R. B. HUGHES.

VEHICLE-SPRING HEADS.

No. 194,093. Patented Aug. 14, 1877.

Fig. 1.

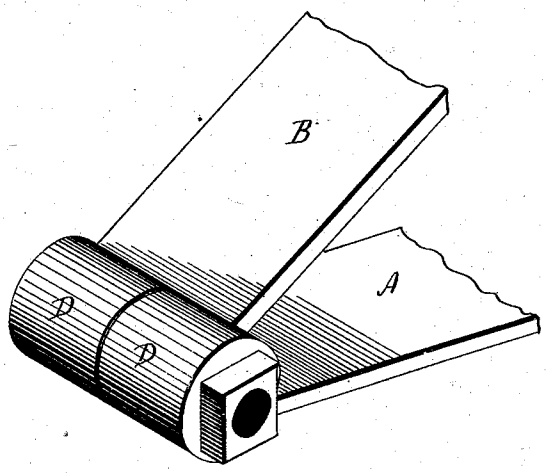



Fig. 3

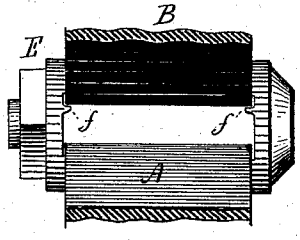



Fig. 2

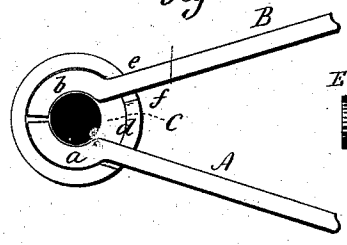



Fig. 4

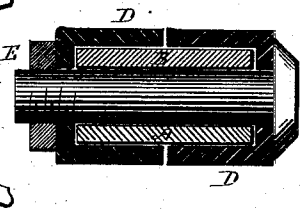
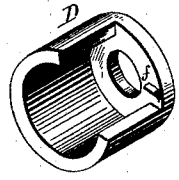



Fig. 5




Witnesses.

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# UNITED STATES PATENT OFFICE.

REUBEN B. HUGHES, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO W. & E. T. FITCH, OF SAME PLACE.

## IMPROVEMENT IN VEHICLE-SPRING HEADS.

Specification forming part of Letters Patent No. **194,093**, dated August 14, 1877; application filed June 19, 1877.

*To all whom it may concern:*

Be it known that I, REUBEN B. HUGHES, of New Haven, in the county of New Haven and State of Connecticut, have invented new and useful Improvements in Carriage-Springs; and 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, in—

Figure 1, perspective view; Fig. 2, sectional side view; Fig. 3, transverse section looking toward the head; Fig. 4, transverse section through the head; Fig. 5, one part of the head.

This invention relates to an improvement in the manufacture of elliptic carriage-springs, with special reference to that part called the "head"—that is, the ends where the upper and lower parts are jointed together.

In the usual construction the parts have been forged, one with a cylindrical head, the other with ears to lap the ends of the head, and a bolt passed through both to serve as the pintle of the joint.

The formation of such joint is a difficult and expensive operation; again, the wear of the head between the ears is considerable, and to take off such wear necessitates an entire refitting of the head.

To simplify the construction and avoid the difficulties incident to the usual construction are the objects of this invention; and it consists in a recessed head independent of the part of the spring divided vertically, with the ends of the spring hook-shaped in the said recess, combined with a transverse bolt through the head and between the hook of the spring, as more fully hereinafter described.

A is the lower, and B the upper, long or principal leaves of the spring. Their respective ends *a b* are made hook-shaped, as seen in Fig. 2, the inner surface corresponding to the body of the bolt C.

D D are the two parts of the head, one part shown detached in Fig. 5. These are of cylindrical form upon the inside, and the other surface of the hooked ends of the spring correspond to the cylindrical interior, as seen in Fig. 2. One side of these two parts D is open, as at *d*, the width of the opening being a little more than the spread of the two parts of the spring at that point. The outer or closed ends of the parts D are concentrically bored to receive the bolt C.

The ends of the parts of the spring are placed together, and the two parts D of the head are set on, one from each side, over the spring ends; then the bolt C is passed through the head between the ends of the spring, as seen in Fig. 4, and the nut E screwed onto the bolt to bind the two parts of the head together, and the spring is complete.

It will be understood that opposite ends of the spring are alike in construction.

In order to hold the upper edge of the opening of the head close upon the upper surface of the spring, as at *e*, a lug, *f*, is formed on the inside of each end of the head, so as to lie close up to the under surface of the upper part of the spring, as seen in Figs. 2 and 3. Hence the working of the spring will cause the parts of the head to turn with the upper part and never open at the point *e*.

In case of wear between the edges of the spring and ends of the head, and which would correspond to the wear of the head between the ears in the usual construction, it may be taken up by simply tightening the nut E.

It will be understood the two parts of the head do not quite meet; but if fitted so closely as to meet, then the meeting-surfaces are filed or cut away to allow the take-up described.

This head may be malleable cast-iron, or may be forged in dies. In either case the cost is much less than the usual construction of spring-heads.

I do not broadly claim a recessed detached spring-head, as such I am aware is not new; nor do I wish to be understood as broadly claiming a cylindrical head constructed independent of and so as to inclose the ends of the springs, as such I am aware is not new; but

What I do claim is—

1. The recessed spring-head constructed in two parts, combined with the two parts of the spring, hook-shaped to correspond to the inte-

rior of the parts of the head, and a bolt through said parts of the head and between the hooked ends of the spring, substantially as described.

2. The recessed spring-head constructed in two parts, combined with the two parts of the spring, hook-shaped to correspond to the interior of the parts of the head, and a bolt through said parts of the head and between the hooked ends of the spring, and lug or lugs in the mouth of the recess in the head to connect the said parts of the head with the upper part of the spring, substantially as described.

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