

(No Model.)

C. A. HOWARD.

WAGON SPRING.

No. 396,694.

Patented Jan. 22, 1889.

Fig. 1.

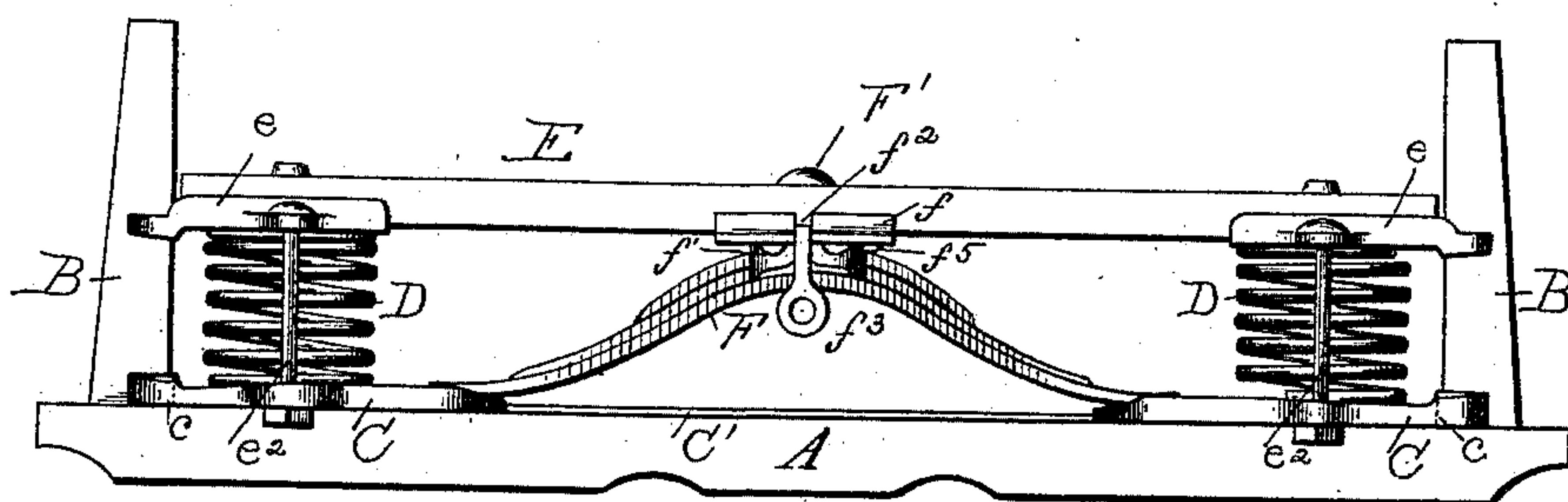


Fig. 2.

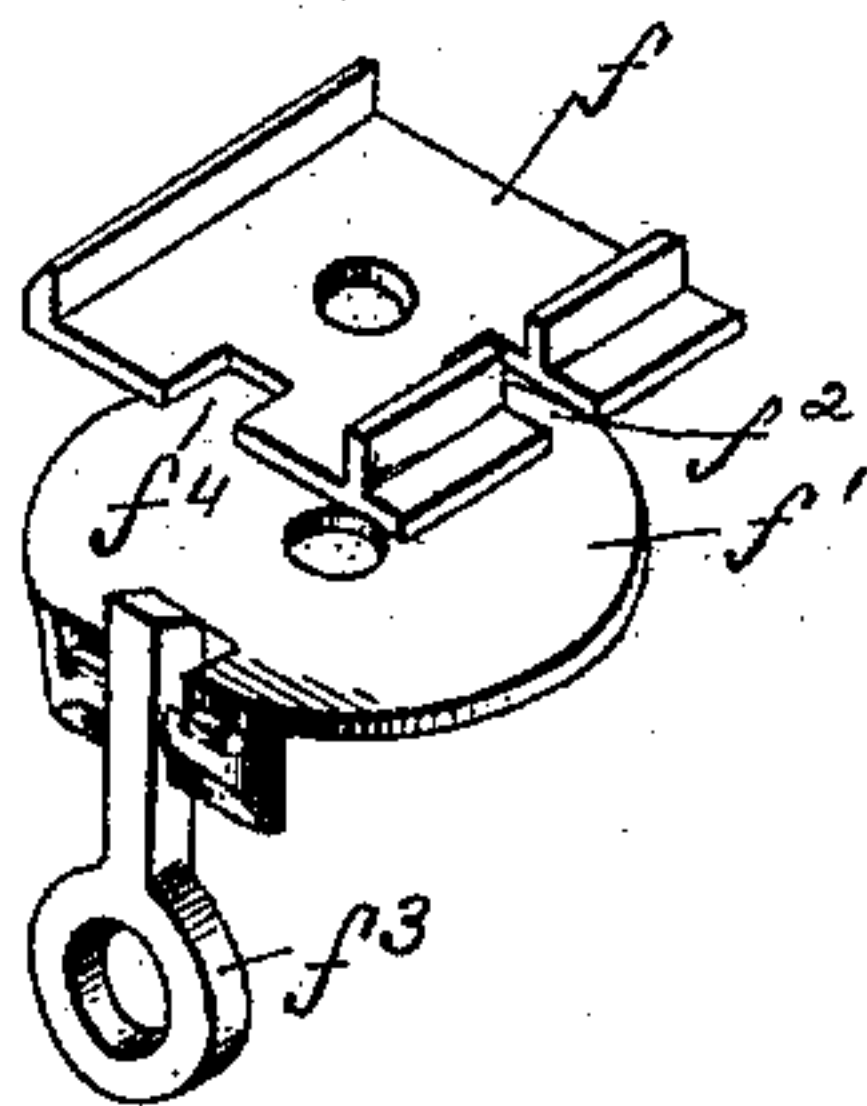
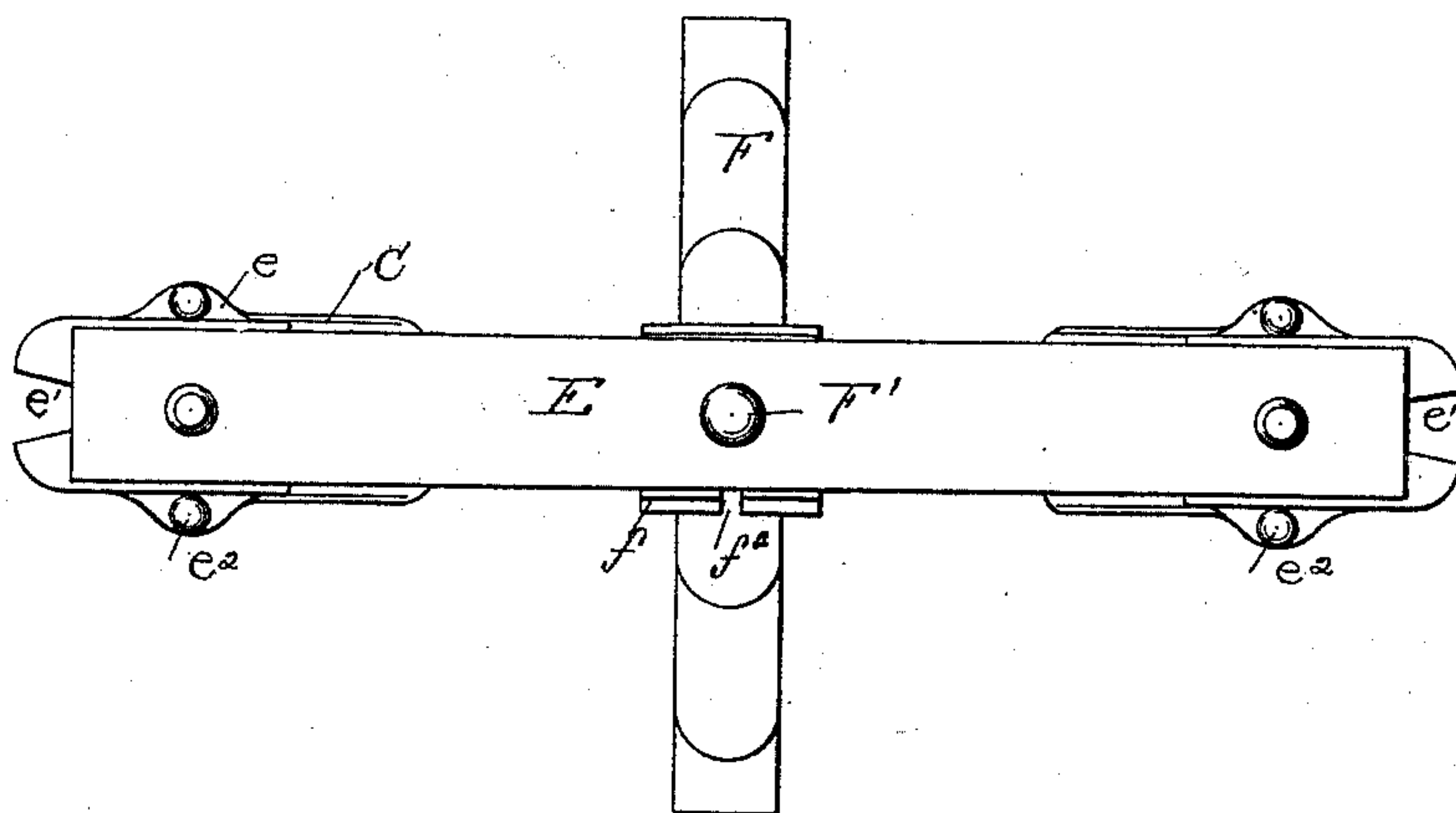


Fig. 3.

WITNESSES,

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# UNITED STATES PATENT OFFICE.

CHARLES A. HOWARD, OF PONTIAC, MICHIGAN, ASSIGNOR TO ALBERT G. NORTH, OF SAME PLACE.

## WAGON-SPRING.

SPECIFICATION forming part of Letters Patent No. 396,694, dated January 22, 1889.

Application filed September 1, 1888. Serial No. 284,329. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES A. HOWARD, a citizen of the United States, residing at Pontiac, county of Oakland, State of Michigan, have invented a certain new and useful Improvement in Wagon-Springs; and I declare the following to be a full, clear, and exact description of the same, 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 drawings, which form a part of this specification, and in which—

Figure 1 represents a side elevation of my improved bolster-spring in use with the semi-elliptic spring upon the bolster. Fig. 2 is a plan view of my improved device with the semi-elliptic spring off from the bolster. Fig. 3 is a view illustrating the means employed for locking the semi-elliptic spring in position on or off the bolster.

The object of my invention is to provide for wagons a bolster-spring adapted to bear a greater or less weight with practically the same elasticity.

To this end, A represents the bolster of a wagon, and B the standards thereon.

C are bed-plates, adapted to rest on the bolster and connected by a brace, C'. A single plate extending from standard to standard along the bolster would serve equally as well; but I find that the construction with the two bed-plates connected with a strip is more economical, and the connecting-strip may, if desired, be dispensed with. Each one of the bed-plates C is provided with a recess, c, adapted to fit onto the bolster-standards B.

D are spiral springs, which rest on the bed-plates C. In the drawings but one of these springs is shown on each end, but two or more might be used in the same location, if desired.

E is a cross-bar on which the wagon-box rests, and is provided at each end with suitable plates, e, against which the spiral springs may rest. These plates are provided with recesses e', adapted to fit onto the bolster-standards. e<sup>2</sup> are bolts extending from the plates e to the bed-plates C, and designed to hold the spiral springs firmly in place.

F is a semi-elliptic metallic spring pivoted midway between its extremities to the cross-bar E by the bolt F', and adapted to either bear on the bolster or be swung round at right angles to the bolster, and thus support none of the load.

f is a clip attached to the under side of the cross-bar E, and bearing on the lateral face of the former is a clip, f', attached to the convex side of the semi-elliptic spring F.

The clip f is provided with a recess, f<sup>2</sup>, at its outer edge adapted to receive a gravity-latch, f<sup>3</sup>, and this gravity-latch, being pivoted on the clip f', serves to lock the semi-elliptic spring in place when resting on the bolster. Another edge of the clip f at right angles to the former is also provided with a recess, f<sup>4</sup>, into which the latch f<sup>3</sup>, when the semi-elliptic spring is swung off from the bolster, may engage itself, and thus lock the said spring in that position. The clip f may be provided with shoulders f<sup>5</sup>, so arranged that the semi-elliptic spring F cannot be swung too far.

The advantages of my improved bolster-spring will now be understood. When the wagon is empty or has only a light load thereon, the spiral springs will be sufficient to give the required elasticity, while the addition of the semi-elliptic spring would make it too stiff. The semi-elliptic spring may, therefore, be swung off the bolster, and thus add none of its strength to the support of the load; but when a heavy load is put on the wagon and the spiral-springs are not strong enough to give sufficient elasticity the semi-elliptic spring may be swung onto the bolster, and thus add its strength to the support of the load.

What I claim is—

1. In a vehicle-bolster-spring mechanism, the combination, with the bed plate or plates adapted to rest on the bolster, and the cross-bar adapted to receive the weight of the load, of spiral springs extending between said bed-plates and cross-bar at their extremities, and a semi-elliptic spring adapted to be swung either on or off the bolster at will, substantially as described.

2. In a vehicle-bolster-spring mechanism,



the combination, with the bed-plates, the cross-bar, and a semi-elliptic spring pivoted to the said cross-bar and adapted to be swung either on or off the bolster, of spiral springs  
5 extending between the said bed-plates and the plates  $e$  on the cross-bar, and held in place by the bolts  $e^2$ , substantially as described.

3. In a vehicle-bolster-spring mechanism,  
10 the combination, with the bed-plates, the cross-bar, the spiral springs, and the semi-

elliptic spring pivoted on the cross-bar and adapted to be swung either on or off the bolster, of means for locking the semi-elliptic spring in a position either on or off the bolster, 15 substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

CHARLES A. HOWARD.

Witnesses:

SAMUEL E. BEACH,  
JOHN FITZPATRICK.