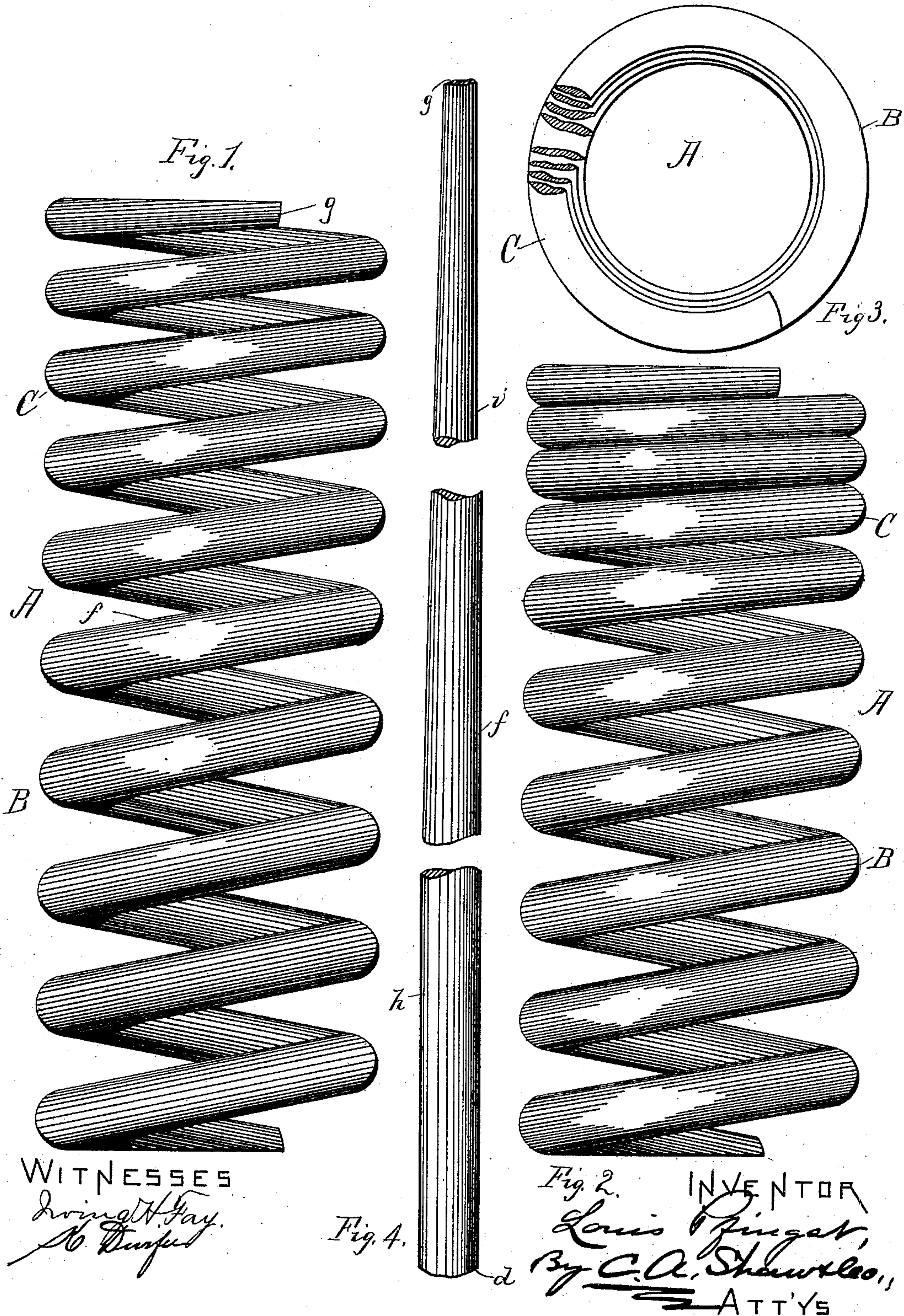


(No Model.)

L. PFINGST.
CAR SPRING.

No. 462,958.

Patented Nov. 10, 1891.



WITNESSES
Dwight H. Fay.
A. D. Dwyer

Fig. 4.

Fig. 2. INVENTOR
Louis Pfingst,
By *C. A. Shaw*,
ATT'YS

UNITED STATES PATENT OFFICE.

LOUIS PFINGST, OF BOSTON, MASSACHUSETTS.

CAR-SPRING.

SPECIFICATION forming part of Letters Patent No. 462,958, dated November 10, 1891.

Application filed May 23, 1891. Serial No. 393,897. (No model.)

To 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 plan view, partly in section, 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.

In the drawings, A represents the spring considered as whole. Said spring is spirally wound from a rod circular in cross-section and of equal diameter from one end *h* to a predetermined point *f*, preferably at or near the longitudinal center thereof. From said point *f* the rod tapers, decreasing gradually in diameter to its opposite end *g*. The straight portion *h* forms the base B, and the taper portion *i* forms the top C of the spring when wound. The rod is wound on a correspondingly-tapered mandrel, forming a coil of equal

exterior diameter throughout, the interior diameter of the top portion C gradually increasing from the center outward, as best shown in Fig. 3. Said top C, in expansive properties, has much the effect of an inverted conical or helically wound spring, its outer coil offering the least resistance in like manner with the base-coil of such helical springs. Such resistance gradually increases through the coils of the top C to the base or lower portion B. Under a light load on the vehicle the top is readily compressed, serving to cushion such load, while the stiffness of the base resists compression. Increase of the load causes the top coils C to close, as in Fig. 2, a further increase in weight being cushioned by the base-coils B.

The objections incident to the use of conical springs or springs constructed from a rod of continuous taper throughout its length are overcome in my improvement, the longitudinal rocking and lateral oscillation of the vehicle-body being greatly reduced. Any desired length of rod may be employed and the taper portion and base portion may vary in length in relation to each other.

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 tapered throughout, the exterior diameters of the spiral coils being uniform throughout the spring, and the interior diameter of the lower portion being smaller than that of the upper portion.

LOUIS PFINGST.

Witnesses:

O. M. SHAW,
K. DUFEE.