D. G. DANIELS.

Car Spring.

No. 98,672. Patented Jan. 11, 1870.

Fig. 2

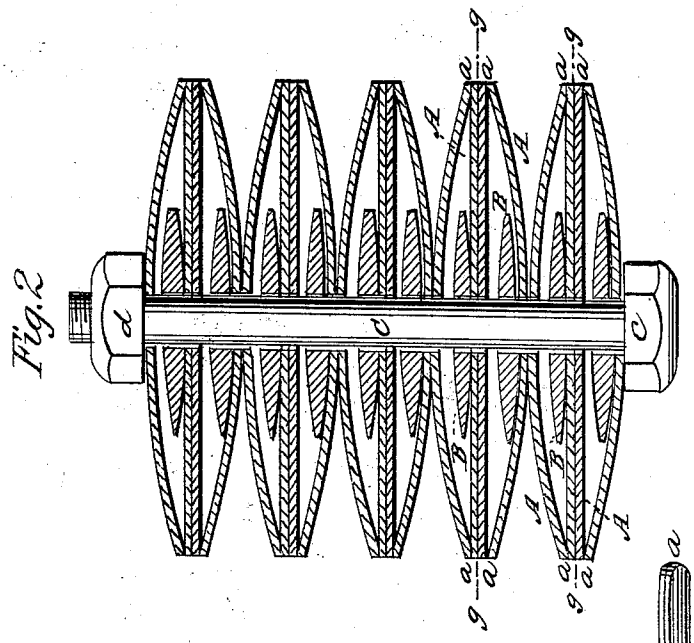


Fig. 3

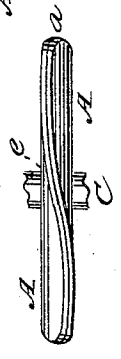
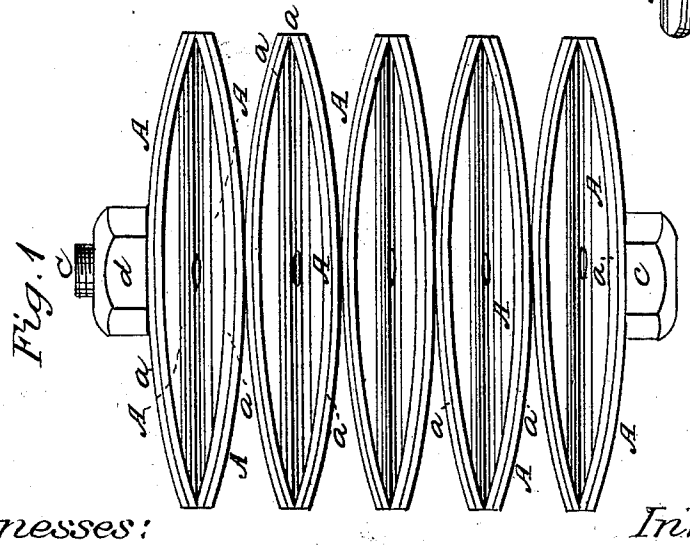


Fig. 1



Witnesses:

R. T. Cornhill

P. A. Campbell

Inventor:

D. G. Daniels

by Mason Fenwick & Lawrence

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

United States Patent Office.

D. G. DANIELS, OF CHICAGO, ILLINOIS.

Letters Patent No. 98,672, *dated January* 11, 1870.

IMPROVED RAILWAY-CAR SPRING.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, D. G. DANIELS, formerly of Cincinnati, Hamilton county, and State of Ohio, but now of Chicago, in the county of Cook, and State of Illinois, have invented a new and useful Improvement on Springs; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a view showing a number of springs piled together, which are adapted for receiving supplemental springs between them.

Figure 2 is a diametrical section through fig. 1, showing the supplemental springs interposed between each pair of the plates which compose a spring.

Figure 3 is an edge view of a single spring composed of two bent plates.

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

This invention relates to an improvement which is designed to remove an objection attending the spring for which Letters Patent were granted to me, bearing date on the 26th day of May, A. D. 1868.

It has been found, by practical test, that the springs above referred to will collapse or flatten, so as to afford solid instead of an elastic support, when they are subjected to extraordinary pressure or load, which is very objectionable, and especially so when the springs are employed for the trucks of freight-cars, where the strength of the springs cannot be conveniently ganged or made to accommodate itself to the varying loads which they are required to sustain.

To overcome this difficulty, and adapt a spring, of the description hereinafter described, to afford an elastic support under ordinary as well as extraordinary loads, the nature of my invention consists in interposing a supplemental or auxiliary spring between each pair of primary springs composing a pile, said interposed spring being so made and arranged, with relation to the yielding capacity of the spring, that the primary spring will operate alone under ordinary loads, and under extraordinary loads, the secondary spring will be brought into action, and assist in sustaining such loads of an elastic support, as will be hereinafter described.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

In figs. 1 and 2, I have represented my improved springs piled together, and confined by a bolt, C, between the head *c* and nut *d* of this bolt; and

In fig. 3, I have shown one spring detached from its gang or pile.

Each spring is composed of two plates, A A, of steel, which plates are exactly alike in shape and size, and are put together so that they bear or touch only at their edges, *a a*. These two plates are stamped out of a sheet of steel or other suitable springy metal, and they are made of a circular shape, and of equal diameter. They are then bent over the surface of a cylinder.

The plates thus produced are punched so as to leave holes through their centres, for receiving through them the centre-rod C, after which they are tempered in the usual well-known manner of tempering springs.

Both plates being of an equal size, and having the same curvature, they can be fitted together in the manner shown in the drawings, so that their outer edges will impinge all around, and leave a space between the plates, within these impinging edges, as shown in fig. 2.

It will thus be seen, that the sections A A, of the spring, are formed and put together precisely as described in my Letters Patent above referred to.

Between each pair of plates A A, forming a primary spring, I interpose a secondary spring, B, which, if a rod, C, be used, is perforated centrally, and held in place in the centre of the space between the plates A A, by means of the rod C, which unites the springs in gangs or piles, as shown in fig. 2.

I prefer to make the springs B of India rubber, of a circular form, and considerably thicker in the centre than at the edges. One or two pieces of rubber may be used between each pair of plates A, and in practice the springs B will be made somewhat less in thickness than the thickness of the space between plates A, so that under ordinary loads, these secondary springs will not come into play.

When an extraordinary load, which would be liable to press the spring-plates flat, is brought to act upon these plates, they will be compressed until secondary springs are caused to act, which will prevent the spring-plates from being injured, and also afford an elastic support to the load.

I am aware that it is not a new idea to employ rubber blocks or secondary springs upon vehicles, to operate, under very heavy loads, in conjunction with the ordinary elliptic springs, and, therefore, I do not claim, broadly, the use of such springs in combination with primary springs of an elliptic form.

I am also aware that it is not new to interpose secondary springs of India rubber between open concavo-convex primary springs, arranged in a pile, and composed of radial spring-arms. I do not, therefore, claim, broadly, such contrivance.

Having described my invention,

What I do claim as new, and desire to secure by Letters Patent, is—

The perforated secondary spring B, placed between the two arched or curved primary springs, A A, which touch at their outer edges, and are adapted to operate substantially as described.

D. G. DANIELS.

Witnesses:

WM. ELIOT FURNISS,
J. M. VARNUM.