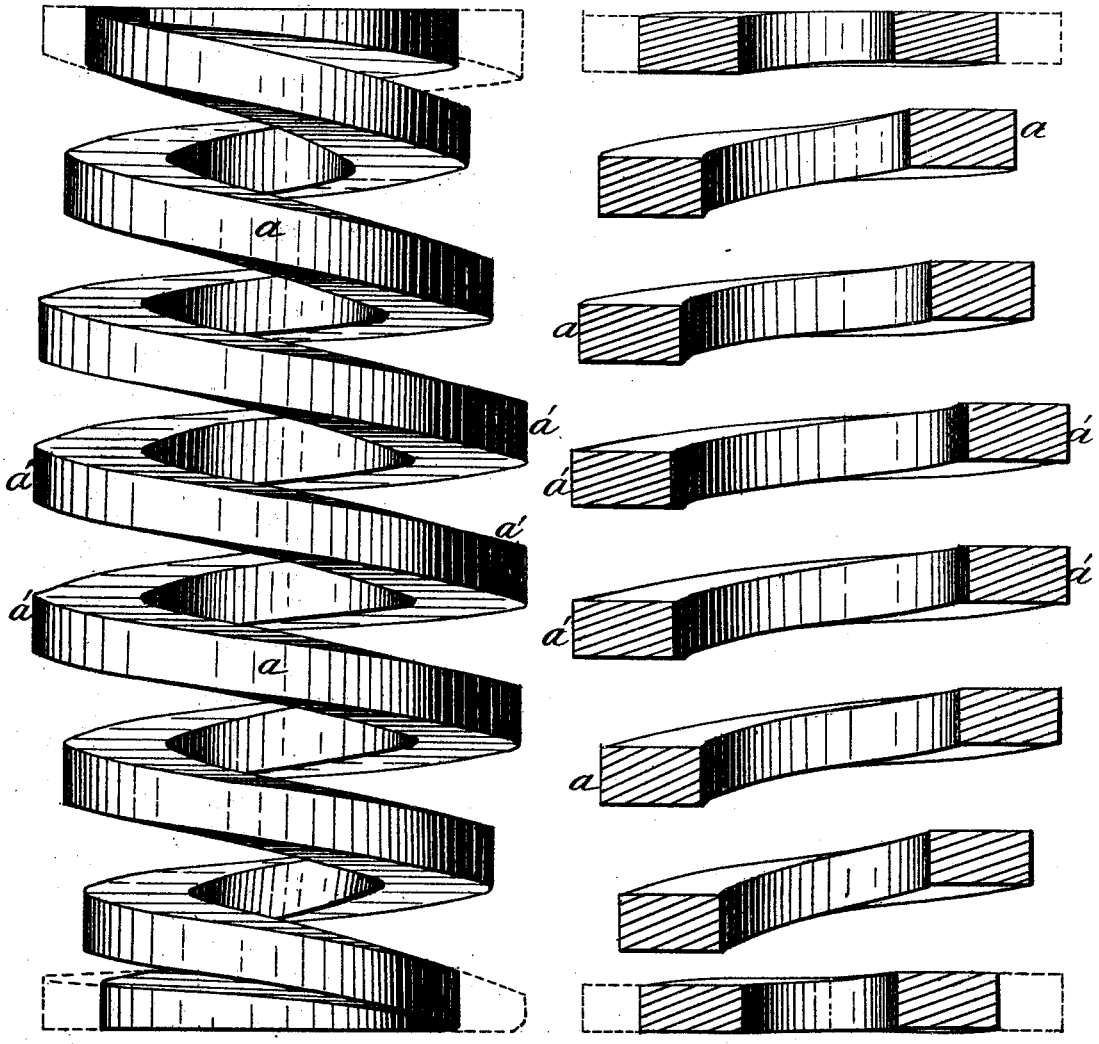
W. P. HANSELL.

CAR-SPRING.

No. 182,924. Patented Oct. 3, 1876.



Witnesses:

J. West Wagner

J. A. Rutherford

Inventor:

Walter P. Hansell

By Johnson and Johnson

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UNITED STATES PATENT OFFICE.

WALTER P. HANSELL, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR OF ONE-THIRD HIS RIGHT TO GEORGE W. MORRIS, OF SAME PLACE.

IMPROVEMENT IN CAR-SPRINGS.

Specification forming part of Letters Patent No. **182,924**, dated October 3, 1876; application filed April 19, 1876.

To all whom it may concern:

Be it known that I, WALTER P. HANSELL, of Pittsburg, in the county of Allegheny, and State of Pennsylvania, have invented certain new and useful Improvements in Car Springs; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My spring is made from a steel bar of uniform thickness throughout its length. It is coiled in spiral form, so that its end coils will be of less diameter than its middle coils, whereby I obtain a spiral spring with its end coils the strongest, and its middle coils (of the greatest diameter) the weakest. I do not, however, claim a barrel-spring in which the steel rod is tapered in thickness from the middle each way, so that when coiled the spring ends will be comparatively thin to yield under light weight, and in which, under a heavy load, the ends will be first compressed, and the heavy or middle part afford the necessary resistance.

In my improved spring the ends afford the greatest resistance, and give greater strength and elasticity to the spring.

Referring to the drawings, which represent an elevation and a section of my improved spring, I coil a bar of steel, *a*, having the same thickness from end to end, so that the end coils *a* will form the strongest portions of the spring, and the middle coils *a' a'* the lightest, although the end coils are of much less diameter than the middle coils. This gives a spring in which as the coils decrease in diameter their strength or resisting power increases, while as their diameters increase their resistance decreases.

When ordinary weight is supported the large coils *a' a'* act, but when a heavy weight is upon the spring these large yielding coils come together, and the powerful smaller coils only act. By this construction the spring will last longer and not be so liable to break and crush at the ends under heavy loads. Such springs may be grouped and have the necessary plates at top and bottom.

I claim—

A coiled spring, in which the bar is of equal thickness throughout, with the end coils of less diameter than the middle, to give the greatest strength to the ends and the least resisting force to the middle coils, as shown, and for the purpose described.

In testimony that I claim the foregoing, I have affixed my signature in presence of two witnesses.

WALTER P. HANSELL.

Witnesses:

BIDDLE R. HANSELL,

CHAS. M. SHEAFFER.