(No Model.)

G. E. BARTHOLOMEW.

VEHICLE SPRING GEAR.

No. 383,850. Patented June 5, 1888.

FIG. 1.

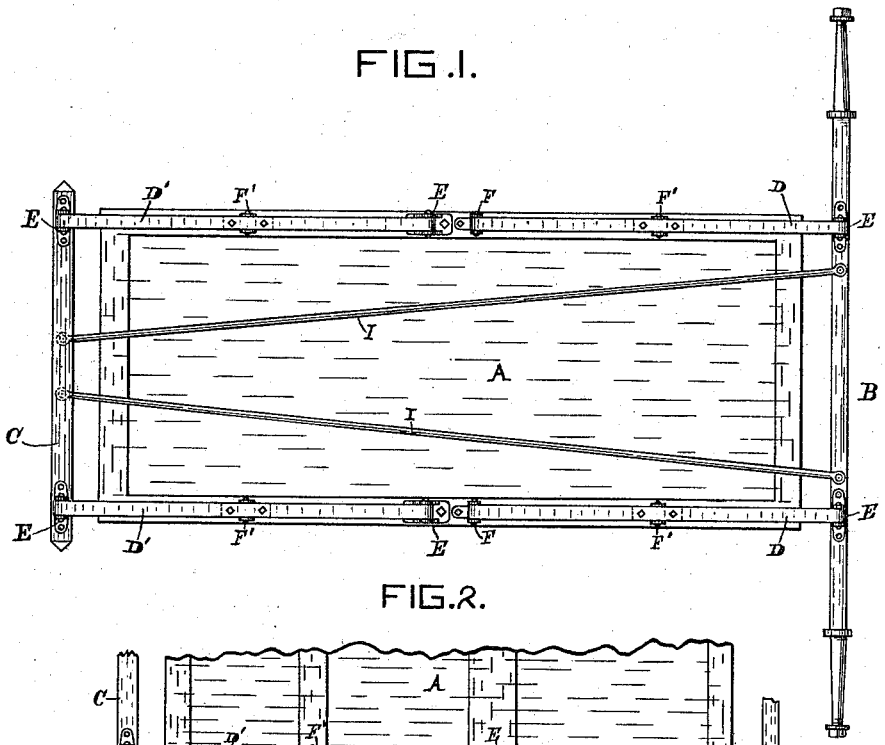


FIG. 2.

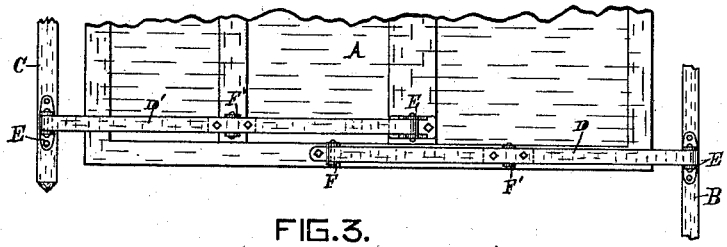


FIG. 3.

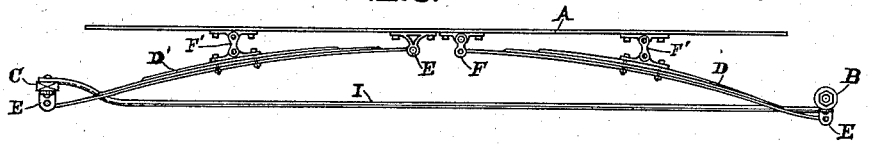


FIG. 4.

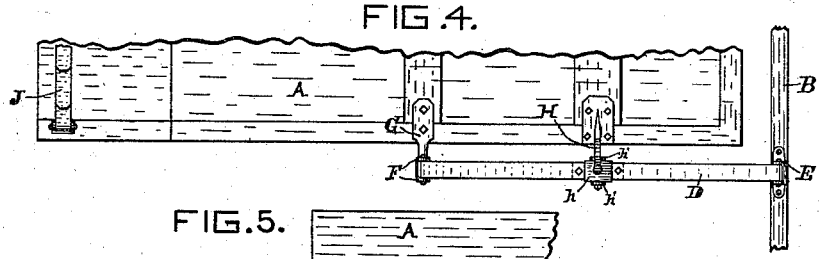
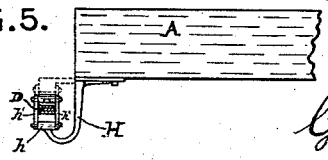


FIG. 5.



Witnesses,
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Inventor.
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By his Attorney Geo. J. Murray.

UNITED STATES PATENT OFFICE.

GEORGE E. BARTHOLOMEW, OF CINCINNATI, OHIO, ASSIGNOR OF ONE-HALF TO EUGENE V. OVERMAN, OF SAME PLACE.

VEHICLE SPRING-GEAR.

SPECIFICATION forming part of Letters Patent No. 383,850, dated June 5, 1888.

Application filed November 9, 1887. Serial No. 254,670. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. BARTHOLOMEW, a citizen of the United States, and a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Vehicle Spring-Gear, of which the following is a specification.

My invention is an improvement in spring-gear for vehicles. Its object is to provide an easy-riding carriage at a moderate cost.

The invention will be first fully described in connection with the accompanying drawings, and then particularly referred to and pointed out in the claims.

In the drawings, in which like parts are indicated by similar reference-letters wherever they occur throughout the various views, Figure 1 is an inverted plan view of a vehicle body and gear constructed according to my invention. Fig. 2 is a similar view of one side of a vehicle-bottom, showing a modified form or arrangement of the springs. Fig. 3 is a side elevation of the form shown in Fig. 1. Fig. 4 is an inverted plan view of another modification, in which but one pair of longitudinal springs are employed, and these secured on brackets projecting out beyond the sides of the body to support it at the rear, while the front is supported upon a cross-spring, the ordinary elliptic being shown. Fig. 5 is a detail view in end elevation of the body and its supporting-bracket employed in the form shown in Fig. 4.

Referring to the parts, and, first, to the form represented in Figs. 1 and 3, A is the vehicle-body; B, the rear axle; C, the front head-block or bolster; D, the rear springs, and D′ the front springs. These springs are arranged in pairs upon each side of the body-bottom. The front springs are connected to the head-block, (preferably underneath,) and the opposite ends of these springs are connected to the body-bottom near its transverse center by rigid shackles E. The rear pair of springs are connected to the rear axle by rigid shackles E. The opposite ends of these springs are coupled to the body-bottom near its center by link or swinging shackles F. Both pairs of springs D and D′ are coupled to the body-bottom near their longitudinal centers or heavy parts by link-shackles F′.

The form shown in Fig. 2 differs from that shown in Figs. 1 and 3 only in that the front and rear springs are in different vertical planes in having the inner ends of each pair passing or extending beyond the transverse center of the body. The rear springs in this form are connected to the side sills of the body, as in Figs. 1 and 3, while the front springs, which are set in from each side of the body, are connected by the shackles to cross-sills.

In the modification shown in Figs. 4 and 5 the springs D are connected at their rear ends to the back axle in the same way as before described, and to near the center of the body by brackets G, which project laterally, and swinging links F, which couple the springs to the brackets G. On the heavy central parts of these springs are secured clip-plates, as in the other forms, to receive the shackle-bolts. The brackets H, which are secured to the body, curve down and then up underneath the springs, and have at their upturned ends perforated bosses *h* to receive the shackle-bolts, which, like the upper bolts, pass through the links *h′* and couple the brackets to the springs. The front of the body is supported by the ordinary elliptic spring, J, which is clipped to the front bolster and secured to the body in the usual manner.

The rear and front axles are coupled together in the usual manner by the reach or perch I, which may be of any approved construction.

I prefer to connect the ends of the springs underneath the rear axle and front bolster, because by so doing the body hangs lower; but their operation would not be varied by clipping on top instead of underneath.

The form shown in Figs. 1 and 3 is preferred for double-seated vehicles, while for smaller ones the other forms are preferred.

By connecting the body to the back springs by swinging shackles, while their ends are rigidly shackled to the axle, the movement of the body in use will be vertical and the disagreeable longitudinal or jerking movement back and forth avoided. This vertical movement is of course aided by the rigid connection of the front springs with the body and the head-block.

What I claim is—

1. The combination, with the vehicle-gear and

body, of the longitudinal side springs, D, the swinging shackles coupling the said springs to the body, and the rigid shackles E, connecting them to the rear axle, and the front springs and rigid shackles coupling the front of the body and the head-block.

2. The combination, substantially as specified, of the body and gear, the two pairs of side springs, one in front and the other at the rear, the rigid shackles E, and loose shackles F, for coupling the springs to the body and gear, respectively, the ends of said front springs being connected to the body and bolster by rigid shackles and their centers by swinging shackles, and the rear springs being coupled to the body by swinging shackles and to the rear axle by rigid shackles, substantially as hereinbefore set forth.

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Witnesses:

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