

J. W. GROAT.
 VEHICLE SPRING.

No. 189,355.

Patented April 10, 1877.

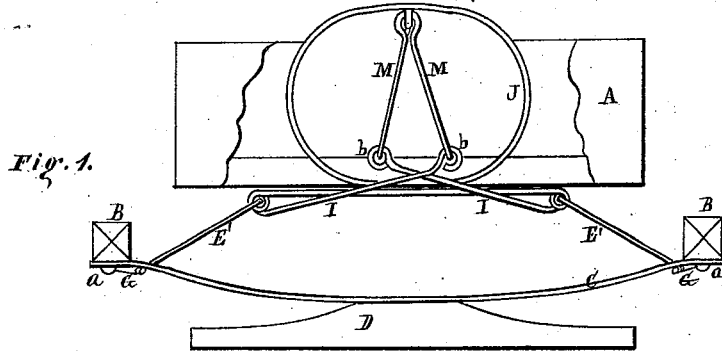


Fig. 1.

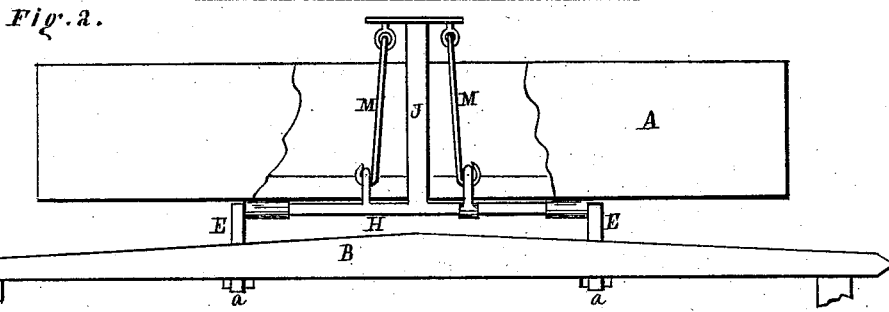


Fig. 2.

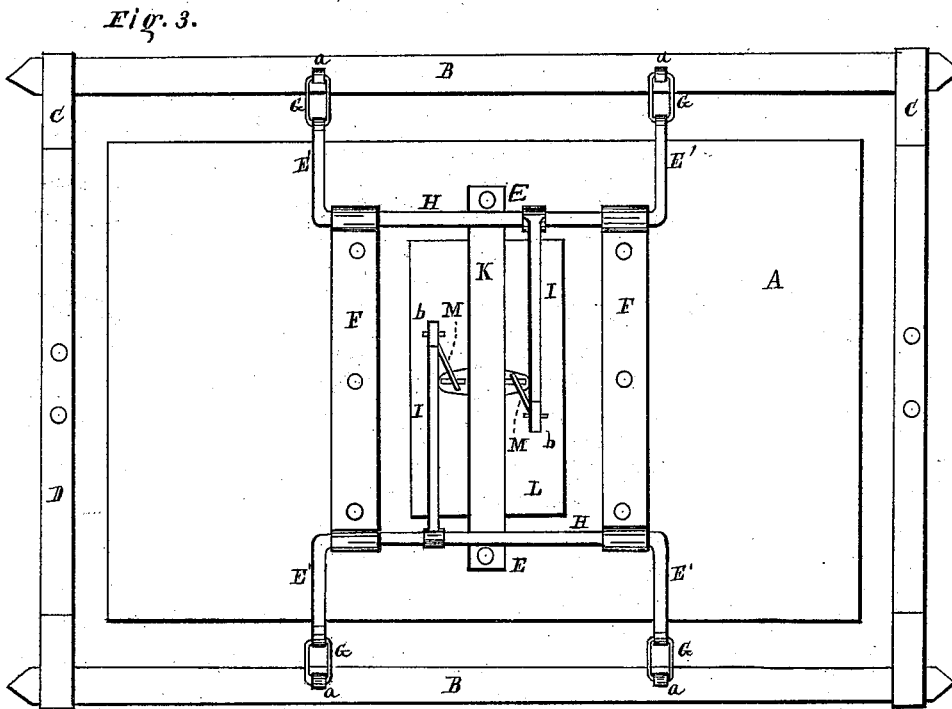


Fig. 3.

Witnesses.
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UNITED STATES PATENT OFFICE

JULIUS W. GROAT, OF FREMONT, OHIO.

IMPROVEMENT IN VEHICLE-SPRINGS.

Specification forming part of Letters Patent No. **189,355**, dated April 10, 1877; application filed December 26, 1876.

To all whom it may concern:

Be it known that I, JULIUS W. GROAT, of Fremont, in the county of Sandusky and State of Ohio, have invented new and useful Improvements in Carriages, of which the following is a description, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is an end view of the carriage, with part broken away. Fig. 2 is a side view, with part broken away. Fig. 3 is a view of the under side of Figs. 1 and 2.

Like letters of reference refer to like parts in the several views.

The nature of this invention relates to a mode of attaching the body of a carriage to the running-gear thereof, and which consists of a spring secured to the middle of the floor of the box or body of the vehicle, and which body is attached to the side bars or spars of the running-gear by an arrangement of levers and links constructed and operated in the manner as follows:

In the drawings, A represents the box or body of the carriage, which may be of the shape shown, or a modification thereof. B B are the side bars or spars, connected to each other at the ends by springs C C, resting upon the bolsters D D, all of which are or may be like those in ordinary use. The box or body A referred to is attached to the side spars by a pair of arms or levers, E E, Fig. 3, secured in a free manner to the under side of the floor of the box by straps F, as shown in said Fig. 3. To the extreme ends of each of the arms E' of the lever is attached a link, G, whereby they are secured to the spars B by an eye, a, inserted therein. The bar H of the levers E E may be extended so that the arms thereof can be attached to the springs C C, in which event the spars may be dispensed with. It is preferred, however, to attach them to the spars in the manner and position shown in the drawing for ordinary purposes. The ends of the arms I of said levers E terminate in an eye, b, Fig. 1. J, Figs. 1 and 2, is a hoop-spring, fixed to the bottom of the box by a cross-piece, K, extending across the opening L in the floor of the box, for the admission up through thereof of

the links or connections M, whereby the arms I are attached to the spring, as shown in Fig. 1. Also, said opening in the floor affords room for the movement of the arms I I, which project into it, as will be seen in the drawing. An elliptic, spiral, or other shaped spring of a suitable character may be substituted for the one herein shown.

The practical operation of the above-described invention will be readily understood on examination of the drawings, in which it will be seen that the weight of the body or box A is borne upon the spring J, which, together with its connections therewith, is supported by the side spars by means of the arms E' of the levers E, which allow the box a transverse rocking motion, but which, at the same time, prevent a transverse horizontal movement; hence, no side jolting or swinging of the box can take place to the discomfort of those riding therein.

The peculiar attachment of the body to the side spars is such as to prevent horizontal movement of the box endwise, but permit an easy rocking one in that direction, and, at the same time, a vertical one.

It will be obvious that by means of the above-described arrangement and combination of devices an easy-riding carriage is produced, and of a simple, light, inexpensive character.

The springs C may be omitted, substituting therefor a bar; also, the arms E' may be attached directly to the spars, thereby dispensing with the use of the links G. It is preferred, however, to use the said links in most cases.

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

1. The combination of the spring J, suspension-rods M M, levers E E, and side bars B B, all substantially as and for the purpose described.

2. The lever E, having bent ends E' E' and arm I on the opposite side, in combination with the side bars B B of a vehicle, substantially as and for the purpose described.

JULIUS W. GROAT.

Witnesses:

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