

(No Model.)

P. CAMPBELL.
Vehicle Spring.

No. 231,996.

Patented Sept. 7, 1880.

Fig. 1.

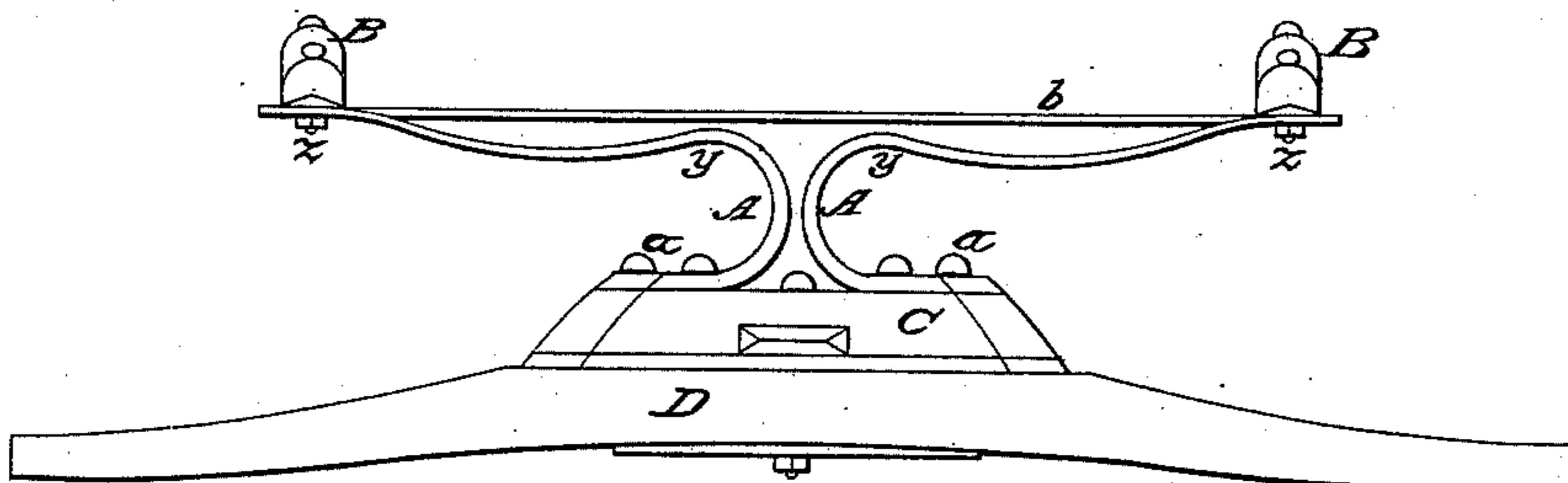


Fig. 2.

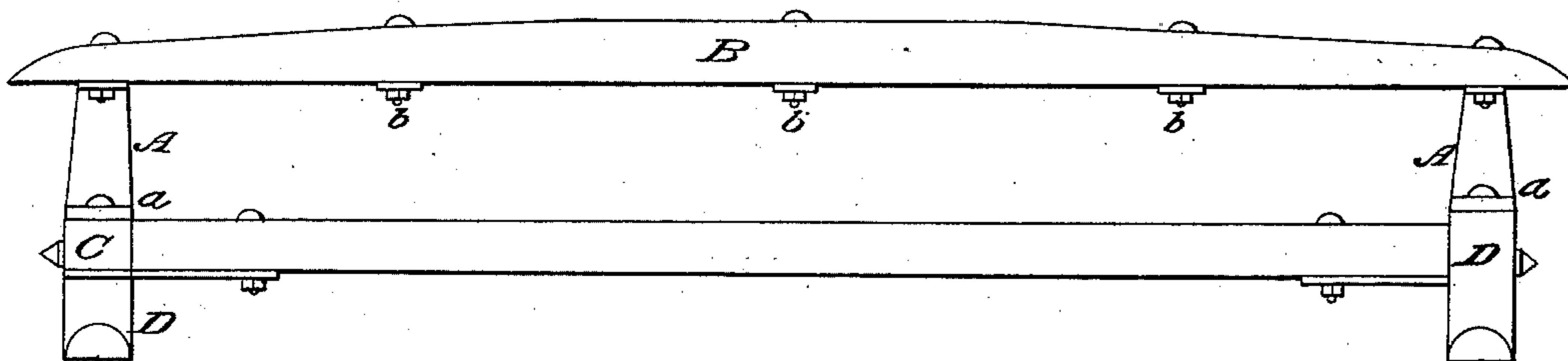


Fig. 3.

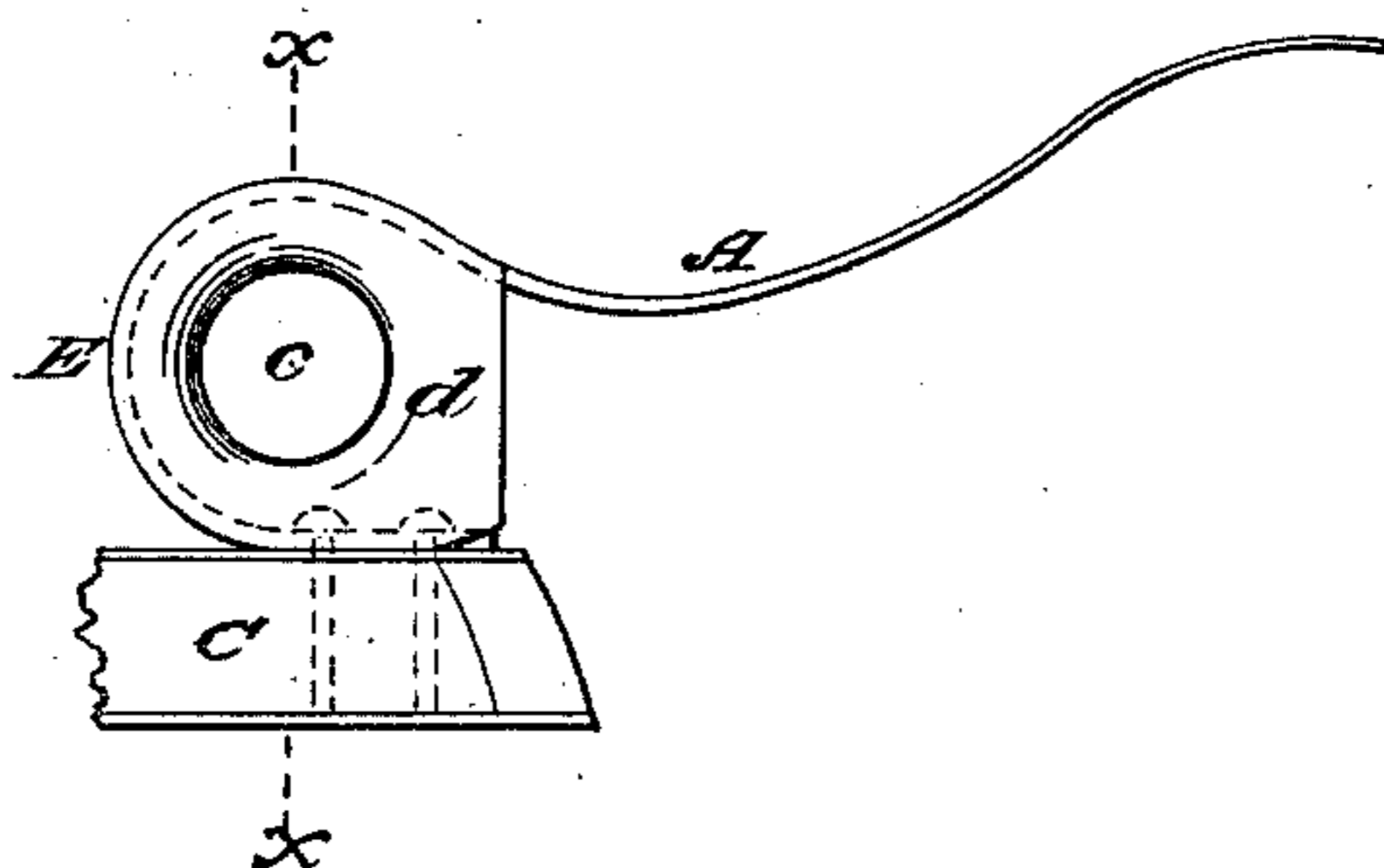
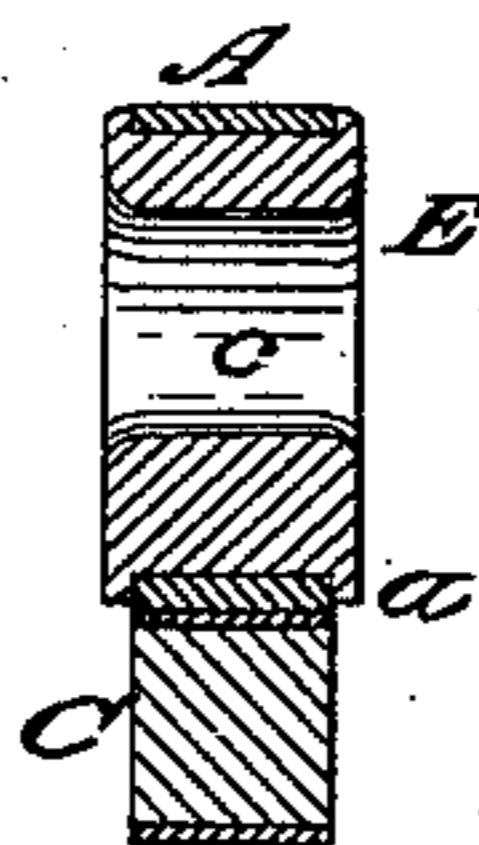


Fig. 4.



INVENTOR:

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UNITED STATES PATENT OFFICE.

PETER CAMPBELL, OF AUGUSTA, KY., ASSIGNOR OF TWO-THIRDS OF HIS
RIGHT TO FRED A. NEIDER AND JOHN A. HOPKINS, OF SAME PLACE,
ONE-THIRD TO EACH.

VEHICLE-SPRING.

SPECIFICATION forming part of Letters Patent No. 231,996, dated September 7, 1880.

Application filed March 11, 1880. (No model.)

To all whom it may concern:

Be it known that I, PETER CAMPBELL, of Augusta, in the county of Bracken and State of Kentucky, have invented certain Improvements in Springs for Vehicles, of which the following is a specification.

This invention relates to springs for vehicles of all kinds, but it is especially adapted to buggies, carriages, or light wagons of any kind.

The invention relates, in part, to the arrangement of the springs with reference to the bolster or axle and the side bars or bed, and in part to rubber re-enforcing springs adapted to be readily removed when desired, all as will be hereinafter more fully set forth.

In the drawings, which serve to illustrate my invention, Figure 1 is a front elevation, showing the arrangement of the springs. Fig. 2 is a side elevation of the same. Fig. 3 is an elevation of a spring supplied with my improved re-enforce; and Fig. 4 is a cross-section of the same, taken in the plane of the line *x x* in Fig. 3.

Let *A A* designate leaf-springs, preferably of one piece or plate of metal and not laminated, and tapered as shown.

B B are the side bars of the vehicle, which connect the outer ends of the springs at the sides. *C* is the bolster, and *D D* are the axles.

The springs *A A* are arranged in pairs, those at the front end fixed upon the bolster at *a* and those at the rear upon the axle. Each spring is curved back over itself, and they are arranged back to back, the outer ends being attached to the side bars at *z z*. The side bars are connected by tie-bars *b b*, upon which the bed rests by preference; but the bed may rest directly upon the side bars or upon the springs themselves. The object is to prevent the ends *z z* of the springs from separating laterally when the weight is thrown upon them, and when the bed does not rest directly upon the side bars or springs the tie-bars *b* serve to prevent this spreading; but when the bed rests upon the side bars it performs this function of itself. If it rests directly upon the springs, it performs the functions of both side bars and tie-bars. This latter construction, however, is objectionable, as it does not permit the bed to be changed readily, and it is

desirable that the ends of the springs be permanently tied together at the sides by the side bars.

I employ the term "bed" to signify the body, box, or platform to bear the load.

A spring of the construction above described possesses great elasticity and is very strong and durable, there being no sharp angles over which it is bent by the load.

In some cases I may arrange my springs as side springs, instead of as shown, and I may arrange them in a position inverted with respect to that shown—that is, the ends *z z* resting on the axle or side bars on the same and the bed resting upon the ends *a a*.

It often happens that it is necessary to throw a severe strain upon the springs of a vehicle by an extra load, and as this is extraordinary, it is desirable that extraordinary means should be employed to prevent the springs from being injured. I employ for this purpose a rubber block, *E*, of peculiar construction, as shown in Figs. 3 and 4. This block is made to fit into the curve of the spring, the latter engaging a shallow groove in its edges or face, whereby it is retained in place, and it is provided with an aperture, *c*, which is adapted to reduce the material of the block where it is not required. The upright part *d* of the block is arranged to take the compressive strain, while the annular part serves to re-enforce the curved part of the spring. This re-enforcing block may be readily forced into its place at any time, and be as readily removed, no extraneous fastening being required.

I am fully aware that bent leaf-springs are not new, and that it is not new to re-enforce metal springs with rubber springs or blocks. All of these are very old, and I make no claim to them; but

What I do claim is—

1. The combination, with the springs, arranged back to back, as shown, of the side bars, the bolster, the axles, and the tie-bars, or other suitable means for connecting the side bars, so as to prevent their separating or spreading when the weight is thrown upon the springs, substantially as set forth.

2. The rubber re-enforce *E*, having a groove or recess to receive the spring, so as to retain it in place in the bend of the same, in combi-

nation with the spring A, substantially as herein set forth.

3. The combination, with the metal spring, bent to form a curve, as shown, of the rubber re-enforce spring, made to fit into the curve in the metal spring, and cut away, as at *c*, so as to weaken it at that point, substantially as and for the purposes set forth.

4. The combination of the spring A with the rubber re-enforce E, provided with the circum-

ferential groove to receive the spring, the aperture *c*, and the upright part *d*, all arranged substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

PETER CAMPBELL.

Witnesses:

JOHN M. HARBESON,
F. W. ALLEN.