

(No Model.)

F. W MARSTON & S. HUNTINGTON, Jr.
Draft and Buffing Apparatus for Cars.

No. 242,548.

Patented June 7, 1881.

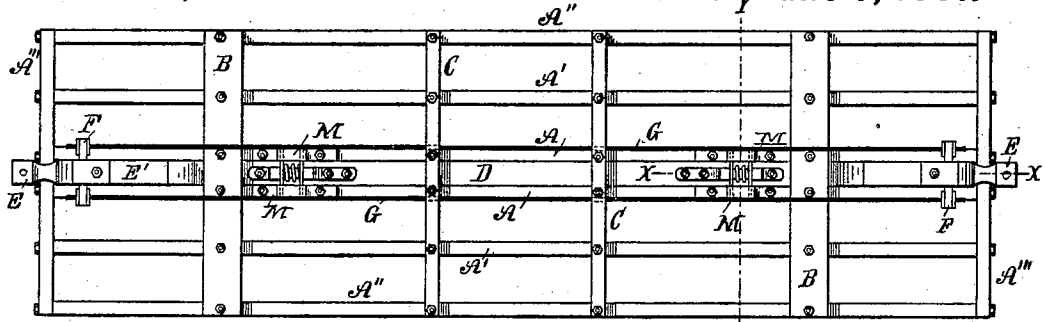


Fig. 1.

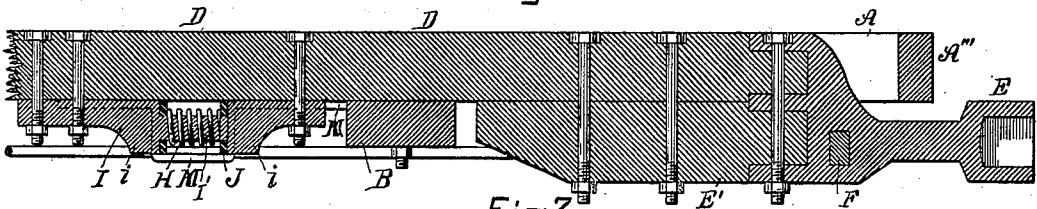


Fig. 2.

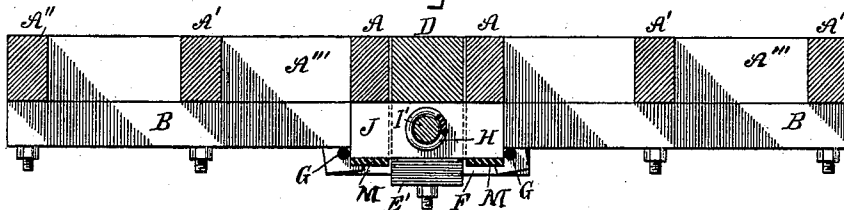


Fig. 3.

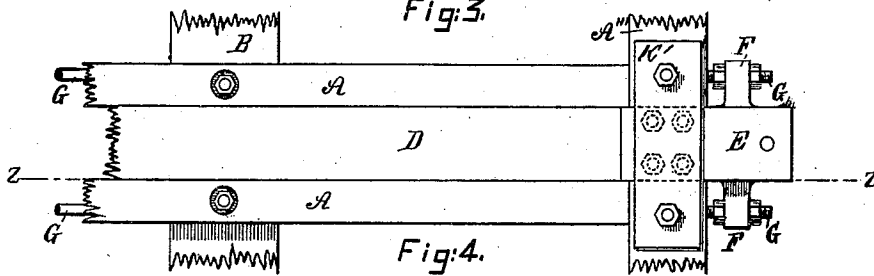


Fig. 4.

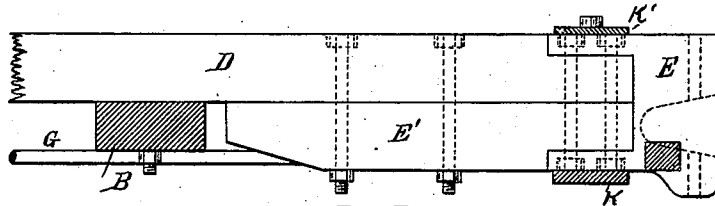


Fig. 5.

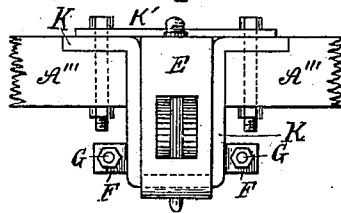


Fig. 6.

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UNITED STATES PATENT OFFICE.

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DRAFT AND BUFFING APPARATUS FOR CARS.

SPECIFICATION forming part of Letters Patent No. 242,548, dated June 7, 1881.

Application filed June 16, 1880. (No model.)

To all whom it may concern:

Be it known that we, FRANK W. MARSTON, of Boston, Massachusetts, and SAMUEL HUNTINGTON, Jr., of New York, N. Y., have jointly invented a new and useful Draft and Buffing Apparatus; and we hereby declare that the following specification is a full, clear, and exact description thereof, and the accompanying drawings are a representation of the best form in which we have contemplated applying our invention.

The object of this invention is to provide railway-cars with a base or frame independent of the car-frame proper, rigid in itself, but elastic with reference to the car-frame, and adapted to receive the direct strains and concussions of the draft and buffing operations, and to transmit the same, when applied at either end, to the car-frame through springs compressed by the movement of such independent frame; but when said buffing strains are applied simultaneously and equally to both ends of the independent frame they shall be received and wholly absorbed by that portion of said frame specially adapted for the purpose, and traction strains due to the movement of any following cars in a train shall be wholly transmitted to them through the draft portion of said frame without affecting the car-frame proper.

A further object of this invention is to provide the cars with an integral coupler and buffer head adapted by its shape and location to bear directly against the end of the buffing portion of the independent frame, inwardly and outwardly, to squarely meet the integral coupler and buffer head of other cars placed below their end sills, (which is the common location of the same in all freight-cars of the American system,) so that all strains received from other cars shall be directly imparted to the respective portions of the independent frame specially adapted to receive them; and the final object of our invention is to so divide and apply the buffing and tractive strains to the cars that their attachments receiving the same shall mutually relieve each other from overstraining in a better manner than practiced heretofore.

Originally the strains of traction and buffing

were expended directly upon the frame of the car. Afterward draft-bars were provided which applied the force required to propel each car through a spring at the rear end thereof. Buffers have also been provided with springs, whereby the impact of a moving car against a stationary one was relieved; but the inertia of the entire train brought the frame under severe pressure. An arrangement has also been devised whereby a single central bar serves as both a buffing-beam and a draft-bar.

Our invention consists in the combination, with a railway-car frame and its traction and buffing springs, of an independent drawing and buffing frame consisting of a continuous central buffing-timber provided with integral coupler and buffer heads, and of one or more draft-rods which rigidly connect the coupler and buffer heads together.

It also consists in the combination, with a railway-car frame and its traction and buffing springs, of an independent buffing-timber placed between the central floor-timbers of the car and in the same horizontal plane, and adapted to receive buffing strains from integral coupler and buffer heads located in a lower plane at opposite ends of the car.

It further consists in two traction and buffing springs arranged to bear simultaneously and equally upon abutments on the central floor-timbers of the car, in combination with a buffing-beam placed between said timbers in the same horizontal plane and two parallel draft-rods located in a lower plane, such beam and rods being united at the coupler and buffer heads into a rigid independent base-frame elastically connected to the frame of the car; and finally our invention consists in an integral coupler and buffer head located below the end sill of the car and provided with a vertical projection adapted to bear upon the end face of a beam placed between the two central floor-timbers and in the same horizontal plane, which, with its springs, forms an elastic abutment.

The drawings represent, in Figure 1, the under side of the bottom frame of a common freight-car provided with our improvements. Fig. 2 is a vertical longitudinal section of the same, taken on the line *xx*, Fig. 1; and Fig. 3 is a transverse section thereof at *yy*, while

Figs. 4, 5, and 6 are respectively a plan, a side elevation at zz , and an end view of a modification in which the buffer-beam extends through the end sill. The several figures, except the first, are right side up.

5 A A' A'' are the longitudinal floor-timbers of the car-frame, placed in the same horizontal plane with the end sills A'''.

10 B B are the transverse bolsters, and C C the needle-beams, both placed beneath and directly supporting the longitudinal floor-timbers A A' A'', to which they are bolted at each intersection in the usual manner. These parts constitute the ordinary base-frame of a car, to which may be attached our improved independent frame, rigid in itself, but elastically connected to the car, preferably in the manner herein shown and described.

20 The independently-movable frame, which embodies the different features of our invention, consists of the central buffing-beam, D, (placed between the central floor-timbers, A A, and upon the bolsters B and needle beams C C;) the integral coupler and buffer heads E E, provided with the vertical projection e and bearing upon each end of the beam D; the timber E', which is a part of and a downward projection from the timber or beam D, and which serves as a stop against the bolsters B, and as a part of the elastic abutment for the buffers E E; an arm, F, extending each side from each buffer-head E; and two parallel draft-rods, G G, running from end to end of the car and uniting the corresponding arms of the opposite coupler-heads E E.

35 The drawing and buffing frame, made up of the parts stated, has a bodily movement in either direction limited within the yielding capacity of the springs H H, through which it exerts upon the car-frame the force required to move or to stop the car, and preferably in the following manner: The springs H are mounted upon the beam D by means of a bar or casting, I, secured thereto, having shoulders $i i$ to press against the spring or against the interposed follower-plates J J. The casting I may be made in two parts, for conveniently passing the body I' through the spring H and plates J J. These plates bear against suitable resistance-pieces, M, secured to the floor-timbers A, and thus transmit to the floor-timbers the strains exerted upon the springs, which are compressed by the movement of the independent frame. This compression is due to friction and the inertia of the car and its load, and is in no way affected by the number of cars in the train, since the drawing and buffing frame is not extensible or compressible, and the same is true of a series of such frames connected.

60 When a moving train of cars is suddenly stopped a severe inward-crushing strain is brought to bear upon each end of the car. At present this crushing strain is applied directly to the car-frame proper. In cars equipped with our independent frame this inward-crush-

ing strain from opposite ends is not received by the car-frame, but by the coupler and buffer heads and the continuous central beam, and wholly absorbed by them, the springs being operated upon only sufficiently to overcome the momentum of the car to which they are attached and bring it to a state of rest. This function of the beam D is wholly independent of its elastic movement under buffing strains applied at either end of the car alternately.

80 The strains of hauling a long train are transmitted from one of our independent frames to another without bearing upon the springs by which each frame is connected to its car. Such springs sustain only the pressure required to move or to stop the particular car to which they belong.

85 It will be observed that the pressure upon the two springs H H is simultaneous and equal, whether in regard to strains of traction or of buffing, and that each spring is located under the center of each half of the load. In these particulars, (excepting in regard to strains of buffing,) and in the application and use of two parallel draft-rods connecting the coupler and buffer heads rigidly, we have followed the plan devised by one of us, and shown in the application of F. W. Marston, filed May 26, 1880, for patent on draw-bar apparatus. Our specific mode of applying pressure to the springs is different from his, however, since his apparatus was destitute of a buffing-beam.

100 In some cases it may be preferable to use with the central buffing-beam a single draft-rod, connecting the opposite coupler and buffer heads and slotted to pass the king-bolts; but for various reasons we regard the arrangement of two rods with the beam as more desirable.

110 The operation of the integral coupler and buffer heads E E, formed with the vertical projection e , is as follows: The outer end of the buffer-head, which contains the coupling-mouth, extends from under the end sill, A''', and corresponds with the standard height of coupler and buffer heads, as has hereinbefore been set forth. It thus receives the coupling-link and the buffing blows from other cars in a direct line. The strains of traction applied through the coupling-link are transmitted from end to end of the car in the same horizontal plane by means of the draft-rods G G. The buffing strains are transmitted by means of the vertical projection e directly into the end face of the buffing-beam D, located between the two central floor-timbers.

125 We guard against overstraining or setting the springs by extending the timbers E' so that one of them will come in contact with the bolster B, and thereby check the movement of the beam D before the elasticity of the spring is completely exhausted. This construction will be understood by reference to Figs. 1, 2, and 5. The end of the opposite bar, I, may also abut

at the same time, for the same purpose, against the other bolster; or other stops may be provided, if desired.

With the construction shown in Figs. 4, 5, and 6 the beam D is carried through the end sills, A''', and bolted to the draw-heads E, so as to receive and transmit from car to car, in a direct line, the concussions and compressive strains due to backing the train. The severed sill may be strengthened and the independent frame supported by a casting or stout iron straps K K, through or between which the coupler and buffer head moves. These supporting and guiding straps are also applicable with the apparatus first described. In either case the coupling-mouth and the buffer-head, which receives buffing blows from other cars, the two being integral, are placed below the axis of the beam D, for the purposes specified, while the upper portion or vertical projection, e, is in direct contact inwardly with the end face of the beam D, as described.

We claim as of our invention—

1. In a car, an independently-movable buffing and drawing frame distinct from the car-frame, consisting of a continuous central timber to resist buffing strains and one or more metallic draft-bars rigidly connecting the integral coupler and buffer heads, said parts adapted to receive the strains of traction and of buffing and transmit them through springs to the car-frame, substantially as set forth.

2. Two metallic draft-bars rigidly connecting the integral coupler and buffer heads at opposite ends of a car, in combination with a continuous buffing-beam interposed between said buffer-heads and located in the horizontal plane of the floor-sills, substantially as set forth.

3. The combination, with a car-frame and two traction and buffing springs, of a continuous buffing-beam provided with integral coupler and buffer heads and two parallel draft-rods rigidly connected to the coupler and buffer heads, whereby the strains, whether of traction or of buffing, are received upon an independent frame and transmitted to the car-frame through the two springs, applying simultaneously to each, substantially as set forth.

4. In a car, an independent continuous buffing-beam distinct from the car-frame, but connected thereto by means of springs, and provided with buffer-heads at each end, said buffing-beam and buffer-heads being adapted

to receive and wholly absorb all buffing strains applied simultaneously at opposite ends of the car without transmitting them into the car-frame through its springs.

5. The combination, in a car, of an integral buffer-head and coupler located below the end sill of the car-frame, and provided with a vertical projection, and a continuous yielding abutment located in the plane of and between the central floor-timbers of the car-frame, whereby buffing strains applied to the buffer-head below the said timbers are transmitted into them through the medium of the said abutment.

6. The combination, in a car, of a continuous yielding abutment located in the plane of and between the central floor-timbers of the car-frame, and an integral coupler and buffer head located in a lower plane and provided with a vertical projection, by means of which buffing strains applied to the buffer-head below the plane of the central floor-timbers are transmitted into them through the medium of the said abutment.

7. In a car, an integral coupler and buffer head located below the end sill and provided with a vertical projection, when adapted and arranged to impart buffing strains to the central floor-timbers of said car through the medium of a continuous yielding abutment located in the plane of and between said timbers.

8. In a car, a continuous yielding abutment located in the plane of and between the central floor-timbers, when adapted and arranged to impart buffing strains applied to it by a buffer-head located in a lower plane to said timbers of the car.

9. In a car, a continuous yielding abutment located in the plane of and between the central floor-timbers, when adapted and arranged to impart buffing strains applied to it by a buffer-head located in a lower plane to two or more points of resistance in the car-frame.

10. The combination and arrangement, with relation to the car-frame and springs, of the buffing-beam D, integral coupler and buffer heads E, timbers E', arms F, and draft-bars G, substantially as and for the purposes set forth.

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