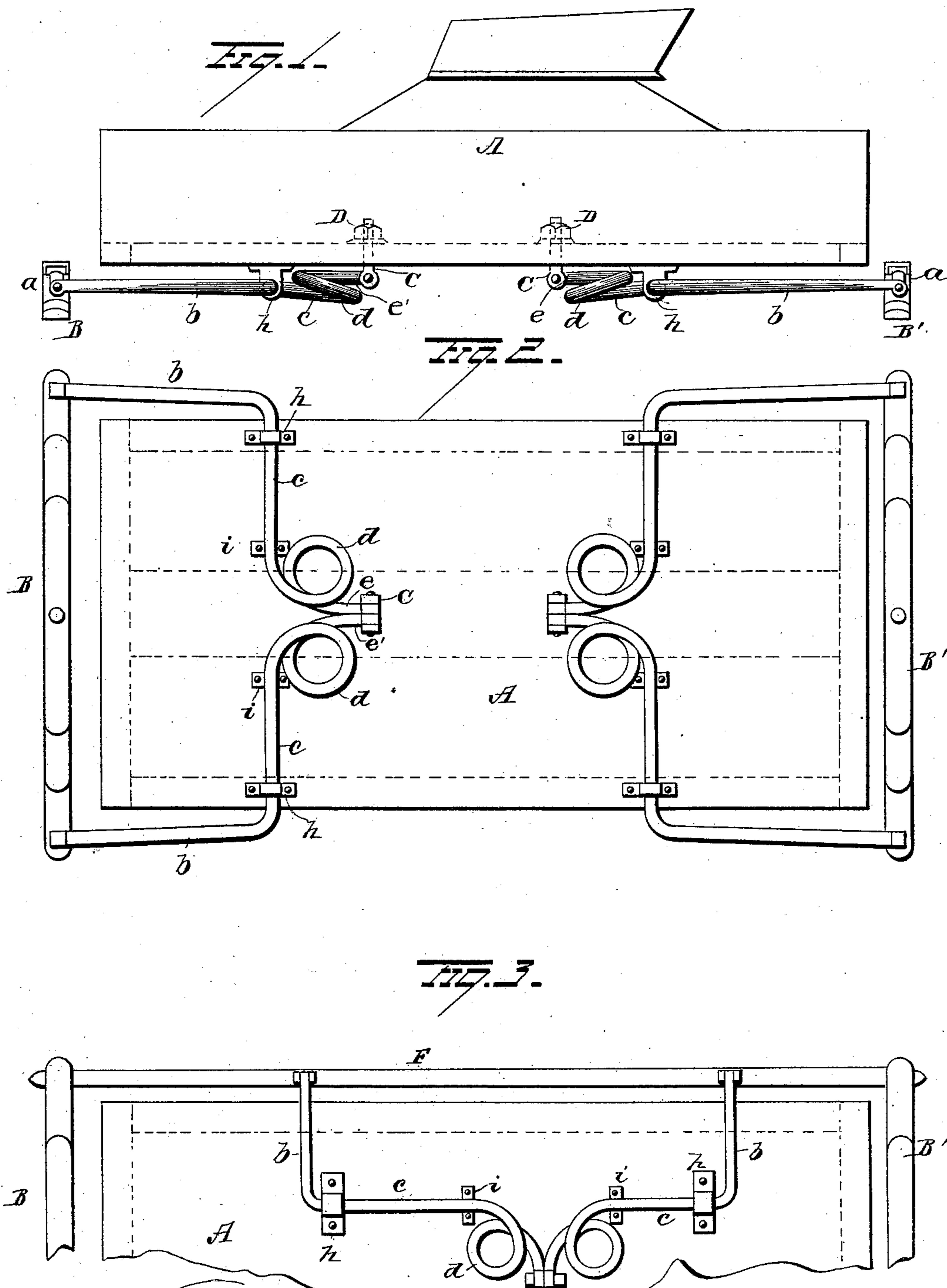


(No Model.)

H. C. SWAN.
SPRING FOR VEHICLES.

No. 365,355.

Patented June 21, 1887.



WITNESSES
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SPRING FOR VEHICLES.

SPECIFICATION forming part of Letters Patent No. 365,355, dated June 21, 1887.

Application filed November 24, 1886. Serial No. 219,821. (No model.)

To all whom it may concern:

Be it known that I, HENRY C. SWAN, of Oshkosh, in the county of Winnebago and State of Wisconsin, have invented certain new and
5 useful Improvements in Springs for Vehicles; 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
10 same.

My invention relates to an improvement in carriage-springs.

The object is to provide a durable and yielding spring which shall be productive of ease
15 and comfort to the occupant of the vehicle.

A further object is to provide a light and simple spring which may be quickly regulated to yield equally well with either a light or heavy load, and also to furnish a spring which
20 may be put on the market at a low cost.

A further object is to provide means for attaching the body of vehicles to either the end springs or side bars with equal yielding effect.

With these ends in view my invention consists in certain features of construction and combination of parts, as will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a carriage-box with my improved springs applied thereto. Fig. 2 is a
30 bottom plan view. Fig. 3 is a modification.

A represents a carriage-box of ordinary construction, and B B' are a pair of elliptical springs secured, respectively, to the forward and rear ends of the running-gear, to which
35 the box A is yieldingly secured by means of my improved spring.

Two bars of spring metal, preferably round in section, are loosely secured by means of a
40 link or shackle, *a*, to the opposite ends of the front elliptical spring, B. These bars extend backward for a suitable distance, forming the arms *b*, which, from the length of the spring B, to the ends of which these arms are attached,
45 and in order that the arms should be out of the way of the wagon-box, are located below and outside of the latter. After these arms *b* are formed in the bars the latter are bent inwardly and to approach each other, forming the intermediate arms, *c*, thence backward and slightly
50 downward below the plane of arms *b*, and

thence completely around and terminating approximately in the same direction as before, but in a higher plane, thus forming a complete spiral, *d*, which latter rests in or approximately
55 in a horizontal plane, the two ends *e e'* of the bars being side by side. These ends *e e'* are laterally perforated and pivoted to an eyebolt, C, which is loosely mounted in the bottom of the body A, where its upper end is screw-
60 threaded, and an adjusting-nut, D, adapted to draw the ends *e e'*, respectively, against or away from the bottom of the body A. The object of this particular construction is to regulate the spring for heavy or light loads, for by
65 tightening the nut D the spring is rendered more rigid and better adapted to sustain a heavy load, as the box is given a greater distance in which to spring up and down, while by loosening the nut D the ends *e e'* are proportionately removed from the bottom of the body
70 A, lowering the latter and rendering the springs less rigid but equally yielding for a light load.

The intermediate arms, *c*, are loosely secured to the bottom of the body A by the brackets
75 or straps *h*, and the bearings *i* between this point and the spiral *d* hold the intermediate arms, *c*, in position beneath the body, while they allow its free torsional action. The straps *h* and bearings *i* act as fulcrums for the arms
80 of the springs; and by the peculiar arrangement of parts described it is evident that any jolting in the running-gear not counteracted by the elasticity of the elliptical springs B B', instead of being transmitted to the carriage-
85 body, which it is desired to avoid, is compensated by the torsional elasticity of the spiral *d*, located on the opposite side of the fulcrum, so that comparatively little movement is caused at the fulcrum, and hence to the body, to which
90 the latter is rigidly secured.

At the opposite or rear end of the box, and secured to elliptical spring B', a similar system of springs as that just described is provided.

In the modification shown in Fig. 3 the intermediate arms, *c*, extend longitudinally of the
95 body A, and the ends of arms *b*, instead of being secured to the front and rear elliptical springs, B B', as in the former construction, are secured to the side bars, F F', respectively, the
100 effect being substantially the same as in the first construction, since in this case the side

bars, F F', are in turn rigidly secured on the elliptical springs B B'.

From the construction disclosed in the description it will be seen that by means of this system of springs a carriage body might be secured to most any form of running-gear with good effect.

It is evident that slight changes might be resorted to in the form and arrangement of the several parts described. For example, the spirals *d* might be double or the mode of attaching the system to the body might be changed without departing from the spirit and scope of my invention; hence I do not wish to limit myself to the particular construction herein set forth; but,

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

20 1. The combination, with the body of a vehicle and a set of springs, consisting, essentially, of the bars of metal bent near the middle and

each terminating at one end in a spiral the coil or coils of which rest approximately in a horizontal plane, of the straps and bearings 25 forming fulcrums for the bars, and a bolt loosely secured to the spiral end for varying the contact of the latter with the vehicle-body, substantially as set forth.

2. The combination, with the body, its running-gear, and a bar of metal, constructed substantially as described, suitably fulcrumed to the body and loosely linked to the running-gear at one end, of an eyebolt pivotally joining the spiral end of the bar to the vehicle-body, and an adjusting-nut adapted to screw 35 on and off the bolt, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses:

HENRY C. SWAN.

Witnesses:

GEO. R. FRASER,
F. W. HOUGHTON.