(No Model.)

M. P. HOLMES.

VEHICLE SPRING.

No. 389,512. Patented Sept. 11, 1888.

Fig. 1.

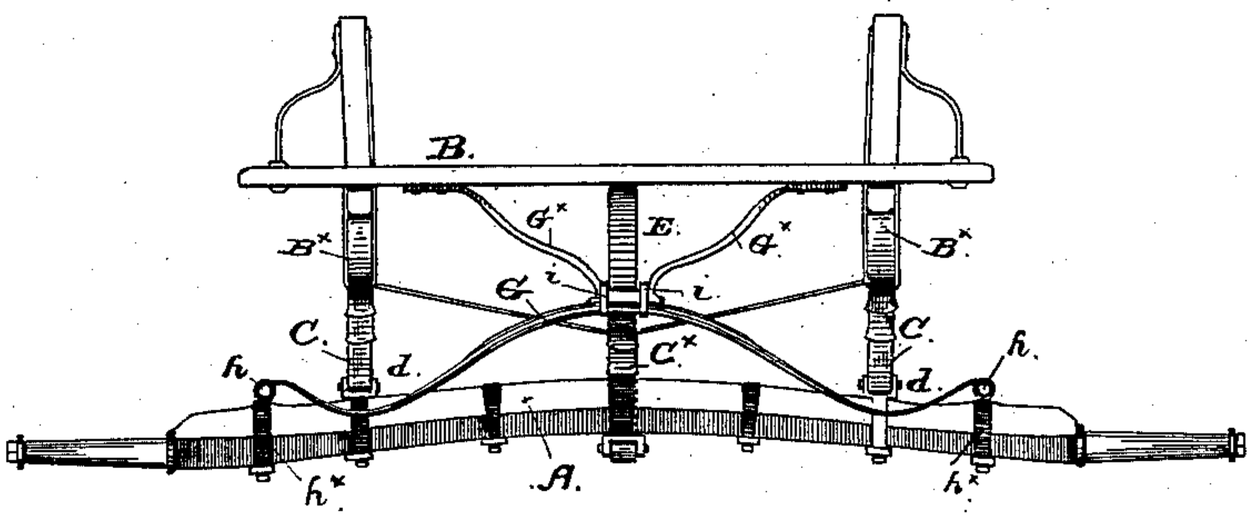

Fig. 2.

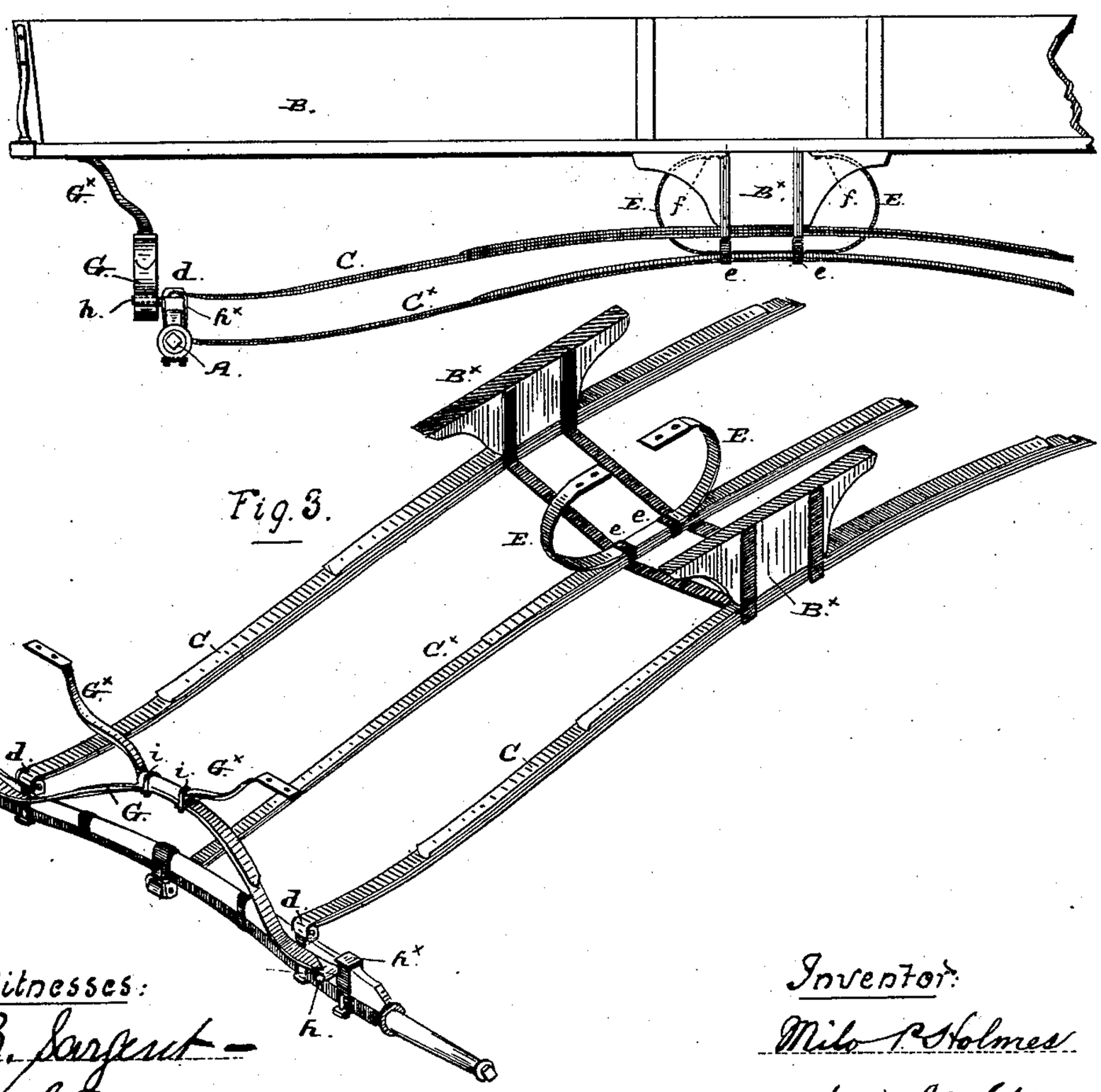

Fig. 3.

Witnesses:
W. B. Sargent
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UNITED STATES PATENT OFFICE.

MILO P. HOLMES, OF SAN FRANCISCO, CALIFORNIA.

VEHICLE-SPRING.

SPECIFICATION forming part of Letters Patent No. 389,512, dated September 11, 1888.

Application filed April 18, 1888. Serial No. 271,098. (No model.)

To all whom it may concern:

Be it known that I, MILO P. HOLMES, a citizen of the United States, residing in the city and county of San Francisco, and State of California, have invented certain new and useful Improvements in Triple-Spring Gear for Wagons; and I do hereby declare that the following is a full, clear, and exact description of my said invention, reference being had to drawings that accompany and form part of this specification.

My invention relates to improvements in spring-gear for wagons; and it consists in the combination of side springs and end springs, as hereinafter fully described, by which the principle of what is known as the "triple-spring" gear is applied and adapted to business-wagons and like vehicles for carrying merchandise.

These improvements have for their object to secure suitable strength and stability, an equal distribution of the weight of the load, an extension of the wagon-body beyond the springs, and all the advantages of the triple-spring gear as well.

The nature of these improvements and the manner in which I proceed to construct, apply, and carry out the same to secure the desired ends and objects are explained and set forth in the following description, in which the accompanying drawings are referred to by letters and figures.

Figure 1 is an end view in elevation taken from the back of the spring-gear, and showing the wagon-body set on it. Fig. 2 is a side view of the same, showing about one-half of the length. Fig. 3 is a perspective view of the same without the body.

Similar letters of reference indicate like parts in all the figures of the drawings.

A is the hind axle, and B the wagon-body.

C C are the side springs, and $C^{\times}$ is the center spring, that is placed midway along the space between the side springs, and, like them, is connected to the front and hind axles. The connections are the same at both axles, except that the side springs at their front ends are attached to the bolster instead of directly to the axle, and the center spring is suitably connected to the axle by a swivel to allow for the movements of the front axle in turning on its center. This is the mode of connecting the springs in the triple-spring gear at the present time. The springs C are attached by shackles *d d* in the usual way above the axle, but the center spring is attached beneath the axle at the middle. The center spring being somewhat lower than the side springs for this reason, it is attached to the bottom of the wagon-body by the C-springs E E, that are fastened by clips *e e* at their lower ends and by bolts *f f* to the body. The side springs are secured to the blocks $B^{\times}$ under the sides of the body in the usual way.

G are the end springs. These are set parallel with and above the axles to receive and give support to the wagon-body at the ends, and they are attached at the ends to the top of the axle by means of the studs *h h*, that are secured in place by clips $h^{\times}$ and by the eyes on the ends of the springs.

$G^{\times}$ $G^{\times}$ are curved arms that are fastened by clips *i i* upon the top of the spring at the middle, and are curved upwardly and outwardly to take the body. Their outer ends are thus thrown beyond the line of the axle and the end spring, so that the support to the body is brought at both ends of the gear outside of the axles.

By setting end springs in this way I secure two results—first, an extension of the body at the ends, thereby increasing its carrying capacity, and, secondly, a distribution of the weight upon both sides of the axles, thereby obtaining greater stability and preventing the axles from "canting," as they are liable to do where the ordinary triple-spring gear is subjected to a heavy load. As thus arranged and combined the body and its load is borne evenly upon all the springs and the weight is equally distributed over the gear. In this way a triple-spring gear can be made to bear a heavy load, and can be therefore employed to advantage in building business-wagons and other comparatively light vehicles for carrying merchandise, to which such spring-gear is otherwise not well adapted by reason of its lightness, the liability of the axles to cant under a heavy load, and the impossibility of extending the body outside the axles.

It will be evident that double springs could be used in place of the single springs G, where greater stiffness at the ends of the gear would be an advantage; and in such case the springs

would be fastened upon the axle at the rear of the gear and on the bolster at the front by clips in the usual way. The arms $G^{\times}$, being secured on the springs and having suitable curvature upwardly and outwardly, will throw the weight of the body and its load to a suitable point outside the line of the axle.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a vehicle-spring, the combination, with the longitudinal springs, of the transverse end springs having curved arms on the top thereof which are curved upwardly and outwardly, their ends being attached to the vehicle-body beyond the axles, substantially as described.

2. The combination, with the side springs, C C, of the end springs, G, arranged parallel with and above the axles, and the curved arms $G^{\times}$ $G^{\times}$, fastened on the top of springs G and curved upwardly and outwardly, so as to support the vehicle-body at points beyond the axles, substantially as described.

3. The combination, with the side springs, C C, and center spring, $C^{\times}$, attached to the vehicle-body by C-springs E E, the end springs, G, arranged parallel with and upon the axles, and the curved arms $G^{\times}$, fastened to springs G and curved upwardly and outwardly, so as to support the vehicle-body at points beyond the axle, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand and seal.

MILO P. HOLMES. [L. S.]

Witnesses:
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