J. H. PHOENIX & J. CURTIS.

Spring-Vehicles.

No. 160,709 Patented March 9, 1875.

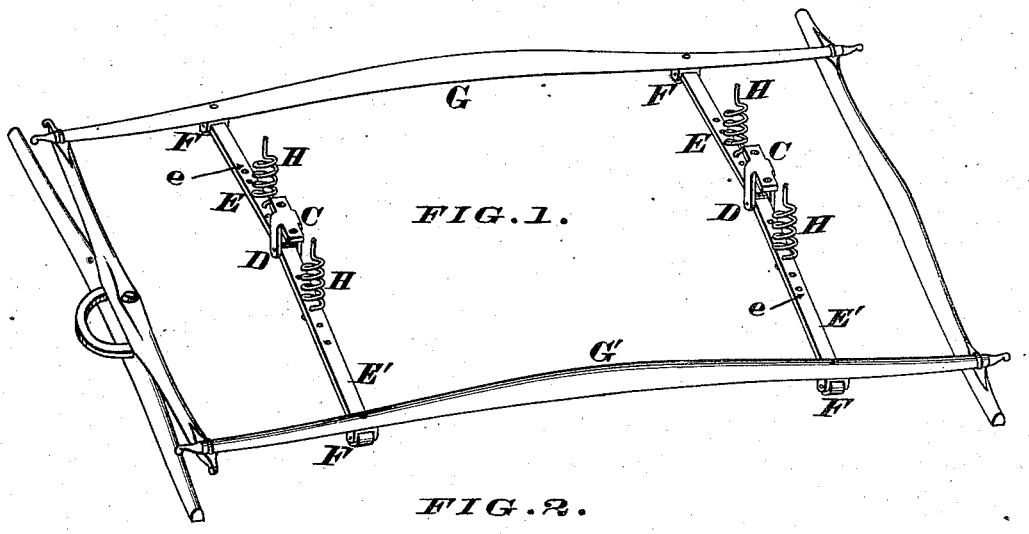


FIG. 1.

FIG. 2.

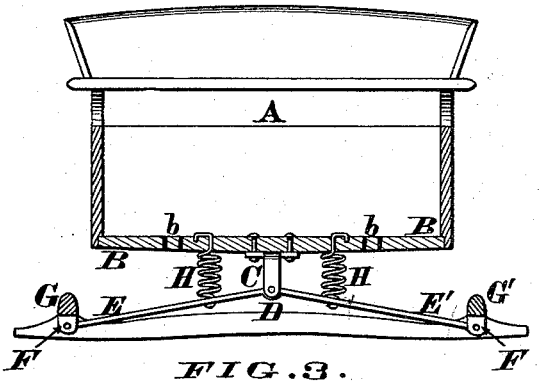


FIG. 3.

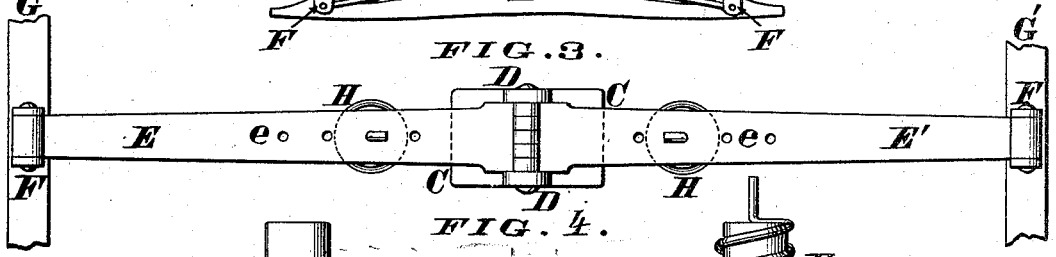


FIG. 4.

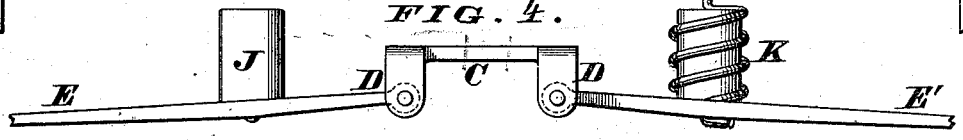
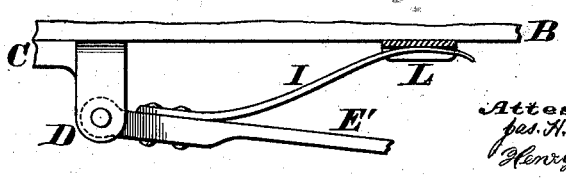


FIG. 5.



James H. Phoenix
John Curtis
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Attest.
Jas. H. Layman.
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UNITED STATES PATENT OFFICE.

JAMES H. PHŒNIX AND JOHN CURTIS, OF CINCINNATI, OHIO.

IMPROVEMENT IN SPRING-VEHICLES.

Specification forming part of Letters Patent No. **160,709**, dated March 9, 1875; application filed January 18, 1875.

To all whom it may concern:

Be it known that we, JAMES H. PHŒNIX and JOHN CURTIS, both of Cincinnati, Hamilton county, Ohio, have invented a new and useful Improvement in Spring-Vehicles, of which the following is a specification:

Our invention has for its object the production of a simple, durable, and effective spring-vehicle, by hinging to the under side of the body, at or near its middle, two or more pairs of rigid cross bars or levers, whose outer extremities are, respectively, hinged or otherwise secured to the under sides of the spring side bars, and are provided with a spiral or other spring or cushion interposed between each of said cross-bars and the body bottom.

In the accompanying drawing, Figure 1 is a perspective view of our improvement without the body. Fig. 2 is a transverse section of the same with the body. Fig. 3 is an under-side view of the hinged bars and their respective cushions. Fig. 4 is a partial side elevation of a modified form of hinged bars with two different forms of cushions mounted upon the same. Fig. 5 is a partial elevation, showing a plate-spring substituted for the cushion.

Of the above illustrations Figs. 3, 4, and 5 are to a larger scale than Figs. 1 and 2.

The bed or body A may have the represented or any other suitable form, and has bolted or otherwise firmly secured to its under side two cross plates or strips, B, of metal or hard wood. Bolted or otherwise fastened to the under side of each plate B, at the mid-length of the same, is a hanger, C, to which are hinged, D, a pair of rigid cross bars or levers, E E′, whose outer extremities are secured by a hinge, F, or other coupling, to the under sides of side spring-bars C C′, of the represented or any approved construction. Interposed between each cross-bar and the plate to which it is hinged is a spring-cushion, H, which may, as represented, consist of a piece of spring-wire in spiral form, or may be a plate-spring, I, or an india-rubber block or pad, J, or such block may be combined with such spiral spring, if desired, as shown at K in Fig. 4. The cushion H, being located near to fulcrums of their respective cross-bars, permit a considerable up-and-down motion of the body to take place with slight compression of the cushion. The cross bars and plates may have a series of apertures, *e* and *b*, which enable the cushions to be set in or out for different purposes, or different sets of cushions may be provided for the different distances from the fulcrum.

The body being supported at so many different parts, a breaking down of any one of them would not endanger the rider.

In Figs. 1, 2, and 3 the bars E E′ are represented as united to the hanger C by a common rivet or bolt, D; but it is evident that each plate may have an independent connection with said hanger, as shown in Figs. 4 and 5.

When the modified form of cushion is employed, as represented in Fig. 5, the rail B should have a flange-bearing plate, L, secured to it, or else some other suitable appliance must be employed to prevent lateral displacement of the plate-spring I.

It will be seen that by our arrangement the body of the vehicle has vertical play between the side bars, to which its supporting cross-bars are attached.

We are aware that it is not new to rest the body of a carriage upon springs of rubber or other elastic material placed on adjustable cross-bars between the body and rigid levers; also, that said springs and hinged levers have been used to support removable wagon-seats. This, therefore, we do not claim as our invention.

We claim herein as new and of our invention—

A wagon bed or body, A, supported from the under sides of side spring-bars G G′ by the conjoined action of the rigid cross-bars E E′, which are hinged in pairs both to said spring-bars and to the body, and of the interposed springs or cushions H, substantially as and for the purposes set forth.

In testimony of which invention we hereunto set our hands.

JAS. H. PHŒNIX.
JOHN CURTIS.

Attest:
GEO. H. KNIGHT,
O. P. CAYLOR.