

A. CHRISTIANSON.
SWINGING BUFFER.
APPLICATION FILED JUNE 1, 1909.

962,818.

Patented June 28, 1910.

2 SHEETS—SHEET 1.

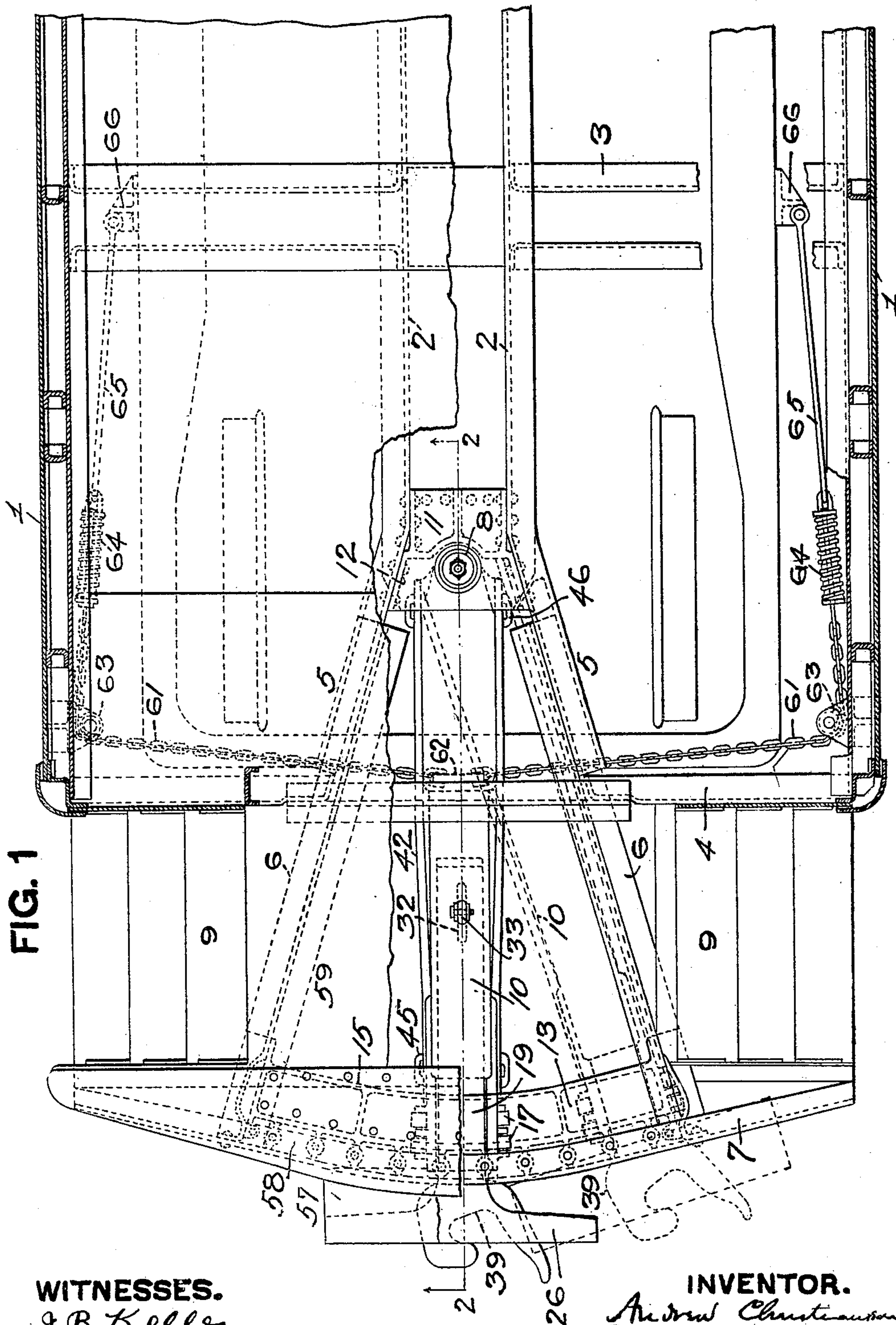


FIG. 1

WITNESSES.

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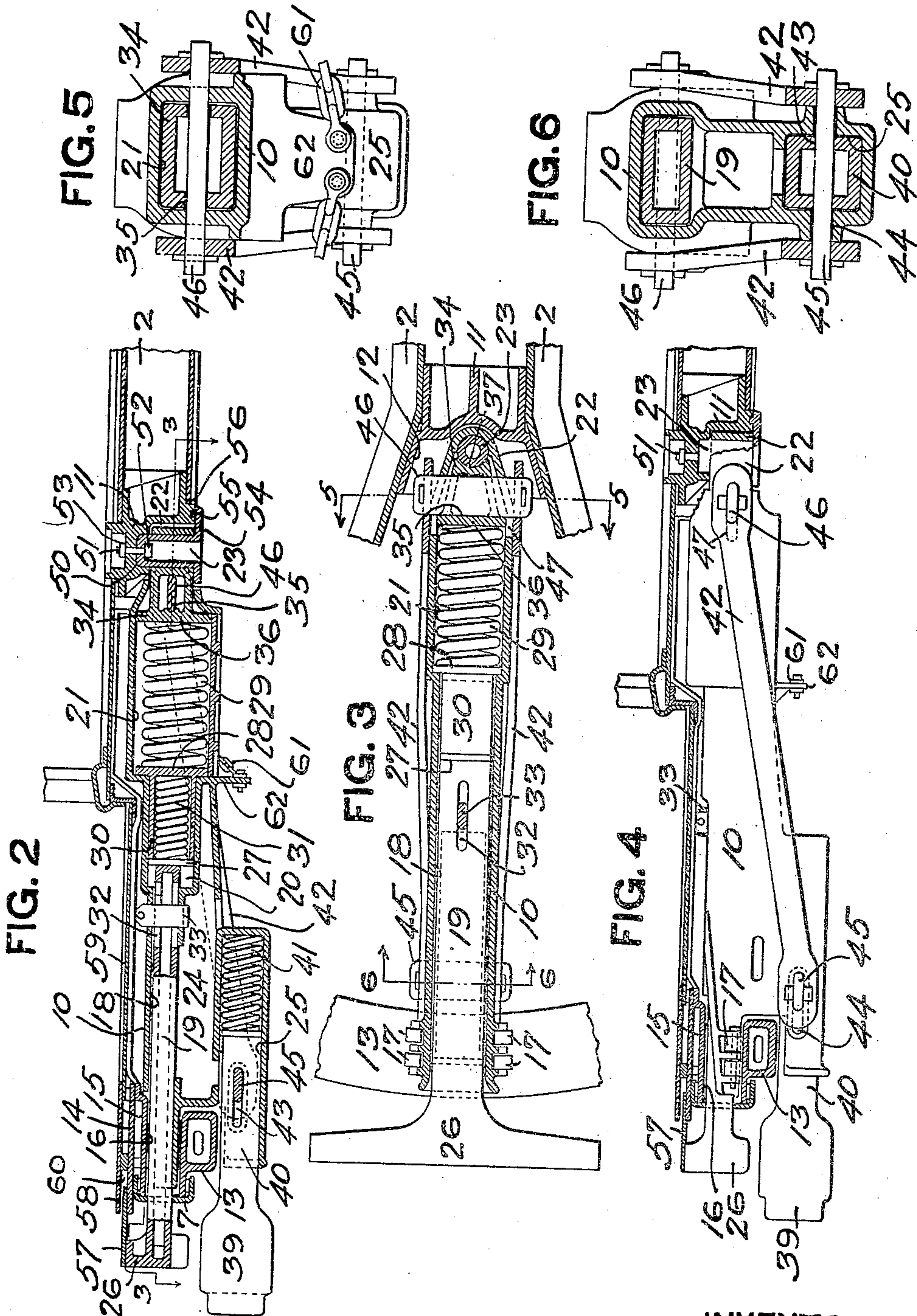
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UNITED STATES PATENT OFFICE.

ANDREW CHRISTIANSON, OF BUTLER, PENNSYLVANIA, ASSIGNOR TO STANDARD STEEL CAR COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

SWINGING BUFFER.

962,818.

Specification of Letters Patent.

Patented June 28, 1910.

Original application filed January 11, 1909, Serial No. 471,757. Divided and this application filed June 1, 1909. Serial No. 499,497.

To all whom it may concern:

Be it known that I, ANDREW CHRISTIANSON, a resident of Butler, in the county of Butler and State of Pennsylvania, have invented a new and useful Improvement in Swinging Buffers; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to radial or swinging buffers for railroad cars, its object being to provide a simple and compact form of such buffer mechanism.

It relates to the same general class of mechanism as set forth in application for patent filed by me January 11, 1909, Serial No. 471,757, for swinging buffer and draft rigging, this application being a division of that application.

The invention comprises, generally stated, the combination with the car underframe of a swinging casing mounted therein and having a guide-way and a buffer provided with a buffer shaft rigid with the buffer and mounted in the guide-way; as well as other improvements as hereinafter more particularly set forth and claimed.

In the accompanying drawings Figure 1 is a plan view illustrating the construction of the apparatus; Fig. 2 is a longitudinal central section; Fig. 3 is a horizontal section on the line 3—3, Fig. 2; Fig. 4 is a side view of the swinging casing; Fig. 5 is a cross section on the line 5—5, Fig. 3; and Fig. 6 is a cross section on the line 6—6, Fig. 3.

The invention may of course be employed in connection with any suitable railroad car whether operated by steam, electricity or other power, or whether employed for freight or passenger service. It is illustrated in connection with a passenger car and also in connection with the draft rigging, as fully set forth in said application, Serial No. 471,757, as it is intended to be employed in connection therewith. It will also be described in connection with such apparatus, though it is of course to be understood that the special invention desired to be covered in this application is confined to the buffer mechanism.

The apparatus may be mounted in any suitable underframe, that shown in the drawing being suitable for passenger car

construction. As illustrated it has the sides 1, center sills 2, and bolsters 3, the center sills as illustrated being formed of channel beams which project through the bolster and are carried to the end sill 4, the center sills 2 being parallel to a point beyond the bolsters while their outer ends are spread or flared, as at 5, and have connected therewith the Z-bar extensions 6 supporting the platform end sill 7 which, as shown, is of spread channel construction with curved outer face, the mid-portion of which is made on a proper radius from the pivot 8 of the draft rigging, such spreading sills giving space for the swinging movement of the draft rigging.

The buffer forming the subject matter of this application, as well as the draft rigging, as described in said application Serial No. 471,757, are carried by a main casing which is mounted in the pivot casting supported between the center sills 2 at the point where the said sills are spread, as at 5, the forward portion of said pivot casting being spread as at 12 to give space for the casing 10. The casing 10 is supported at the forward end by the segmental frame 13 which is secured within the platform end sill 7 having a top plate 14 riveted thereto and a top segmental casting 15, said two castings being riveted to each other and to the platform end sill 7 and to the forward ends of the flaring Z-bar sills 6 where said flaring sills and platform end sill meet; and the segmental castings 13 and 15 form a guiding space 16 within which the forward end of the casing 10 travels and is supported, said casing preferably having the anti-friction rollers 17 bearing upon the lower segmental casting 13 to reduce friction between the same. The main casing 10 has the guide-way 18 for the buffer shaft 19, said guide-way terminating in the enlarged intermediate guide-way 20 and having back of the same the compression spring pocket 21, said casing extending back of the said compression spring pocket and having a semi-circular strap 22 bearing against the rear face of the pivot 23 and forming a portion of the pivot bearing of the casing. The casing extends down below the guide-way 18 and back of the segmental casting 13, as at 24,

and forms the draw bar guide-way 25, the buffer-bar guide-way 18 and the draw-bar guide-way 25 being on the same vertical plane, so as to cause both buffer and coupler to swing together. In said main casing 10 is mounted the buffer 26 with its buffer bar 19 fitting within the guide-way 18 and extending into the enlarged space 20 where it contacts with the bearing plate 27 which, when compressed, contacts with the front compression plate 28 of the compression spring 29, said plate 28 having a sleeve portion 30 extending within the intermediate guide-way 20 in which is confined the primary buffer spring 31, which takes the first thrust of the buffer through the plate 27. The buffer bar 19 has a longitudinal slot or key-way 32 formed therein within which fits the key 33 for confining the buffer within the main casing, the slots 32 being of sufficient length to give full movement to the same. Any suitable form of compression spring mechanism may be employed, the drawing illustrating simply a compression spring confined between plates and as it is also employed as a draft gear it will be so described in the application. The drawing shows the compression spring 29 fitting within the pocket 21 between the front plate 28 and the rear plate 34. The rear plate has an extension 36 fitting within the casing 20, such extension terminating in the concave bearing face 37 bearing upon the pivot 23. It will thus be seen that the compression spring 29 by pressure upon the rear plate 34 holds its bearing face 37 in contact with the pivot, while by pressure upon the front plate 28 which engages with the front wall 38 of the pocket 21 the spring holds the semi-circular rear bearing face 22 of the main casing in contact with the pivot 23, so preventing rattling and lost motion and taking up wear. The coupler 39 has its draw bar 40 which may be of ordinary rectangular form and is mounted within the guide-way 25 in the main casing 10 and operates upon the primary draw-bar compression spring 41 to aid the buffer in sustaining compression strains. The straps 42 fitting on both sides of the main casing 10 connect the coupler with the draft 29, the draw bar 40 having the elongated slot 43 and a like slot 44 shown in dotted lines being formed in the side of the main casing, and the transverse coupler pin 45 extending through said slots and through the ends of the straps 42 so as to connect the said straps with the coupler or its draw-bar. In like manner the rear draft plate 34 of the draft gear has a seat 35 formed therein for the reception of the transverse pin 46, which is connected to the rear ends of the straps 42 and slides within the longitudinal slots or key-ways 47 in the main casing. The straps 42 which are held on a slight incline thus connect the draft

gear 29 with the coupler and enable said draft gear to sustain all draft strains brought upon the same. The main operative parts of the buffer are thus all inclosed within the main casing 10, which can be of narrow width and so obtain all the necessary swing between the spreading draft sills 5, 6, supporting the buffer on the same horizontal plane as said sills, said casing supporting both buffer and coupler and the sustaining of all strains brought upon them. For example, the compression strains brought upon the buffer and coupler are first sustained by the spring 31 in the guide-way 20 and the spring 41 in the draw bar guide-way 25, and the main or heavier strains are transmitted from the buffer-bar to the front draft plate 28 of the draft gear 29; and the draft strains upon the coupler are sustained by said draft gear 29 through the straps 42 connected to the draw bar 40; while at the same time any lost motion and wear between the swinging casing and its pivot are also cared for by the draft gear as above described.

While any suitable pivot may be employed, in order to fully sustain the draft strains, I prefer the pivot construction illustrated, the pivot 23 consisting of a hollow pin having its upper end fitting within the pivot seat 50 of the pivot casting 11 and supported within said pivot casting 11 by the bolt 51, the head 52 of which fits within the hollow portion and projects up through the casting 11, being held by a suitable nut 53. Such pivot pin 23 has formed at the base thereof the horizontal flange 54 extending backwardly from the main body and having the radial segmental rib 55 formed on its upper face which extends into a like radial seat 56 formed in the pivot casting 11. Said pivot casting 11 which is secured to the center sills as above stated, thus sustains not only the draft strains on the pivot pin 28 by the seating of said pin within the bearing 50 above the main casing 10 and within the segmental radial seat below the same, but receives and sustains the buffing strains transmitted through the buffer bar 19 and through the compression spring or draft gear and the rear plate thereof to the pivot pin and thence to the underframe through the pivot casting. The pin 23 can be easily withdrawn by the loosening of the supporting bolt 51 and this permits the lowering of the rear end of the main casing 10 so that after the withdrawal of the buffer from the main casing that casing with the other parts of the draft gear can be easily withdrawn from the underframe. It is, of course, necessary that the buffer shall have a top telescoping or sliding plate 57, which in the present case is riveted to the top face of the buffer, which in its preferred form is rigid with its buffer-bar, being of suitable width

to support such plate according to the swinging action of the buffer in passing around curves, etc. Said plate 57 travels on top of the top plate 14 of the platform end sill 7 and passes under the supplemental top plate 58 extending from the platform floor 59 forward over said telescoping plate 57 which travels within the space 60.

Any suitable connections can be employed between the main casing 10 and the truck to move said main casing and with it the buffer bar in substantial unison with the truck so that in case of coupling upon a curve the buffer and draft rigging will be held on practically proper lines for coupling. For this purpose I prefer to employ the chain or rope 61 connected to a depending lug 62 on the main casing 10 back of the end sill 4 and passing around a sheave 63 mounted on the side 1 of the underframe and to a suitable compression spring 64 from which the rope 65 extends back and is connected to the bracket 66 mounted at any suitable place on the truck, preferably about the mid-portion thereof. As the truck in conforming to the curve of the track is thus swung from side to side it draws the buffer with it, the spring 64 compensating for any difference in swing between the buffer and the truck, such as on account of the different points of pivoting.

The buffer is rigid with the buffer bar which slides within its guide-way in the main casing so that a strong and durable construction is obtained, and as means are provided for swinging the buffer as well as the coupler into proper position for coupling, according to the position of the trucks upon the rails, the buffers of the two cars to be coupled will be substantially parallel and the couplers will be held in proper position to couple, the difficulty of coupling on an angle being entirely overcome. When the cars are coupled and the buffing mechanism is brought into use, on account of mounting the buffer within a narrow casing which in turn is mounted to swing within the car frame I am enabled to arrange said casing on the same plane as the body of the underframe, this being accomplished first through the employment of the narrow body casing supporting the buffer, and next, to the employment of the spreading platform sills which, as illustrated, give free room for the swinging of the casing supporting the buffer. I also provide a very compact arrangement for the support not only of the buffer but of the coupler and its draw bar by supporting the coupler below the buffer as described in said application Serial No. 471,757. I am also enabled to give full support to the main casing carrying the buffer below said buffer by the segmental frame fitting between the buffer guide-way of the casing, the draw bar in the guide-way provided

therefor in the casing extending below said frame while at the same time the frame unites and braces the platform and the ends of the spreading platform sills. The apparatus also provides for the taking up of all buffing strains in a very economical way, the primary buffing strains being sustained through the primary spring 31 within the sleeve portion 30 of the front compression or draft plate 28, while heavier strains upon the buffer are sustained by the main compression spring. The main swinging frame is also securely mounted in the underframe in an efficient way, the pivot pin being supported against compression strains both above and below such frame and a firm bearing of the main casing upon the pivot pin is secured through the compression spring which presses upon the rear plate 34 and through the extension 36 and bearing face 37 of that plate bears on the pivot pin, while the front plate of the compression spring by contacting with the shoulders 38 of the main casing draws on the strap 22, forming thus through said strap and the bearing face 37 a firm bearing on the pivot pin by which rattling is prevented and all wear taken up, the compression gear thus serving two purposes.

What I claim is—

1. The combination with an underframe, of a swinging casing mounted therein having a pocket for the compression gear and in front of the same a buffer bar guide-way, said casing having an enlarged intermediate guide-way between the pocket and buffer bar guide-way, compression gear mounted in said pocket having a front compression plate provided with an extension fitting within the intermediate guide-way, and a buffer having a buffer bar mounted in its guideway and adapted to engage with such front compression plate.

2. The combination with an underframe, of a swinging casing mounted therein having a pocket for the compression gear and in front of the same a buffer bar guide-way, said casing having an enlarged intermediate guideway between the pocket and buffer bar guide-way, compression gear mounted in said pocket having a front compression plate provided with a tubular extension fitting within the intermediate guide-way, a primary compression spring fitting within said tubular extension, and a buffer having a buffer bar mounted in its guide-way and adapted to engage with such primary compression spring.

3. The combination with a car underframe, of a swinging casing mounted therein having at its rear end a bearing face inclosing the rear portion of the pivot pin, a pivot pin fitting within and against said face, and a compression gear mounted in the casing and having its rear plate provided with

a rearwardly extending bearing face contacting with such pivot pin.

4. The combination with a car under-frame, of a swinging casing mounted
5 therein, having an inclosing bearing face, a pivot pin mounted in the casing and fitting within said bearing face, and a separate spring controlled plate mounted within the

casing and having a bearing face bearing on said pivot. 10

In testimony whereof, I the said ANDREW CHRISTIANSON have hereunto set my hand.

ANDREW CHRISTIANSON.

Witnesses:

ROBERT C. TOTTEN,
J. F. WILL.