J. J. C. SMITH.

Car Spring.

No. 50,849. Patented Nov. 7, 1865.

Fig. 1.

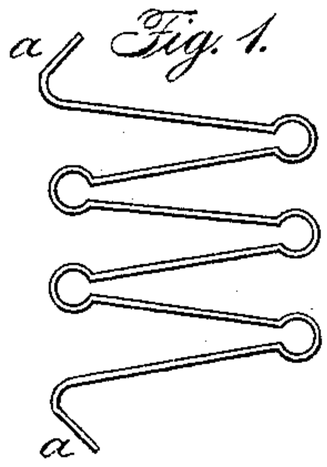


Fig. 2.

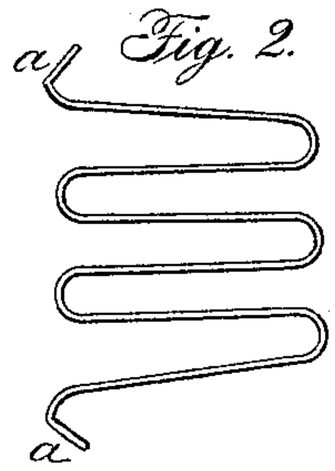


Fig. 3.

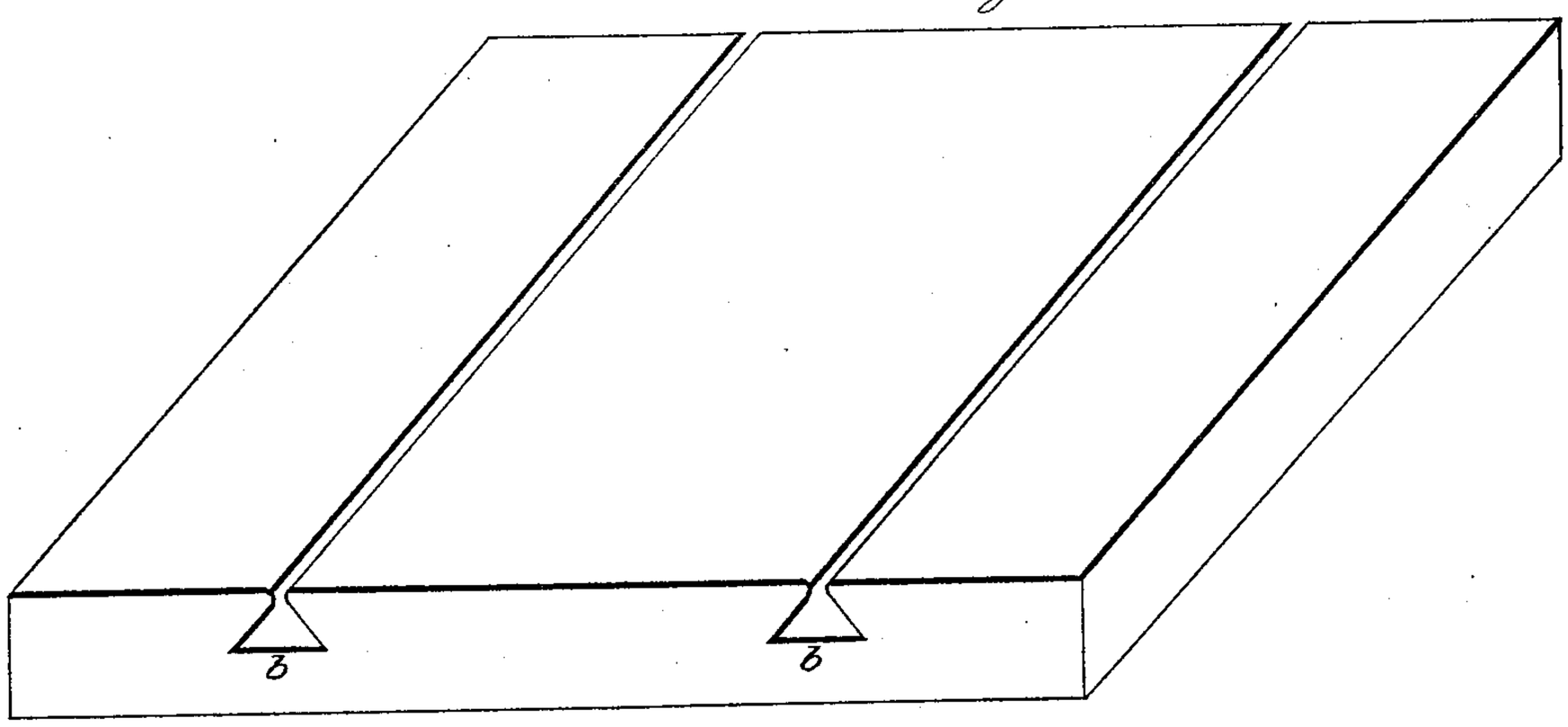
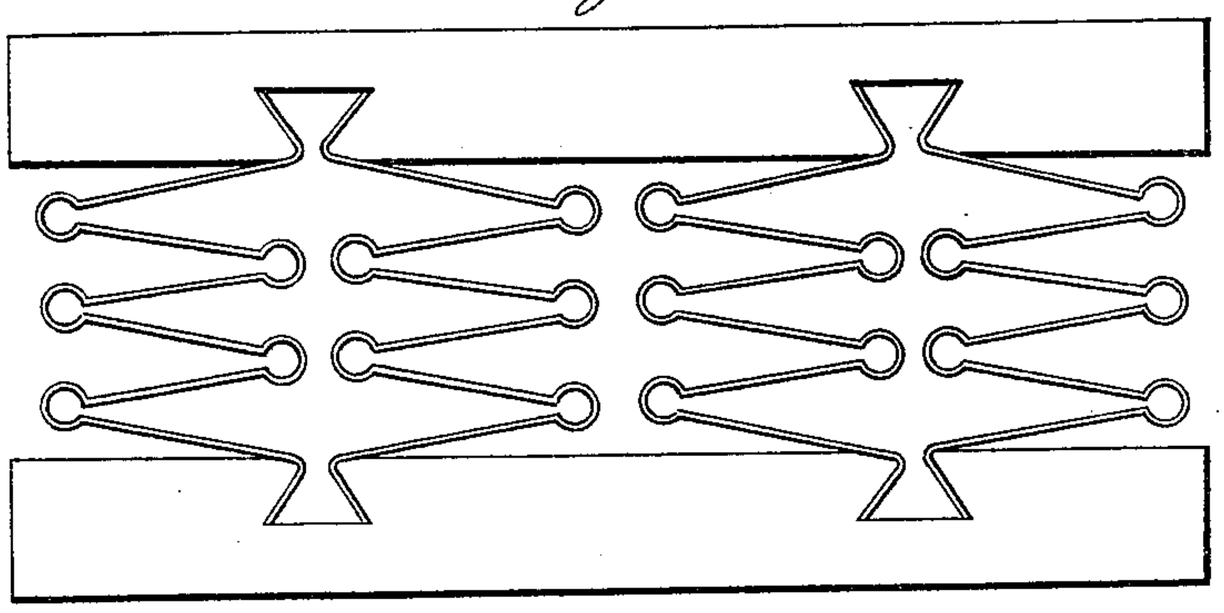


Fig. 4.



Witnesses:

Michael Smith

Jacob Stepp

Inventor:

John Joseph Ch. Smith

UNITED STATES PATENT OFFICE.

JOHN JOS. CHARLES SMITH, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVED CAR-SPRING.

Specification forming part of Letters Patent No. **50,849**, dated November 7, 1865.

To all whom it may concern:

Be it known that I, JOHN JOSEPH CHARLES SMITH, of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in the Construction of Car-Springs; and I do hereby declare the following to be a full, clear, and exact description of the nature, construction, and operation of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figures 1 and 2 are detail views of two different forms of single springs illustrative of my invention. Fig. 3 is a perspective view of one of the plates which are employed to retain the springs in their combined operating condition. Fig. 4 is an elevation of the improved combined spring entire.

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

In order to define the nature of my invention in a lucid and unequivocal manner, I will here state that it does not relate to any specific form of single spring, or to any connection or arrangement of such spring with different devices or appurtenances.

My invention consists of an assemblage or cluster of comparatively diminutive convoluted springs, which, while they are units in themselves, or, in other words, manufactured separately, are brought together and combined in such a way that each cluster or combination shall perform the office which has usually been assigned to a single spring.

The objectionable characteristics of the single springs in common use—such as their liability to break and endanger the safety of the cars and passengers, to say nothing of their inefficiency in operation and the difficulty attending their manufacture—are too well known by those familiar with the subject to require extended remarks in this specification.

I have made many and tedious experiments and have contrived numerous plans, which have resulted in the conviction that the combined spring which I have originated, and which constitutes the present invention, is far superior in respect to strength, durability, and operation than any which has hitherto been devised.

To enable those skilled in the branch of manufacture to which my invention appertains to fully understand and use the same, I will proceed to describe it with reference to the accompanying drawings.

I take bars of steel or cold-rolled iron about one-sixteenth of an inch in thickness and from one-eighth of an inch to one inch in width, (the smaller are preferable,) and bend them in a zigzag line, so as to produce the small convoluted spring A, the corners or angles of which are rounded off in either of the fashions shown in Figs. 1 and 2. The distance from angle to point of each spring A may be about one inch.

To obtain a supporting medium for a car-body, I place a number of these single springs in close proximity with each other, and retain them in the relative positions in which they are arranged by means of the iron plates B B, which are provided with dovetail-grooves *b*, for the reception of the hooked ends *a*, which constitute the termini of each of the springs A, the hooked ends of the springs being secured in the grooves by means of a key, or in any suitable manner. It is the intention to secure a definite supporting capacity by first determining the strength of one of the single springs A, and then apportioning the requisite number to make the combined spring consisting of the assemblage of single ones.

The strength of the individual springs, notwithstanding their smallness, is not generally appreciated, except by a practical test of the matter. Their resisting capacity is commensurated with the degree of their contraction. After the springs A are combined and fixed between their retaining-plates, they may all be subjected to a tempering process at one operation, whereby considerable labor is avoided.

I repeat that I do not claim novelty in the method of constructing the individual springs; but I am not aware that the assemblage or combination of small springs to perform the functions of the large spring, as described, has ever before been reduced to practice in this connection.

I would further state that my invention has nothing in common with the car-spring which is composed of a series of metallic plates with the lowest point of one plate resting on the highest point of the next.

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

A car-spring consisting of the combination or assemblage of the individual and comparatively small springs of convoluted or zigzag shape, retained in their relative proximity, and operating substantially in the manner described.

JOHN JOS. CH. SMITH.

Witnesses:
OCTAVIUS KNIGHT,
CHAS. D. SMITH.