J. LUDLUM.

SPIRAL CAR-SPRING.

No. 192,703. Patented July 3, 1877.

Fig. 1

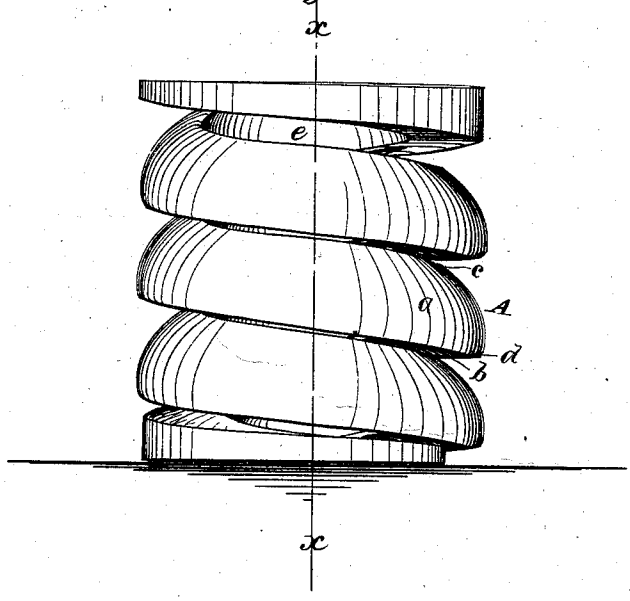
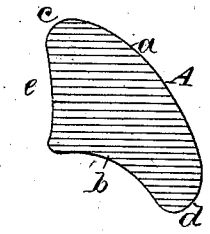


Fig. 2



WITNESSES:

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INVENTOR:

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UNITED STATES PATENT OFFICE.

JAMES LUDLUM, OF POMPTON, NEW JERSEY.

IMPROVEMENT IN SPIRAL CAR-SPRINGS.

Specification forming part of Letters Patent No. **192,703**, dated July 3, 1877; application filed May 28, 1877.

To all whom it may concern:

Be it known that I, JAMES LUDLUM, of Pompton, in the county of Passaic and State of New Jersey, have invented a new and Improved Spiral Spring, of which the following is a specification:

Figure 1 is a side elevation of a spiral spring made on my improved plan. Fig. 2 is a transverse section of one of the coils, taken on line *x x* in Fig. 1.

Similar letters of reference indicate corresponding parts.

The invention consists in a car-spring of the peculiar form hereinafter described.

The object of the invention is to provide a spring that will yield to lateral strain without breaking, and that will afford the greatest possible amount of resistance to downward pressure.

In Fig. 1, A represents a spiral spring made from a metallic bar, whose cross-section is shown in Fig. 2. The exterior surface *a* is convex, and the interior ones *b e* more or less concave, while the upper and lower edges *c d* of each spiral are rounded off.

It is obvious that the spring thus formed is capable of resisting a great amount of pressure, while it is also capable of yielding laterally, and as the coils overlap each other they are mutually supported.

Should the spring at any time be subjected to sudden diagonal strains the peculiar form of the surfaces that come into contact render it impossible for one coil to engage another so positively as to cause the spring to break.

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

The spiral spring A, provided with convex outer surface *a*, interior concave surfaces *b e*, and rounded edges *c d*, as and for the purpose specified.

JAMES LUDLUM.

Witnesses:

C. SEDGWICK,

ALEX. F. ROBERTS.