

W. P. HANSELL.
 Elliptic Springs for Vehicles

No. 155,723.

Patented Oct. 6, 1874.

FIG I

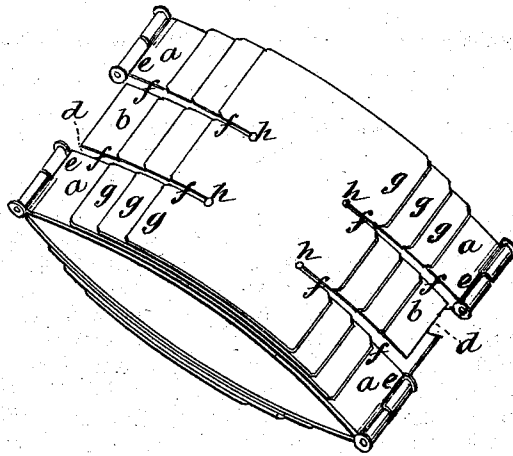
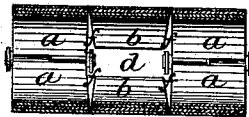


FIG II



FIG III



WITNESSES

John C. Laing
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UNITED STATES PATENT OFFICE.

WALTER P. HANSELL, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN ELLIPTIC SPRINGS FOR VEHICLES.

Specification forming part of Letters Patent No. **155,723**, dated October 6, 1874; application filed September 11, 1874.

To all whom it may concern:

Be it known that I, WALTER P. HANSELL, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Elliptic Springs; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention consists of an elliptic spring of outer and intermediate parallel integral branches, the latter whereof being disconnected and of less length and pitch than the connected branches, for action under increased weight of load, and forming a double spring of parallel connected and free ends; also, in uniting the connected branches by intermatching their half-cut ends upon the uniting-pins, to avoid friction and save metal; and in securing and clamping the several leaves of the parallel integral branches by bolts at the termination of the slits of said branches.

In the accompanying drawings, Figure 1 represents a view, in perspective, of an elliptic spring embracing my invention; Fig. 2, a vertical section, taken through the middle, lengthwise thereof; and Fig. 3, a cross-section thereof.

My improved spring consists of two or more top and bottom plates of steel, secured one upon the other, each having three parallel branches at the opposite ends, with the two outer ones, *a a*, of equal length at each end, and the inner ones, *b b*, made a few inches shorter, and are of less pitch or curve than the outer branches, so as to leave a space, *d*, between them, so that when secured together the outer branches form two elliptic springs, with an intermediate elliptic spring integral with the other ones. The ends of the outer branches are joined together; but the intermediate short ends are only brought into action under an increased weight, and increases the strength of the spring in proportion as

the strain increases, and thereby give it as much elasticity under a heavy as under a light load. The ends of the branches *a* are secured to their uniting-pins by cutting out their alternate sides, as at *e*, and halving the upper and lower ends together, which not only avoids the friction of one spring upon the other, but effects a saving of steel over the plan now practiced of turning one end round the other in the ordinary elliptic spring. The series of branches *a b* are formed by having slits *f* between them, extending lengthwise of the ellipse to near the middle of the spring; and the additional leaves *g* are formed in like manner, but their branches may be in the same line crosswise, and they are secured together by bolts *h* driven through them in the slits *f*, at their joints of junction with the solid part of each leaf, thus clamping them together, and avoiding the labor and expense of drilling separate holes for rivets. Any suitable number of these leaves may be used, with their split branches occupying outer and intermediate parallel positions.

I claim—

1. An elliptic spring, each plate of which is composed of three or more integral leaves, *a b*, the ends of the longer outer leaves *a* being jointed together, and the ends of the intermediate leaves *b* being disconnected and of less pitch or curve for action under increased weight, all combined as set forth.

2. The connected leaves *a*, having their ends joined upon their uniting-pins by intermatching half-cuts *e*, all combined as set forth.

3. The parallel integral leaves *a b*, secured and clamped together by bolts *h* at the termination of the slits *f* of said leaves, all combined as described.

In testimony that I claim the foregoing as my own I have affixed my signature in presence of two witnesses.

WALTER P. HANSELL.

Witnesses:

WM. J. LOGAN,
JOHN GORMLY.