W. S. PRATT.

Carriage-Spring.

No. 29,304 Patented July 24, 1860

Fig. 1

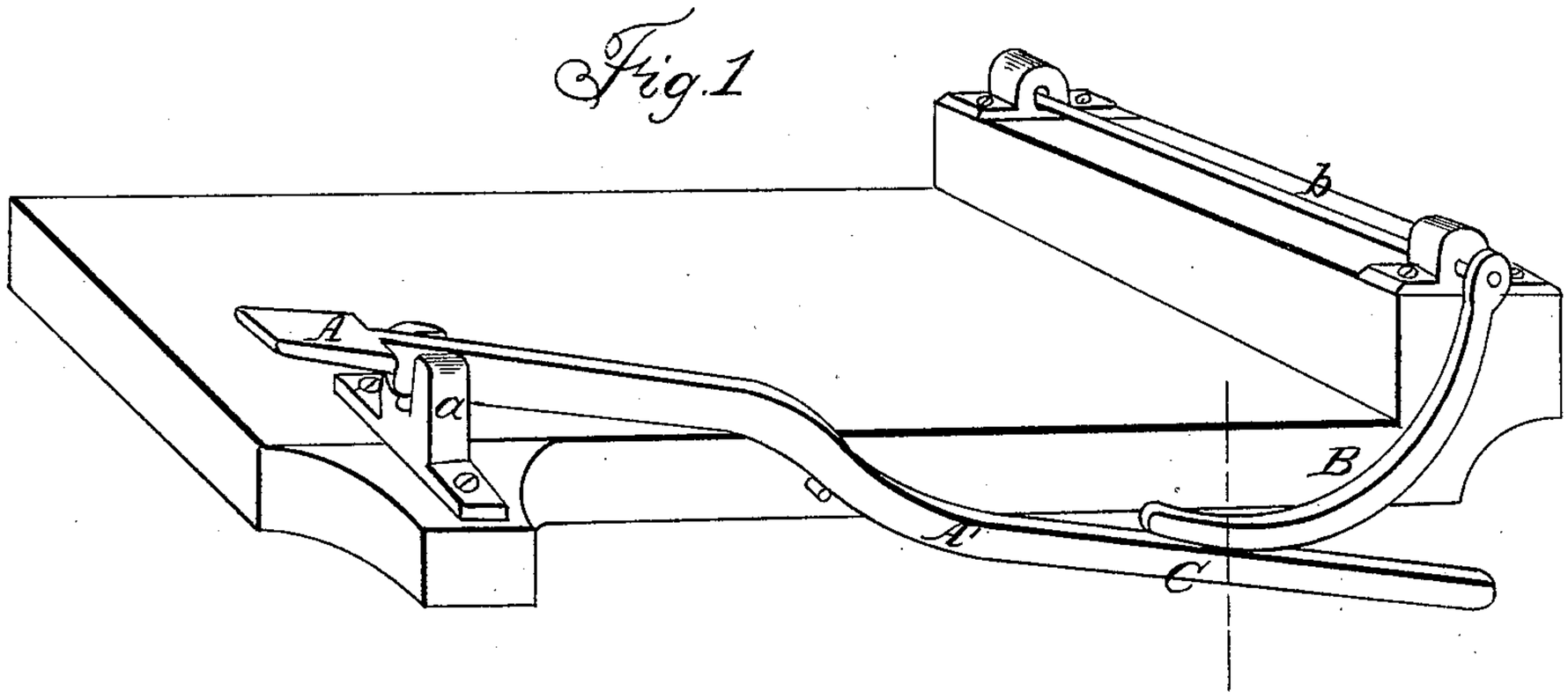
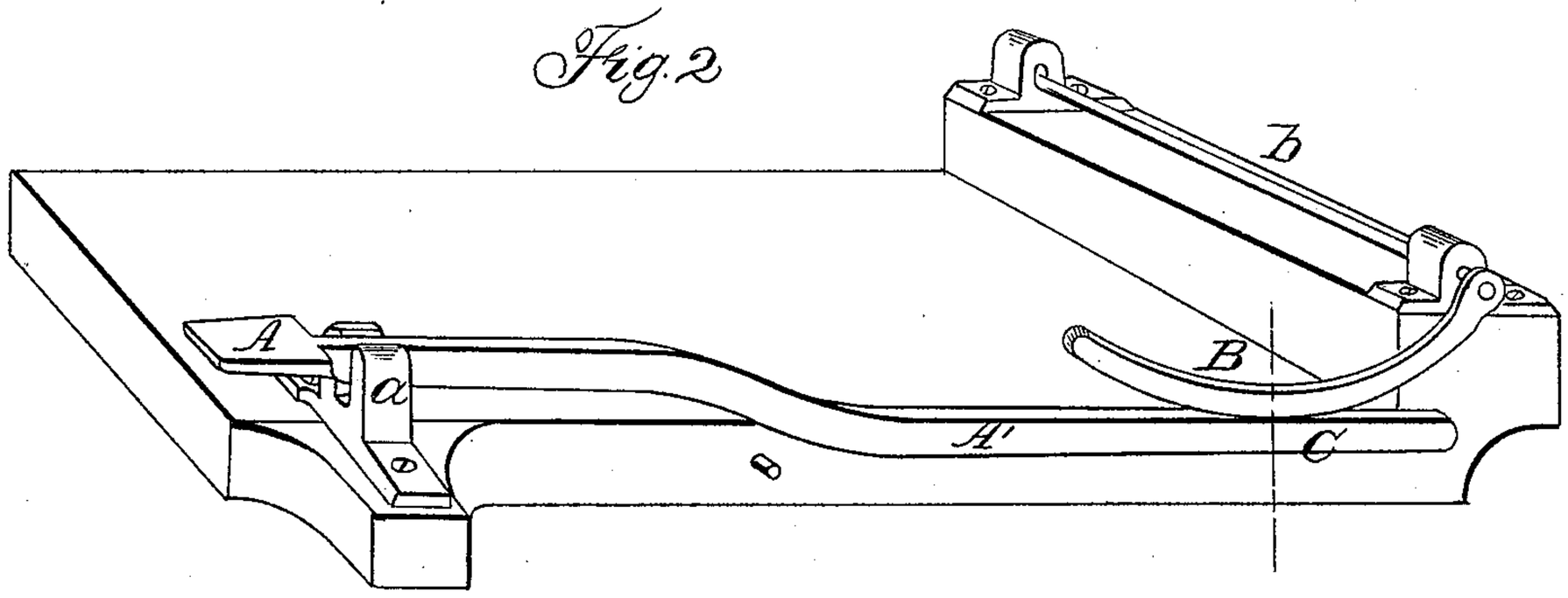


Fig. 2



Witnesses.
E. F. Barnes

Inventor:
Wm S. Pratt

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UNITED STATES PATENT OFFICE.

WILLIAM S. PRATT, OF WILLIAMSBURG, NEW YORK.

COMPENSATING LEVER-SPRING.

Specification of Letters Patent No. 29,304, dated July 24, 1860.

To all whom it may concern:

Be it known that I, WILLIAM S. PRATT, of Williamsburg, State of New York, have invented a new and improved and useful Spring for Railway and other Carriages and for Uses where Springs are Desired; and I do hereby declare that the following is a full, clear, and exact description thereof and of its construction and mode or manner of operation, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

My invention consists in the production of a spring, which is most sensitive, when sensitiveness is most required, that is when the pressure is the least, and which has an increasing sustaining power as the pressure or weight is increased, and which is also very simple in construction, durable in action, and not liable to get out of order.

Figure 1 is a representation of my improved spring, when but little pressure is on it. Fig. 2 shows its position when the pressure is increased.

The spring consists or is composed of two levers A, A′ and B—one straight and the other bent in a circular form and playing against each other. The lever A, A′, is an ordinary lever of the first order, and rests at *a*, on a diamond or wedge shaped point upon which it turns. Upon the short arm A, of this lever the weight or pressure is applied—the other end A′ lying in contact with the bent lever B. This bent lever B has its fulcrum, so to speak, in the torsion steel rod *b*, one end of which is fixed to the lever B, and the other end of which is fixed so as to have no motion whatever.

As will be seen, by reference to Fig. 1, when the pressure is but little on the short arm A, the bent lever B, is in contact, nearly at its end, with the arm A′, at which time the torsion rod *b*, is but little twisted, or nearly in its natural position, and then yields most easily to any action of the arm A′, produced by pressure on A. When however the pressure on the short arm A, is increased, and the levers take the position shown in Fig. 2, the length of the lever B, between its fulcrum and the point *c*—the point of contact with the lever A′—becomes shortened, and the torsion rod *b*, is the more twisted, and offers the greatest resistance. It will also be observed that at the time the pressure is the least, and the lever B, the longest, that the length of the lever A′, or the distance between the fulcrum *a*, and the point *c*, is the least; but when the pressure is increased, and the lever B, shortened, the length of the lever A′ is increased; and that in the same proportion that the length of the lever B, is diminished, the length of A′, is increased.

The point *c*, or the place of contact of the two levers A′, and B, is the resistance offered to the weight or pressure at A, and as will be seen this point is constantly variable, being nearest the fulcrum *a*, when the pressure is the least, and further removed from it, as the pressure increases. The action of the lever A′, is thus similar to a scale beam, the resistance at *c*, moving, like the scale beam poise, nearer to or farther from the fulcrum *a*, as the pressure on A, is less or greater.

The power of the torsion rod or spring *b*, should be sufficient to counterbalance any weight that may act on A. A small weight at *c*, will however be ample to balance a large one at A. If the lever A, is six inches and the long arm A′ two feet, and the length of the bent lever B, also six inches, it is found that four hundred pounds at *c*, will sustain two tons at A.

The drawing represents but a single spring or combination of levers. When applied to a railway or other carriage, there will be four similar springs, two for each axle. For other uses and applications the spring can be readily adapted.

The object and purpose of the torsion rod or spring *b*, is to operate the lever B, or oppose resistance on the long arm A′, to the pressure or weight acting at A. Instead however of the torsion rod *b*, any other arrangement of spring may be made use of to accomplish the same purpose; or the lever B, may be in itself a spring, with sufficient elasticity or stiffness to furnish the resistance necessary. The particular arrangement of parts to offer or furnish the proper resistance, through the lever B, is not material, it being only important, for the purposes of my invention, that the lever B, should, in some way or another, act upon the long arm A′, with sufficient force or resistance to support any pressure that may be applied at A.

This combination of levers, in addition to their action as and for a spring, furnish also a ready and accurate arrangement or device, by which the extent of any pressure, or the

weight of any load may be quickly ascertained. If a graduated plate be attached to the carriage or vehicle, so that an index or pointer, on the end of the long arm A′, will vibrate or oscillate upon it, it will be readily apparent that any pressure or weight at A, will be indicated on such graduated plate. This arrangement therefore furnishes a convenient and ready method of weighing loads, &c., without the use or inconvenience of platform or other scales.

I do not confine myself to the particular form or arrangement of levers above described, nor to any particular method of causing the lever B, to oppose the resistance required; but

What I claim as my invention and desire to secure by Letters Patent, is—

The arrangement and combination of the levers A A′ and B, substantially as and for the purposes set forth.

WM. S. PRATT.

Witnesses:
S. D. Law,
E. F. Barnes.