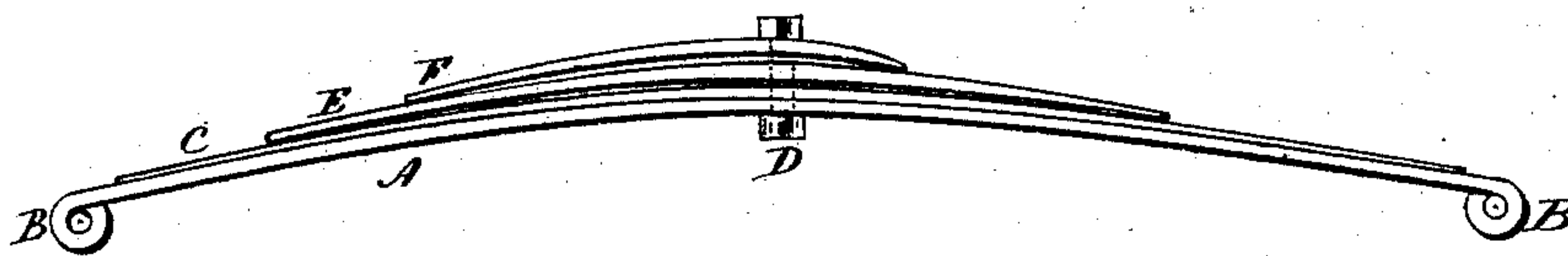


H. M. BIDWELL.
Carriage-Springs.

No. 156,122.

Patented Oct. 20, 1874.



Witnesses.
W. Thummoag
A. J. Tibbitts

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Inventor
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UNITED STATES PATENT OFFICE.

HENRY M. BIDWELL, OF NEW HAVEN, CONNECTICUT.

IMPROVEMENT IN CARRIAGE-SPRINGS.

Specification forming part of Letters Patent No. **156,122**, dated October 20, 1874; application filed August 13, 1874.

To all whom it may concern:

Be it known that I, HENRY M. BIDWELL, of New Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in Side-Spring for Carriages; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent a side view.

This invention relates to an improvement in that class of springs which extend from the rear axle to the forward running-gear for the support of the body, and commonly known as "side springs". As usually constructed this class of springs are made from a succession of steel leaves, one above the other, each successive upper leaf shorter than the one below, the several leaves secured together at the center, and the body to the spring at the same point. This class of carriages is generally fitted for two seats, hence the weight of the load is brought almost entirely in rear of the center, and this is true to a considerable extent with a single seat only. The result of it is to depress the spring at the rear, and bring a much greater strain upon that portion of the spring than forward of the center, hence these springs frequently break in rear of the center, and also tend to throw up the forward end of the body to the discomfort of the occupant of the carriage. To overcome this difficulty is the object of my invention; and it consists in constructing the springs with the upper leaves extending farther to the rear than forward from the cen-

tral or supporting point, whereby the spring is made proportionately stronger toward the rear.

The first leaf A is formed in substantially the usual manner, with the head B at the rear, and B' at the forward end, by which to attach the spring to the running-gear, and preferably the second leaf C is made in substantially the usual manner, and the two perforated at the center to receive the bolt D, also in the usual manner. Above these successive leaves E F are placed, extending from the center-bolt D toward the rear considerably farther than they do forward, the perforations for the bolt D through the upper leaves being proportionately nearer the forward end, as seen in the drawing; or it may be said that the leaves from the center to the rear are about the usual proportion to the lower leaf, but shortened forward. This completes the spring, hence when the load is in the carriage, as usually more to the rear than front, the spring at the rear end being the strongest, will accordingly sustain the body, and maintain it in its proper level position, and makes the strain upon the spring nearly or quite equal at both ends, thus avoiding to a very great extent its liability to break.

I claim—

The combination of the principal leaf A, and the successive upper leaves C E F, which extend from the middle D to the rear, and shortened forward, substantially as and for the purpose specified.

HENRY M. BIDWELL.

Witnesses:

A. J. TIBBETS,
J. H. SHUMWAY.