E. M. WRIGHT.

Carriage-Spring.

No 44.908. Patented Nov. 1, 1864.

Fig. 1.

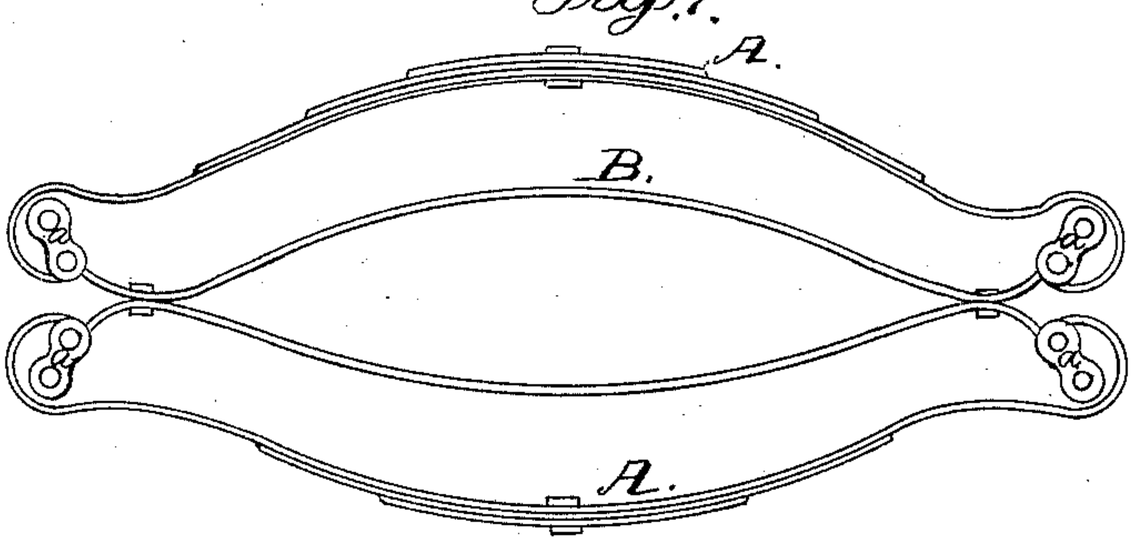


Fig. 2.

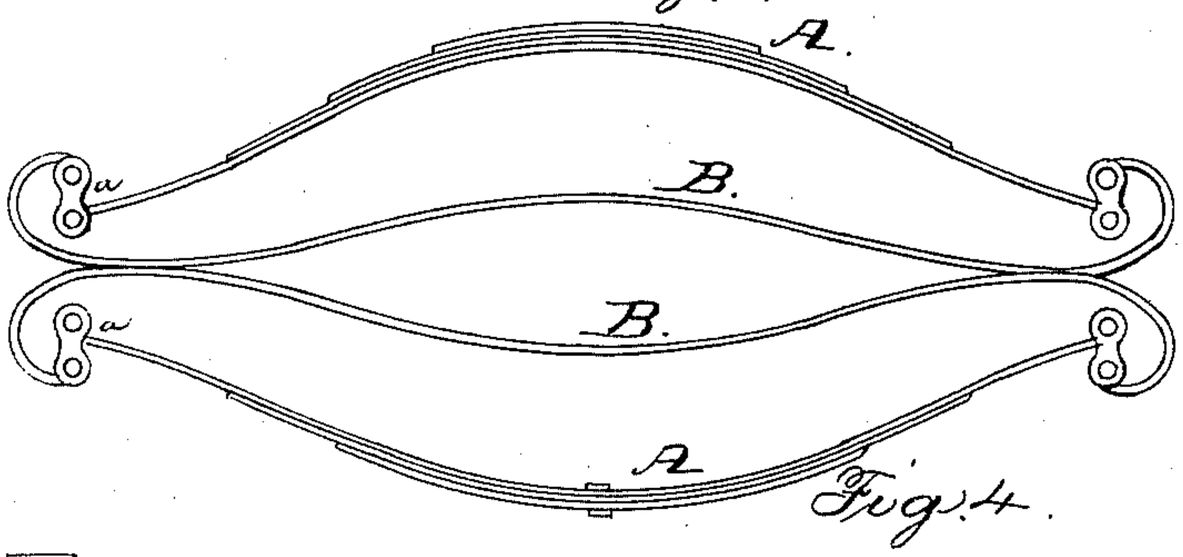


Fig. 4.

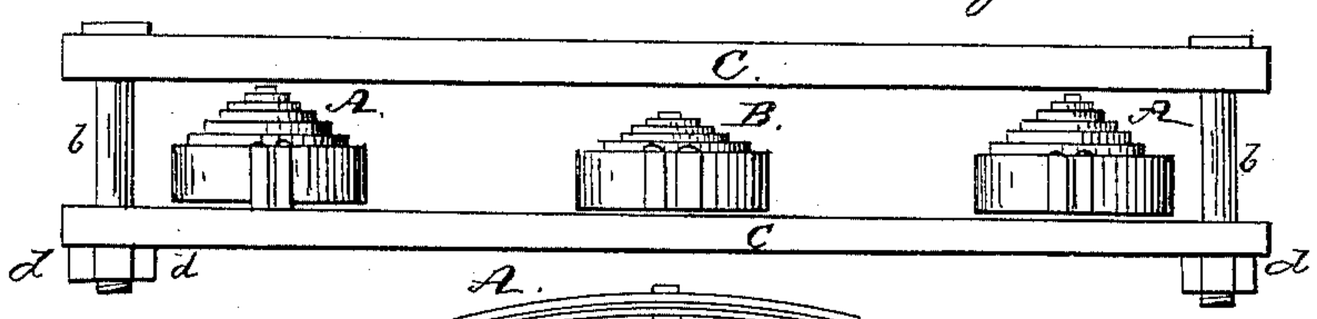


Fig. 3.


WITNESSES:
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INVENTOR:
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By his atty
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# UNITED STATES PATENT OFFICE.

E. M. WRIGHT, OF WYANDOTTE, KANSAS.

## IMPROVEMENT IN CARRIAGE-SPRINGS.

Specification forming part of Letters Patent No. **44,908**, dated November 1, 1864.

*To all whom it may concern:*

Be it known that I, E. M. WRIGHT, of Wyandotte, in the county of Wyandotte and State of Kansas, have invented a new and Improved Graduated Spring; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification—

Figure 1 being a view of a carriage-spring constructed in my improved manner; Figs. 2 and 3, modifications of the construction thereof; Fig. 4, a view of an arrangement of car or other springs applied on the same principle.

Like letters designate corresponding parts in all the figures.

The nature of my invention consists in the combination of two or more single or double springs in such a manner as to form a compound spring, and so that they shall come successively into action when the load or force is increased to such an extent as to cause or require the increased action.

Letter A in Figs. 1, 2, and 3 represents carriage-springs to receive the first action of the load or weight. They may be constructed as usual, except in respect to their connection with the additional or supplemental springs. Within these springs, or so arranged as to bear the same relation to them is a pair of springs, B B, as in Figs. 1, 2, or a single spring, B, as in Fig. 3, for the purpose of receiving the burden of the load or weight when too great for the first acting springs A A. These supplemental or auxiliary springs B B are connected with the springs A A by means of joints and links *a a*, as shown, or their equivalents, so that the springs A A may have freedom to expand lengthwise before the weight comes upon the springs B B.

In the modification, Fig. 4, the primary springs A A are nearly first compressed between the bars C C, before the weight comes upon the supplemental spring or springs B. The bars C C may slide on rods *b b* or equivalent guides, and be adjusted as to amount of movement by screws and nuts *d d* or other suitable means.

The operation and advantages of this compound spring, graduated, may be clearly understood by describing its functions as applied to carriages in the manner above set forth. Suppose a single person rides in a carriage. The primary springs A A may be of sufficient strength to support him and permit great scope and freedom of elasticity much better than if the springs were strong enough to support several persons. Then, when two or more persons are in the carriage, the springs A A are compressed beyond their strength and the supplemental springs B B come into action, freely supporting, in connection with the springs A A, the whole weight, and or with nearly equal freedom of elasticity to that with one person.

The improvement is obvious.

It is apparent that this principle of graduation may be extended to two or more successively acting supplemental springs.

What I claim as my invention, and desire to secure by Letters Patent, is—

The combination of two or more elliptic springs, connected at their ends by free joints, as described, so that the inner auxiliary spring shall begin to act only when the outer spring shall have been pressed down to a certain extent, substantially as and for the purpose herein specified.

The above specification of my improved graduated spring for carriages, cars, and other vehicles signed by me this 11th day of January, 1864.

E. M. WRIGHT.

Witnesses:

FRANKLIN BAYHEM,

W. B. FISHER.