(No Model.) 4 Sheets—Sheet 1.

# W. F. RICHARDS.

## CAR BUFFER.

No. 495,060. Patented Apr. 11, 1893.

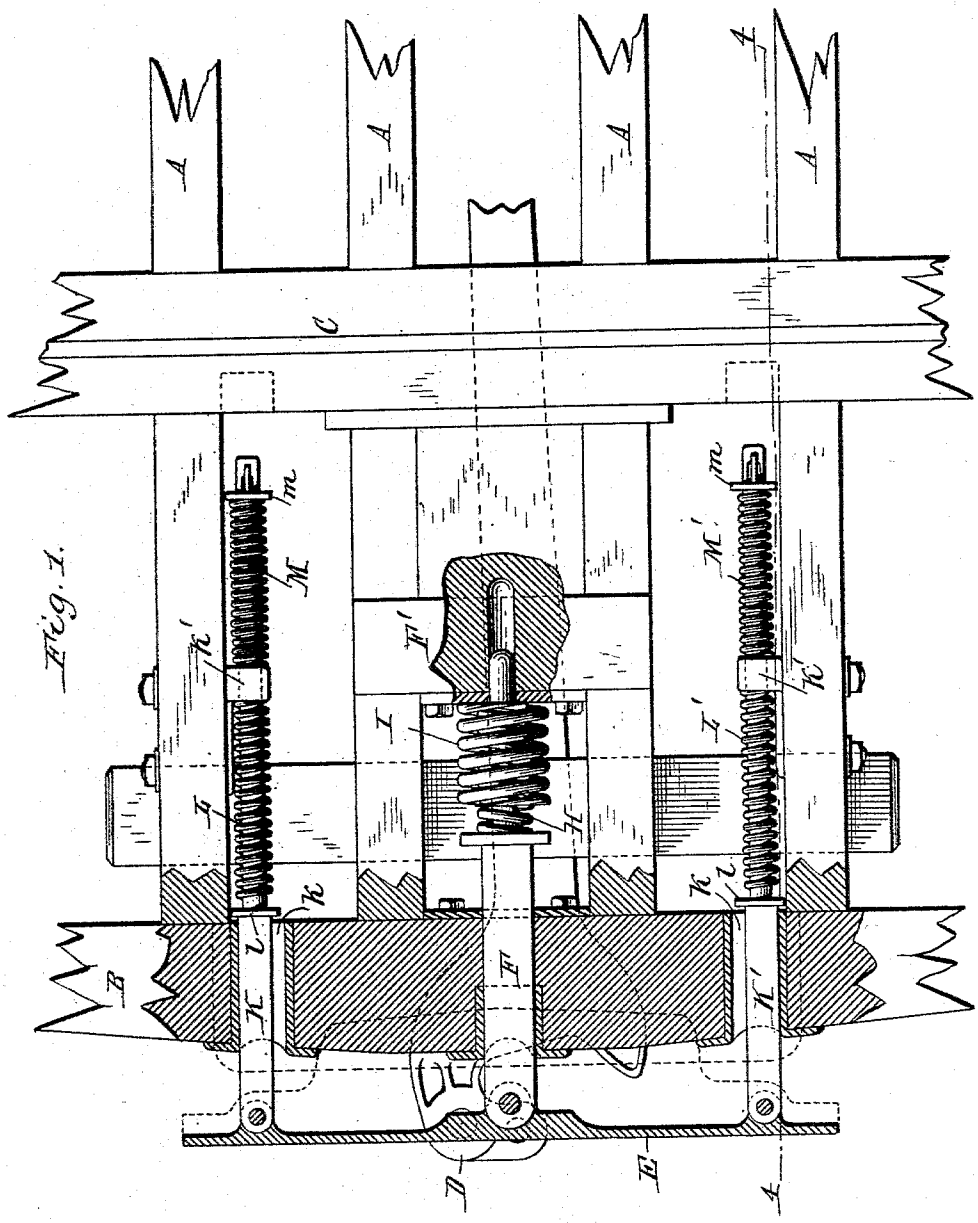


Fig. 1.

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Theo. L. Popp.

W. F. Richards Inventor.
By Wilhelm & Bonner
Attorneys.

(No Model.)

4 Sheets—Sheet 2.

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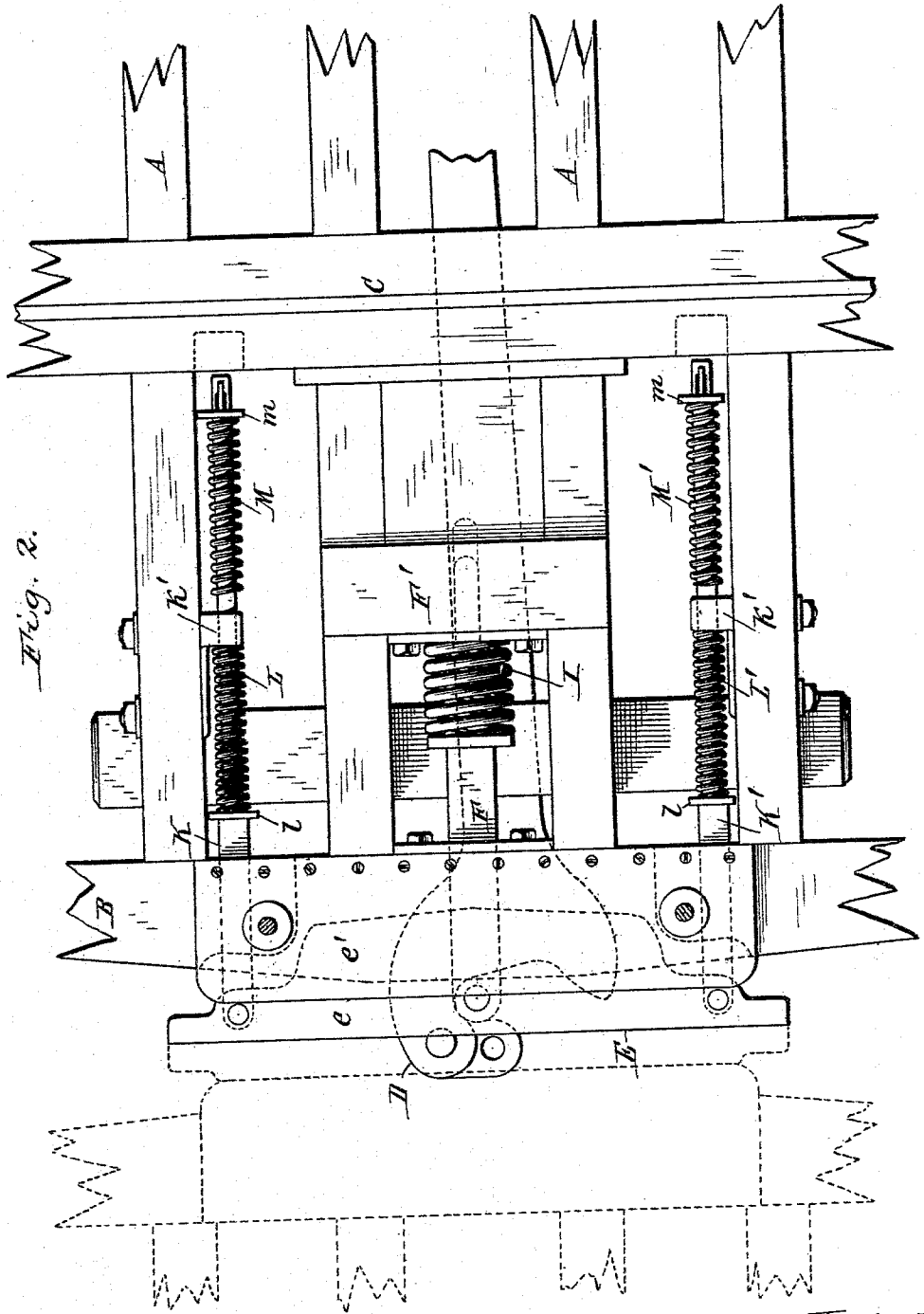


Fig. 2.

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(No Model.) 4 Sheets—Sheet 3.

# W. F. RICHARDS.

## CAR BUFFER.

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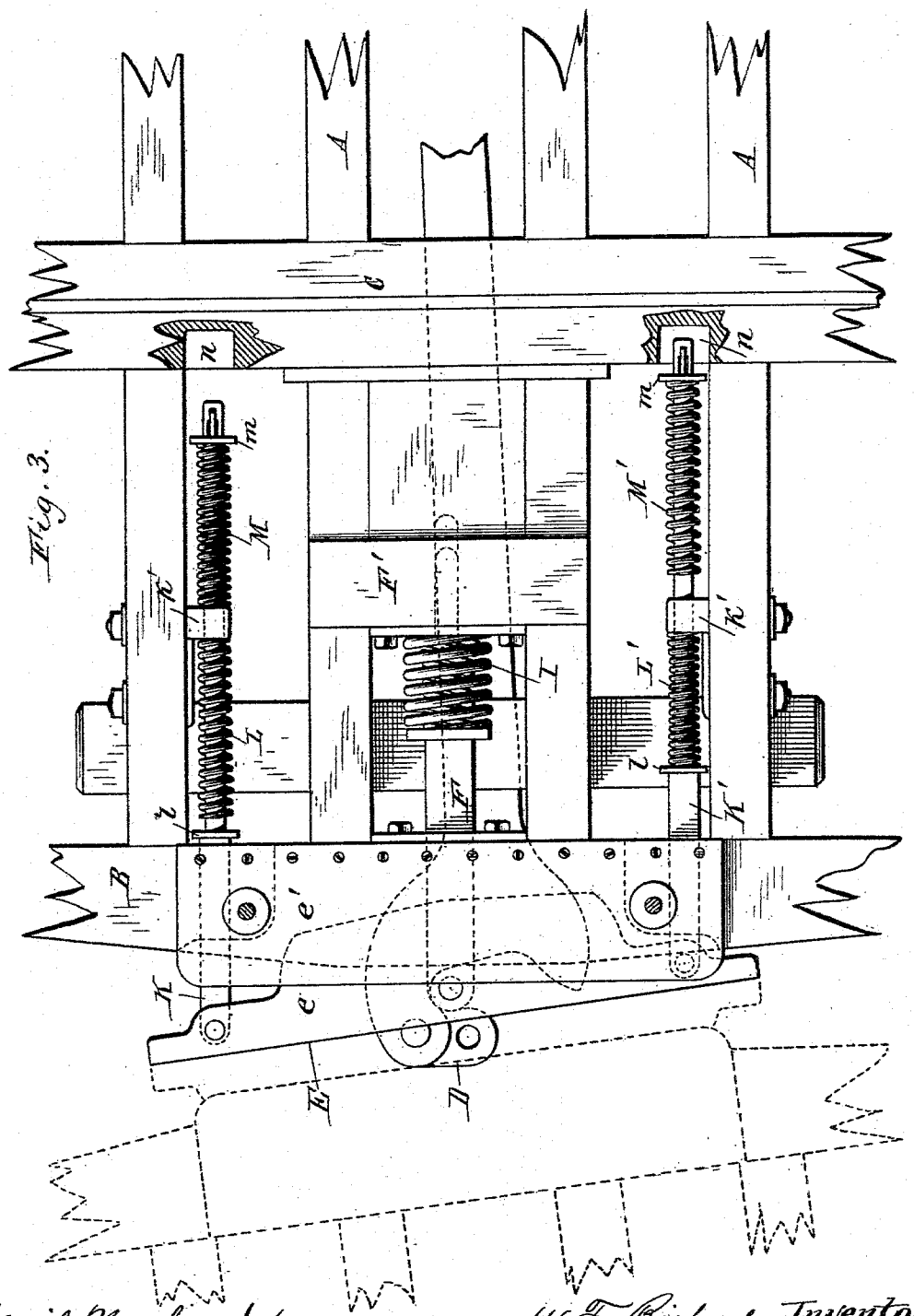


Fig. 3.

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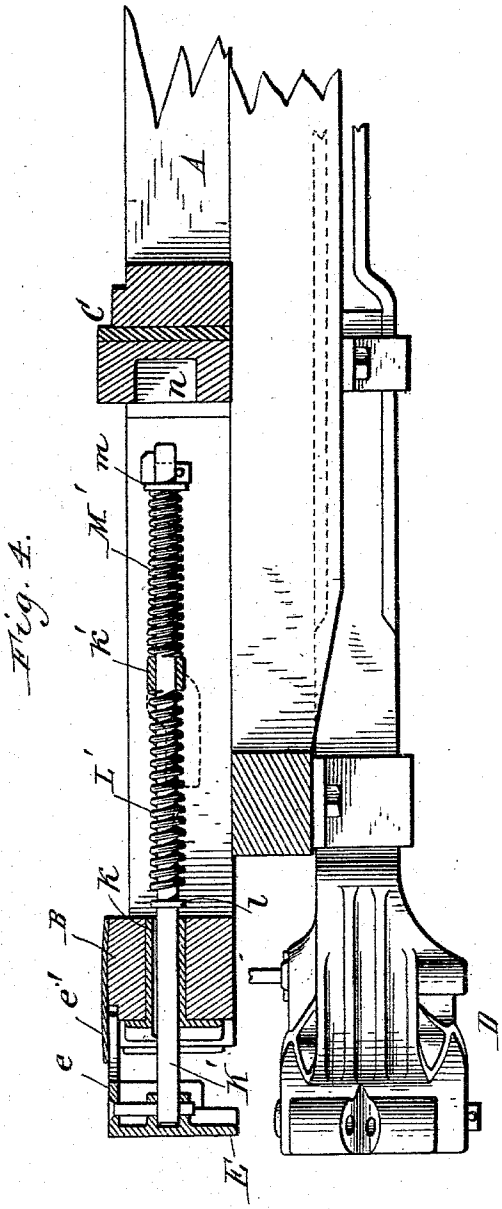
(No Model.) 4 Sheets—Sheet 4.

# W. F. RICHARDS.

## CAR BUFFER.

No. 495,060. Patented Apr. 11, 1893.

Fig. 4.




Witnesses:
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# UNITED STATES PATENT OFFICE.

WILLARD F. RICHARDS, OF BUFFALO, ASSIGNOR TO THE GOULD COUPLER COMPANY, OF NEW YORK, N. Y.

## CAR-BUFFER.

SPECIFICATION forming part of Letters Patent No. 495,060, dated April 11, 1893.

Application filed October 31, 1892. Serial No. 450,516. (No model.)

*To all whom it may concern:*

Be it known that I, WILLARD F. RICHARDS, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Car-Buffers, of which the following is a specification.

My invention relates more especially to that class of car buffers or yielding platform-extensions which are pivotally supported at the end of the car, so as to be capable of assuming an angular position with reference to the same in rounding curves, and in which the buffer is provided on opposite sides of its pivot with righting springs for returning it to its normal position parallel with the end of the car after passing a curve. The buffer is usually supported upon a stem or bar upon which is arranged a comparatively light spring for holding it in its extended position and a heavy buffer spring for opposing any violent shocks received by the cars. Prior to my invention these buffers were provided with righting springs which served the additional function of supplementing the buffing action of the springs on the buffer stem; and in order to hold the buffer in its normal position with sufficient security to prevent its rattling when free or out of contact with an opposing car, these combined righting and buffing springs were made of such a length as to be under partial compression in the free or projected position of the buffer. When extended to its outermost position, the buffer usually projects about two inches beyond the retracted position which it occupies when the car is coupled to an opposing car, so that when the righting springs of the buffer are already partially compressed in the extended position of the buffer, as above mentioned, the resistance offered by such springs must be overcome in addition to that of the light extension spring of the buffer in coupling and uncoupling the cars, which is objectionable because in order to facilitate these operations, the resisting power of the springs which press out the buffer should be as light as possible, and yet sufficient to project the buffer to the required extent.

The object of my invention is to provide the buffer with simple and effective spring mechanism which acts not only to right or square the buffer when swung out of its normal position, but which at the same time augments the power of the buffer springs on the carrying stem of the buffer, without offering excessive additional resistance to the light extension spring of the buffer.

In the accompanying drawings consisting of four sheets:—Figure 1 is a sectional top plan view of the platform of a railway car provided with my improved buffer mechanism, showing the buffer free or wholly projected, the flooring of the platform being omitted to expose subjacent parts. Fig. 2 is a top plan view of the platform, showing the position of the parts when the buffer is pressed inward by contact with an adjoining car, and the coupled cars are in line or running on a straight section of track. Fig. 3 is a top plan view of the platform showing the position of the parts when the buffer is pressed inward and swung at an angle to the end of the car in rounding a curve. Fig. 4 is a longitudinal sectional elevation on line 4—4, Fig. 1.

Like letters of reference refer to like parts in the several figures.

A represents the longitudinal timbers of the stationary car platform, B the cross timber connecting the outer ends of the longitudinal timbers and C the end sill of the car body.

D is the draw bar which may be of any ordinary construction.

E is the buffer or yielding extension of the platform which preferably consists of a transverse vertical buffer plate having at its upper end a horizontal threshold plate *e* which extends inwardly over the end timber B and is overlapped by a foot-plate *e'* secured to the upper side of the end timber.

F is the main buffer bar or stem which carries the buffer E at its outer end and is guided with its outer portion in an opening formed in the end timber of the platform and with its inner portion in a similar opening formed in a block F' secured between the longitudinal central timbers of the platform. The buffer is pivoted centrally to the outer end of the main buffer stem by a vertical pin or bolt,

so as to be free to oscillate and assume an angular position with relation to the end of the stationary platform.

H represents the light spiral spring arranged on the contracted inner portion of the buffer stem between a shoulder on the latter and the block F′ and which yieldingly holds the buffer in its projected position.

I is the main or heavy buffer spring surrounding the light extension spring H and which sustains any heavy shocks which overpower the light spring.

K K′ represent the longitudinal side stems or stay rods of the buffer which are pivoted at their outer ends to the latter on opposite sides of its pivot and are guided with their outer portions in openings *k* formed in the end timber B and with their inner portions in perforated lugs or bearings *k′* secured to the inner sides of the longitudinal timbers A.

L L′ represent auxiliary buffing springs surrounding the contracted central portion of the stay rods K K′ between the outer ends of the lugs *k′* and shoulders or collars *l* formed on the front portion of the stay rods. These auxiliary springs are made of such a length that when the buffer is free or projected, as shown in Fig. 1, they have a clearance at their outer ends with reference to the front abutments *l*, of say three-fourths of an inch, so that they do not aid in resisting the inward movement of the buffer until the latter has been pressed inward a sufficient distance to bring the shoulders of its stay rods against the outer ends of the auxiliary buffer-springs, as shown in Fig. 2.

M M′ are spiral righting springs applied to the inner portions of the stay rods and interposed between the inner ends of the lugs *k′* and shoulders or washers *m* which are secured to the rear ends of the stay rods so as to take part in the inward and outward movements of the rods. The end sill C of the car body is formed in its front side with recesses *n* which permit the stay rods to recede to the requisite extent when the buffer is pushed to its innermost position.

The righting springs are of such a length as to be under compression so long as the buffer is fully projected or free from contact with an adjoining car, as shown in Figs. 1 and 4, so as to be wholly relaxed when the buffer is pushed inward, as shown in Fig. 2. It will thus be seen that when the buffer is free or wholly extended, the righting springs oppose any oscillating or swinging movements of the buffer, and therefore not only hold the buffer parallel with the end of the car, but in connection with the light extension spring also serve to prevent it from rattling.

The righting springs are less powerful than the light extension spring of the buffer, so as not to defeat the action of the same.

As soon as the buffer is pushed inward by contact with an opposing car, the stay rods move inward with the buffer and the righting springs are relaxed, while the auxiliary buffer springs are compressed, as shown in Fig. 2, whereby the latter springs augment the buffing action of the light extension spring H.

When the buffer assumes an angular position in rounding a curve, as shown in Fig. 3, the righting spring M′ connected with the inwardly-swung end of the buffer is relaxed and the auxiliary buffer spring L′ connected with the same end thereof is compressed, while the righting spring M connected with the outwardly-swung end of the buffer is compressed and the auxiliary buffer spring L connected with the same end thereof is relaxed. The movement of the pivoted buffer into this angular position is thus opposed by the righting spring on one of the stay rods and the diagonally opposite auxiliary buffer spring on the other stay rod, while the remaining righting spring and auxiliary buffer spring are relaxed so that as soon as the cars round the curve the compressed righting and auxiliary buffer springs both react and return the buffer to its normal position parallel with the end of the car, the righting spring pulling the outwardly-swung end of the buffer inward, and the buffer spring pushing its inwardly-swung end outward without encountering any resistance by the remaining springs, and as this force is exerted upon both ends of the buffer in opposite directions, it is effectually and promptly righted upon passing the curve.

My improved buffer mechanism while combining the advantages of the righting and auxiliary buffer springs heretofore employed, obviates the disadvantage of increasing the resistance to coupling and uncoupling cars, found in such prior devices.

I claim as my invention—

1. The combination with the stationary car platform, the longitudinally movable buffer or platform extension and its central extension spring, of buffer springs operating upon the buffer on opposite sides of said extension spring and having clearance between their end abutments in the outermost position of the buffer, whereby said springs are wholly relaxed except when the buffer is pressed inward by contact with an opposing car, and separate retaining springs also operating upon the buffer, which are compressed in the outermost position of the buffer and are relaxed when the buffer is pressed inward beyond such position, substantially as set forth.

2. The combination with the stationary car platform and the longitudinally movable buffer provided on opposite sides of its center with longitudinal stay rods sliding in stationary lugs or abutments arranged on the platform, of buffer springs surrounding said stay rods and each bearing at its rear end directly against the front side of the adjacent stationary abutment, and at its front end against a shoulder on its stay rod, and independent righting springs also surrounding said stay rods and each bearing at its front end against

the rear side of the adjacent stationary abutment and at its rear end against a stop or shoulder on its rod, substantially as set forth.

3. The combination with the stationary car platform, the centrally pivoted buffer, and its central extension spring, of stationary guide lugs arranged on the platform, stay rods pivoted at their front ends to the buffer on opposite sides of its center and sliding with their rear portions in said guide lugs, buffer springs arranged on said stay rods and each interposed between the front side of the adjacent guide lug and a shoulder on its rod, said springs being wholly relaxed in the outermost position of the buffer, and independent righting springs also surrounding said stay rods and each interposed between the rear side of the adjacent guide lug and a shoulder on its rod, said righting springs being compressed in the outermost position of the buffer, to prevent oscillation of the buffer, substantially as set forth.

Witness my hand this 11th day of October, 1892.

WILLARD F. RICHARDS.

Witnesses:
CARL F. GEYER,
FRED. C. GEYER.