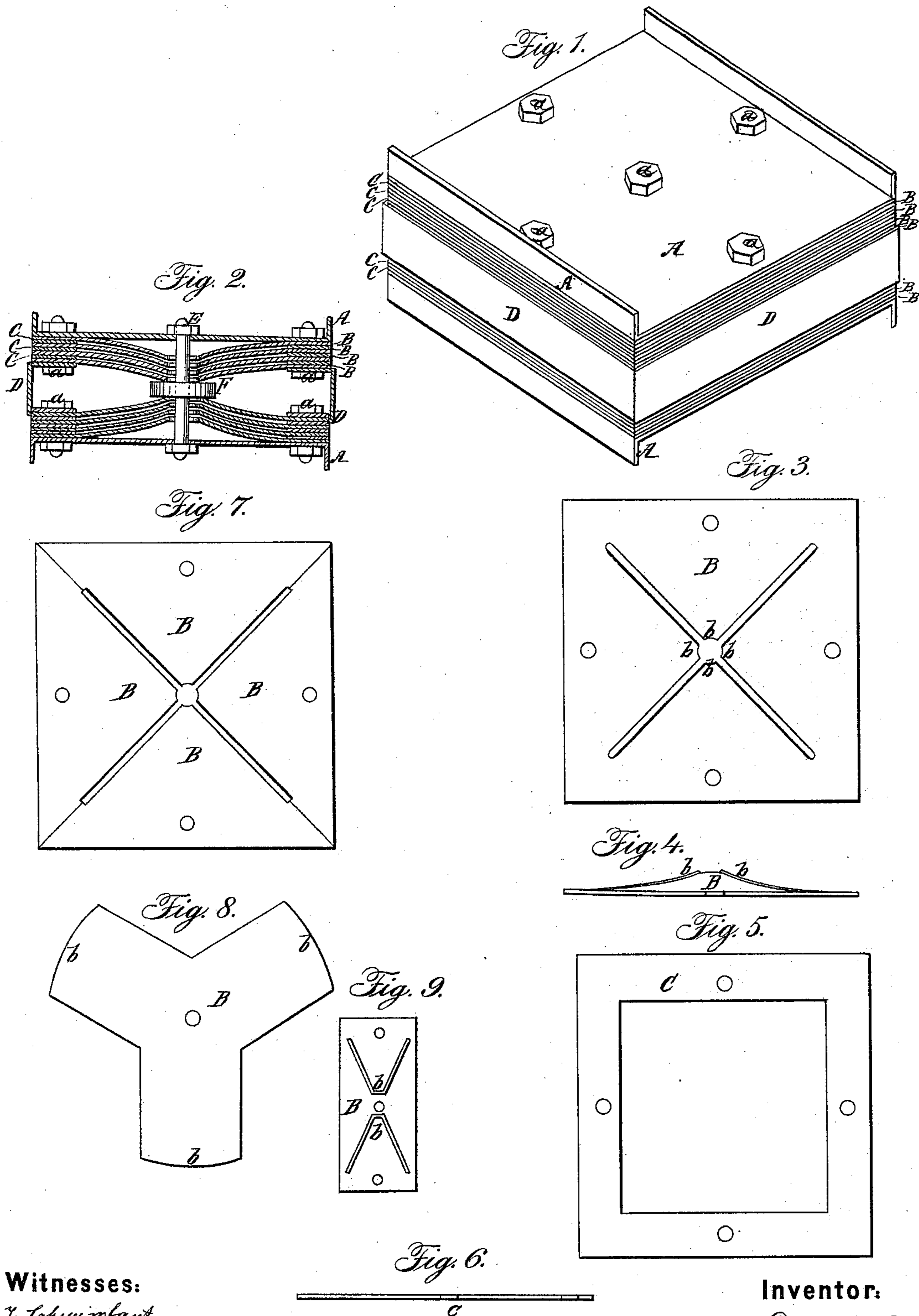


G. A. RIEDEL.

Car Spring.

No. 43,708.

Patented Aug. 2, 1864.



Witnesses:

J. Schumacher.  
Stephen W. Cook.

Inventor:

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# UNITED STATES PATENT OFFICE.

G. ADOLPH RIEDEL, OF PHILADELPHIA, PENNSYLVANIA.

## IMPROVEMENT IN CAR-SPRINGS.

Specification forming part of Letters Patent No. 43,708, dated August 2, 1864.

*To all whom it may concern:*

Be it known that I, G. ADOLPH RIEDEL, of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Car-Springs; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a perspective view of the combined spring. Fig. 2 is a vertical section of the same. Fig. 3 is a top view of one of the spring-plates B. Fig. 4 is an edge view of the same. Fig. 5 is a top view of one of the washers C. Fig. 6 is an edge view of the same. Fig. 7, 8, and 9 are top views of modified forms of the plate B.

Like letters in all the figures represent the same parts.

The nature of my invention consists in constructing combined springs for railroad-cars, and other purposes, of sheet metal, in a peculiar manner, by which there are a plurality of resilient parts to each sheet or layer, which will be understood by the following description.

In the lower section of the spring (see Figs. 1 and 2) A represents a head-plate, to which, the spring plates B B B B are confined by means of bolts *a a a a*, or rivets. One of the plates B, detached from the spring, is represented in Figs. 3 and 4. Between the said plates, at their outer edges, there are washers C C C. One of them is represented detached from the spring in Figs. 5 and 6. The upper section of the spring is similarly constructed, and like parts I have designated by the same letters; but in addition to the parts described in the lower section there is a flanged rim, D, which is secured to the under side of the section by means of the bolts *a a a a*, which hold the whole section together. The object of the said ring is to protect the inside of the spring from dust. There is a small space between the ring and the lower section all around to prevent rubbing when the sections approach to or recede from each other. E is a center bolt which holds the two sections together. There is a central washer, F, interposed between resilient parts *b b b b* of the outer springs of the upper and lower sections. In some cases it may be desirable to have a

washer between each spring and the next succeeding one. Still, the said washer, and also the washers C C C, may be dispensed with without materially affecting the working of the springs.

The operation of the spring is as follows: A combined spring, as represented, being put in position between each journal-box and its pedestal, the weight of the cars presses the resilient parts *b b b b* of each middle spring against the central washer, F, and each succeeding spring in each section will successively be brought into action by the pressure occasioned by the weight of the car as the first and succeeding springs yield against the next spring, from the middle springs outward, corresponding to the weight of the car and the strength of the springs; and hence a perfect elasticity of the combined spring is maintained during its sustaining all degrees of weight.

Some cases will arise in which both sections of the spring will not be necessary, and the number of spring-plates B may be varied to suit the amount of weight the spring has to sustain. For some purposes in the use of the spring, either for railroad-cars or for other purposes, a single spring-plate may be enough, while in other cases the number of plates will require to be increased. This spring is well adapted for a bumper, it being so simple in its construction and so readily attached to the ends of the cars.

I usually, when using a single section, have an iron plate for the resilient parts to bear against, which has a central pin or bolt connected thereto, on which the resilient parts *b* slide in the contraction and expansion of the spring. Instead of curving the springs B, as represented, they may be left flat, if desired.

My invention is susceptible of various modifications. I have represented different forms of the plate B in Figs. 7, 8, and 9. In Fig. 7 the plate or layer is made in four distinct sections, corresponding to the number of resilient parts. In constructing the springs of this form they may be made merely by the use of shears, and consequently very expeditiously. The work may be still further lessened by making their radial edges straight clear through, as represented in one piece by

the red lines. In the latter form of the pieces there will have to be two bolt-holes to each piece.

Fig. 8 shows a modification in which the resilient parts *b b b* are reversed, being at the periphery of the plate.

In Fig. 9 the spring-plate B is of rectangular form and has but two resilient parts *b b*, which terminate a short distance from the center. I contemplate for some purposes to have a plurality of either single or double sections of the spring to one or two head-plates A, as the case may be, which will constitute an entire spring.

Having thus fully described the construction and operation of my improvement in car-springs, what I claim therein as new, and desire to secure by Letters Patent, is—

1. Constructing a spring in one or more

sections, which have one or more sheets, plates, or layers, in which each sheet has a plurality of resilient parts, centrally arranged or otherwise, substantially in the manner and for the purpose above set forth.

2. The washers C C C, when interposed between the spring-plates B B B B, substantially in the manner described.

3. Combining one or more central washers, F, with the resilient parts of the spring, substantially as described, and for the purpose above set forth.

In testimony that the above is my invention I have hereunto set my hand this 15th day of June, 1864.

G. ADOLPH RIEDEL.

Witnesses:

F. SAKWEINHUNT,  
STEPHEN USTICK.