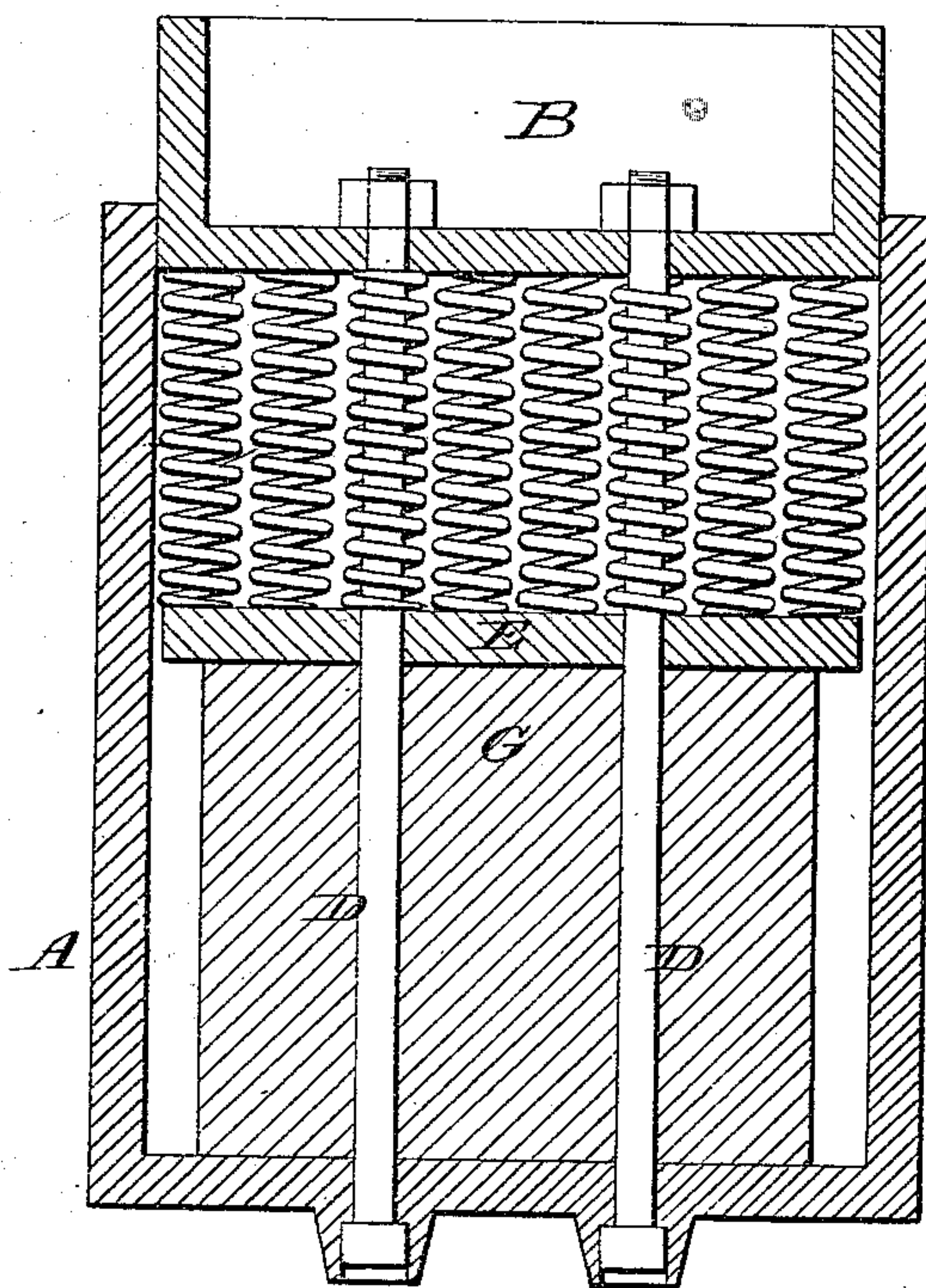


ALLEN MIDDLETON, Jr.

Improvement in Car-Springs.

No. 126,073.

Patented April 23, 1872.



Witnesses.
Albert G. Norris

A. Middleton Jr.
By his attys.
Howe & Son

UNITED STATES PATENT OFFICE.

ALLEN MIDDLETON, JR., OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN CAR-SPRINGS.

Specification forming part of Letters Patent No. 126,073, dated April 23, 1872.

SPECIFICATION.

I, ALLEN MIDDLETON, Jr., of Philadelphia, county of Philadelphia, State of Pennsylvania, have invented an Improved Box-Spring, of which the following is a specification:

My invention relates to that class of car-springs known as box-springs, in which elastic mediums are confined within a metal box by a sliding cap; and my invention consists of a box in which are confined the two elastic mediums, described hereafter, these two mediums being such that one will counteract the defects of the other, the entire spring, which is simple and economical in construction, being rendered more free in its movements and better adapted to passenger-cars than other springs of this class.

The figure in the accompanying drawing is a vertical section of my improved box-spring.

A represents a metal box, closed at the bottom and open at the top, a cap, B, being arranged to fit snugly, but slide freely, in the body of the box, and bolts D D serving to retain the said cap, as shown in the drawing. A block, G, which is made of rubber, rests on the bottom of the box, and on this block bears a plate, E. Between the plate E and cap B are arranged vertically spiral springs *e e*, which are secured in any suitable manner, so as not to come in contact with each other.

As a specimen of the class of springs on which my invention is an improvement, I may refer to the box-spring for which Letters Patent No. 22,941 were granted to A. B. Davis February 15, 1859, this spring consisting of a box and sliding cap, with a group of spiral springs as the sole elastic medium between the box and cap. This spring has become very popular for freight-cars, but has been but little used in connection with passenger-cars, owing to the peculiar character of the elastic medium, which is more rigid and abrupt in its action than either rubber or elliptical springs. The latter have, consequently, retained their popularity in connection with passenger-cars, although they are neither as cheap nor as lasting as the Davis spring.

My improved spring has been designed with the view of retaining the advantages of the Davis car-spring, as regards economy and durability, while the free elasticity of rubber is secured. This end is accomplished by con-

structing a spring in the manner described—one portion of the elastic medium consisting of a series of spiral springs of metal, and another portion of rubber.

The proportions of the interior of the box, to be devoted to the separate elastic mediums, will depend in a great measure upon the desired character of the spring. If the latter has to possess great elasticity, and is to be free to move very freely, then the prevailing elastic medium should be rubber or its equivalent; if, on the contrary, a more rigid spring is required, more of the space within the box should be devoted to a metal medium of elasticity. Whatever proportions of the two elastic mediums are adopted, the result will be the same, and that is, a tendency of the rubber to counteract the abrupt action of the metal springs, and the latter to counteract the excessive elasticity of the rubber.

The metal medium of elasticity may consist of a series of short elliptical springs or of springs of any other configuration, although I prefer the system of spiral springs adopted by A. B. Davis in his aforesaid patent.

The rubber, instead of being in a single block, may be arranged beneath the plate H in layers; or layers of leather or compressed felt may be substituted for rubber.

In some cases the box may contain an upper and lower set of metal springs and an intervening block or layers of rubber; or there may be within the box two blocks or layers of rubber, compressed felt, or other equivalent elastic material, with an intervening set of metal springs, the disposal and proportions of the two elastic mediums within the box being determined by the desired character of the springs.

I claim as my invention—

The within-described car-spring, composed of a box, A, containing a spring or springs of rubber, and the within-described system of spiral springs, separated from those of rubber by a transverse rigid plate, arranged to slide freely in the box, all as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALLEN MIDDLETON, JR.

Witnesses:

WM. J. WATSON,
JOS. CLEMENT.