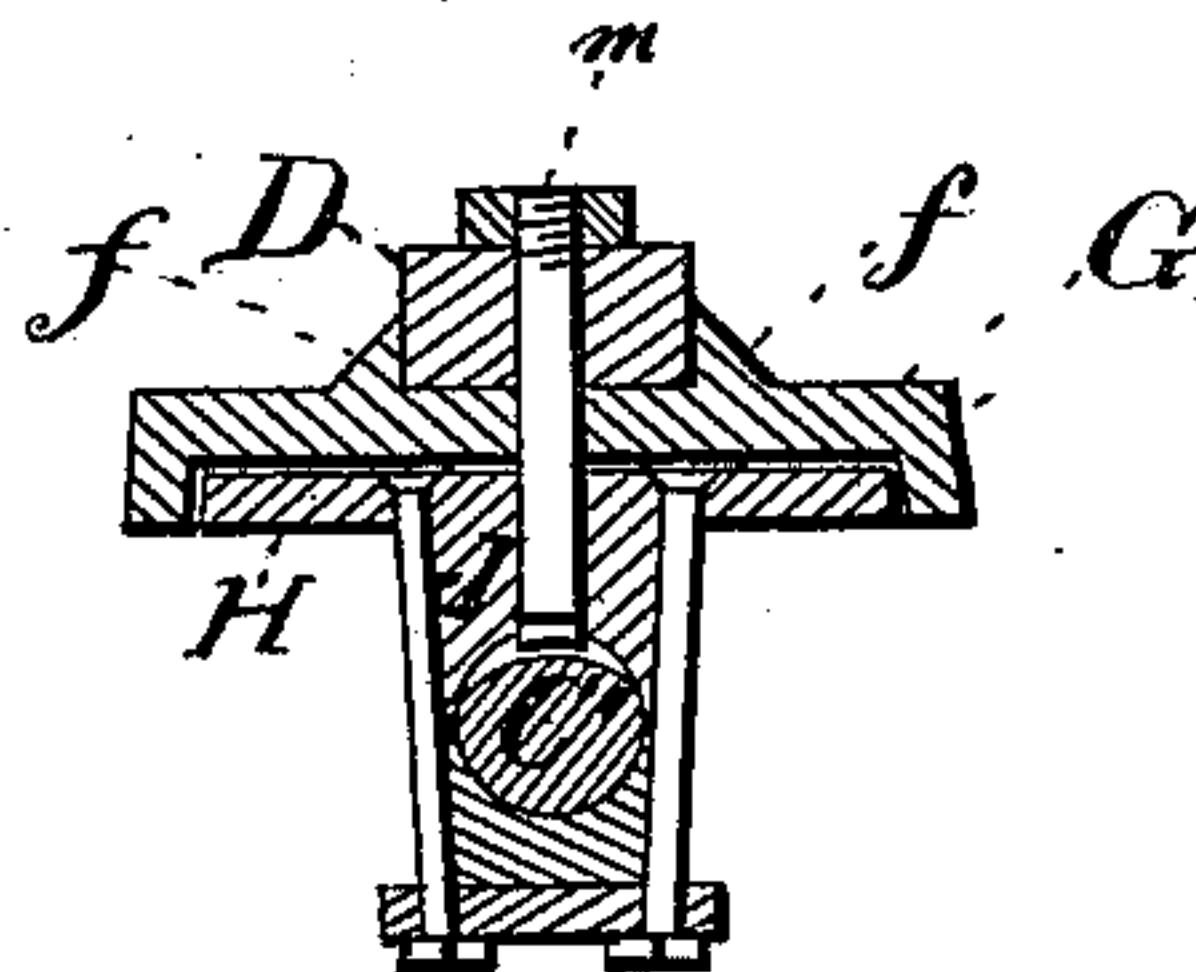


Fig. 6.

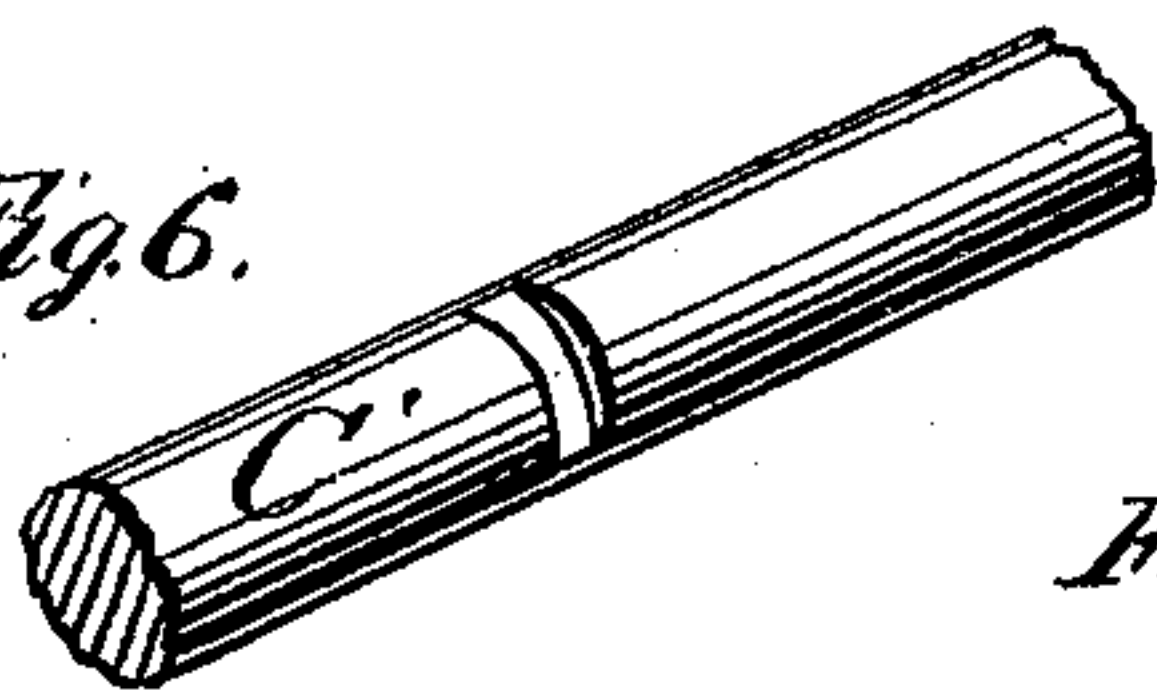


Fig. 7.



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# UNITED STATES PATENT OFFICE.

JOHN C. HEATER, OF CLIFFORD, CANADA, ASSIGNOR OF ONE-HALF HIS  
RIGHT TO ISAAC HENDY CULP, OF SAME PLACE.

## IMPROVEMENT IN LIGHT CARRIAGES.

Specification forming part of Letters Patent No. 176,956, dated May 2, 1876; application filed  
February 18, 1876.

*To all whom it may concern:*

Be it known that I, JOHN C. HEATER, of Clifford, in the county of Wellington, Province of Ontario, and Dominion of Canada, have invented a new and valuable Improvement in Light Carriages; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a longitudinal vertical section of my buggy, and Fig. 2 is a horizontal sectional view of the same. Fig. 3 is a plan view, and Figs. 4, 5, 6, and 7 are detail views, thereof.

This invention has relation to light four-wheel vehicles; and it consists, mainly, in four levers or reaches, which are extended up through the bottom of the carriage-body, in combination with a horizontal elliptic spring, to which the upper ends of the said levers or reaches are suitably connected, thereby obtaining freedom of motion from the spring as well as from the reaches. The invention also consists in braces for the carriage-body, which connect the latter to the levers or reaches and allow free spring-play, and at the same time prevent lateral tilting of the body. My invention finally consists in a novel construction of a box for the fifth-wheel, which box will allow the front axle to oscillate in it, and thus render unnecessary the use of articulating thill-couplings.

In the annexed drawings, A designates a carriage-body, which may be of any suitable style. B B B' B' designate levers or reaches, which are curved, as shown in the drawings. The rear reaches are rigidly secured to the rear axle C, which may be straight or bowed, and the front reaches are rigidly secured to a spring-bar, D, connected to the front axle C', as will be hereinafter explained. About midway of the length of the reaches they are turned upward and passed freely through the

bottom of the body A beneath the seat, where they are attached centrally to an elliptic spring, E, which is horizontally arranged.

Instead of securing the upper ends of the reaches directly to the elliptic spring E, bars of suitable length may be secured to the spring, and the upper ends of the reaches secured to the ends of these bars.

The rear reaches B B are sustained by braces *c c*, and the front reaches B' B' are sustained by diagonal braces *d d*.

Braces *g* are rigidly secured to the bottom of the body A, extended forward and connected to the rear reaches by joints at *i*. Braces *g'* are rigidly secured to the bottom of the body A, extended backward and downward a suitable distance below the reaches B', and terminated by steps *h*. These braces *g'* are allowed to play freely through loops *k*, fixed to the reaches B'.

The body A is thus allowed to have free vertical play, and a very easy-riding vehicle is obtained.

The fifth-wheel G is circular in form, cup-shaped, and constructed with parallel ribs *f* on its upper side, between which the spring-bar D is rigidly secured. This fifth-wheel G receives a circular table, H, having a beveled periphery, which table is formed on or secured to the upper half of a block, J, the lower half of which is secured to it by means of a clip-plate and bolts, as shown.

The king-bolt *m*, which passes up through the table H and fifth-wheel G, has a tenon, *x*, formed on its head, which tenon is received into a cross-groove made in the axle C'.

The tenon *x* allows a limited oscillation of the axle, for the purpose mentioned in the preamble.

What I claim as new, and desire to secure by Letters Patent, is—

1. The reaches B B', attached to the rear and front axles, passing up through the body, and united at their upper ends under the seat by the horizontal elliptic spring E, in combination with the rear brace *g*, pivoted

at its lower end to the rear reach, and attached at its upper end to the body, and front brace *g*, attached to the body, and passing through the loop *k*, substantially as and for the purpose set forth.

2. The circular table *H* for the fifth-wheel *G*, formed on a box through which the front axle *C* passes, the latter being grooved to receive the tenon *x* on the head of the king-bolt *m*, substantially as described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

JOHN CALVIN HEATER.

Witnesses:

A. S. ALLAN,  
ROBT. BIGGAR.