(No Model.)

T. J. MAGNER & C. L. THOMAS.

Vehicle Spring.

No. 231,070. Patented Aug. 10, 1880.

Fig. 1.

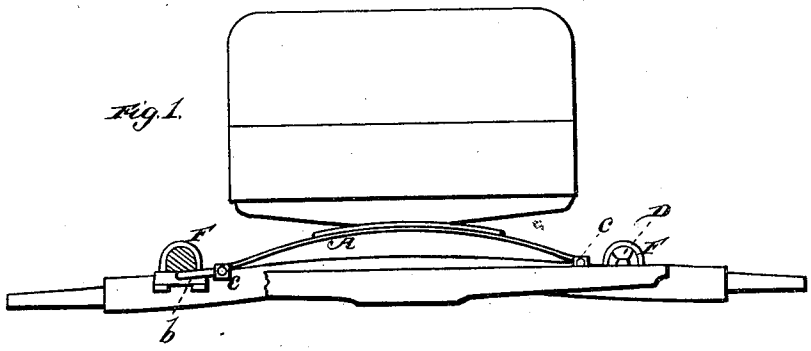


Fig. 2.

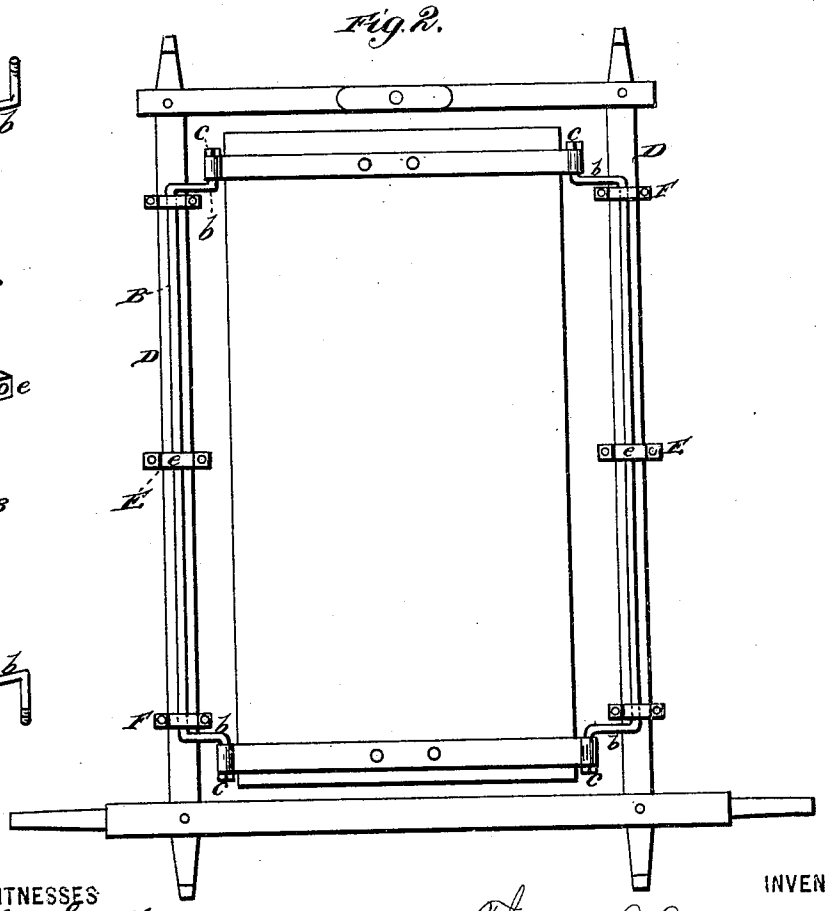
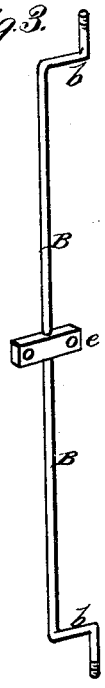


Fig. 3.



WITNESSES

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THOMAS J. MAGNER AND CHARLES L. THOMAS, OF HORNELLSVILLE, N. Y.

VEHICLE-SPRING.

SPECIFICATION forming part of Letters Patent No. 231,070, dated August 10, 1880.

Application filed June 5, 1880. (No model.)

To all whom it may concern:

Be it known that we, THOMAS J. MAGNER and CHAS. L. THOMAS, citizens of the United States, residing at Hornellsville, in the county of Steuben and State of New York, have invented certain new and useful Improvements in Vehicle-Springs; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, and to letters or figures of reference marked thereon, which form a part of this specification.

Our invention relates to vehicle-springs; and it consists in the improved features of construction, hereinafter fully described, and particularly pointed out in the claim.

Referring by letter to the annexed drawing, A refers to the ordinary form of semi-elliptic spring, which may be either a many-leaved or a single spring, as desired. These springs are applied to the vehicle in the usual way, the several figures of the drawing being, in this respect, designed to show their application to a carriage-body in one way.

B refers to the torsional side springs, which consist of long spring-rods, each one of which has one of its ends formed into a crank shape, as at *b*. The semi-elliptic springs are connected with the crank ends of these springs B, and are held thereon against any accidental end displacement by nuts *c*. These springs B are arranged in pairs against the under side of the side bars, D D, of the running frame, which is independent of the carriage-body save through the medium of the spring-connections.

Said torsional springs are rigidly secured to the plates *e* of clips E, one of which clips is clipped on and at or about the middle of each side bar, D. These clips hold the inner ends of the springs firmly, while near the outer end of each torsional spring, and adjacent to the crank end thereof, is a clip, F, also clipped upon the bars D. The plate of the clip has, however, in this instance, an opening or channel through which the spring passes, so that when the weight in the vehicle, or a sudden jolt, causes the semi-elliptic springs to straighten out in a measure, and thereby act upon and turn the crank ends of the torsional springs, the rods of these springs will be free to turn or twist from their crank ends toward their ends which are rigidly held by the centrally-arranged clips.

If it is found desirable, plates of anti-friction metal, with proper holes or channels for the torsional springs, may be interposed between said springs and the usual plates of the clips F.

By this arrangement the front torsional springs are entirely independent of the rear torsional springs, and yet but one central clip is required for each pair of said springs. It also enables us to employ long spring-rods, which constitute valuable auxiliaries to the ordinary semi-elliptic springs, and which prevent them from breaking.

We are aware that torsion-springs have been used in combination with semi-elliptic springs in vehicles prior to our invention, as shown in Patent No. 83,810, of November 3, 1868; but in that instance the torsion-springs, four in number, extend the entire length of the vehicle, which greatly weakens them and lessens their usefulness, and the fixed ends of said springs are fixed in sockets in the cross-bars of a frame interposed between the bottom of the body and the running-gear. The crank-arms are made independently of the rods which form the torsion-springs, and the invention differs materially from our construction. We therefore make no claim to said invention herein.

Having thus described our invention, what we claim, and desire to secure by Letters Patent, is—

As an improvement in vehicle-springs, the torsional side springs, B, having cranks *b* at their outer ends, fixed at their inner ends to the central clips, E, upon the under faces of the side bars, D, and supported near their outer ends by the clips F, in combination with the semi-elliptic springs A, substantially as and for the purposes set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

THOMAS J. MAGNER.
CHARLES LE THOMAS.

Witnesses:
JAMES MILLARD,
EDWARD E. GILBERT.