

(No Model.)

E. H. CARPENTER.
VEHICLE SPRING.

No. 410,705.

Patented Sept. 10, 1889.

FIG. 1.

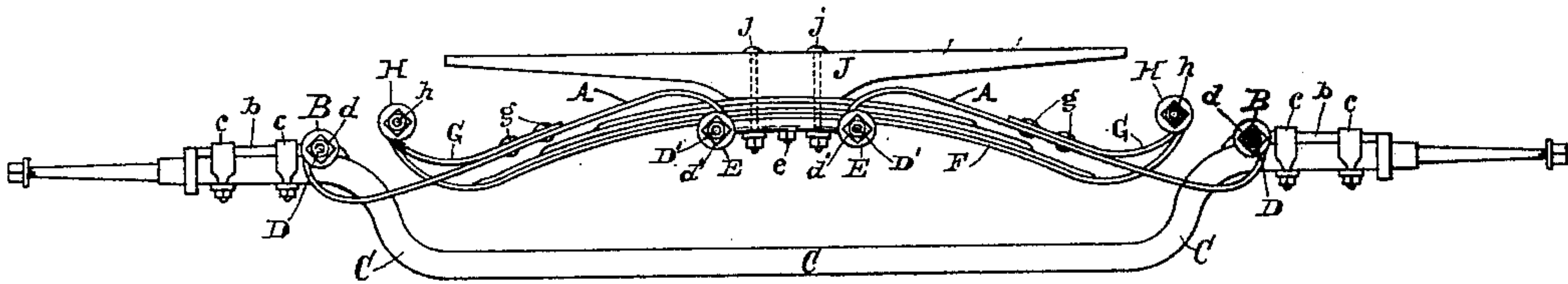


FIG. 2.

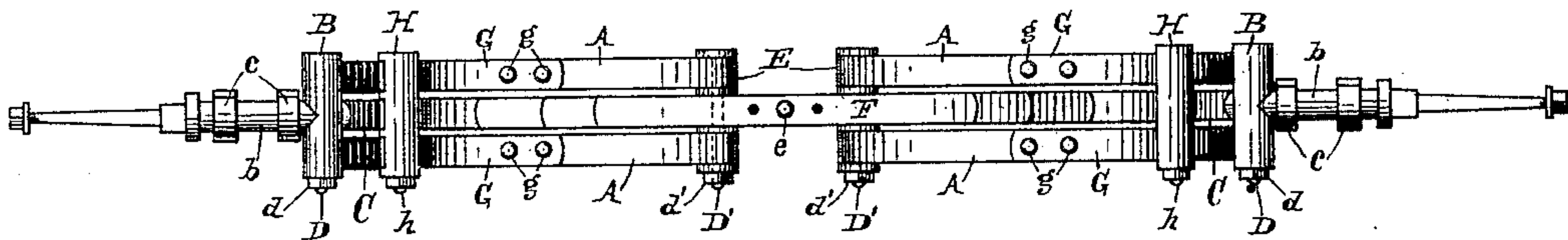
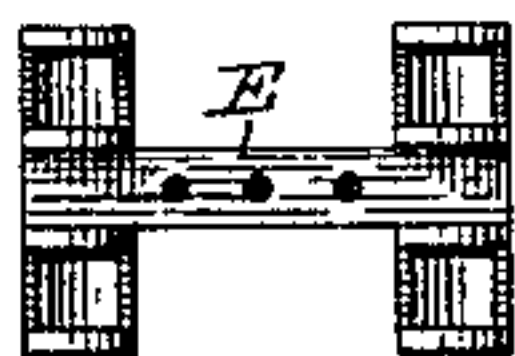


FIG. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

EDMUND H. CARPENTER, OF JACKSON, MICHIGAN.

VEHICLE-SPRING.

SPECIFICATION forming part of Letters Patent No. 410,705, dated September 10, 1889.

Application filed June 6, 1889. Serial No. 313,272. (No model.)

To all whom it may concern:

Be it known that I, EDMUND H. CARPENTER, a citizen of the United States, and a resident of Jackson, in the county of Jackson and State of Michigan, have invented certain new and useful Improvements in Vehicle-Springs, of which the following is a specification.

My invention relates to springs for coupling vehicle-bodies to the gears, and is especially intended for buggies and pleasure wagons of the class which now employ cross-springs as the coupling device.

The object of the invention is to provide a spring-coupling which will retain its elasticity equally well whether the vehicle be heavily or lightly laden.

Its object is also to prevent the sudden recoil of the spring when the vehicle is used upon rough or uneven roads.

I have observed that springs seldom break from being overloaded or from any sudden pressure brought down upon them, because when the spring is depressed all the leaves or plates act in unison to sustain the load, but on the recoil the tendency of the plates is to separate, so that the strain is unequally distributed, especially in a sudden recoil, such as takes place when the wheels pass over an obstacle in the road or in crossing a rut when driving at a quick pace. The sudden jar is liable to break some of the leaves or plates of the spring, in addition to producing an unpleasant jolting of the vehicle-body. This sudden recoil of the body I prevent by my compound spring-coupling, which is composed of several spring-sections so connected together that both the downward thrust and the recoil brings the sections successively into action, so that the movement either up or down is so gradual that all sudden jars are avoided.

The invention will be first fully described in connection with the accompanying drawings, in which like parts are indicated by similar reference-letters wherever they occur throughout the various views, and will then be particularly referred to, and pointed out in the claims.

Figure 1 is an edge elevation of my spring-coupling as used when the body is to be coupled to the downwardly-bent axles of the vehicle. Fig. 2 is a top view of the same with the spring-

bar removed. Fig. 3 is a top or plan view of the center coupling which connects the inner ends of the quarter spring-sections and also connects these sections to the center spring-bar.

The spring-sections A, of which there are four, preferably made of a single plate each, have their ends turned in opposite directions. The outer ends are coupled to tubular shackles B. The under sides of these shackles are cut away to receive the spring ends, and also to pass the axle C, to which they are secured by clips c, which pass around the shanks b of the shackles and the sides of the axle, and are secured by clip bars or nuts. Bolts D pass through the shackles and the eyes of the springs, and are secured in place by nuts d. The inner ends of each pair of springs A enter the cut-away tubular portions of the center coupling E, and are shackled to it by bolts D' and nuts d'.

The center spring F, which is of the semi-elliptic type, is composed of any number of plates desired. These are connected at the center to the center coupling E by a bolt e. The outer ends of the center spring F curve up above the springs A, its eye being in the same plane as the eyes of the shorter springs G, which are arranged in the same vertical plane as the springs A, to which their inner ends are connected by rivets g. The outer ends of the center spring and the springs G are coupled by the shackles H and their bolt h. The spring-coupling is connected to the spring-bar J by bolts j, which pass through the coupling E, spring F, and the spring-bar and have nuts on their ends to tighten the parts together.

It will be seen that any downward pressure on the wagon-body is first communicated to the center spring F and through it to the inner ends of the springs A. The depression of the vehicle-body exerts an upward pressure upon the couplings H, while this upward pressure is resisted by the short springs G, which are coupled at their opposite ends, respectively, to the couplings H and the springs A. Thus the springs are successively brought into action, each set alternately cushioning the others, preventing sudden jars and producing the effect only attainable in very long

springs, which cannot be used across the body, and produce an unpleasant rocking motion when used lengthwise of the body and gear.

I have shown my springs coupling the body 5 directly to the axle; but it is obvious that the ends of the springs A may be shackled to the ordinary side bars, and they may also be used to advantage as longitudinal side springs by shackling the ends of the springs A, re- 10 spectively, to the rear axle and front head-block. These and other modifications need not be specifically described, as they are merely mechanical and will readily suggest themselves to the skilled artisan from what 15 has been hereinbefore shown and described.

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

1. In a vehicle-spring, the combination, substantially as hereinbefore set forth, of the four 20 quarter-sections A, the center spring F, the coupling E, and bolt connecting the inner ends of the quarter-springs and the center spring, the short springs G, having their inner ends secured to the springs A, and the shackles H 25 to couple the ends of the springs G and center spring F.

2. The combination, substantially as specified, of the center spring and quarter-springs A, the coupling E and its bolt for the inner 30 ends of said quarter-springs, and the bolt centrally connecting the said quarter-springs, center spring, and coupling, the four short springs G, secured to the quarter-springs, the shackle H and its bolt for coupling the ends 35 of the springs G and center spring F, and the shackle B and its bolt to couple the outer ends of the quarter-springs.

3. The combination, substantially as specified, of the quarter-springs, the short springs G secured thereto, the center spring F, the 40 coupling E, spring-bar J, and bolts connecting the coupling-springs and spring-bar, and the shackle H to couple the outer ends of the short springs G and center spring F.

4. The combination of the axle C, having 45 the downwardly-bent center part, the shackles B, secured upon each end of said axle, and the compound spring-coupling comprising the quarter-springs A, coupled to said shackle B, the coupling E for the inner ends of said 50 quarter-springs, the center spring F, also secured to said center coupling, the short springs G, and the shackle H and its bolt for coupling the ends of said center spring and the short springs G. 55

5. A spring-coupling for connecting the body and gear of vehicles, consisting of four quarter-sections arranged in pairs, a semi-el- 60 liptic spring arranged between the said quarter-springs, a center coupling for said center and quarter springs, four short spring-sections G, secured upon the quarter-springs and hav- 65 ing their outer ends curved above the quarter-sections and in the same plane as the upwardly-curved ends of the center spring, and shackle H and bolt h to couple the outer ends of the said short spring-sections and the ends of the center spring, substantially as and for the purpose set forth.

EDMUND H. CARPENTER.

Witnesses:

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K. A. CARPENTER.