

E. L. PHILIPP.
 DRAFT AND BUFFING GEARING FOR RAILWAY CARS.
 APPLICATION FILED MAR. 29, 1905.

933,201.

Patented Sept. 7, 1909.

2 SHEETS—SHEET 1.

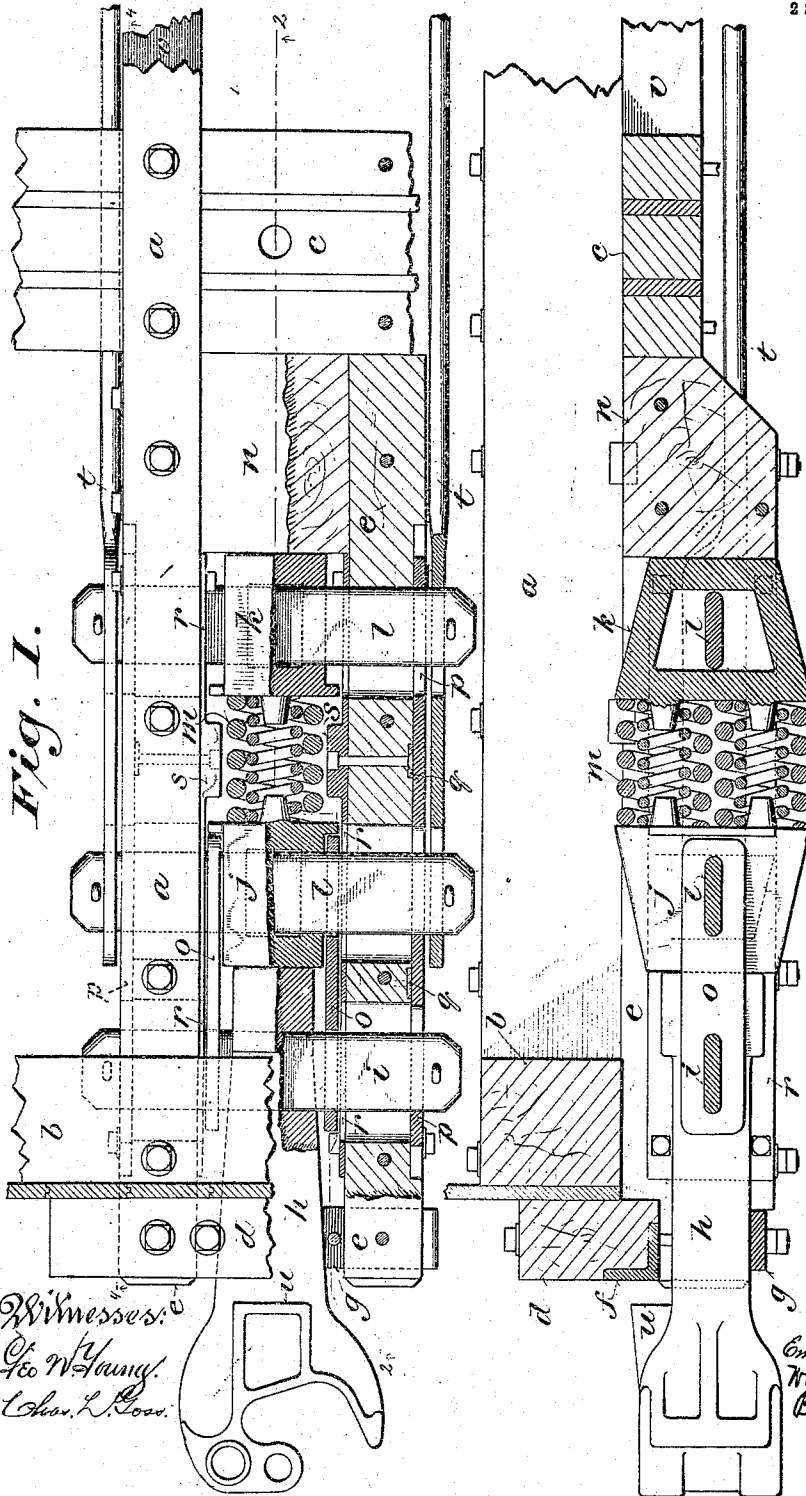


Fig. 1.

Fig. 2.

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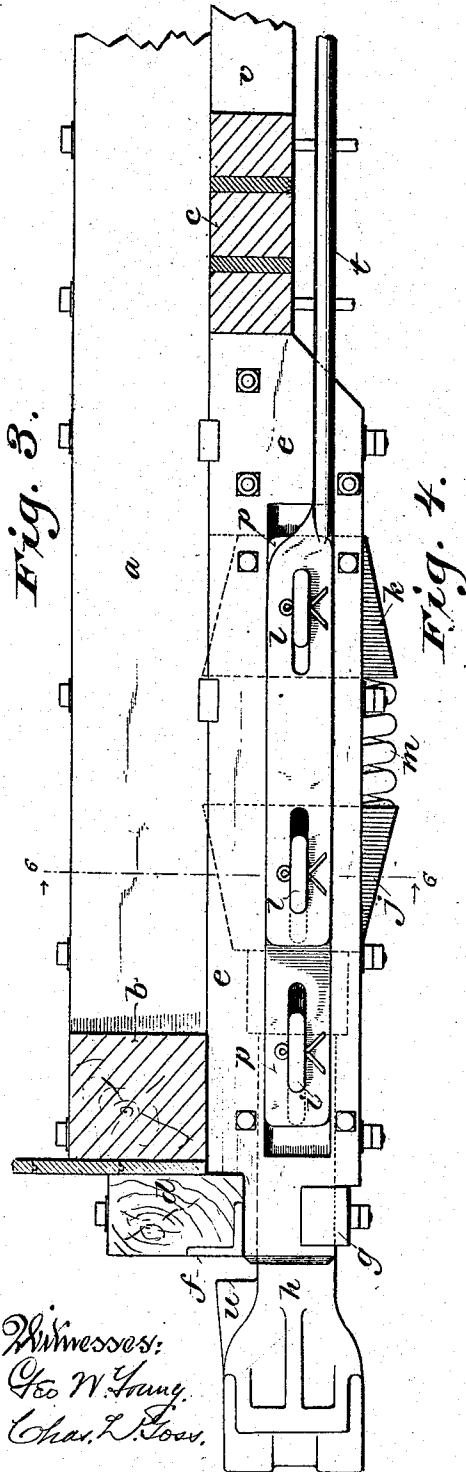


Fig. 6.

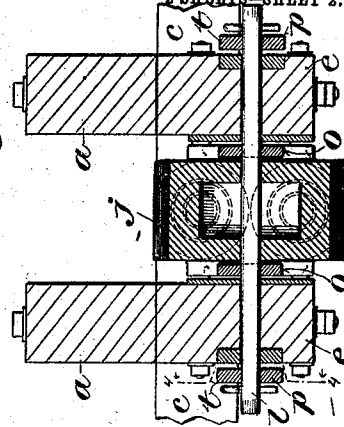
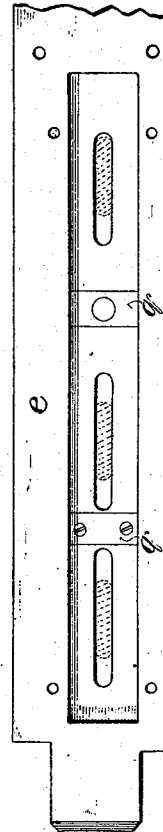


Fig. 5.



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DRAFT AND BUFFING GEARING FOR RAILWAY-CARS.

933,201.

Specification of Letters Patent.

Patented Sept. 7, 1909.

Application filed March 29, 1905. Serial No. 252,628.

To all whom it may concern:

Be it known that I, EMANUEL L. PHILIPP, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Draft and Buffing Gearing for Railway-Cars, of which the following is a specification, reference being had to the accompanying drawing, forming a part thereof.

The main objects of this invention are to relieve car bodies of the shocks and strains incident to buffing and to stopping, starting, pulling or pushing them singly or in trains; to avoid breaking and injuring the connections between the draft and buffing gearing and the car bodies; to facilitate replacing broken or defective parts; and generally to improve the construction and operation of apparatus of this class.

It consists in certain novel features of construction and in the peculiar arrangement and combinations of parts hereinafter particularly described and claimed.

In the accompanying drawing like characters designate the same parts in the several figures.

Figure 1 is a plan view of gearing embodying the invention at one end of a car, parts of the frame work of the car and of the gearing being broken away and shown in horizontal section; Fig. 2 is a vertical longitudinal section of the gearing on the line 2 2, Fig. 1; Fig. 3 is a side elevation of the gearing, the body or frame work of the car to which it is applied being shown in vertical longitudinal section; Fig. 4 is a vertical longitudinal section on the line 4 4, Figs. 1 and 6, showing in side elevation one of the slotted links connecting the coupler and buffer heads and a portion of one of the draft rods; Fig. 5 is an outside elevation of a portion of one of the draft beams; and Fig. 6 is a vertical cross section on the line 6 6, Fig. 3, of the draft gearing and associated frame work of a car.

a designates the central longitudinal stringers, *b* an end sill, and *c* a transom of a car body or frame.

d is the dead wood or buffer block at the end of the car body.

e e are longitudinally slotted draft beams abutting at their inner ends against the transom *c* and bolted to the stringers *a*. At their

outer ends they are bolted with the angular chafing iron or plate *f* and the carrying iron or plate *g*, to the buffer block *d*.

h is a coupler provided at its outer end with a head of the usual or any suitable form and having a shank which is supported and guided next to the head between the chafing and carrying irons *f* and *g*. At or near its inner end it is provided with a cross bar or key *i*, which projects on opposite sides thereof into slots in the draft beams *e*. This cross bar or key is immovable in the shank of the coupler, but is capable of a limited movement in the elongated slots of the draft beams.

j and *k* are longitudinally movable buffer heads located between the draft beams *e*, and each provided with a transverse key or cross bar *l*, which projects therefrom into slots in the draft beams. These keys or bars are fast in the buffer heads, but capable of limited movement in the elongated slots of the draft beams lengthwise thereof. Springs *m*, interposed between the buffer heads, tend to separate them. These springs are preferably arranged in sets, as shown in Fig. 2, one above the other, each set consisting of two spiral springs one within the other and supported at the ends by studs or bosses on the buffer heads. A filling block *n* secured in place between the inner ends of the draft beams *e* and bearing against the outer side of the transom *c*, forms an abutment against which the inner end of the buffer head *k* normally rests.

The shank of the coupler *h* abuts at its inner end against the buffer head *j* and is connected therewith on both sides by links *o* embracing the cross bars *i* and *l*. The several cross bars *i* and *l* are connected outside of the draft beams *e* by longitudinally slotted links *p*, which are sunk into the outer faces of said beams and are movable endwise in the recesses therein. The beams *e* are preferably provided in the bottoms of the recesses in their outer faces with wear plates *q*, against which the links *p* bear. On their inner faces said beams are provided with wear plates *r*, which are slotted to correspond with the slots in said beams and are provided between the buffer heads *j* and *k* with inwardly projecting stops *s*, for limiting the inward movement of the head *j* and the outward movement of the head *k*, said

heads being formed at the sides with flanges to engage with said stops. Outside of the draft beams *e* the cross bars *l* are connected with each other and with corresponding cross bars and buffer heads at the opposite end of the car by draft rods *t*, slotted to correspond with the links *p*.

The coupler head is provided in the usual way on the upper side with a projection *u* which is adapted to engage with the chafing iron on the buffer block when the springs *m* are compressed to the limit for which the draft and buffing gearing is designed or adjusted.

To the under sides of the stringers *a* are bolted compression timbers or struts *v*, which abut at their ends against the inner sides of the transom *c*.

In the normal condition and preferred form of the gearing when it is not subjected to strain, the inner cross bar *l* bears against the inner ends of elongated slots in the draft beams *e*, links *p* and draft rods *t*, the outer cross bar *l* bears against the outer ends of elongated slots in said links and rods, and occupies a position midway between the ends of elongated guiding slots in said draft beams, and the cross bar *i* of the coupler *h* which is unyieldingly connected by the links *o* with the head *j*, bears against the outer ends of elongated slots in the links *p*, and occupies a position midway between the ends of elongated guiding slots in the draft beams. In this condition of rest the stops *s* are midway between the heads *j* and *k*, and the distance between said stops and the flanges on said heads corresponds with the distance between the cross bars *i* and *l* and the ends of their elongated slots in the draft beams *e*, links *p* and draft rods *t*, as well as with the distance between the chafing iron *f* and the projection *u* on the coupler.

The apparatus as hereinbefore described operates as follows: The draft to which the coupler is subjected in drawing or starting a train or car, is transmitted through the links *o* and *p* and the cross bars *i* and *l* which they connect, at the front end of each car, and through the draft rods *t*, to the outer buffer head *j* at the rear end of the car, and compressing the buffer springs *m* at the rear end, causes the cross bars with the associated buffer heads at the front end without change in their relative positions to each other, to move forward in the guiding slots in the draft beams *e*. The forward thrust on the inner buffer head *k* by the compression of the springs *m* at the rear end of a car, is received by the rear block *n* and through it communicated to the rear transom *c* and the compression timbers or struts *v*, by which it is distributed to and along the stringers *a* as far as the front transom. Thus the body or frame work of the car and the fastenings which secure the draft and buffing gear

thereto, are relieved from the direct and severe shocks and strains of starting and towing. If the draft exerted on a car is sufficient to compress the rear springs *m* to the full limit for which the gearing is designed, the outer buffer head *j* at the rear end of the car will be brought into engagement with the stops *s* and the associated cross bar *i* and outer cross bar *l* will at the same time be brought into contact with the inner ends of their guiding slots in the rear draft beams *e*, while the cross bar *i* and outer cross bar *l* at the front end of the car will be brought into contact with the front ends of their guiding slots in the front draft beams *e*, thereby distributing the draft in excess of that taken up by the springs at the rear end of the car, along and through said draft beams at both the front and rear ends of the car. In pushing a train or car and in buffing, the thrust on the coupler at the rear end of a car operates to first move the outer head *j* forward and compress the springs *m* at the rear end of the car, the inner head *k* being held against inward movement by its abutment against the filling block *n*, and the cross bar *i* and outer cross bar *l* moving idly inward and forward in their elongated slots in the links *p* and draft rods *t*. As before in the case of starting and towing, the thrust of the springs *m* against the inner buffer head *k* is received by the block *n* and through it communicated to the rear transom *c* and the rear ends of the compression timbers or struts *v*, by which it is distributed to and along the stringers *a* and the several fastenings between them and said struts as far as the front transom. If the thrust on the coupler is sufficient to compress the springs *m* to the full limit for which they are designed, the cross bar *i* and the outer cross bar *l* will be brought into contact with the inner ends of their elongated slots in the draft beams *e*, the flanges on the inner end of the outer head *j* will be brought into contact with the stops *s*, and the projection *u* on the coupler will be brought into contact with the chafing iron *f*. In this way the excess of force in the thrust on the coupler at the rear end of the car over what is taken up by the buffer springs at that end of the car, is distributed along and through the draft beams *e* at the rear end of the car.

With the arrangement of parts herein described it will be observed that the breaking of either link *o*, of either or both links *p* and of either or both draft rods *t*, if other parts of the apparatus were left intact, would not put a car out of service. The breaking of both draft rods *t* would eliminate the action of the springs *m* and cause the draft to be exerted entirely through the front draft beams *e* in starting and towing.

By removing the cross bars or keys *i* and *l* which are held in place in the draft beams *e*

by cotters, as shown, the several parts of the gearing may be readily removed and replaced.

Various changes in the minor details of construction and arrangement of parts may be made without materially affecting the mode of operation of the gearing and without departing from the principle and scope of the invention.

10 I claim:

1. The combination in a draft and buffing gear, of beams formed with slots, an outer buffer-head, an inner buffer-head, a spring between the buffer-heads, cross bars passing through the buffer-heads and extending into slots in the beams, a coupler having its inner end normally bearing against the outer buffer-head, a cross bar extending from opposite sides of the coupler and passing through slots in the beams, slidable links lying on the inner sides of the beams and connecting the cross bar of the coupler with the cross bar of the outer buffer-head so that the coupler and the outer buffer-head will move together in drawing and buffing, and slidable links lying on the outer sides of the beams and having slots to receive the cross bars of both buffer-heads and the cross bar of the coupler, said slots being elongated on the inner sides of the cross-bars of the outer buffer-head and coupler, and on the outer side of the cross bar of the inner buffer-head, substantially as described.

2. The combination in a draft and buffing gear, of beams formed with slots, an outer buffer-head, an inner buffer-head, a spring between the buffer-heads, cross bars passing through the buffer-heads and extending into slots in the beams, a coupler having its inner end normally bearing against the outer buffer-head, a cross bar extending from opposite sides of the coupler and passing through slots in the beams, slidable links lying on the inner sides of the beams and connecting the cross bar of the coupler with the cross bar of the outer buffer-head so that the coupler and the outer buffer-head will move together in drawing and buffing, slidable links lying on the outer sides of the beams and having slots to receive the cross bars of both buffer-heads and the cross bar of the coupler, said slots being elongated on the inner sides of the cross bars of the outer buffer-head and coupler, and on the outer side of the cross bar of the inner buffer-head, and rods for connecting the gear at one end of a car with the gear at the other end, said rods having slots to receive the ends of the cross bars extending from adjacent buffer-heads, the slots being elongated on the inner side of one bar and on the outer side of the other bar, substantially as described.

3. The combination in a draft and buffing-gear, of beams formed with slots, an outer

buffer-head, an inner buffer-head, a spring between the buffer-heads, cross bars passing through the buffer-heads and extending through the slots in the beams, the slots for the inner buffer-head bar being elongated on the outer side of the bar and the slots for the outer buffer-head bar being elongated on both sides of said bar, a coupler having its inner end normally bearing against the outer buffer-head, a cross bar extending from opposite sides of the coupler and passing through slots in the beams, said slots being elongated on both sides of the bar, slidable links lying on the inner sides of the beams and connecting the cross bar of the coupler with the cross bar of the outer buffer-head so that the coupler and the outer buffer-head will move together in drawing and buffing, slidable links lying on the outer sides of the beams and having slots to receive the cross bars of both buffer-heads and the cross bar of the coupler, the slots in said links being elongated on the outer side of the bar of the inner buffer-head and on the inner side of the cross bars of the outer buffer-head and coupler, and rods for connecting the gear at one end of a car with the gear at the other end, said rods having slots to receive the ends of the cross bars extending from adjacent buffer-heads, the slots being elongated on the inner side of one bar and on the outer side of the other bar, substantially as described.

4. In draft and buffing gearing for railway cars the combination of longitudinally slotted draft beams fixed to the car body, an abutment fixed between the inner ends of said beams, longitudinally movable buffer heads, transverse bars projecting from said heads into slots in said beams in which they are guided, a spring interposed between said heads and tending to separate them, longitudinally slotted links connecting said bars and limiting the separation of said heads, a coupler connected with the outer head, and draft rods slotted to correspond with said links and connecting said bars and heads at the opposite end of the car, the inner head being held normally against said abutment, the inner bar in the inner ends of slots in said links, beams and rods, and the outer bar in the outer ends of slots in said links and rods and midway between the ends of slots in said beams, substantially as described.

5. In draft and buffing gearing for railway cars the combination of longitudinally slotted draft beams fixed to the car body, longitudinally movable buffer heads, cross bars projecting from said heads into slots in said beams in which they are guided, a spring interposed between said heads and tending to separate them, an abutment on the car body against which the inner head normally bears, longitudinally slotted links

connecting said cross bars and limiting the separation of said heads, correspondingly slotted draft rods connecting said cross bars with corresponding cross bars at the opposite ends of the car, and a coupler having a cross bar projecting into slots in the draft beams in which it is guided and connected by links with the cross bar of the outer buffer head, substantially as described.

6. In draft and buffing gearing for railway cars the combination of longitudinally slotted draft beams fixed to the car body at each end thereof, longitudinally movable buffer heads provided with cross bars projecting therefrom into slots in said beams in which they are guided, a spring interposed between and tending to separate the buffer heads at each end of the car, abutments fixed to the car body in position to receive the inward thrust of the inner buffer heads, couplers connected with the outer buffer heads, and slotted draft links connecting the cross bars of the buffer heads at each end of the car with each other and with those of the buffer heads at the opposite end of the car, substantially as described.

7. In draft and buffing gearing for railway cars, the combination with the transoms and central stringers of a car body of longitudinally slotted draft beams secured to said stringers and abutting at their inner ends against the transoms, longitudinal struts secured to said stringers between and abutting at their ends against the transoms, blocks abutting against the outer sides of the transoms between said beams, buffer heads having cross bars projecting therefrom into elongated slots in said draft beams, the inner heads bearing normally against said blocks, a spring interposed between and tending to separate the buffer heads at each end of the car, a draft rod connecting the outer heads at opposite ends of the car, and couplers connected with the outer heads, substantially as described.

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

EMANUEL L. PHILIPP.

Witnesses:

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CHAS. L. GOSS.