

S. W. BEESON.

DRAW BAR.

APPLICATION FILED NOV. 25, 1908.

945,079.

Patented Jan. 4, 1910.

2 SHEETS—SHEET 1.

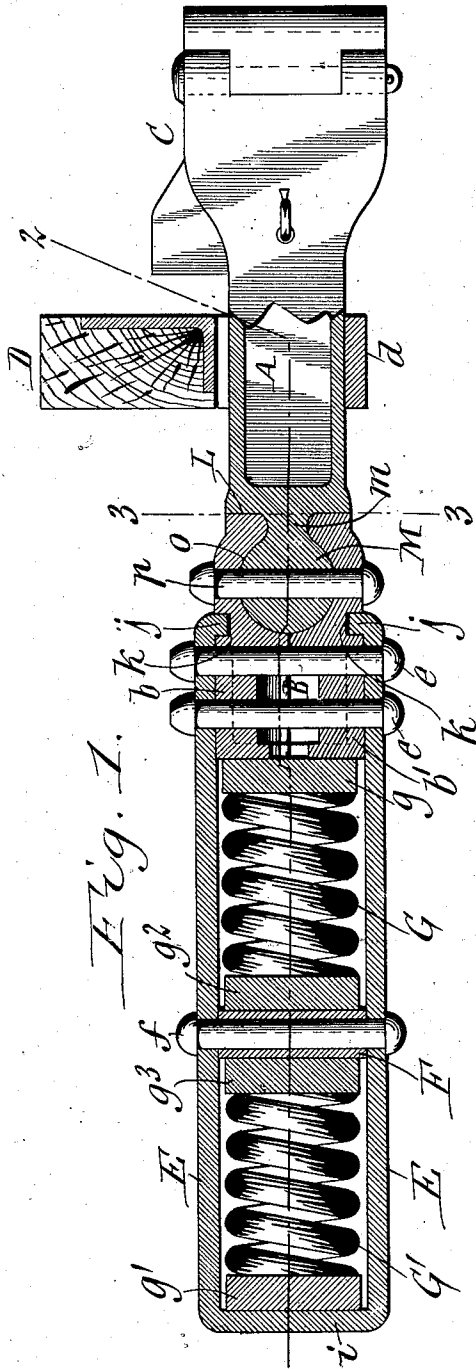


Fig. 1.

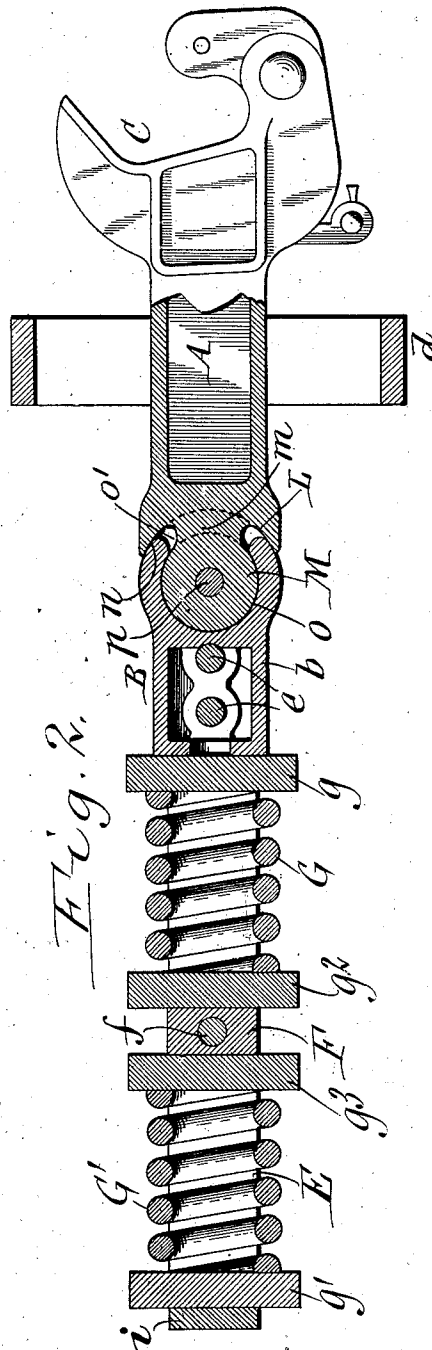


Fig. 2.

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2 SHEETS—SHEET 2.

Fig. 3.

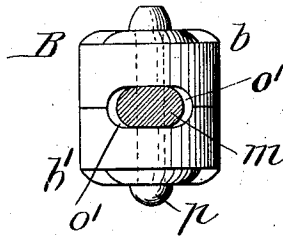


Fig. 5.

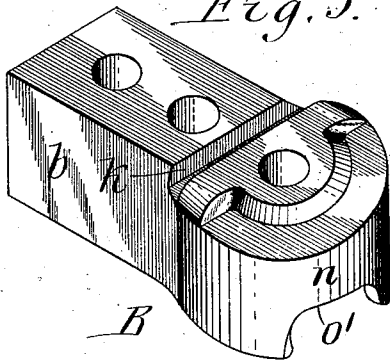


Fig. 4.

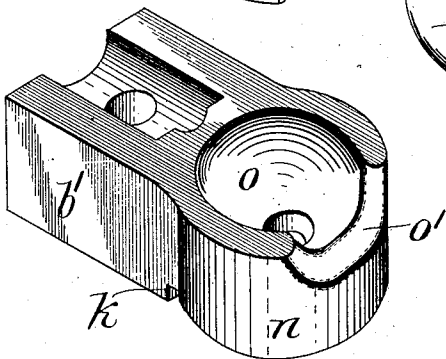
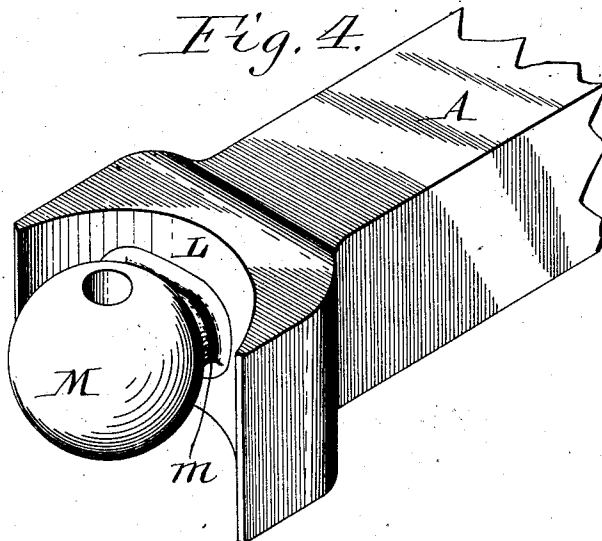


Fig. 6.

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UNITED STATES PATENT OFFICE.

SAMUEL W. BEESON, OF BUFFALO, NEW YORK.

DRAW-BAR.

945,079.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, SAMUEL W. BEESON, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Draw-Bars, of which the following is a specification.

The draw bars of railway cars now in common use are constructed in one piece and so mounted on the car body and connected with the draft rigging thereof that the draw bar is only able to move laterally a comparatively small extent. After the lateral play has been exhausted while the car turns a curve it produces not only an undue strain on the car body, draft rigging and other parts but also causes the flanges of the car wheels to be crowded against the rails and wear unduly. Furthermore, draw bars having but slight lateral play cannot be coupled while the cars are standing on a curve and therefore necessitates moving the cars upon a straight part of the track before the coupling of the same can be effected.

The object of this invention is to produce a jointed draw bar which permits of a wider range of lateral movement so as to avoid the above mentioned objections, which is as strong and durable as the one piece draw bars heretofore in use, and which is interchangeable with the draw bars now in general use, so that no change is required in the standards of design which have been adopted by the railway authorities.

In the accompanying drawings consisting of two sheets: Figure 1 is a longitudinal sectional elevation of a draw bar and connecting parts embodying my improvements. Fig. 2 is a horizontal section thereof in line 2—2, Fig. 1. Fig. 3 is a cross section in line 3—3, Fig. 1. Figs. 4, 5 and 6 are fragmentary perspective views of parts of the draw bar showing the construction of the pivotal joint between the same.

Similar letters of reference indicate corresponding parts throughout the several views.

In carrying my invention into effect the body or shank of the draw bar is divided into a front body section A and a rear body section B. The front body section is provided at its front end with a coupler head C which may be of any suitable or well known construction and forms no part of this invention. In rear of the coupling head the front section of the draw bar is guided in a stirrup *z* secured to the platform end-timber

or buffer-beam D, the horizontal transverse opening in said stirrup being of sufficient length to permit the front section of the draw bar to swing laterally to the fullest extent afforded, by the joint between the same and the rear section of the draw bar.

The rear draw bar section is connected with a draft rigging which may be of any suitable construction that portion thereof shown in the drawings consisting of a tail strap or yoke having upper and lower bars E, E which are secured lengthwise to the upper and lower sides of the rear draw bar section by vertical rivets *e, e*, a tail block F secured centrally to the tail strap bars by a rivet *f*, follower plates *g, g¹, g², g³* arranged between the tail strap bars and engaging respectively with the rear end of the rear draw bar section, the rear cross piece *i* of the tail strap and the front and rear sides of the tail block, two buffer springs G, G¹ one arranged between the plates *g, g²* and the other between the plates *g¹, g³*, and hooks or lips *j* arranged on the front ends of the tail strap bars and engaging with notches or grooves *k* in the upper and lower sides of the rear draw bar section, as shown in Figs. 1 and 2.

The rear end of the front draw bar section is constructed to form an upright concave cylindrical face L of nearly one-half a circle and opposite this face is arranged a spherical member or ball M which is connected with the rear end of the front draw bar section at the center of its cylindrical face L by a narrow or contracted neck *n* which is preferably elongated in a horizontal direction, as shown in Figs. 2 and 3.

The rear section B of the draw bar is divided horizontally to form upper and lower parts *b, b¹* which are identical in construction and secured to each other in the assembled condition of the parts to form practically one piece. The front end of each part of the rear draw bar section is constructed to form a vertical convex cylindrical face *n* which is adapted to fit snugly into the corresponding part of the concave face L of the front draw bar section.

On the inner side of each part of the rear draw bar section at its front end the same is provided with a semispherical socket section *o* and a transversely elongated notch or recess *o¹* extending from the front side of the socket section to the central part of the convex face thereon. When the two parts of the rear draw bar section are secured to-

gether the socket sections thereof together form a complete spherical socket which receives the spherical member or ball of the front draw bar section and the two recesses or notches o^1 thereof together form a horizontal slot or elongated opening which receives the neck which connects the ball and the front draw bar section.

The upper and lower sides of the slot formed by the notches o^1 are parallel so that they bear firmly against the upper and lower sides of the neck in all positions of the front body section relatively to the rear section.

The rivets which secure the tail strap to the rear draw bar section may serve as the sole means of connecting the upper and lower parts of the latter but if desired additional means may be used for this purpose such for instance as a vertical rivet or pin p which extend centrally through the socket parts of the rear draw bar section and the spherical member or ball between the same.

The ball M fits snugly in the socket o and the upper and lower sides of the slot formed by the notches o^1 bear against the upper and lower sides of the neck but the length of this slot is greater than the width of the neck so as to provide lateral clearance between the same and the neck to permit of turning the front body section relative to the rear body section. The convex and concave faces of the draw bar sections and the spherical faces of the ball and socket are all concentric so that upon turning the front body section at an angle on the rear body section the spherical and cylindrical joints between the body sections will always be tight and enable the draw bar to take up any pushing or buffing strains regardless of the angular position of the front body section relatively to the rear body section.

Any pulling strains will be resisted by the spherical joint between the front and rear body sections and also by the rivet or pin which connects the same with the parts of the rear body section.

If the front body section is struck by an upward or downward blow displacement of the same is prevented by the concave face of the front section bearing against the upper or lower end of the convex face of the rear body section, also by the neck bearing against the upper or lower side of the transverse slot in the rear body section and also by the spherical member or ball engaging the rivet on the rear body section.

Owing to the spherical form of the ball and the socket which receives the same any pulling or buffing strains to which the draw bar is subjected are distributed uniformly over the surfaces of this ball and socket joint thereby insuring the same against failure under the severest strains which are liable to occur. Inasmuch as the pressure of the ball is exerted in all directions against

the socket there is little if any tendency to spread the two parts of the rear body section. The rivet or pin p could therefore be omitted if desired but it is preferable to employ the same because by its use the parts of the draw bar are held in an assembled condition which permits of shipping the same more conveniently and it also strengthens the rear body section of the draw bar and also aids in preventing the front swinging in any other except a horizontal direction.

By the use of this draw bar the coupling heads are enabled to swing laterally a much greater distance on the car body than has been possible heretofore, thereby enabling the cars to pass around curves easily and without an undue strain on the car body and the draft rigging. Furthermore, a saving is effected in the wear on the wheel flanges and also in the power necessary for propelling the cars. Owing to this joint in the draw bar it is possible to couple and uncouple the cars as readily on a curve as on a straight track and it also lessens the liability of the uncoupling while the cars pass around short curves. All of these advantages are obtained in this improved jointed draw bar without weakening the same inasmuch as the same amount of tensile strength is maintained in the neck of the spherical ball as in the cross section of an ordinary draw head. Its interchangeability with other coupler draw bars of Master Car Builders' dimensions permits of introducing the same gradually on the various railway cars and avoids the necessity of discarding the couplers now in use before they are worn out.

I claim as my invention:

1. A draw bar comprising two sections one of which has a concave cylindrical face and a ball arranged concentrically with said concave face and connected therewith by a contracted neck, and the other section having a convex cylindrical face adapted to engage with said concave face, a spherical socket which completely incloses said ball and bears with its bottom against the crown of said ball, and an opening extending from said socket to said convex face and receiving said neck.

2. A draw bar comprising two sections one of which has a concave cylindrical face and a ball arranged concentrically with said concave face and connected therewith by a contracted neck, and the other section having a convex cylindrical face adapted to engage with said concave face, a spherical socket which completely incloses said ball and bears with its bottom against the crown of said ball, and an opening extending from said socket to said convex face and receiving said neck, said socket section being divided lengthwise and centrally through its socket

and opening, means for connecting said socket sections adjacent to the socket between them, and a pin connecting the socket sections and extending through said socket and ball concentrically with said convex and concave cylindrical faces.

3. A draw bar comprising front and rear body sections, one of said sections having a concave cylindrical face, a ball and a reduced neck which connects said ball with the central part of said concave face, and the other body section having a convex cylindrical face which engages said concave face, a spherical socket which receives said ball, and a horizontal slot extending from said socket to said convex face having parallel upper and lower sides which engage with the upper and lower sides of said neck.

4. A draw bar comprising a front body section adapted to carry a coupling head and a rear body section adapted to be connected with a draft rigging, said front body section having a concave cylindrical face at its rear end, a ball arranged in rear of said concave face and concentrically therewith and a reduced neck which connects said ball with said front body section at the center of its concave face, and said rear body section having upper and lower parts which are constructed on their opposing inner sides to form a spherical socket which receives said ball and a transverse slot having parallel upper and lower sides which engage with

the upper and lower sides of said neck while their corresponding front ends are constructed to form a convex cylindrical face which engages said concave cylindrical face.

5. A draw bar comprising a front body section adapted to carry a coupling head and a rear body section adapted to be connected with a draft rigging, said front body section having a concave cylindrical face at its rear end, a concentric ball arranged in rear of said concave face and a reduced neck which connects said ball with said front body section at the center of its concave cylindrical face, and said rear body section having upper and lower parts which are constructed on their opposing inner sides to form a spherical socket which receives said ball and a transverse slot having parallel upper and lower sides which engage with the upper and lower sides of said neck while their corresponding front ends are constructed to form a convex cylindrical face which engages said concave cylindrical face, and a vertical pin or rivet passing through the parts of the rear body section and said ball concentrically with said cylindrical faces.

Witness my hand this 23 day of November, 1908.

SAMUEL W. BEESON.

Witnesses:

HILARIA KNEIS,
GROVER KNEIS.