(No Model.)

J. W. HENNEY.

VEHICLE SPRING.

No. 344,105. Patented June 22, 1886.

Fig. 1.

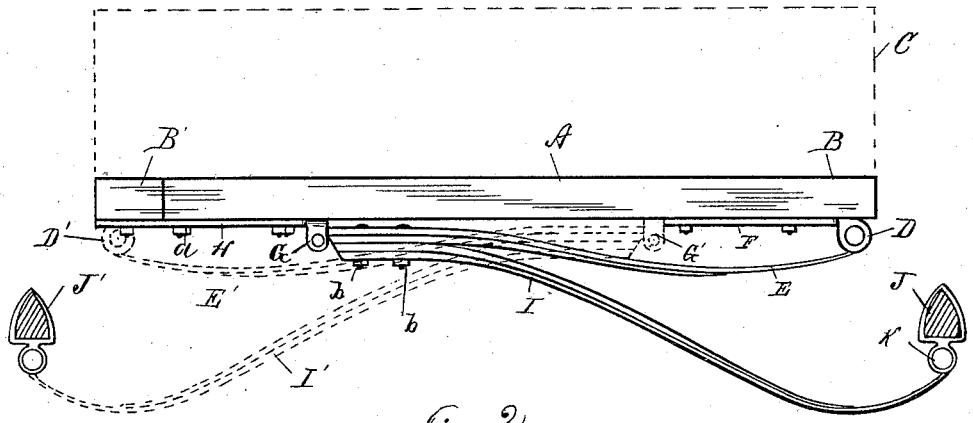
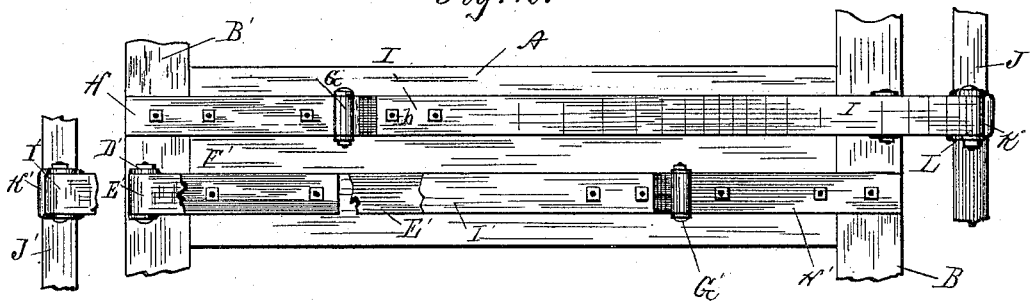


Fig. 2.



WITNESSES:

L. Mc. Drown
E. W. Shoesmith

INVENTOR

John W. Henney
BY Wilkerson

ATTORNEYS.

UNITED STATES PATENT OFFICE.

JOHN W. HENNEY, OF FREEPORT, ILLINOIS.

VEHICLE-SPRING.

SPECIFICATION forming part of Letters Patent No. 344,105, dated June 22, 1886.

Application filed July 27, 1885. Serial No. 172,761. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. HENNEY, a resident of Freeport, in the county of Stephenson and State of Illinois, have invented certain new and useful Improvements in Vehicle-Springs; 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 pertains to make and use the same.

My invention relates to improvements in vehicle-springs, and is fully described and claimed in this specification, and shown in the accompanying drawings, in which—

Figure 1 is an elevation of my spring as applied to a side-bar buggy, and Fig. 2 is a plan of same parts inverted or seen from below.

In Fig. 1, A is a block, to which the springs are attached. B B′ are side sills of the body, which are shown in dotted lines at C. The spring shown in full lines, being precisely like its companion in form and attachment, may be described alone. It consists of two branches, E and I, rigidly united at their inner ends by the bolts *b b*, and attached, respectively, by the shackles D and K to the body-frame A B and side bar, J. At the inner end of the bar E the upper leaf thereof is attached to the shackle G, whereby the whole spring may revolve about G as a center. The shackles D and G are formed integrally with the rigid bars F and H, which, being bolted to the sills and block A, serve to strengthen the frame of the body as well as to securely attach the spring.

In Fig. 2 the upper spring is the one just described, the branch E being hidden by the branch I, which lies in the same plane. The lower spring is the spring shown in dotted lines in Fig. 1. Its branch I′ is broken away to show the branch E′, which is also partially removed, exposing the bar F′, attached to the body of the vehicle. It will be seen that the springs E E′ do not rest against the block A, nor the sills B B′, but are held at a short distance therefrom by the fastenings G D. When weight is placed upon the spring, Fig. 1, the inner united portions of the members E and I rotate about the point G and approach the block A. The outer or free portion of the member E rotates about the point D, also approaching the body of the vehicle, but to a less extent, and the entire curved portion of this member undergoes a change of form, its deviation from a straight line being increased. The member I, carried upward at its inner end with the member E, still flexes like an ordinary side-bar spring. By the motions just described the surface of contact between E and I is increased, and thus the flexible portions of the two members are shortened and the inflexible parts lengthened—that is, this spring automatically adjusts the length of its flexible parts to the weight imposed. This spring also gives unusual length of flexible members and a great amount of vertical motion, thereby securing "softness" of action.

We prefer springs having reversed curves and shackles without connecting-links, as shown; but evidently links may be employed, in which case the member E may be a simple curve or straight without changing my invention. So, too, the shackle G may be placed at any desired point in the length of the bar H, and the entire normal length of the spring be thus varied.

I am aware that a side-bar spring consisting of two members lying in the same vertical plane, rigidly connected at their inner ends and fastened at their outer ends to the body and side bar of the vehicle, respectively, is already well known.

It is evident that in the use of a two-member spring similar to the one shown and described herein, if both ends of the upper member be connected with the body provision must be made for the change of length of said member under varying pressure. This may be done in three ways: first, by giving one end of the member a sliding bearing; second, by pivoting both ends of the member to stationary shackles and making it a reverse curve or compensating spring; and, third, by hanging one or both ends of said member on swinging or link shackles. The first method mentioned is old, and is shown in prior patents. The other two are new, and they are certainly preferable to the first, since in all constructions of this class a pivotal connection of two coacting parts is better than a sliding bearing.

I am further aware that it is not new to connect the inner end or point of junction of said members by means of a pivot or shackle with the body of the vehicle; but mine is the first spring of the class in which the inner end of

the combined spring is pivoted or shackled to the body while the outer end of the upper member is shackled or pivoted to the body and the outer end of the lower member is similarly fastened to the side bar.

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

1. The combination, with the body and running-gear of a vehicle, of a two-member spring connecting said body and running-gear, the upper member being a double-curved or compensating spring pivotally connected at both its ends with the body and the lower member being a curved spring connected rigidly at its inner end with the upper member and pivotally connected at its outer end with the running-gear.

2. The combination, with the body A and side bar, J, of the double-curved compensating spring E, pivoted at both ends to the body, and the curved spring I, bolted to the spring E at its inner end and shackled to the side bar at its outer end, substantially as shown and described, and for the purpose set forth.

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

JOHN W. HENNEY.

Witnesses:

HORACE S. WEBSTER,

JNO. B. TAYLOR.