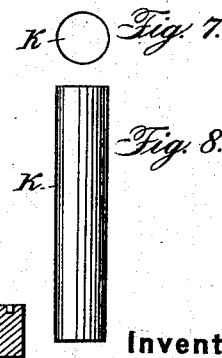
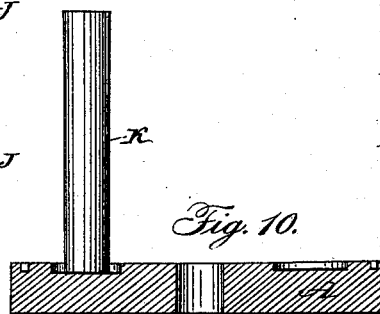
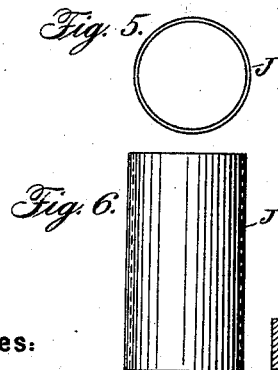
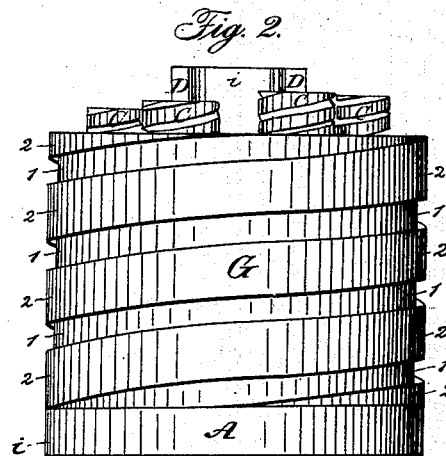
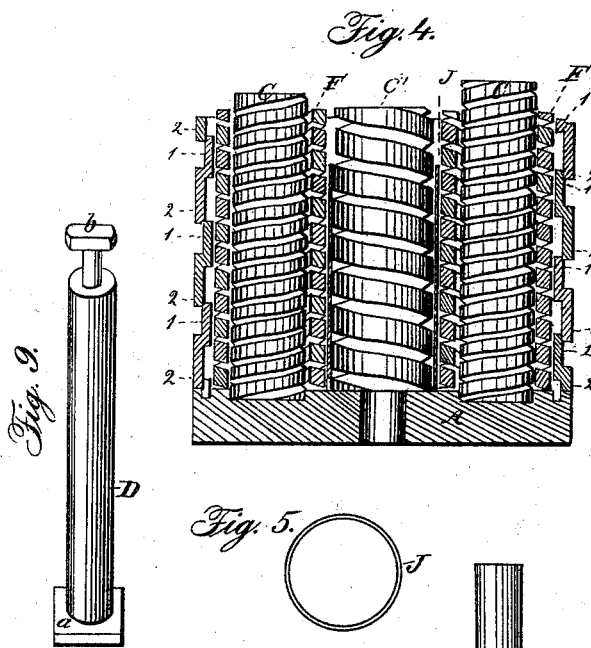
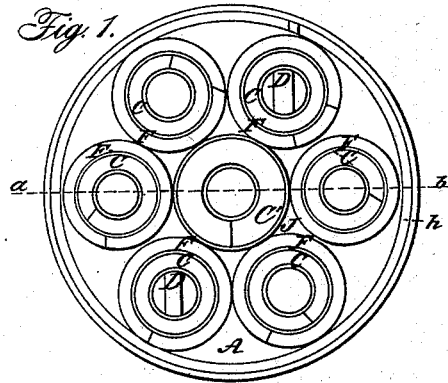
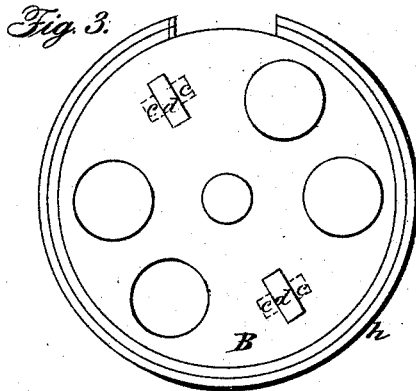


G. A. RIEDEL.

Car Spring.

No. 47,373.

Patented Apr. 18, 1865.



Witnesses:

Stephen H. H. H.
Samuel L. H.

Inventor:

G. A. Riedel

UNITED STATES PATENT OFFICE.

G. ADOLPH RIEDEL, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO A. MERRITT ASAY, OF SAME PLACE.

IMPROVEMENT IN CAR-SPRINGS.

Specification forming part of Letters Patent No. 47,373, dated April 18, 1865.

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 top view of the combined spring, with the plate B removed. Fig. 2 is a side elevation of the same. Fig. 3 is a face view of the plate B reversed. Fig. 4 is a vertical section at the red line *a b* of Fig. 1. Fig. 5 is an end view of the washer or tube J. Fig. 6 is a side view of the same. Fig. 7 is an end view of one of the studs K. Fig. 8 is a side view of the same. Fig. 9 is a perspective view of one of the clamp-bolts D. Fig. 10 is cross-section of the plate A, with one of the studs K in position.

Like letters in all the figures represent the same parts.

The nature of my invention will be understood by the following description.

The pairs of springs C F and the combining-spring G are confined between the plates A B, and held in position by means of the buttons or clamp-bolts D D, one of which is represented in Fig. 9, the heads *a* of the bolts resting against the outer face of the plate A, or in countersinks of the same, and the button parts *b* being brought into the countersinks *c c* in the upper side of the plate B by first passing them through the slots *d d* and then turning the bolts one-quarter round.

As the arrangement of the said parts is essentially the same as that described in the specification which is embraced in the Letters Patent which were granted to me April 19, 1864, a further description thereof I deem unnecessary.

C' is a central spring, which is made considerably stiffer than the springs C F, for the purpose of preventing an undue compression of the latter; and its construction is such that it receives its set before them, to prevent their being crushed when the pressure upon them is greater than they are able to bear.

J is a washer or tube, which surrounds the

spring C'. I usually construct it of wrought-iron, but it may be made of cast-iron, if desired, by increasing its thickness so as to give the requisite strength to it.

I have represented but one spring C' and washer J, yet a plurality of them may be used by placing them at regular distances apart.

Whether I use but one or more springs C' in a nest of springs, I may at pleasure use them with or without the washers J; or, vice versa, I may use the washers without the springs.

Within some of the springs C, I have studs K, to give increased security to the springs C F, the said studs being of such length as to arrest the approach toward each other of the head-plates A B at the point where the compression of the springs should cease. They may also be placed at the center of the plates A B or otherwise in place of the spring or springs C' and washer or washers J. The said studs may be made simply of cylindrical form, as represented in Fig. 8, and set loosely on the plate A, as represented in Fig. 10, they being kept in position by the springs C', which set in recesses in the plate; or they may have their lower ends confined to the plate in any convenient manner. In the latter case the said recesses may be dispensed with, the springs being kept in place by the studs.

The spring G, which surrounds the series of springs F, is constructed of a twin-shaped bar or plate, the cross-section of which is represented in Fig. 4, the outer side of the bar at one edge corresponding to the inner side of the other edge, so that part one of the folds will fit and slide within part two of the same, as represented in Figs. 2 and 4, and consequently protect the nest of springs from dust as well as by thus conjoining the folds give lateral stiffness to the spring for the purpose of giving lateral support to the springs F. The inner parts, 1, at the ends of the spring fit in the annular grooves *h* in the head-plates A B, and the ends are confined to the plates by means of screws, which pass through the projections *r r* in the ends of the springs, the said projections fitting in the peripheries of the plates.

Having thus fully described my improvement in car-springs, what I claim therein as

new, and desire to secure by Letters Patent, is—

1. The tubes J, combined with the head-plates A B, and arranged and operating in relation to the springs C F, substantially as hereinbefore described, and for the purpose above set forth.

2. Combining and arranging the spring C' with the tube J, substantially in the manner and for the purpose above set forth.

3. Constructing the combining-spring G of

a twin shaped bar or plate, substantially in the form represented in Fig. 4, when operating as described, for the purposes set forth.

In testimony whereof I have hereunto set my hand and affixed my seal this 16th day of September, 1864.

G. ADOLPH RIEDEL. [L. S.]

Witnesses:

STEPHEN USTICK,
SAMUEL L. KING.