(No Model.)

G. B. MILNE.

CAR TRUCK SPRING.

No. 295,417. Patented Mar. 18, 1884.

Fig. 1.

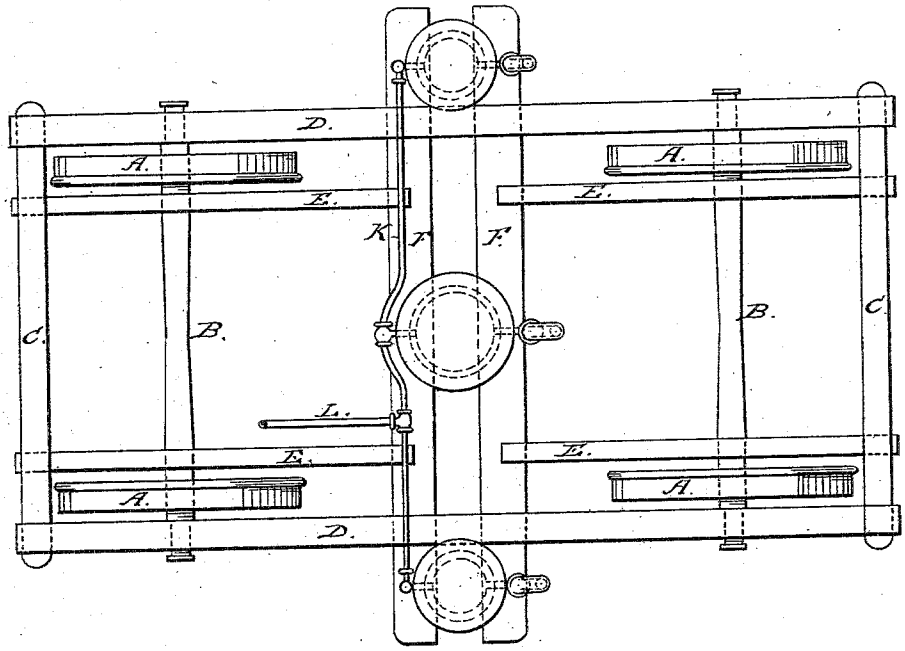


Fig. 2.

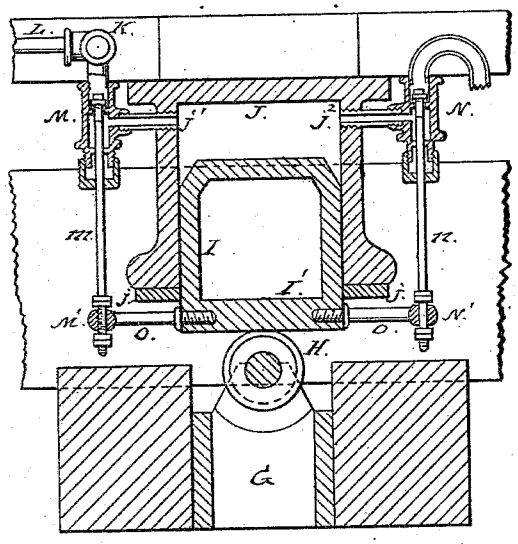
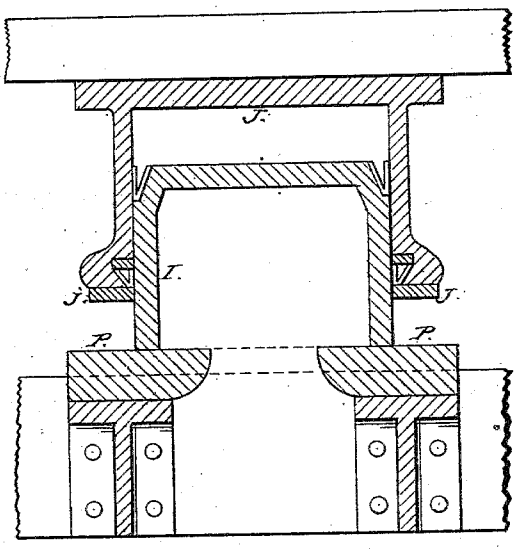


Fig. 3.



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CAR-TRUCK SPRING.

SPECIFICATION forming part of Letters Patent No. 295,417, dated March 18, 1884.

Application filed January 5, 1884. (No model.)

To all whom it may concern:

Be it known that I, GEORGE B. MILNE, a citizen of Canada, residing at Oswego, in the county of Oswego and State of New York, have invented certain new and useful Improvements in Car-Trucks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as 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 or figures of reference marked thereon, which form a part of this specification.

This invention relates to car-trucks, and especially to devices for supporting the weight of the cars as substitutes for the springs ordinarily employed. These springs weaken gradually by the strain to which they are subjected; they will not operate satisfactorily and evenly without the use of an equalizer or equalizing-bar; they are difficult and expensive to manufacture, and divers other objections exist to their use. To avoid these I substitute for the ordinary springs a series of air-cushions, consisting, preferably, in each instance of two cylinders, one within the other, with an air-space between them. I supply these air-spaces from the air-brake pipe with compressed air. I provide means for regulating the admission and expulsion of said air, and I dispense with the usual equalizing-bar and all other unnecessary elements.

In the accompanying drawings, Figure 1 represents a plan view of a car-truck embodying my invention. Fig. 2 represents a vertical section of the middle air-cushion and its attachments, shown in detail. Fig. 3 represents a similar view of one of the end cushions and its attachments, taken at right angles to the plane of Fig. 2.

A designates the wheels, and B the axles, of a car-truck, the latter consisting of the end beams, C, wheel-beams D, safety-beams E, and transoms F. These transoms extend, as usual, across the middle of the truck and parallel to one another, their ends protruding on each side considerably beyond said wheel-beams, and they are connected in the space outside the latter by castings G, one on each side of the truck. In each casting G an anti-friction roll, H, is journaled, and upon this rests the transverse bottom bridge, I', of a cylindrical piston, I, which is hollow, and, except for said bridge, open at the bottom. This cylindrical piston I fits within a cylinder, J, of corresponding shape, provided at its bottom with a packing-ring, *j*, and immediately supporting the car-transom. In this cylinder, near its top, there are two openings, *j' j²*, the former of which is in communication with a supply-pipe, K, which is connected by a branch pipe, L, with the air-brake pipe, the other, *j²*, being an outlet-opening. The supply of air is controlled by a valve, M, the outlet by a valve, N. These valves are provided with stems *m n*, which extend down through the seats M' N' of said valves, and are screwed into arms O, that are attached to piston I, said seats being in castings, which are attached to cylinder J. As said cylinder descends by the pressure of the weight of the car, these valves open, and the surplus air in the space thus contracted between said piston and cylinder is allowed to escape through opening *j²*, while the influx of compressed air through opening *j'* keeps up the proper pressure in said space. By screwing stems *m n* up or down in arms O, the action of the valves may be modified, so as to make their operation more or less prompt and sensitive. The supply-pipe K extends entirely across the car and supplies three of these air-cushions, the middle one being constructed substantially like the end ones already described, except that its piston has no transverse bridge at the bottom, but is provided with rounded shoes P, which rest upon the transoms F. These rounded shoes and the rolls H aforesaid allow a certain amount of lateral play in swinging curves and on other occasions. These air-cushions answer every purpose of the springs commonly employed. They do away with equalizing-bars, suspending-links, and sand-boards, thus considerably lessening the weight of the truck, their location outside of the wheel-beam does away, in a great measure, with the rolling motion of the car, the friction in rounding curves is much less than with the old form of truck, and there are divers other advantages which need not be here dwelt upon. Of course the number and arrangement of these air-cushions may be

varied, and their details of construction modified in various ways without departing from the spirit of my invention; but I prefer them as shown.

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

1. The branch pipe L, which is connected with the air-brake pipe of a train, in combination with said air-brake pipe, the transversely-arranged supply-pipe K, and the air-cushions at the sides and middle of a truck, all supplied by said pipe K, substantially as set forth.

2. In an air-cushion for car-trucks, a cylinder having at its upper end the inlet-opening j', and outlet-opening j^2, in combination with a piston fitted in said cylinder, and valves controlling said openings, and attached to said piston, so that the rising and falling of the cylinder will operate said valves, substantially as set forth.

3. A series of air-cushions attached to a car-truck and adapted to support a locomotive-body or car-body, in combination with devices for supplying compressed air to said cushions; each cushion consisting of a cylinder and a piston, and each cylinder being provided with inlet and outlet openings, which are governed by valves operated by said piston as said cushion rises and falls.

4. The cylinder J of an air-chushion, having openings j' j^2, in combination with piston I in said cylinder, valves governing said openings, horizontal arms *o*, and vertical valve-rods *n*, whereby said valves are attached to said piston, and devices for supplying air to said cylinder through opening j', substantially as set forth.

5. In combination with the transoms of a truck, two air-cushions resting on the same outside of the wheel-beams, in combination with rolls journaled in attachments of said transoms, and forming the immediate support for the lower parts of said cushions.

6. The middle cushion having a piston provided with rounded feet, in combination with the transoms on which said piston rests, and the means of supplying said cushion with compressed air, substantially as set forth.

7. The piston of an air-cushion and screw-tapped arms attached to the side thereof, in combination with inlet and outlet valves having their stems screwed into said arms, and thereby made adjustable, the cylinder in which said piston fits, and the supply-pipe connecting with the air-brake pipes, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE BANNERMAN MILNE.

Witnesses:

WILLIAM E. BELL,

JOSEPH H. BISHOP.