(No Model.)

2 Sheets—Sheet 1.

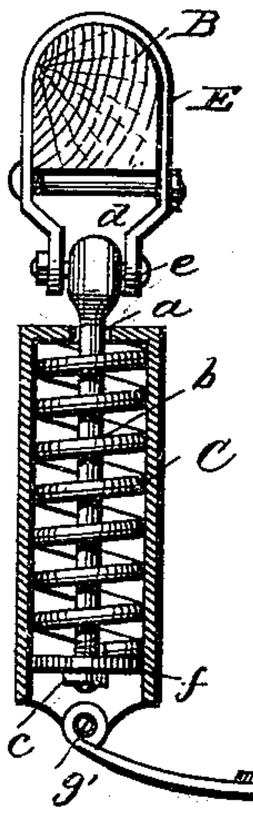
C. N. HASKINS.

VEHICLE SPRING.

No. 330,023.

Patented Nov. 10, 1885.

Fig. 1.



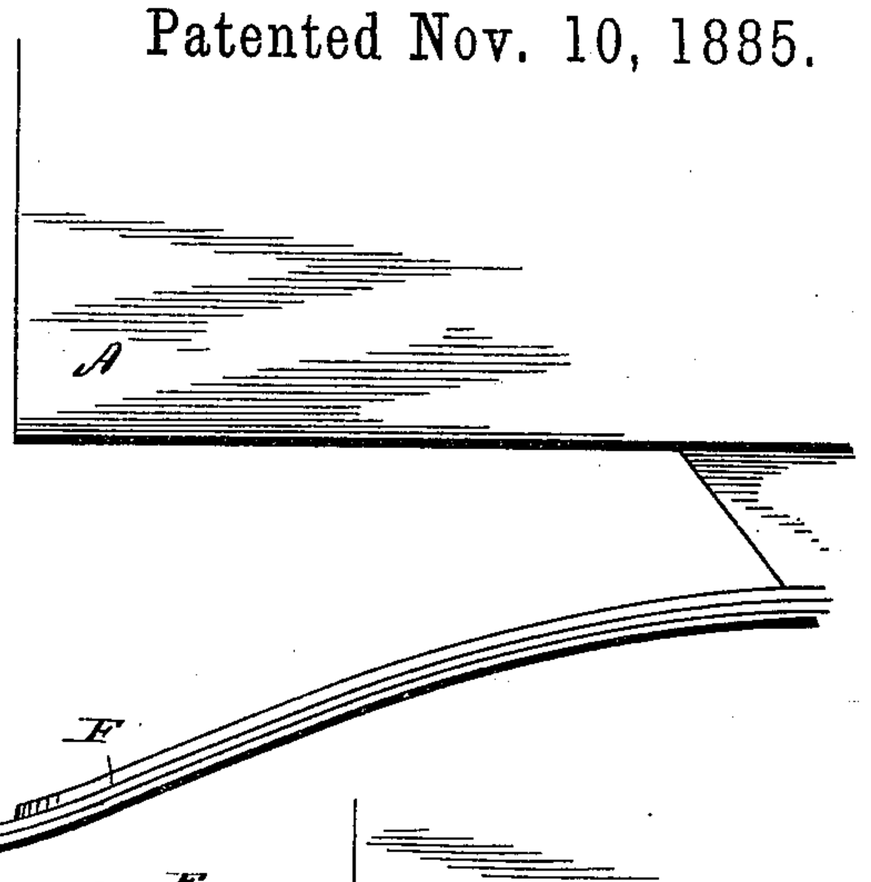


Fig. 2.

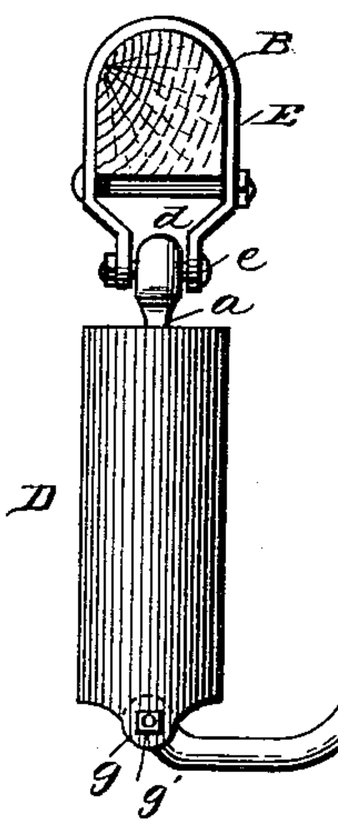


Fig. 3.

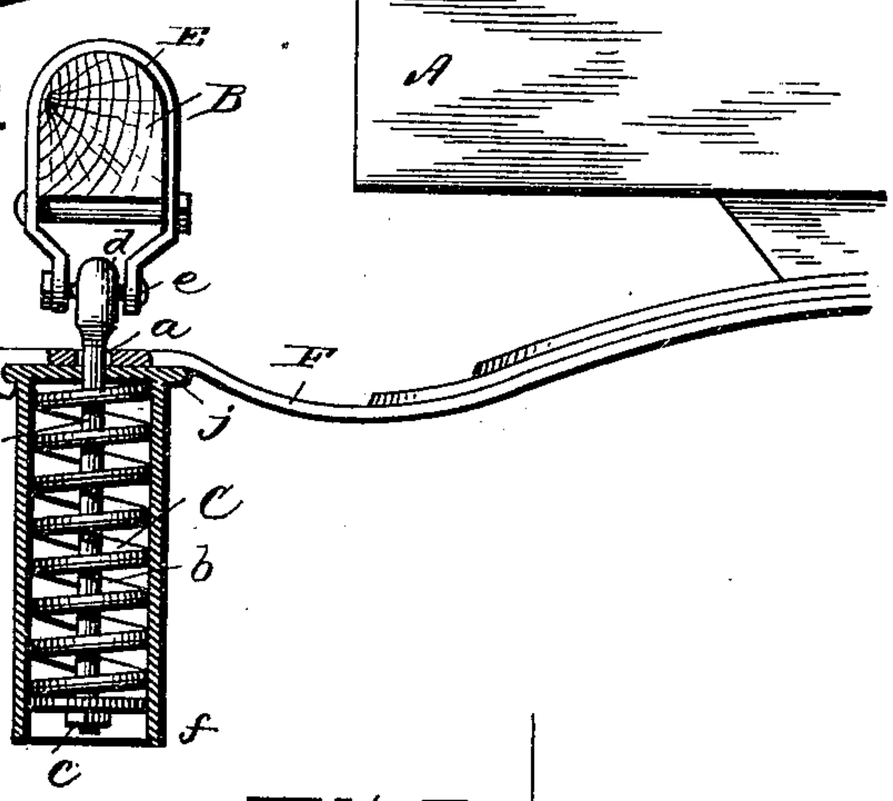


Fig. 4

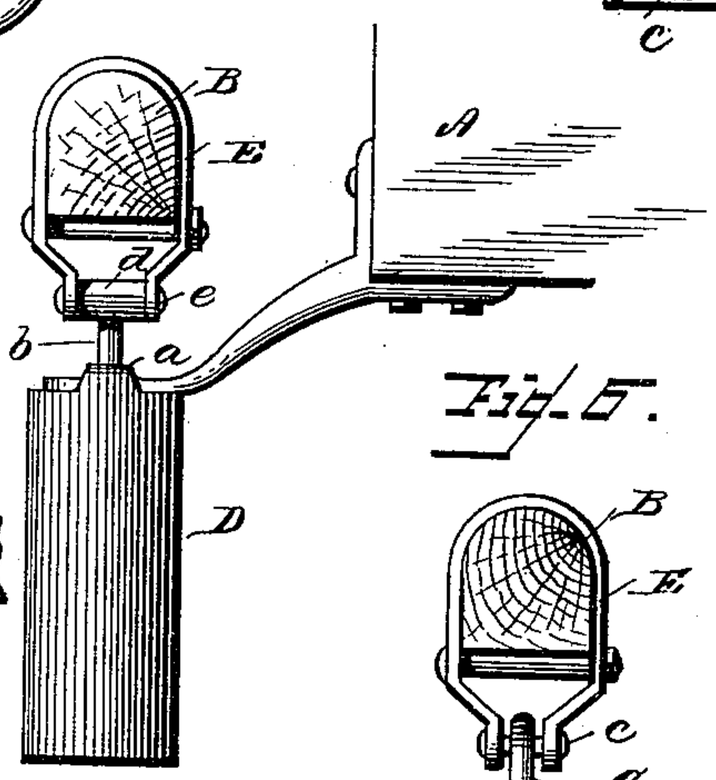


Fig. 5.

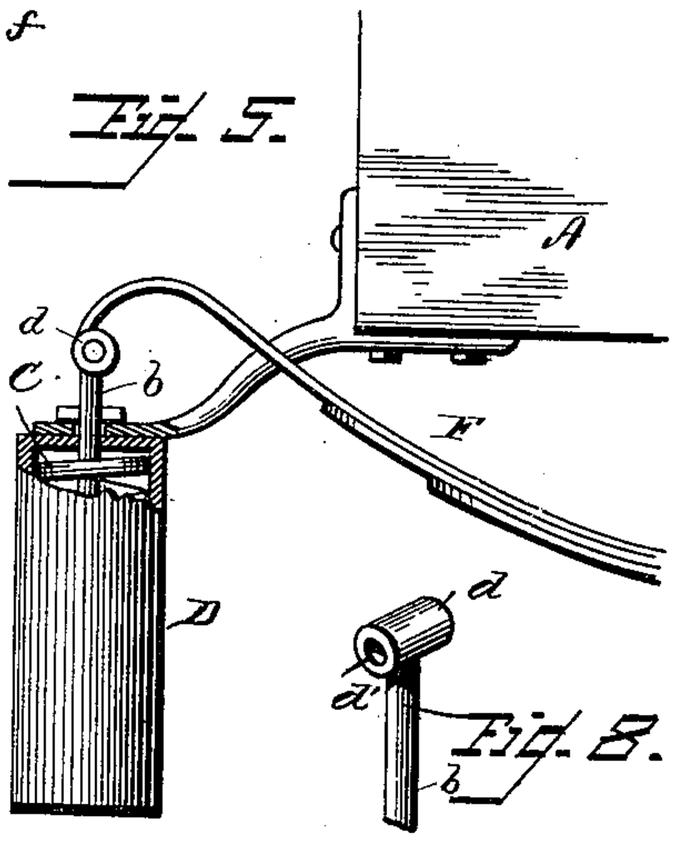


Fig. 6.

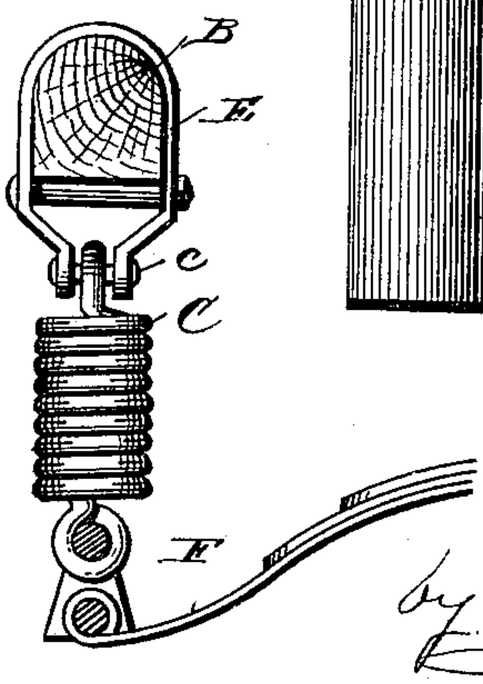


Fig. 7.

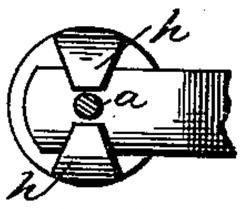


Fig. 8.

Witnesses.
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(No Model.) 2 Sheets—Sheet 2.

C. N. HASKINS.

VEHICLE SPRING.

No. 330,023. Patented Nov. 10, 1885.

Fig. 9.

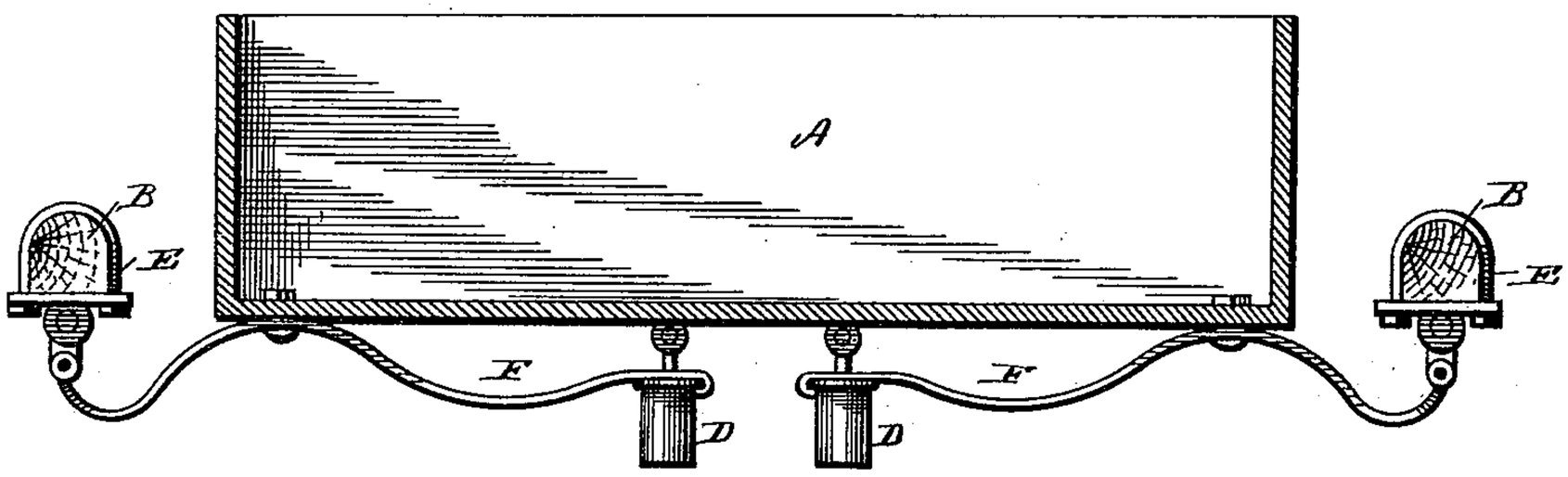
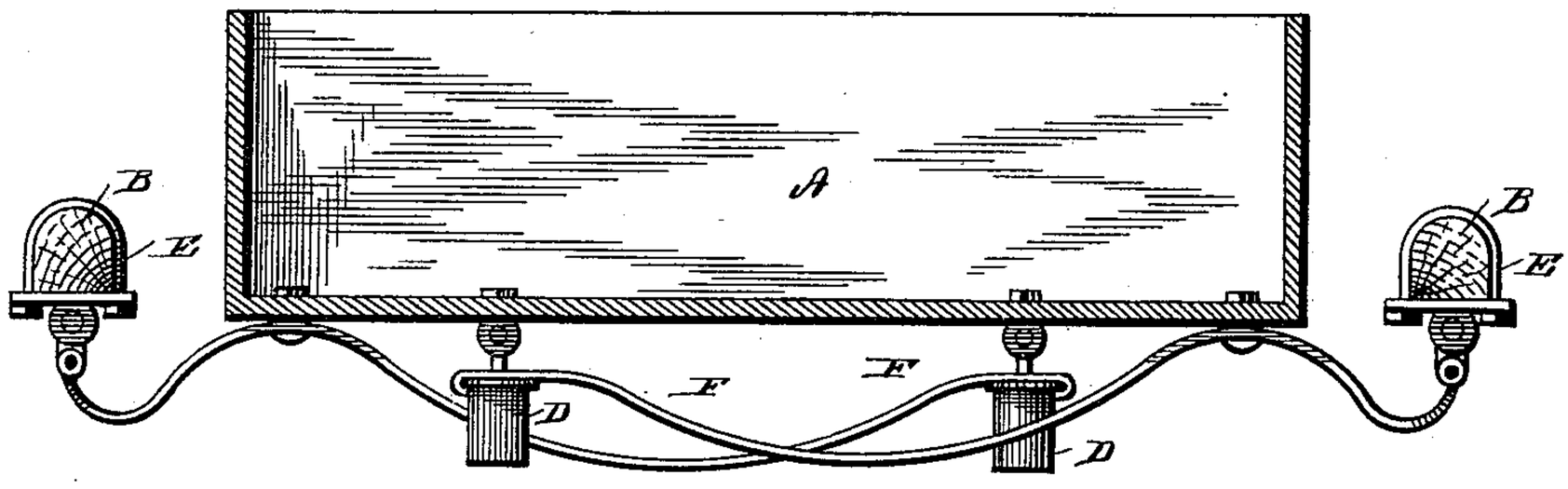


Fig. 10.



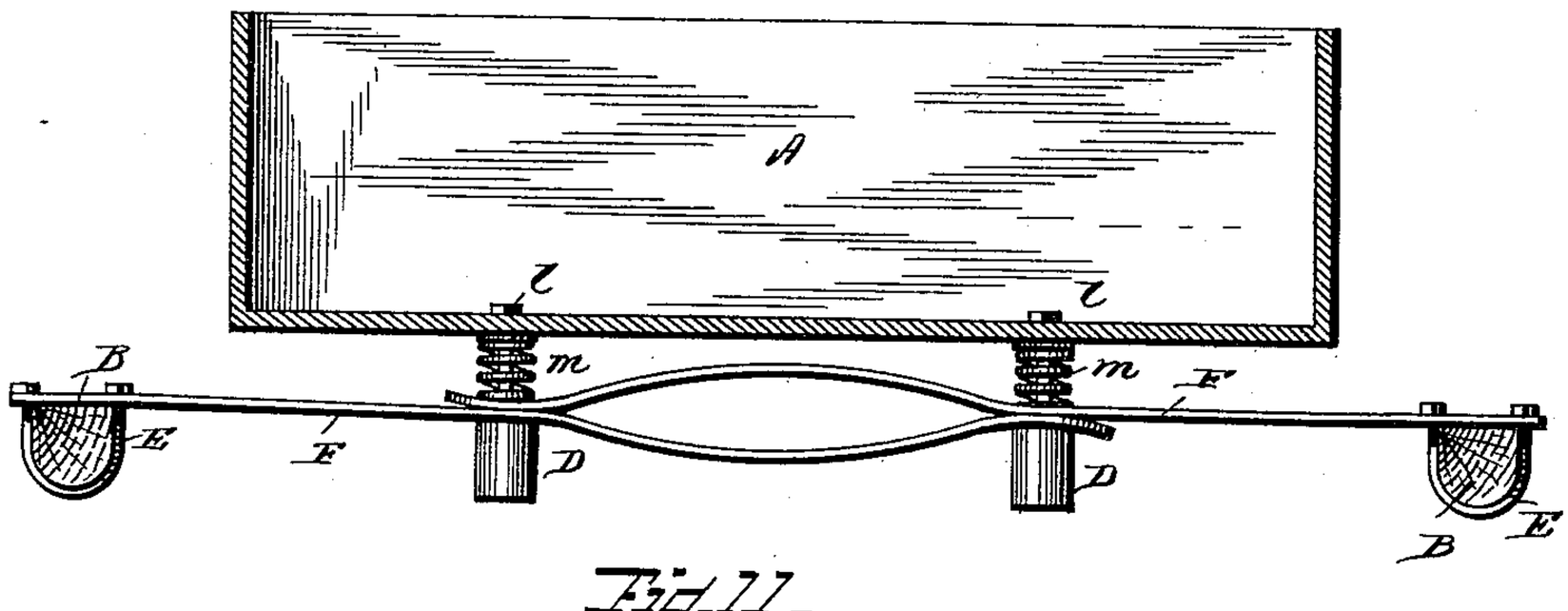


Fig. 11.

Witnesses.
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Aldis D. Foot

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UNITED STATES PATENT OFFICE.

CHARLES NELSON HASKINS, OF COLUMBUS, OHIO.

VEHICLE-SPRING.

SPECIFICATION forming part of Letters Patent No. 330,023, dated November 10, 1885.

Application filed March 5, 1885. Serial No. 157,762. (No model.)

To all whom it may concern:

Be it known that I, CHARLES N. HASKINS, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Springs for Wagons, Carriages, &c.; and I 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 drawings and letters of reference marked thereon, which form a part of this specification.

Like letters refer to similar parts throughout the several views.

The object of my invention is to provide a novel and efficient spiral spring adapted to be used either separately or in combination with any of the various forms of leaf-springs now in use upon wagons and other vehicles.

It is my further object to provide a spring which will be both simple in construction and inexpensive, and which, when used either separately or in combination with other springs, may be readily adjusted to the various loads to be carried, will permit the body of the vehicle to which they are attached to be placed lower than is possible with the use of springs heretofore constructed. The springs may be easily replaced or repaired, and when used upon carts or other two-wheeled vehicles will in a great measure overcome the "horse motion" or "jolt" caused by the movements of the horse.

I accomplish these objects in the manner hereinafter specified.

Referring to the drawings, Figure 1 is an end elevation of a portion of a vehicle-body with my improved spiral spring suspended from the side bar by means of a clip, and having the outer end of a leaf-spring attached to the lower extremity of the case containing the spiral spring. A portion of the case is removed to show the construction and arrangement of the parts. Fig. 2 is a similar view of a portion of a vehicle-body in which the spiral spring is shown as used independently of other springs, and is attached to the platform of the vehicle by means of a body-loop. Fig. 3 is a similar view, partly in section, in which the spiral spring is shown in combination with a leaf-spring, the outer end of the leaf-spring being shown as resting upon the upper end of the case containing the spiral spring. Fig. 4 is a similar view in which the spiral spring is shown as used in combination with a body-loop, the outer end of which is shown as resting upon the upper end of the spiral-spring case. Fig. 5 is a similar view, partly in section, in which the spiral spring is shown as used independently of side bar, the spring being attached to the platform of the vehicle by means of a body-loop, and the leaf-spring having its outer end attached to the upper end of the spiral-spring actuating-rod. Fig. 6 is a modification. Figs. 7 and 8 are details. Figs. 9 and 10 are end elevations of a vehicle-body in which the spiral spring is shown as used in combination with a leaf-spring, the spiral spring being secured to the lower surface of the platform, and the inner ends of the leaf-spring resting upon the upper ends of the spiral-spring cases, and the outer ends of the springs being shown as attached to the side bars of the vehicle by means of clips. Fig. 11 is a modification.

A represents a portion of the body of a vehicle; B, the side bar to which the spiral spring C is pivotally attached by means of clips, as shown in Figs. 1, 2, 4, &c., of the drawings. The spiral spring C is inclosed within a cylindrical metallic case closed at its upper end, with the exception of a small opening, *a*, in the center. The spring-actuating rod *b* is passed through the opening *a*, and, extending downward through the center of the case, terminates at a point in the plane of the lower extremity of the same. The lower end of the rod *b* is threaded to accommodate the nut *c*, while its upper end, which is extended above the upper end of the cylinder or case, is provided with a head, *d*, which may be cylindrical, as shown in Fig. 8. The head *d* is provided with a hole, *d'*, through which the bolt *e* is passed in securing the same to the clip E. The spring C is placed within the case from its lower end, the rod *b* is inserted, and the washer *f* is placed upon the lower end of the rod and secured by means of the nut *c*.

When it is desired to attach the spring as shown in Figs. 1 and 2 of the drawings, the

case is so constructed that two opposite sides of the same are extended downward so as to form the ears *g*. The spring may be attached either to the body-loop or leaf-spring by means of the bolt *g'*, passed through suitable holes provided in the ears *g*.

When the spiral spring is intended to be used in either of the combinations shown in Figs. 3, 4, and 5 of the drawings, the ears *g g* are omitted from the lower extremity of the case, and similar ears or projections, *h h*, are formed upon the upper extremity of the case, which, when bent downward, as shown in Fig. 7, serve to secure in place the end of the spring or body-loop, which is between the ears and the upper extremity of the case.

In Fig. 3 the leaf-spring F is secured in place upon the upper end of the case. When to be used in this form, the top of the case is so constructed as to extend beyond the sides of the case forming the rim *j*, and the end of the leaf-spring or body-loop is bent downward, as shown at *j'*, Fig. 3, so as to bear against the lower edge of the rim.

Fig. 11 is a modification. When intended to be used in this form, the spring-actuating rod heretofore described is omitted, and its place supplied by a bolt, *l*, which is extended a sufficient distance above the top of the case to pass through the leaf-spring bar or rod and permit the separate spiral spring *m* to be inserted between the leaf-spring bar or rod and the platform of the vehicle. The rod *l* is extended through the platform and secured by means of a nut upon the upper surface of the platform.

In the modification shown in Fig. 6 of the drawings the metallic case and spring-actuating rod are omitted, and the spiral spring is suspended from the side bar and attached to the leaf-spring by means of bolts passed through loops formed by bending the ends of the wire or rod of which the spring is composed.

I am aware of the Patent No. 203,863, of 1878, which shows a metal case inclosing a rubber spring said case having formed integral therewith a clip or clamp adapted to embrace and to be rigidly secured to the side bar, the end of the cross-spring being pivotally connected to a rod extending upward through said rubber spring; but the spring there shown is not a pendent one, and is not pivotally connected to but is rigid with the side bar. I am also aware of the Patent No. 3,126, of 1843, and make no claim to the construction shown therein as forming part of my invention.

I deem it important that my spring be interposed between the ends of the leaf-spring and the side bars and pivotally connected thereto. I also attach importance to my peculiar arrangement of parts.

On reference to Fig. 1 it will be seen that the case inclosing the spring is open at the bottom to facilitate the ready adjustment of the spring C to adapt it to the load to be carried, which adjustment is accomplished by turning the nut *c* in one direction or the other, as will be readily understood.

Having thus described my suspended spiral spring, and pointed out some of the forms in which it may be used, both as an independent spring, and also in combination with leaf and other vehicle springs, what I claim to be new, and desire to secure by Letters Patent, is—

1. The combination, with a side bar and leaf-spring of a vehicle, of an incased spiral spring pivotally connected at one end to the leaf-spring, and a clip pivoted at one end to the opposite end of said spiral spring, and its other end embracing the side bar, substantially as and for the purpose specified.

2. A cylindrical case having an open end and an aperture through its closed end, as shown, the rod *b*, inserted through said aperture and having an enlarged head and threaded lower end, the spiral spring C, encircling said rod within the case, the washer *f*, supporting said spring, and the adjusting-nut *c*, all combined, arranged, and operating as set forth.

3. A cylindrical case having an open end and an aperture through its closed end, the rod *b*, inserted through said aperture and having an enlarged head and threaded lower end, the spiral spring C, encircling said rod within said case, and adjusting means, as described, within said case, in combination with a clip pivotally connected with said enlarged head, as and for the purposes specified.

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

CHARLES NELSON HASKINS.

Witnesses:

J. R. BOWDLE,

A. T. STEVENS.