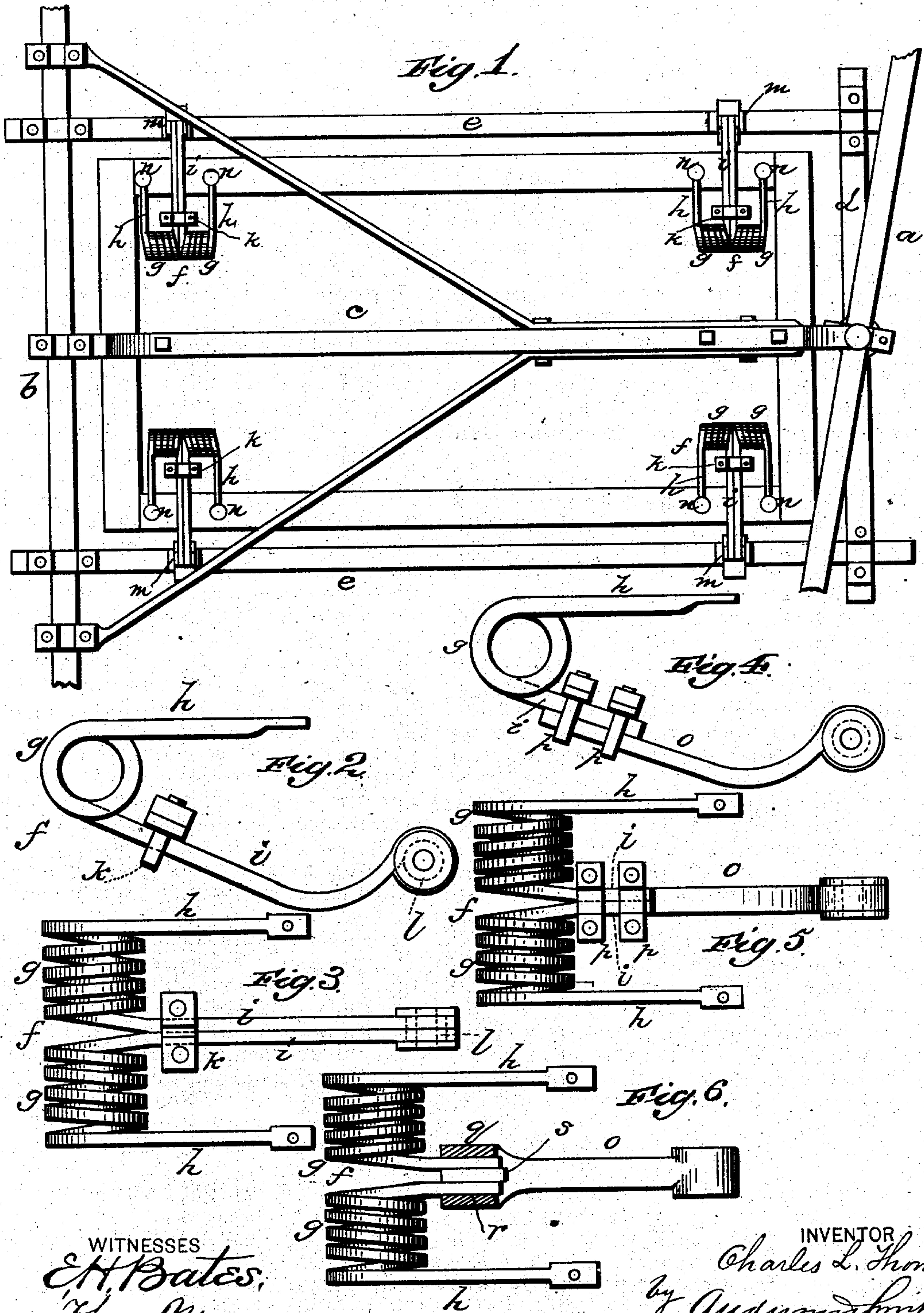


(No Model.)

C. L. THOMAS.
SPRING FOR VEHICLES.

No. 292,147.

Patented Jan. 15, 1884.



WITNESSES
E. H. Bates,
Theo. Munger.

INVENTOR
Charles L. Thomas
by *Anderson Smith*
his ATTORNEYS

UNITED STATES PATENT OFFICE.

CHARLES L. THOMAS, OF HORNELLSVILLE, NEW YORK.

SPRING FOR VEHICLES.

SPECIFICATION forming part of Letters Patent No. 292,147, dated January 15, 1884.

Application filed October 17, 1883. (No model.)

To all whom it may concern:

Be it known that I, CHARLES L. THOMAS, a citizen 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 Coil-Springs for Vehicles; and I do 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 drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a representation of a bottom view showing the springs applied. Fig. 2 is a side view of one of the springs. Fig. 3 is a plan view of one of the springs. Figs. 4, 5, and 6 are modifications of the spring.

This invention has relation to coil-springs for vehicles; and it consists in the construction and novel arrangement of devices, as will be hereinafter fully described, and particularly pointed out in the claim appended.

Referring by letter to the accompanying drawings, *a* designates the front axle, *b* the rear axle, *c* the reach, *d* the head-block, and *e e* the side bars, of a vehicle to which my improved coil-spring is shown applied to the vehicle-body and side bars to permit the necessary springing action to the vehicle-body.

I have found by actual trial that in this class of coil-springs, where they are made of a single piece of steel having a lateral or connecting bend at the middle of the coil portion of the spring to which the arm extending to the side bar is keyed, the grain of the steel at the lateral bend is subjected to great strain, which soon weakens the spring at this point.

The object of my improvement is to remedy this defect and to produce a stronger and better spring.

I preferably make the spring *f* and the arms for connecting it to the vehicle-body and side bars of two separate pieces of steel, in each of which I form a spiral, *g*, which runs from the outer upper short arm, *h*, to the inner lower longer arm, *i*. The inner arms, *i*, are placed edge to edge, and are secured firmly together in this position by a substantial clip, *k*. The

arms *i i* extend straight forward from the clip *k*, and are curved upward and are provided with aligned eyes *l*, the outer faces of which are bushed with brass to prevent noise when they are connected with the shackles *m*, clipped to the side bars, *e e*. The short upper arms, *h*, are secured to the under face of the vehicle-body by bolts *n*.

Instead of extending the inner long arms, *i*, to the side bars, I sometimes cut them off or extend them only a short distance from their coils and connect a single curved arm, *o*, to them. The connection between the short arms *i i*, when so constructed, and the single curved arm *o*, which is also brass-bushed at the eye, may be made by two stout clips, *p p*; or, if I prefer, I may and do provide the inner end of the arm *o* with a head, *q*, having a rectangular or other suitably-shaped mortise, *r*, which receives the ends of the arms *i i*, when they are made short, and between the ends of these arms *i i*, and in the direction away from the eye of the arm *o*, I drive a wedge or key, *s*, which spreads the arms *i i* within the mortise and forms a rigid connection at this point between the head *q* and the arms *i i*.

It will be observed that the essential feature of the invention consists in extending the inner lower arms forward from their coils and connecting them, thereby dispensing with the lateral bend heretofore employed.

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

A coil-spring for vehicles, formed of two separate pieces of steel, each provided with an upper outer arm extending to and connected with the body of the vehicle, a spiral coil running inwardly from said outer arm and terminating in an inner lower arm extending nearly straight forward from the inner coil, in combination with a rigid fastening device connecting the inner arms in front of their inner coils, and secured to the side bars, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES L. THOMAS.

Witnesses:

THEO. MUNGEN,
EMORY H. BATES.