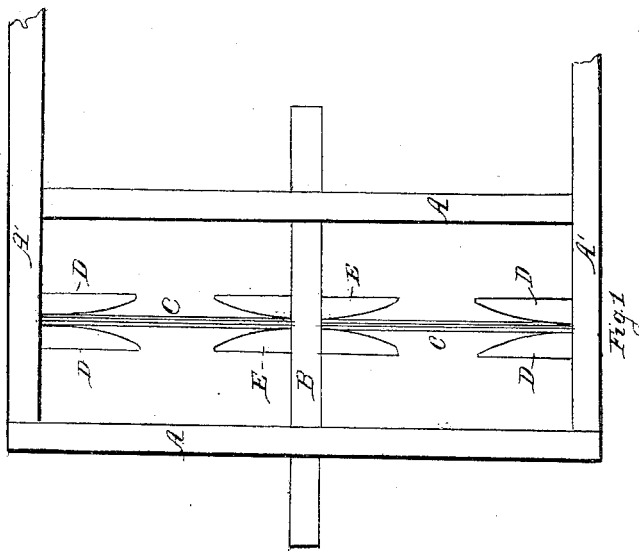
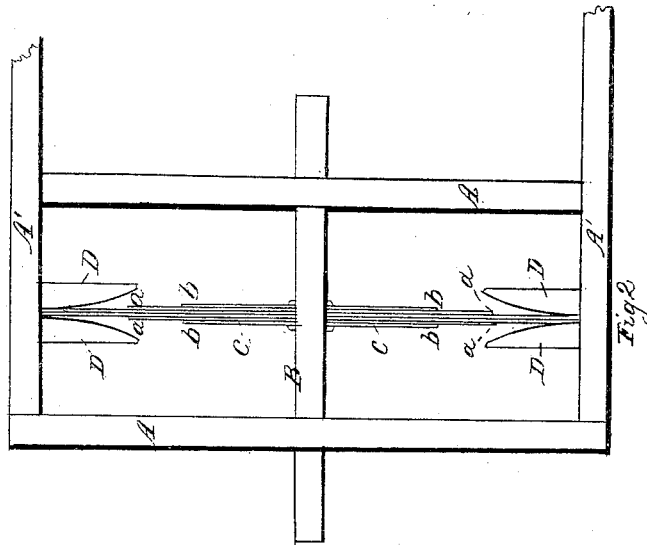


F. M. RAY.
CAR SPRING.

No. 2,201.

Patented July 29, 1841.



UNITED STATES PATENT OFFICE.

FOWLER M. RAY, OF CATSKILL, NEW YORK.

MANNER OF CONSTRUCTING AND APPLYING BUMPERS AND DRAFT SPRINGS ON RAILROAD CARS.

Specification of Letters Patent No. 2,201, dated July 29, 1841.

To all whom it may concern:

Be it known that I, FOWLER M. RAY, of Catskill, in the county of Greene and State of New York, have invented certain improvements in the manner of constructing and of applying the springs used as bumper and as draft springs in railroad-cars and other vehicles used on railroads; and I do hereby declare that the following is a full and exact description thereof.

The springs used by me consist of flat and straight leaves, or plates, of spring steel, sometimes consisting of two, three or more leaves of equal length, and placed so as to extend across the frame of the car, from side to side, where they are received within pockets of a peculiar construction to be presently explained. Instead of making the springs with leaves all of equal length, I sometimes form them, in part, with leaves of unequal lengths, as hereinafter described; but in all cases these leaves are to be so arranged and combined as that their power of resistance shall increase in a degree proportioned to the force exerted upon them.

In Figures 1 and 2, I have represented two modifications of the manner of constructing my spring.

In each of these figures A, A, is a part of the frame of a car, A', A', being a portion of the side timbers.

B, is a bar which slides freely through A, A, and which embraces the middle of the spring C. The bar B, is that to which the connecting links are to be attached for the purpose of drawing the car, and which may also be used as a bumper.

In Fig. 1, the spring is composed of such number of leaves as may be preferred, all of equal length and width, perfectly flat, and placed upon each other. D, D, are projecting pieces forming the pockets within which the ends of the springs are to be received. These pockets are made of metal, or in part of wood and in part of metal; and they are regularly curved on their inner sides, against which the springs when bent are to bear, as represented in the drawing. In use these pockets are provided with a top and bottom plate to check the edges of the springs. In this figure the springs are embraced not only by this sliding bar B,

but also by the check pieces E E, which are curved, and operate upon said springs in the same manner with the curved pieces D, D, which operation is as follows. When this sliding bar B, is moved in either direction it laps on two of the curved portions of D, D, and also on two of the curved portions of the check pieces E, E, and its acting part is thereby progressively shortened in exact proportion to the force exerted upon it.

In Fig. 2, the spring C, is formed in part of leaves of unequal length. It consists, like that first described, of one, two, or more leaves of the full length of the spring, and of one, two, or more placed on each side of these, successively diminishing in length. In this drawing there are two center leaves which extend to the bottom of the pockets, and two shorter leaves on each side of these, the two longer of which terminate at a, a, within the pieces D, D, and the other two at b, b. In this arrangement the check pieces E, E, used in Fig. 1, are omitted, the required stiffness being derived from the springs themselves. The leaves a, a, when the pressure becomes considerable, bear upon the pieces D, D, of the pockets. The spring, under this arrangement, is stiffer and less yielding in its first action than that first described. When the springs are to be used for draft only, and are not to operate as bumper springs, two of the pieces constituting the pockets, and one of those constituting the check pieces, under the first modification, may be straight, and the shorter leaves under the second modification, may be placed on one side only of the longer springs.

Having thus fully described the nature of my improvement in the manner of constructing and applying the springs used as bumper and as draft springs on railroad cars, what I claim therein as new, and desire to secure by Letters Patent, is—

The combining of springs composed of straight leaves or plates of steel, in the manner set forth, with pockets curved at their sides, in such manner as that the flexure of said springs shall cause them to diminish, progressively, in their effective length, and consequently to increase in their power of resistance. I claim, in combination with

said springs and pockets, so constructed and arranged, the employment of the curved check pieces to cooperate with the curved pockets, when the leaves are all of one
5 length. I claim also, the substituting for said check pieces, and the combining with the long leaves which extend to the bottom

of the pockets, such number of shorter leaves as may be found necessary, and in the manner herein described.

FOWLER M. RAY.

Witnesses:

THOS. P. JONES,
GEORGE WEST.