(No Model.)

A. B. DAVIS.

Car Spring.

No. 231,019. Patented Aug. 10, 1880.

Fig. 1.

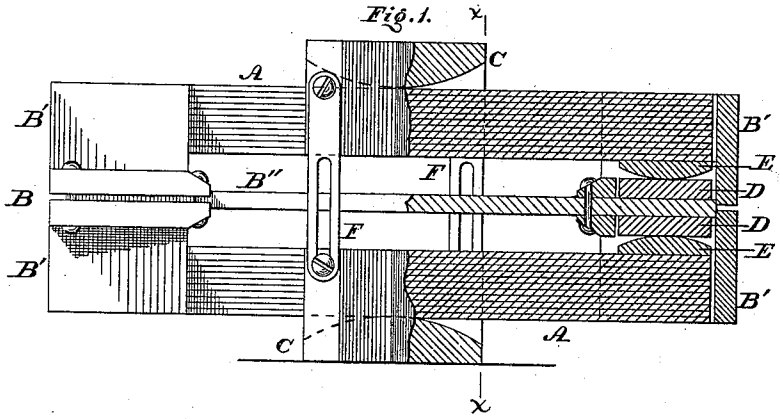


Fig. 2.

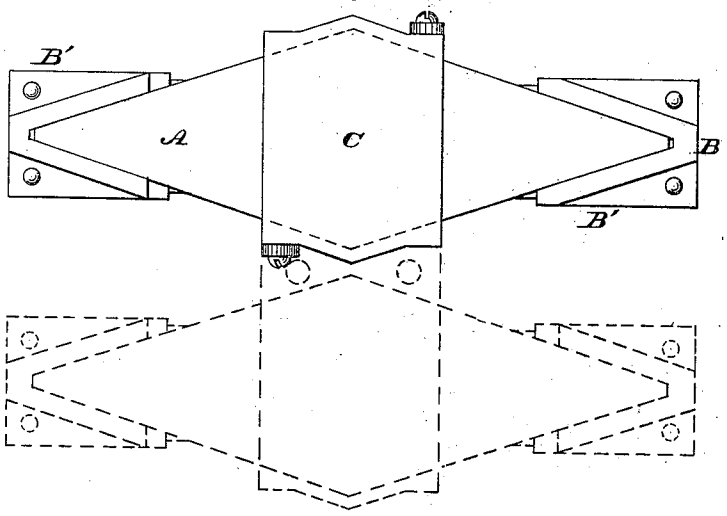


Fig. 3.

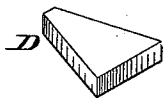


Fig. 4.

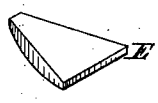
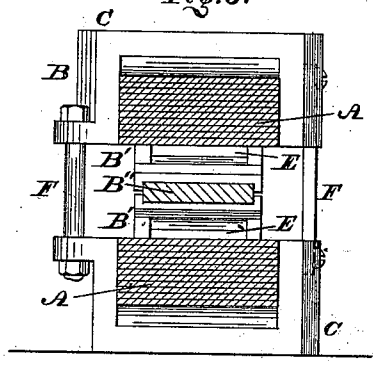


Fig. 5.



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UNITED STATES PATENT OFFICE.

AUGUSTUS B. DAVIS, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF NINE-TWENTIETHS OF HIS RIGHT TO JOHN K. BOYER, OF SAME PLACE.

CAR-SPRING.

SPECIFICATION forming part of Letters Patent No. 231,019, dated August 10, 1880.

Application filed May 18, 1880. (No model.)

To all whom it may concern:

Be it known that I, AUGUSTUS B. DAVIS, a citizen of the United States, residing in the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Springs for Cars, &c., (Case B,) which improvement is fully set forth in the following specification, and accompanying drawings, in which—

Figure 1 is a side elevation, partly sectional, of the spring embodying my invention. Fig. 2 is a top or plan view thereof. Figs. 3 and 4 are perspective views of detached portions thereof. Fig. 5 is a transverse section in line *x x*, Fig. 1.

Similar letters of reference indicate corresponding parts in the several figures.

My invention consists of a reversible duplex spring formed of two parallel sets of spring plates and clamps located centrally on opposite outer faces of the two sets. The ends of the springs are fitted to boxes which are connected by a longitudinal bar, the boxes and bar forming a supporting-frame which is strong and durable, and admits of reversibility. The ends of the springs rest on followers which have rocking motions on bearing-pieces in the boxes, thus preventing wiping or rubbing and wearing action of the spring on the followers and boxes and the tie plate or bar of the latter.

Referring to the drawings, A represents two sets of springs arranged parallel, and each formed of a series or pile of flat plates, preferably of rhomboidal form, the broadest or greatest surfaces thus being at the centers of said plates.

B represents the spring-frame, which is formed of boxes B′, cast with or secured to the ends of a longitudinally-extending tie-bar, B″, said boxes being adapted to receive the pointed or tapering ends of the springs A. It will be noticed that there is a box, B′, at each end of the upper and lower sides of said bar B″, each pair of boxes thus receiving the ends of a set of springs.

C represents clamps which are located centrally on the opposite outer faces of the two sets of springs, each clamp being open at two sides and at what may be termed its "bottom," the closed sides embracing the central portions of the springs. The outer pieces of said clamps, or what may be termed the "top" and "bottom," have the faces which are in contact with the springs of convex or segmental form, the convexity or curvature being greater than any curvature which the spring may assume.

Within the boxes, at the base thereof, are placed bearing-pieces D, of steel or other hard metal, against which rest rocking followers E, the curved faces whereof are in contact with the bearing-pieces, and the other faces, which are flat, accord with the contiguous portion of the springs, as clearly shown at the right hand of Fig. 1.

The clamps are connected by bolts or links F, which retain the springs in position and guide the clamps in their motions, the length of the bolts or links being less than the height of the spring, so that when the clamps approach each other the bolts or links do not strike the spring planks or bearings with which the clamps are in contact.

The spring is supported on the spring-plank or suspended in the usual way of swinging bolsters, or otherwise supported or suspended, it being noticed that the clamps project respectively above and below the sets of springs, the lower clamp being sustained on the place of support or suspension, and the weight of the car or other vehicle or object rested on the upper box. The weight thus superimposed on the clamps as bearers for the load is transmitted to the centers or widest portions of the two sets of springs, thus deflecting and shortening the springs and causing the followers E to roll and conform to the motions of the ends of the springs, thus securing to the spring the same endwise motions as when it is straight, and preventing all wiping or rubbing and wearing action of the spring on the followers.

When the spring, from long use or otherwise, is set out of a straight line the clamps are removed, one or both sets of springs are reversed, and the clamps are again applied and secured, so that the spring renders service anew and obviates the displacement of the plates for straightening and tempering purposes.

It will also be seen that I produce a spring that is inexpensive, may be readily produced and conveniently set up, possesses great resiliency, and rides easily.

The degree of resiliency may be adjusted by increasing or decreasing the number of spring-plates.

The bearing-pieces D, which prevent wearing action on the boxes and tie plate or bar B″, may be removed and replaced when worn or broken.

Two or more duplex-springs, constructed as above, may be coupled side by side and employed as desired or required.

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

1. A reversible duplex spring having two sets of end-supported spring plates and clamps at the centers of opposite outer faces of said sets of plates, said clamps being provided with the slotted guides F, substantially as set forth.

2. In combination with two sets of spring-plates, the longitudinal tie-bar and end boxes, the removable bearing-pieces D, and rocking followers E, substantially as and for the purposes set forth.

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Witnesses:
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