

No. 645,606.

Patented Mar. 20, 1900.

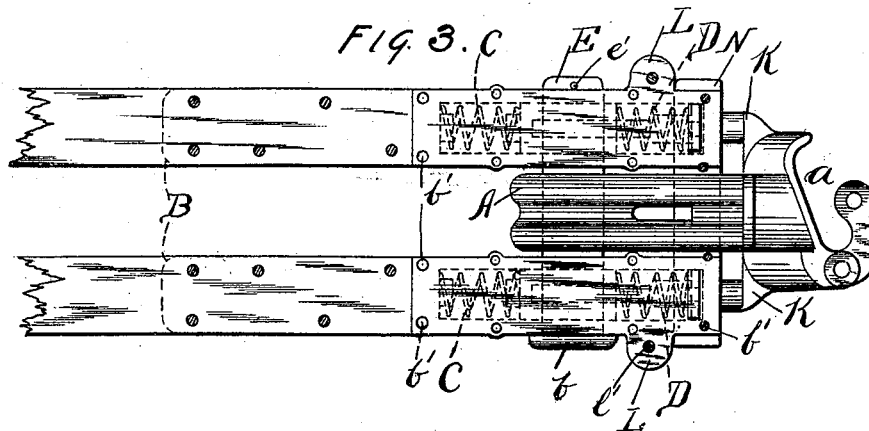
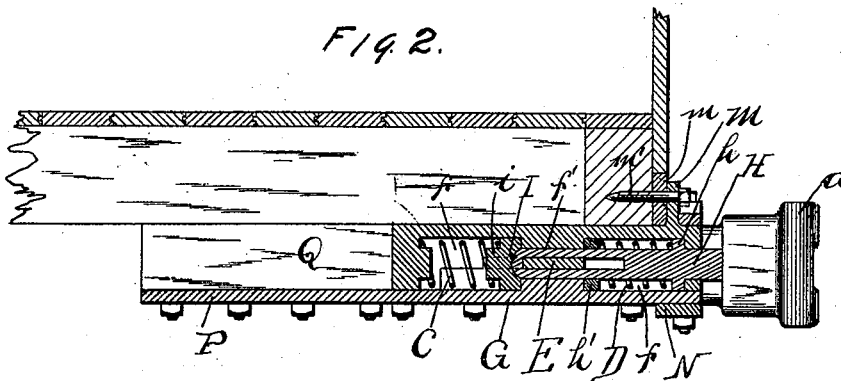
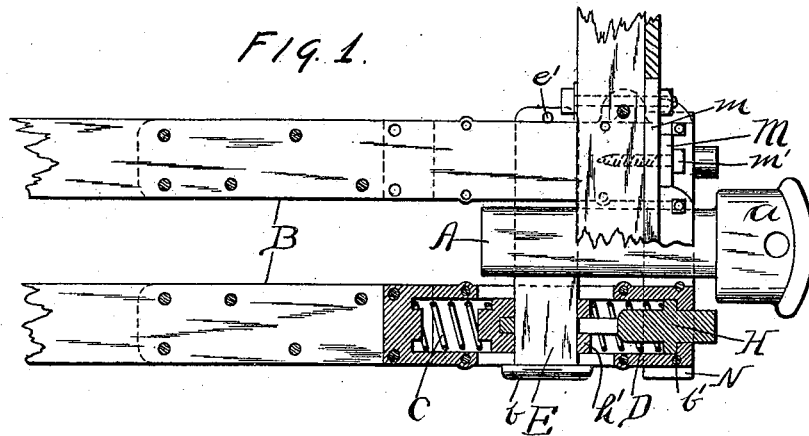
J. RAWLES.

DRAFT GEAR FOR CAR COUPLINGS.

(Application filed Aug. 25, 1899.)

(No Model.)

2 Sheets—Sheet 1.



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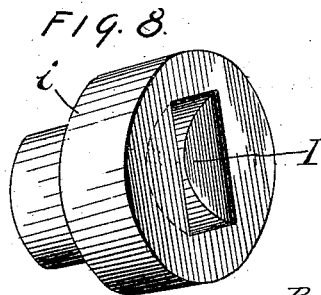
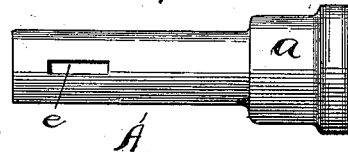
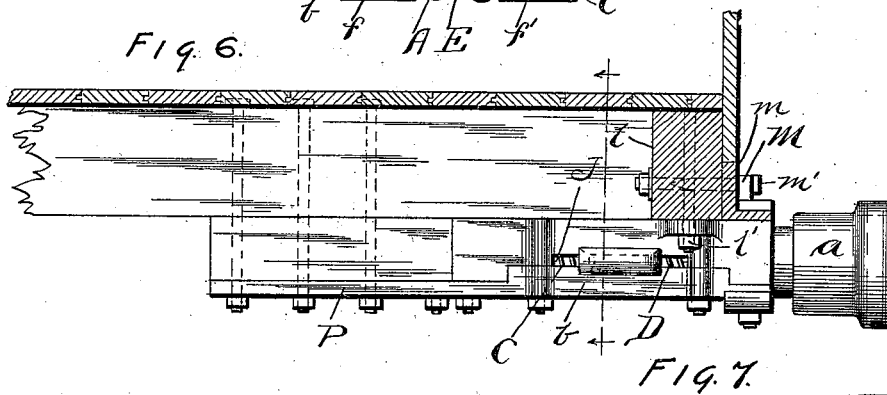
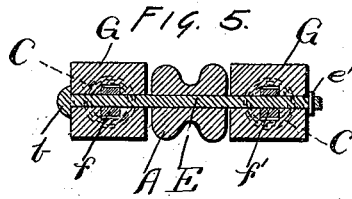
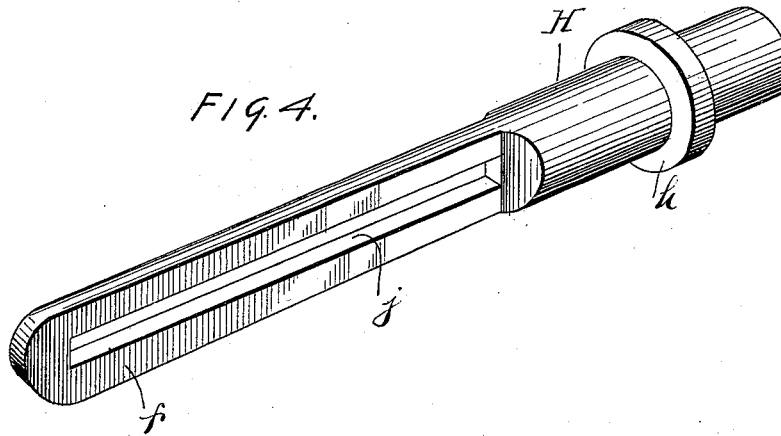
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DRAFT GEAR FOR CAR COUPLINGS:

(Application filed Aug. 25, 1899.)

(No Model.)

2 Sheets—Sheet 2.



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# UNITED STATES PATENT OFFICE.

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## DRAFT-GEAR FOR CAR-COUPPLINGS.

SPECIFICATION forming part of Letters Patent No. 645,606, dated March 20, 1900.

Application filed August 25, 1899. Serial No. 728,464. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN RAWLES, a citizen of the United States, residing at Galesburg, in the county of Knox and State of Illinois, have invented certain new and useful Improvements in Draft-Gear for Car-Couplings, of which the following is a specification.

My invention relates to certain new and useful improvements in draw-bars for car-couplings; and its primary object is to provide a stronger, safer, and better system of mounting and securing the draw-bar in position on a car to take the place of the ordinary yoke-pocket system of attachments commonly used with the Master Car-Builders' coupler.

A further object of the invention is to provide a simple method of securing the draw-bar in position on a car and springs arranged in such a manner as to secure a maximum degree of resistance.

Another object of the invention is to connect the draw-bar with the draft-arm by means of a single transverse key and springs in front of and behind said key, arranged and connected therewith in such a way that when two cars bump together the resistance of all the springs will be brought into action and on the outward pull of the draw-bar after the coupling is effected the resistance of one set of springs in front of the key will be brought into play.

A further object of the invention is to provide substantially a complete iron front for the car which can be made practically indestructible and free from the usual wearing and eventual destruction of the ordinary wooden fronts on cars.

My invention also has many other objects in view intended to simplify and improve the construction and mounting for draw-bars, to facilitate their removal and interchangeability, and, which is an object of great importance, to distribute the concussion incident to the coupling of two cars together equally upon the head of the draw-bar and upon the rear end thereof, the arrangement being such that the draw-bar acts directly upon the springs.

I will describe the foregoing and other ob-

jects more fully hereinafter in the detail description of my invention, the preferred embodiment of which is illustrated in the accompanying drawings, in which—

Figure 1 is a top plan view, partly in section, showing my invention. Fig. 2 is a longitudinal sectional view extending through one of the draft-arms. Fig. 3 is a top plan view showing the invention embodied with a draw-bar having a knuckle coupler-head. Fig. 4 is a perspective view of the link and plunger. Fig. 5 is a sectional view on the line 5 5 of Fig. 6. Fig. 6 is a side elevation, partly in section, showing my invention. Fig. 7 is a detail view, in side elevation, of the draw-bar. Fig. 8 is a detail perspective view of one of the followers.

Referring to the drawings, in which like letters of reference denote corresponding parts in all of the figures, A designates a draw-bar of any desired construction, which is located and arranged between the draft-arms B and is provided with a coupler-head *a* of any variety. It has been customary heretofore to place a spring behind the rear end of the draw-bar, so that the full force of the concussion incident to coupling is communicated directly to the said rear end of the draw-bar, and the method of attachment and the mounting for the draw-bar with this end spring have been of such a character that the repeated concussions result in a short time in the destruction of the spring and the draft-arms and the different attaching devices. I have provided an improved method of mounting a draw-bar in the draft-arms and arranged springs in such relation thereto that the concussion and blow incident to coupling is communicated directly to the springs and preferably between the coupler-head and the rear end of the bar.

In the forward end of each draft-arm I arrange springs C behind and corresponding springs D in front of a transverse key E, passing through the two draft-arms and the rear end of the draw-bar located between them, the arrangement being such that in each of the draft-arms springs are located in a horizontal position on each side of the key for a purpose hereinafter described. The key E passes through a slot *e*, provided for it in the

draw-bar, and it preferably fits comparatively snug in said slot, so that the connection between the key and the draw-bar will be substantially tight; but the key operates freely enough in the slot *e* to permit of its being readily withdrawn when desired by removing the pin *e'* and pulling on the head *b*.

The draft-arms are constructed substantially in every respect alike, and I will therefore proceed to describe only one of them specifically.

The draft-arm is made in two parts, the upper part or member *F* and the lower part or member *G*, said parts being fitted together in a neat and careful manner and fastened by means of bolts *b'*. The upper part *F* of the draft-arm is cored out to provide two spring-chambers *f*, separated by a central abutment *f'*, between which and the ends of the chambers the springs are arranged and adapted to operate. The lower part or member is fastened to the upper part and completely incloses the spring mechanism and other movable parts within the draft-arm. Within the forward chamber of the draft-arm I arrange a plunger *H*, which projects forwardly through an opening in the end of the arm and is provided with a collar *h*, located within the chamber to limit its forward movement and provide a shoulder against which the spring *D* may bear, the other end of said spring bearing against a collar *h'* adjacent to the abutment *f'*. This plunger has a rearward extension provided with a slot to form, in effect, a link which projects through a central opening in the abutment *f'* and receives in its slot the key *E*. The rear end of this link has a bearing in a recess *I* of the follower-block *i*, which is arranged in the rear chamber of the arm and between which and the end of said chamber the rear spring *C* operates.

It will thus be observed by the foregoing description, and the figures on Sheet 1 of the drawings particularly, that in each of the draft-arms I employ a plunger which preferably projects beyond the front of the draft-arm and is provided with a collar *h* and a link at its rear end to receive the key passing through the draw-bar, so that when the draw-bar is forced rearward the movement thereof communicated through the key to the plunger will result in carrying the plunger rearwardly, thereby compressing the forward spring *D*, owing to the collar *h*, and the rear spring *C*, owing to the follower-block *i*. This compression of both the front and rear springs results from the direct backward pressure of the key on the rear spring and the pulling of the plunger rearward by said key, and thereby I am enabled to provide an improved and superior spring-buffer for the draw-bar of great tension. The four springs, made of one-and-one-sixteenth-inch wire eight inches long and five inches in diameter, will give an approximate resistance of forty-eight thousand pounds or more. When the draw-bar is pulled

outward after the coupling has been effected, the key operates only upon the collar *h'* to compress the forward spring *D*, and consequently the resistance offered to the draw-bar will be practically one-half of that offered when all the springs are brought into action. In other words, on a rearward movement of the draw-bar all four of the springs offer their resistance, while on the outward movement of the draw-bar only the front springs offer resistance.

The draft-arms are provided with elongated slots *J*, and the link *f'* is provided with a similar slot *j*, so that the key is capable of a limited play within said slots, while it fits substantially tight within the draw-bar.

My invention may be embodied in draw-bars having coupler-heads of any known description.

In Figs. 1 and 2 I have shown the coupler-head of the ordinary link-and-pin variety, and in this construction it is unnecessary to have the plungers projecting through the ends of the draft-arms; but as the draw-bar may be taken out and replaced by a draw-bar of a different variety without in any way changing the other parts I prefer to have the plungers project through the forward ends of the draft-arms simply for the purpose of convenience, so that a draw-bar similar to that shown in Fig. 3 can be substituted for the link-and-pin draw-bar illustrated in Fig. 1 without requiring any changes in the spring device.

The draw-bar shown in Fig. 3 has a coupler-head of the knuckle variety, and it is provided with the lugs *K*, which are arranged to engage the projecting ends of the plungers, so that the concussion occasioned by a coupling of cars will be distributed and divided between the head and the rear end of the draw-bar, the lugs *K* pushing on the plungers to compress the forward springs and the rear end of the draw-bar operating on the key to compress the rear springs, thereby in an effectual manner distributing the concussion through all the springs and providing a stronger, safer, and more effectual buffer for the draw-bar. In this construction the concussion is distributed to the springs in a slightly-different manner from that in the construction shown in Fig. 1, in the respect that the coupler-head operates directly upon the plungers to cooperate with the key in compressing the forward springs, while at the same time the key being carried backward by the draw-bar in compressing the rear springs. In the construction shown in Fig. 1 the coupler-head does not operate upon the plungers except through the key, which causes the plungers to pull on the forward springs and compress the same while said key is moving backward to compress the rear springs. The upper part of each draft-arm is provided with the ear *L*, by means of which it is secured to the car-sill *l* by the bolt *l'*, and at the front it is also provided with a lug *M*, which extends upward through the angle-iron *m* and

receives a bolt *m'*, securing it to the car-sill. The draw-bar is supported at its front end on the carry-iron N.

The draft-arms are preferably cast in two parts, as hereinbefore described, the lower part extending beyond the rear end of the upper, as indicated by P, and receiving a filling-piece Q, which is arranged behind the upper part of the draft-arm and between the rearward extension of the lower part of the draft-arm and the car-frame, the usual bolts being provided to secure the parts to the frame.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination with a pair of parallel draft-arms secured to the frame of a car, of a draw-bar located between said draft-arms, springs arranged in the draft-arms, a key passing through the draft-arms between the springs therein and through the draw-bar, and means for simultaneously compressing the springs on opposite sides of the key, substantially as described.

2. The combination with a pair of parallel draft-arms secured to the frame of a car, of a pair of springs arranged within each of said arms, a plunger within each of said arms, a draw-bar supported between the arms and a key extending transversely through the two draft-arms and between the springs in each arm and through the plungers and rear end of the draw-bar, substantially as described.

3. The combination with a pair of draft-arms secured to the frame of a car, of a draw-bar supported between said draft-arms, a key passing transversely through the arms and the draw-bar, springs arranged on each side of said key and plungers operating in the draft-arms and connected with said key to compress the springs in front of the key when the draw-bar moves inward, and simultaneously compressing the springs in rear of the key, substantially as described.

4. The combination with a pair of parallel draft-arms secured to the frame of a car, of a draw-bar supported between said arms, a key passing transversely through the arms and the draw-bar, springs arranged in the arms in front of said key and springs arranged within said arms behind the key and means connected with the key to simultaneously compress the front and rear springs when the draw-bar moves inward, substantially as described.

5. The combination with a pair of draft-arms secured to the frame of a car, of a draw-bar supported between said arms, front springs and rear springs located within the arms, plungers extending through the front springs and provided with links on their rear ends and a key passing through the draft-arms, the links and the draw-bar, substantially as described.

6. The combination with a pair of draft-arms secured to the frame of a car, of a draw-bar provided with a coupling-head and supported between said arms, lugs on said coupler-head, a key passing through the draft-arms and the draw-bar, springs arranged within the arms in front of the key and plungers extending through the front ends of the draft-arms in line with the lugs on the coupler-head and provided with collars to engage the springs within said arms, substantially as and for the purpose described.

7. The combination with a pair of draft-arms secured to the frame of a car, of a draw-bar supported between said arms, a plunger arranged within the forward end of each draft-arm, a link connected with each plunger, a key passing transversely through the draft-arms, the links and the draw-bar, a spring on each plunger and a spring at the rear end of each link, substantially as described.

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Witnesses:

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