

L. BISSELL.  
METALLIC SPRING.

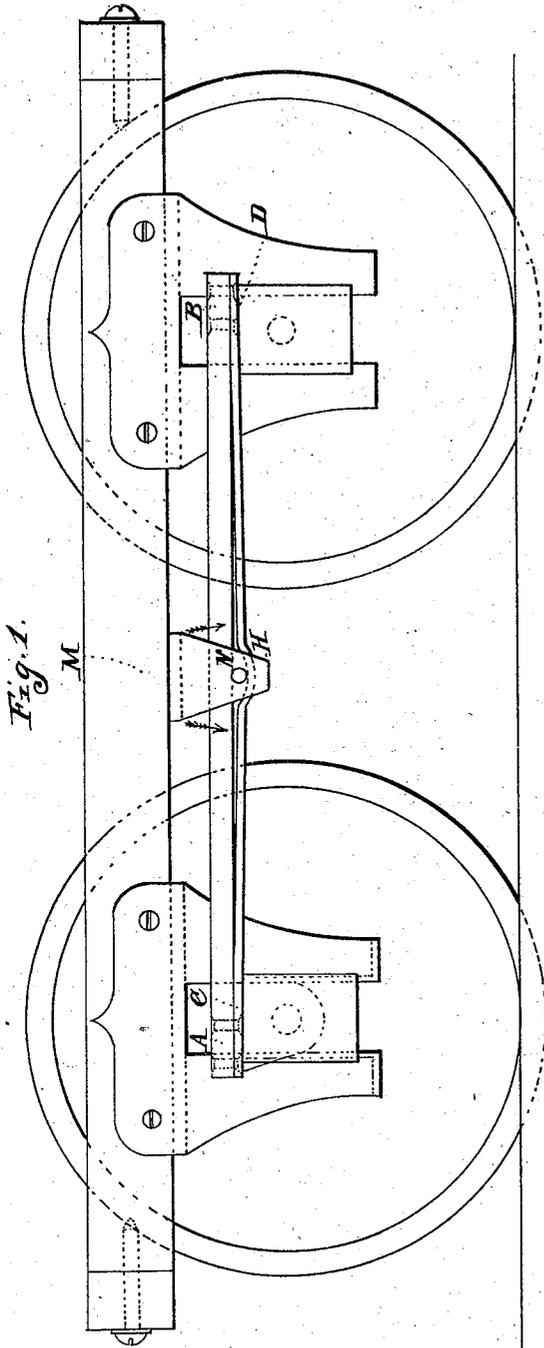


Fig. 1.

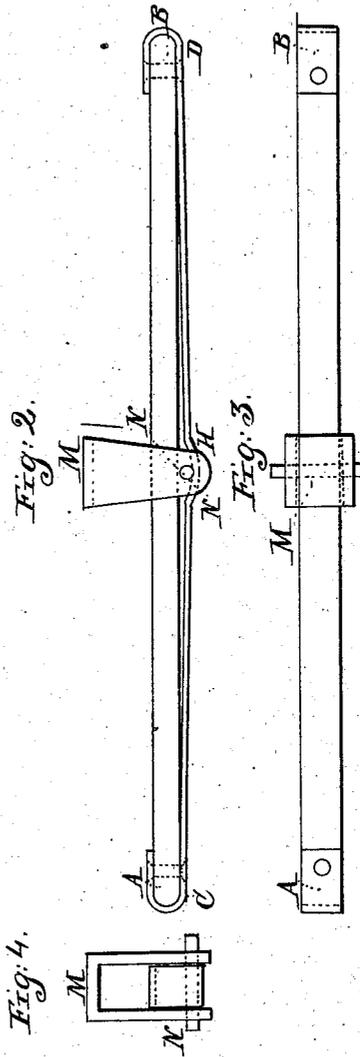


Fig. 2.

Fig. 3.

Fig. 4.

Witnesses;

*Wm. C. Jones*  
*George Harding*

Inventor:

*Levi Bissell*

# UNITED STATES PATENT OFFICE.

LEVI BISSELL, OF NEW YORK, N. Y.

## METALLIC SPRING.

Specification of Letters Patent No. 12,406, dated February 20, 1855; Antedated August 20, 1854.

*To all whom it may concern:*

Be it known that I, LEVI BISSELL, of the city and State of New York, have invented a new and useful Improvement in the Construction of Metallic Springs for Cars, Carriages, &c.; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawing, making part of this specification, in which—

Figure 1 is a side view of my improved spring attached to a car truck. Fig. 2 is a side view of the spring detached. Fig. 3 is a top view of the spring.

The nature of my improvement consists in the employment of a thin metallic strap in combination with a metallic bar rigidly attached together at each end and so arranged that the thrust of the car on the spring shall tend to elongate the metallic strap; the elastic face rendered available is the tendency of the thin metallic strap to retain its length and form in opposition to a tensile strain.

To enable others skilled in the art to make and use my improvement I proceed to describe its construction and mode of operation.

A, B, (Fig. 2) is a rigid metallic bar of sufficient strength to prevent its bending. It may be made of wrought or cast iron or steel and in ordinary passenger cars it should be about two inches square in section. It should be long enough to extend from the journal of one axle to the journal of the next axle on the same truck as shown at A, B, Fig. 1. To the extremities A and B of this rigid bar a metallic strap of wrought iron C, D, is rigidly attached. This metallic strap C, D, is made of wrought iron about  $\frac{3}{4}$  inches thick (varied of course according to the degree of pressure to be resisted) and about three inches wide. The

metallic strap C, D, is attached to the extremities A and B of the rigid bar either by hooking and rivets as shown in Fig. 2 or by welding.

M, N is an upright metallic support or bracket and is shaped as shown in Fig. 4. It is flat on top and has a pin which passes across and rests at H upon the middle of the strap C, D. This bracket is to receive the vertical pressure and transfer it to the metallic strap C, D. The compound spring thus formed is attached and operates as follows: the body of the truck frame on each side rests upon the top of the bracket M, N as shown at Fig. 1. The extremities A and B respectively rest upon the top of the boxes of two contiguous axles as shown in Fig. 1. When the truck is attached to the car the weight of the car presses upon the bracket M, N in the direction of the arrow and as the extremities A and B are supported by the journals of the axles, the metallic strap C, D, tends to recede from the rigid bar A, B, at the point H. The strap C, D, can only recede by increasing its length. Instead of a single thin strap a series of two or more straps may be used. The principle on which my spring depends for its efficiency is the tensile elasticity of the thin metallic strap when applied in this manner.

Having thus described my improved spring what I claim and desire to secure by Letters Patent is—

The combination of the rigid bar and the thin metallic strap with their extremities rigidly attached together in the manner and for the purposes substantially as hereinbefore described.

LEVI BISSELL.

Witnesses:

J. E. SHAW,  
CHARLES D. FREEMAN.