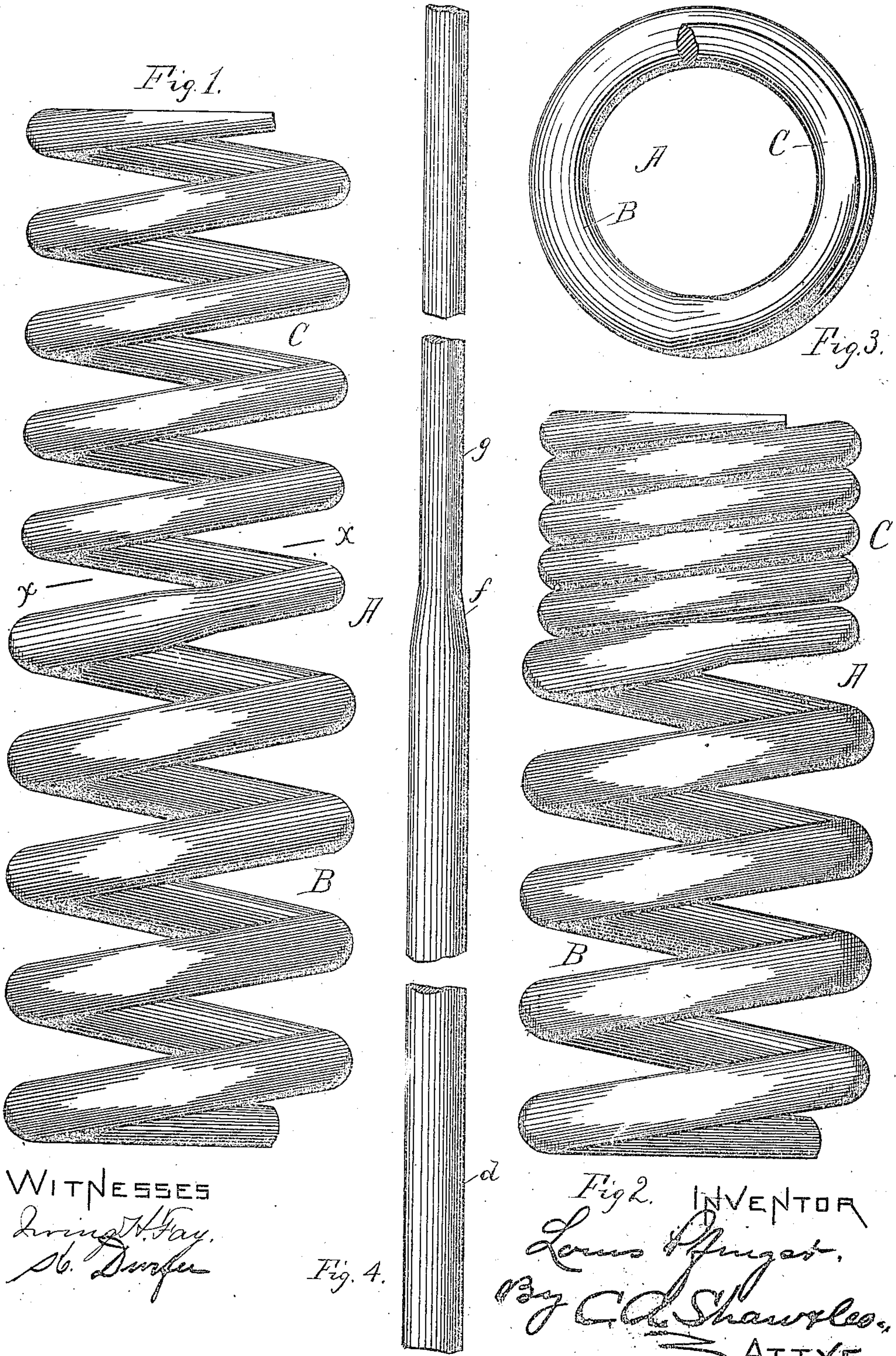


(No Model.)

L. PFINGST.
CAR SPRING.

No. 462,971.

Patented Nov. 10, 1891.



WITNESSES
Livingston H. Fay.
St. Dwyer

Fig. 2. INVENTOR
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UNITED STATES PATENT OFFICE.

LOUIS PFINGST, OF BOSTON, MASSACHUSETTS.

CAR-SPRING.

SPECIFICATION forming part of Letters Patent No. 462,971, dated November 10, 1891.

Application filed May 23, 1891. Serial No. 393,896. (No model.)

all whom it may concern:

Be it known that I, LOUIS PFINGST, of Boston, in the county of Suffolk, State of Massachusetts, have invented certain new and useful Improvements in Car-Springs, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an elevation of my improved car-spring; Fig. 2, a like view of the same, showing the spring partially compressed; Fig. 3, a cross-section taken on line *xx* in Fig. 1, and Fig. 4 a plan view of the rod from which the spring is wound.

Like letters of reference indicate corresponding parts in the different figures of the drawings.

My invention relates especially to supporting-springs for railway-cars and similar vehicles, the object being to produce a spring which shall be correspondingly sensitive in cushioning the vehicle as the load varies thereon.

The nature and operation of the improvement will be readily understood by all conversant with such matters from the following explanation.

The spring A is formed from a rod circular in cross-section and of two diameters, the body portion *d* of the rod being, for example, seven-eighths of an inch in diameter and at a point *f* drawn or reduced to five-eighths of an inch in diameter for the remaining half *g* of its length. When coiled, the portion *d* forms the base B of the spring, and the portion *g* forms the top C thereof. Said spring is wound on a mandrel of equal diameter throughout, rendering the coil thus formed of equal interior diameter, the exterior diameter of the top C being correspondingly less than that of the base B. As thus constructed the top C is more readily compressed than the base B, and when the vehicle is sustaining a light load acts to cushion such load, while the degree of compression on the base B thereunder is practically imperceptible. As the load increases the coil on the top C closes, as shown in Fig. 2, forming solid bearing for

the vehicle on the base B, which then begins to compress under such increased weight. By thus constructing the spring with its upper and lower sections, respectively, of equal interior diameter much better results are effected than when the coil is formed from a rod of equal taper throughout.

The longitudinal rocking or oscillation of the car-body is by the use of my improved spring greatly reduced, as where a spring of this class constructed of a bar of equal diameter throughout is employed the oscillation of such springs greatly increases such rocking, whereas the force of the weight is received by the smaller or upper portion of my improved spring without compressing the larger portion or base, and the oscillation of such reduced portion alone has any effect on the car-body.

In springs constructed from a bar tapered its entire length and wound into a coil of equal interior diameter the smaller end of the taper or top coil of the spring receives the blow from any movement of the body of the vehicle and soon crystallizes, causing it to become greatly weakened and easily broken. In conically-wound springs from a bar of equal diameter throughout the lower or broader coil is effected in like manner. These objections are overcome by my improved construction, wherein such blow is received by and imparted equally throughout the length of the top or upper portion C of the spring, the same effect being had on the base of the spring when the body is sufficiently loaded to entirely compress the upper C.

Having thus explained my invention, what I claim is—

A spring comprising a spirally-wound rod, that portion of the rod forming the lower portion of the spring being of one size throughout and that portion of the rod forming the upper portion of the spring being smaller and of one size throughout, the interior diameters of the spiral coils being uniform throughout the spring, and the exterior diameter of the lower portion being larger than that of the upper portion.

LOUIS PFINGST.

Witnesses:

O. M. SHAW,
K. DUFFEE.