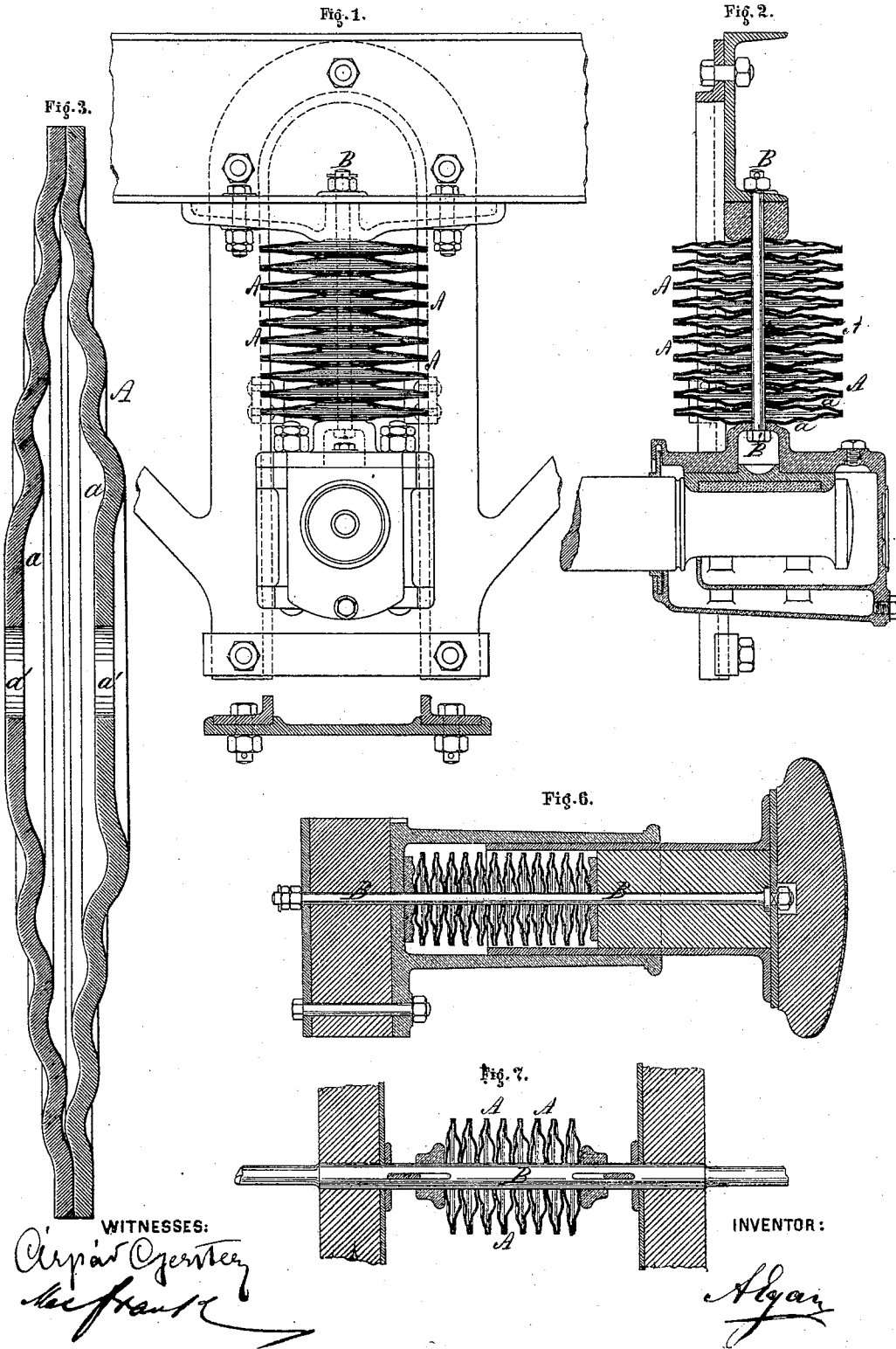


A. EGAN.

Metallic Springs for Railway-Cars, &c.

No. 131,154.

Patented Sep. 10, 1872.



WITNESSES:

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UNITED STATES PATENT OFFICE.

ALFRED EGAN, OF PESTH, HUNGARY.

IMPROVEMENT IN METALLIC SPRINGS FOR RAILWAY CARS, &c.

Specification forming part of Letters Patent No. 131,154, dated September 10, 1872.

SPECIFICATION.

To all whom it may concern:

Be it known that I, ALFRED EGAN, of Pesth, Hungary, have invented a certain new and useful Improvement in Metallic Springs for Railroad and other Carriages, of which the following is a description:

This invention consists of a spring constructed of a series of two or more concave-convex centrally-corrugated metallic disks arranged in pairs, each pair being placed with their concave sides opposite and their edges in contact, thus inclosing a central space sufficient for the elastic action of the disks when compressed.

In the drawing, Figure 1 is an elevation of my improved spring, showing it applied to railway carriages. Fig. 2 is a central vertical section of the same; Fig. 3, a cross-section of one pair of the disks of which the spring is composed; Fig. 4, Sheet 2, a like view, showing disks of a thinner metal, and duplicated before being arranged in reverse series; Fig. 5, a similar view, showing disks of graduated thickness; Fig. 6, Sheet 1, a sectional view, showing the springs applied to buffers for railroad cars; Fig. 7, a sectional view, showing its application to draw-bars of railway carriages. Fig. 8, Sheet 2, is a sectional elevation of a mode of applying my springs to elastic carriage or wagon bearers.

My spring consists of one or more sections, A A. Each section A consists of two metallic disks, *a a*, of single or of two or more thicknesses of dishing or concave-convex form, placed with edges in contact, and their concave faces opposite, each alternate concave-convex concentric corrugated disk *a* being seated at its axis *a'* in the concave of the one below it, leaving an inclosed space between to admit of the disks being forced nearer togeth-

er. The disks are formed with circular concentric corrugations to obtain the maximum of elasticity and strength with the minimum of thickness, and for the same purpose they may be of varied thickness, as shown in Fig. 5, Plate 2.

Where the elasticity of the disks *a a* is employed alone they are simply laid together as described, and the sections A strung together by a central rod or bolt, B, passing through the holes *a'* of the disks; or they are held in position by bars or guides outside.

The spring is light and inexpensive, as, owing to its dishing and corrugated form, it combines the maximum of strength and elasticity with the minimum amount of material. It is also convenient in application, as sections may be removed or applied at pleasure to adapt it to circumstances or vary the strength or elasticity; and where the compressed air is used the latter effect is attainable with great accuracy and delicacy, as, by increasing or diminishing the pressure within the spring, its power is varied at will.

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

A spring formed of a series of concavo-convex concentrically-corrugated metallic disks *a a*, placed together in inverted pairs, each alternate disk *a* being seated at its axis *a'* in the concave seat of the one below it, and having their outer edges joined or united together, as and for the purpose set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

ALFRED EGAN.

Witnesses:

C. GERETEE,
MAX FRANK.