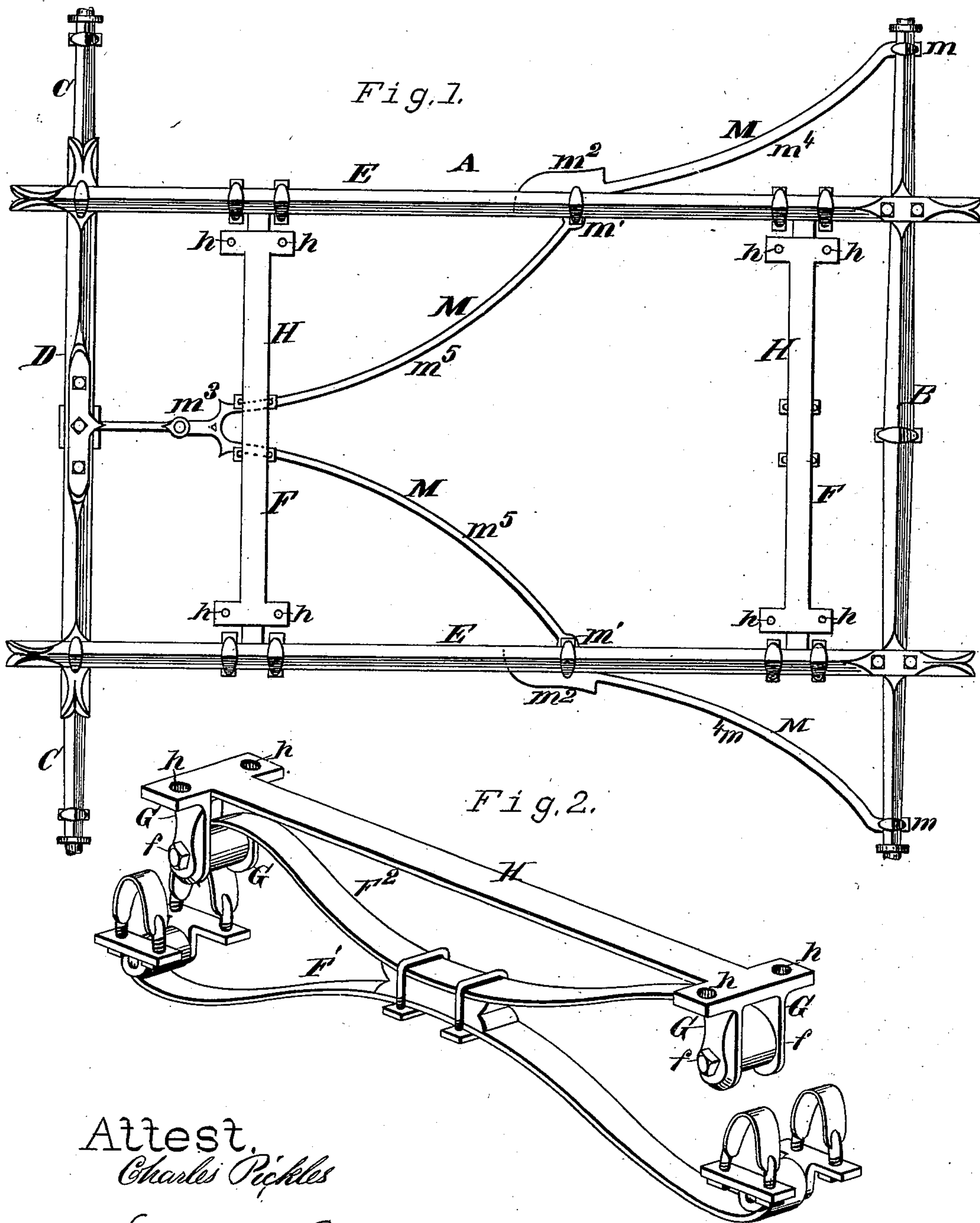


F. J. SPRINGER.
Vehicle-Spring.

No. 227,661.

Patented May 18, 1880.



Attest.
Charles Pickles

Amos S. Boyd

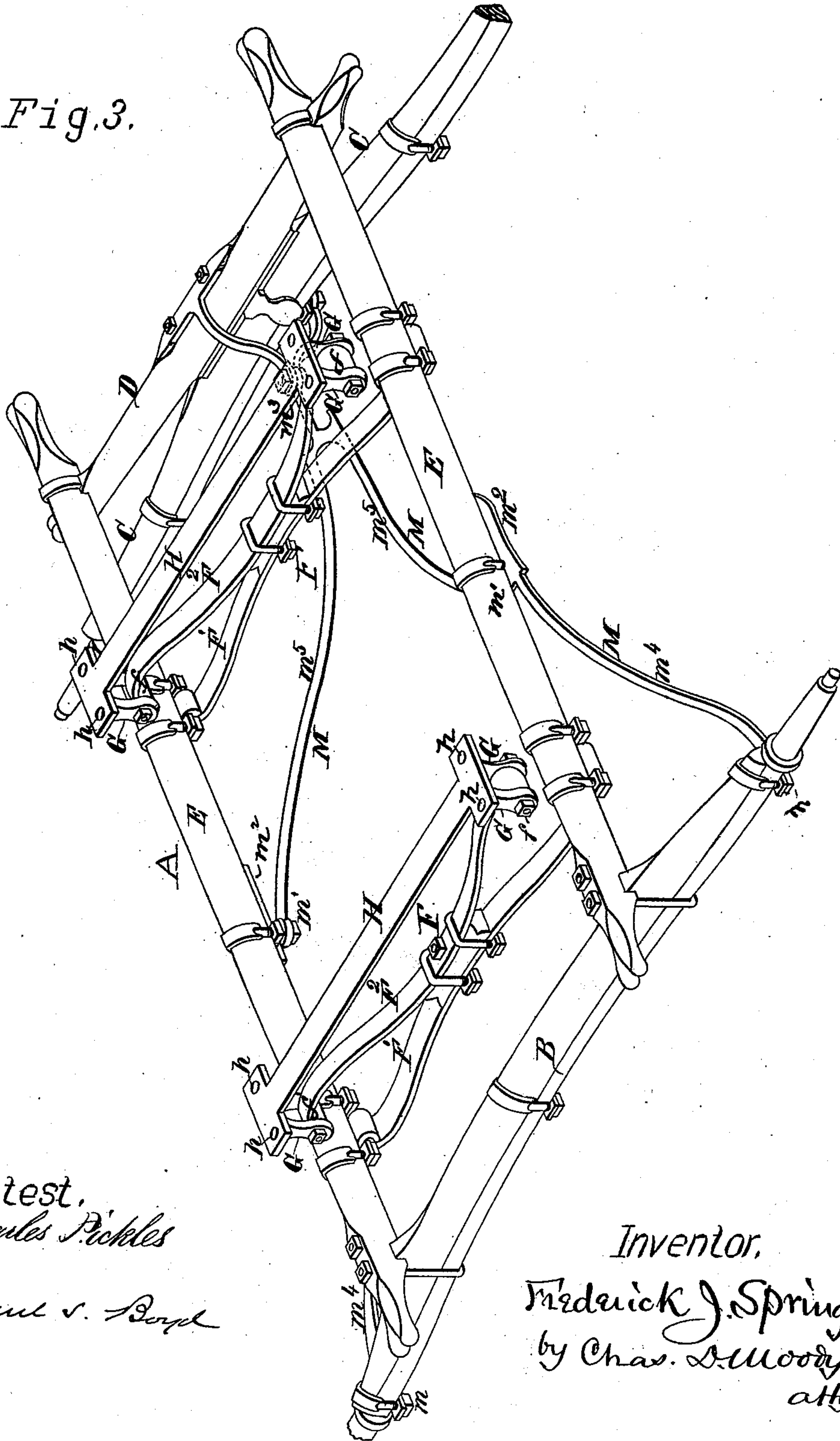
Inventor.
Frederick J. Springer.
by Chas. S. Moody, atty.

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Fig. 3.



Attest,
Charles Pickles
Ernest S. Dwyer

Inventor,
Frederick J. Springer
by Chas. S. Moody.
atty.

UNITED STATES PATENT OFFICE.

FREDERICK J. SPRINGER, OF EDWARDSVILLE, ILLINOIS.

VEHICLE-SPRING.

SPECIFICATION forming part of Letters Patent No. 227,661, dated May 18, 1880.

Application filed January 24, 1880.

To all whom it may concern:

Be it known that I, FREDERICK J. SPRINGER, of Edwardsville, Illinois, have made a new and useful Improvement in Carriage-Gears, of which the following is a full, clear, and exact description, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a plan of the improved gear; Fig. 3, a perspective view thereof, and Fig. 2 a perspective view of one of the springs.

The same letters denote the same parts.

I have heretofore (July 16, 1878) patented an improvement in carriage-gears, consisting partly in the construction and mode of attaching the carriage-springs, and partly in the manner of connecting the bolster and front axle.

The present improvement is supplemental to the one referred to, having relation to the means used in uniting the springs and the carriage-body.

Referring to the drawings, A represents the carriage-gear in question, B representing the hind axle, C the front axle, D the bolster, E E the side bars, and F F the springs, all substantially as in the former construction, the upper part, F², of the spring being shorter than the lower part, F', and sufficiently so as to enable it to move up and down between the side bars.

Now, in place of the part F² of the spring being connected by clips directly with the carriage-body, as in the patented construction referred to, the eyes *f f* connect loosely with clips G G, which depend from, or are attached to or made part of, a tie-rod or plate, H, which extends longitudinally with the spring. The carriage-body rests upon and is fastened to the plate, which also serves to preserve the form of the upper part, F², of the spring by preventing any tendency thereof to spread and lengthen in use. The plate is, further, especially valuable in preventing any strain from coming upon the carriage-body and in

resisting the strain upon the clips. The fastenings, with the carriage-body, may be in the form of bolts passing upward through the perforations *h h*.

M M represent stay-irons. Their office is to impart rigidity to the side bars, E E, in a lateral direction and to prevent the bars from spreading or coming together. They are especially valuable in connection with the springs F F. Beginning near the ends of the hind axle at *m m*, respectively, they, considered generally, extend forward, converging, and finally connecting with the front gear at the center thereof. At *m' m'*, where they cross the side bars, they are fastened thereto, and they are united just in rear of the front axle. At *m' m'* they may be enlarged to form the usual wheel-fenders *m² m²*, and at *m³* the stay may branch, one part leading to the top of the bolster and the other part to the under side of the front axle. Each iron, from the point *m* forward to the point of union, may be in a single piece, or at the points of connection with the side bars they may be divided into separate parts, one part, *m⁴*, leading from the hind axle to the side bar, and the other part, *m⁵*, leading thence forward; but in such case the two parts *m⁴ m⁵* of the stay-iron must be connected with the side bar at the same point.

I claim—

1. The combination of the part F² of the spring F, the clips G G, and tie-plate H, the part F² being loosely connected with the clips, and the tie-plate extending longitudinally with the spring, substantially as described.

2. The combination of the side bars, E E, spring F, constructed as described, clips G G, and plate H, said plate being arranged longitudinally with the spring, substantially as described.

F. J. SPRINGER.

Witnesses:

JOHN G. IRWIN,
H. J. SPRINGER.