D. DALZELL.
Carriage-Spring.

No. 206,302. Patented July 23, 1878.

Fig. 1

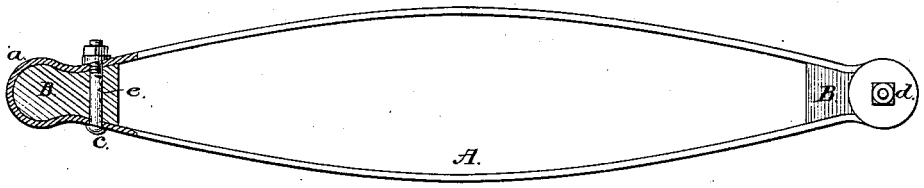


Fig. 2.

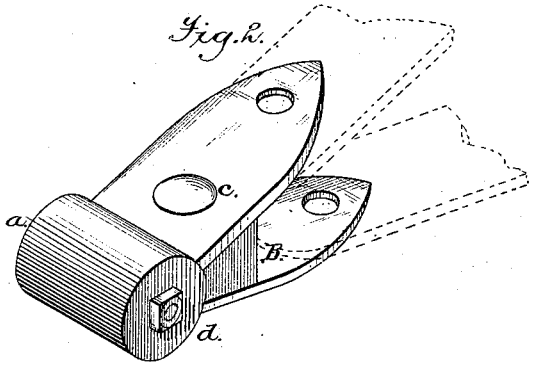
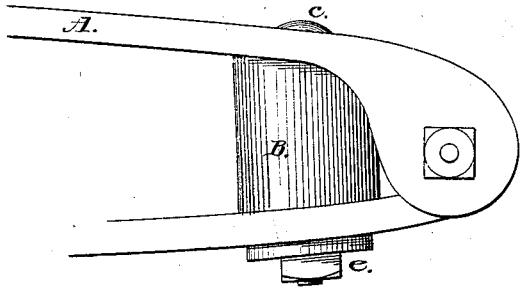


Fig. 3.



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DAVID DALZELL, OF SOUTH EGREMONT, MASSACHUSETTS.

IMPROVEMENT IN CARRIAGE-SPRINGS.

Specification forming part of Letters Patent No. **206,302**, dated July 23, 1878; application filed March 16, 1878.

To all whom it may concern:

Be it known that I, DAVID DALZELL, of South Egremont, in the county of Berkshire and State of Massachusetts, have invented a new and useful Improvement in Carriage-Springs; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing, forming a part of this specification, in which—

Figure 1 represents a sectional view of a full elliptic spring formed in a single piece. Fig. 2 represents an end portion of a modification of the same; and Fig. 3, an end portion of an ordinary elliptic spring, all embodying my invention.

The object of my invention is to improve the action and increase the efficiency and durability of elliptic springs for vehicles; and my invention consists in applying an india-rubber cushion within such springs, near or at their respective ends, and a vertical check-bolt, as hereinafter described and claimed.

In the drawing I have shown various modifications of my invention in order to enable others to construct and apply the same both to a special construction of spring and to the form now in use.

A in the several figures represents the body of the spring, which may be formed of a single piece, as shown in Fig. 1, or in sections connected together, as shown in Fig. 3, and the same may be supplied with one or any number of leaves required for light or heavy service.

In Figs. 1 and 2 the respective ends of the spring are formed with an enlargement, *a*, within which the rubber cushion B is placed. This cushion is intended to fill the space within the enlarged projecting portion *a*, and also to extend a short distance within the main body of the spring, as shown at *b*.

The extended portion *b* is perforated vertically to receive a bolt, *c*, which assists to retain the cushion in place, and side washers, as shown at *d*, may also be applied for this purpose; or any other convenient and sightly devices may be used.

The prime function of the bolt *c* is to check the sudden recoil action of the spring, to which it is liable when used upon rough or uneven roads, and which is the main cause of breakage, especially with springs constructed in one piece or with a single leaf. It is also desirable to insert an elastic washer, *e*, either beneath the nut or head of such bolt to avoid jar and prevent the nut or head from stripping.

Fig. 3 illustrates the adaptation of my invention to the ordinary elliptic spring, and in which the rubber cushion is made in the form of a hollow cylinder, and held in place by the vertical check-bolt, the latter performing its additional function as in the modifications heretofore described; but the cushion, in this instance, may be formed to fit within and fill the extreme end of the spring, if desired.

By my invention the metallic portion of the springs may be made much lighter, and in the adaptation of the same to the leaf-spring one leaf may be dispensed with, and a comparative tension preserved. It renders the springs noiseless and increases their durability, lessens the original cost, and may be applied to springs already in use.

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

An elliptic spring for vehicles formed in a single piece, or of separable parts united at the extreme ends, in combination with an interposed rubber cushion, arranged within each extremity of such spring, and a vertical check-bolt, *c*, substantially as described.

DAVID DALZELL.

Witnesses:

CHAS. W. FORBES,

L. W. SLOAT.