(No Model.)

2 Sheets—Sheet 1.

W. E. HOYT.

CAR COUPLING.

No. 545,202. Patented Aug. 27, 1895.

Fig. 1.

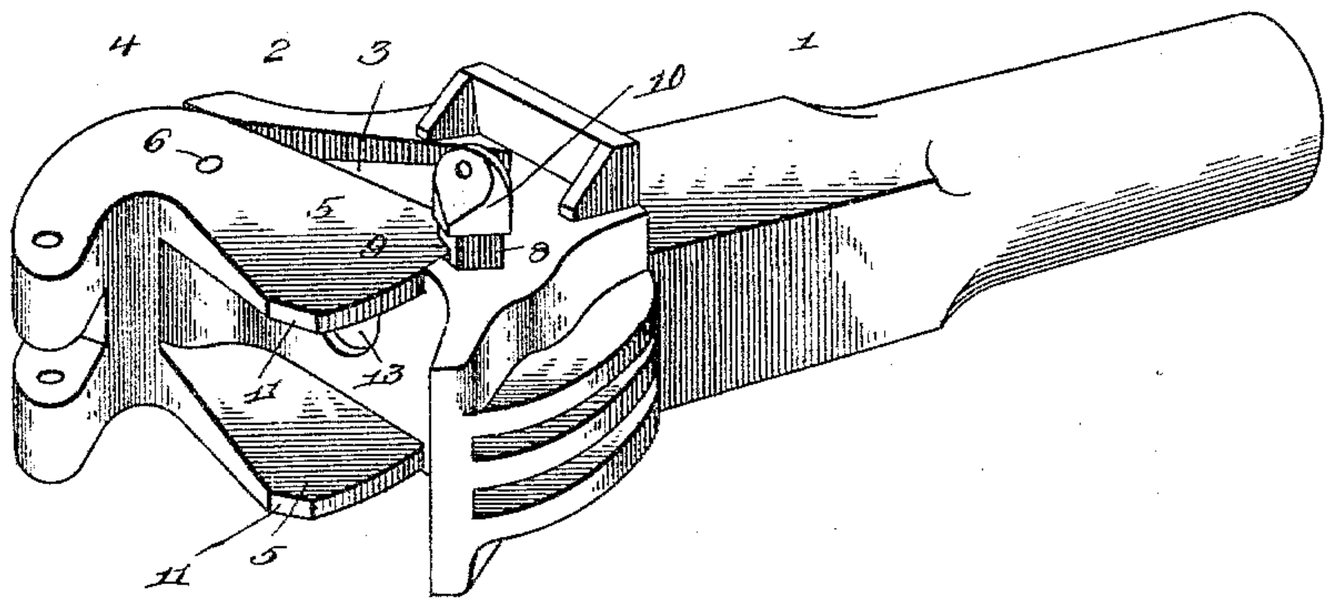


Fig. 2.

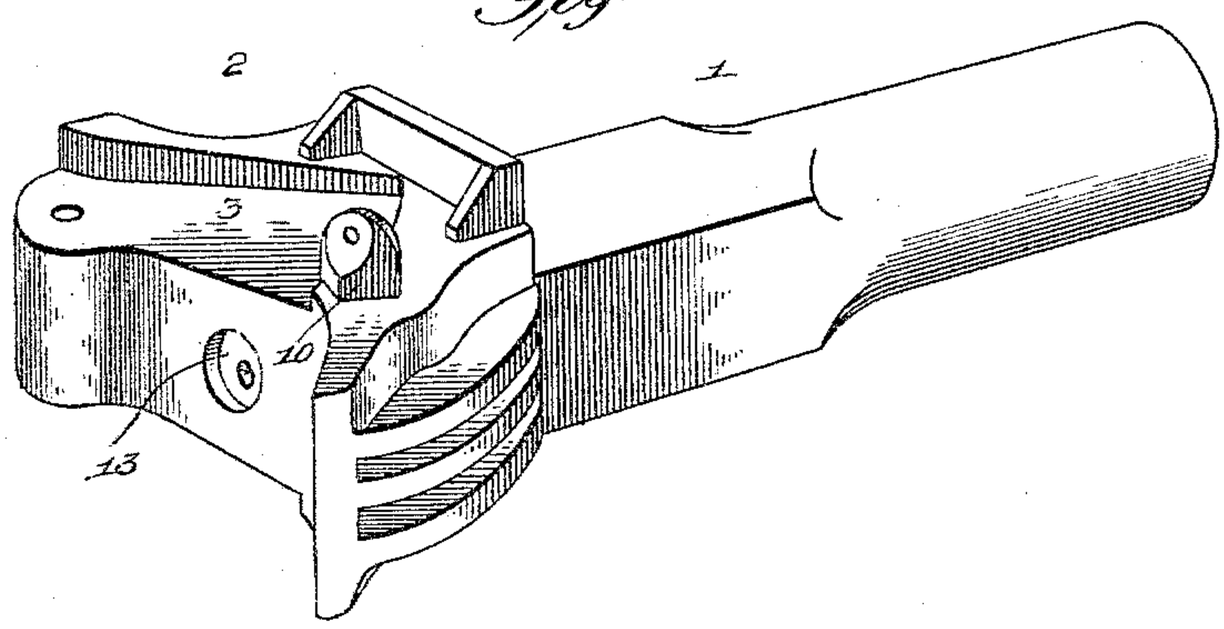
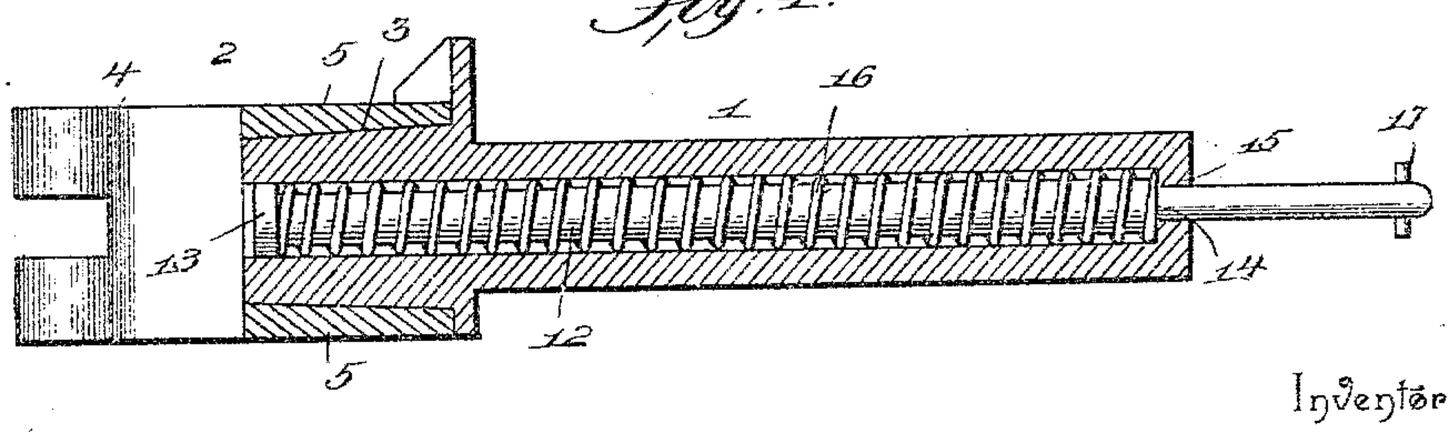


Fig. 4.



Inventor

William E. Hoyt,

Witnesses

John C. Shaw.

R. M. Smith.

By his Attorneys.

Church & Co.

(No Model.) 2 Sheets—Sheet 2.

W. E. HOYT.

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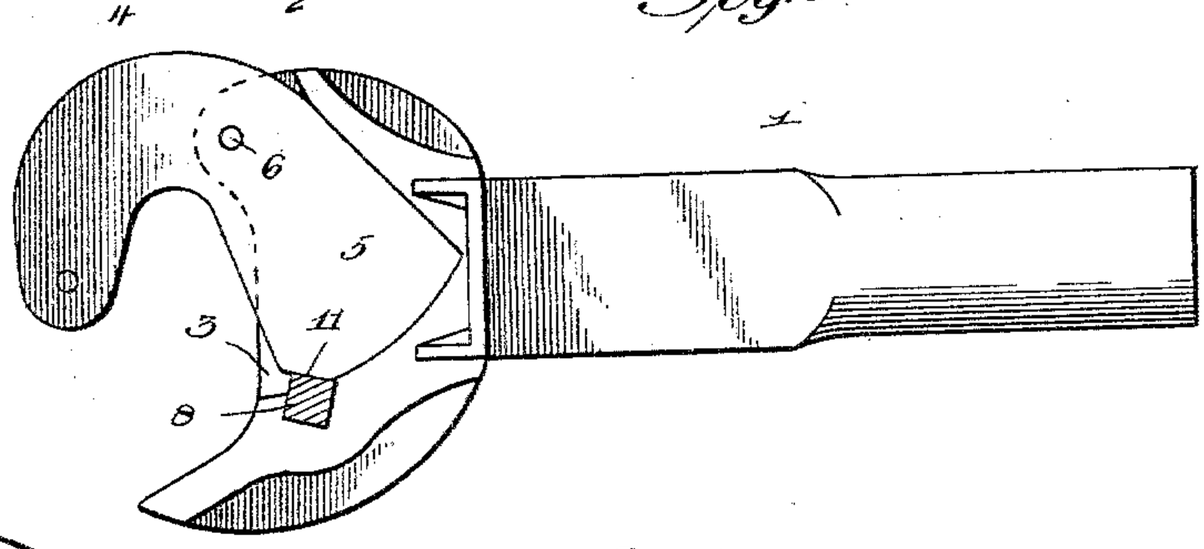
Fig. 5.



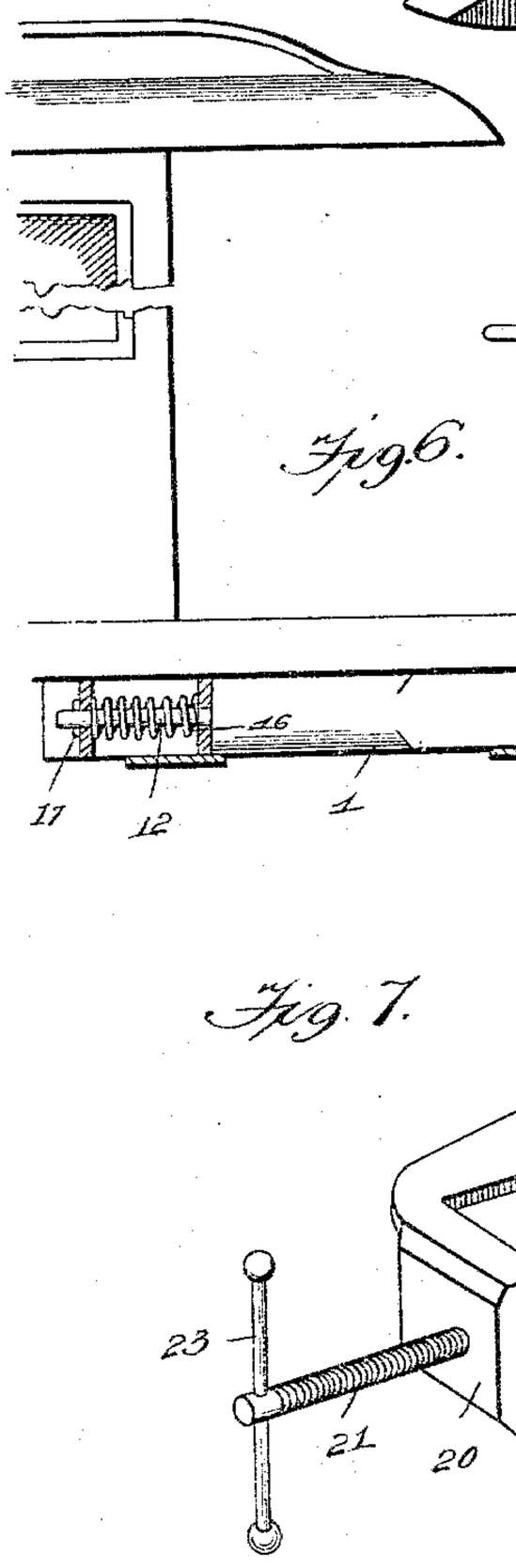


Fig. 6.

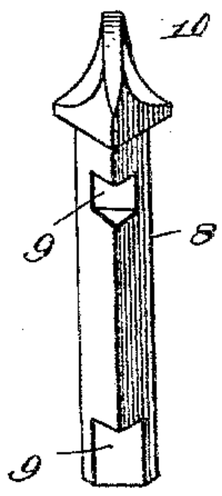


Fig. 3.

Fig. 7.

Inventor

William E. Hoyt,

Witnesses

John C. Shaw.

R. M. Smith.

By his Attorneys.

C. A. Snow & Co

UNITED STATES PATENT OFFICE.

WILLIAM E. HOYT, OF RAVENSWOOD, WEST VIRGINIA.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 545,202, dated August 27, 1895.

Application filed April 11, 1895. Serial No. 545,390. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. HOYT, a citizen of the United States, residing at Ravenswood, in the county of Jackson and State of West Virginia, have invented a new and useful Car-Coupling, of which the following is a specification.

This invention relates to an improvement in car-couplers of the Janney type, and has for its object to simplify and improve the construction of car-couplers of this description, with a view to materially strengthen the draw-head particularly and the coupling device as a whole generally.

A further object of this invention is to construct the pivoted knuckle in such manner and to provide a locking-pin of such form and located in such position that said knuckle will be automatically locked in a way that will equalize the pull and strain applied thereto.

A further object of the invention is to provide novel means whereby, in event of the draw-bar pin becoming broken or displaced, the draw-bar will be forcibly engaged with the opposing draw-head in such manner as to prevent the loose draw-bar from falling upon the road-bed, and, as very frequently happens, causing derailment of one or more cars.

In order to accomplish the objects above mentioned, the invention consists in certain novel features and details of construction and arrangement, as hereinafter fully described, illustrated in the drawings, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view of a car-coupler constructed in accordance with the present invention, showing the knuckle thrown out into position for coupling. Fig. 2 is a similar view of the draw-head with the knuckle removed to better illustrate the form of the segmental depressions in which the upper and lower arms of the bifurcated knuckle travel. Fig. 3 is a detail perspective view of the gravity locking-pin. Fig. 4 is a vertical longitudinal section through the draw-bar, draw-head, and knuckle. Fig. 5 is a plan view of the draw-head and knuckle in closed position with the gravity locking-pin in section. Fig. 6 is a side elevation of one end of a car provided with my improved coupler and illustrating the manner in which the spring follower or plunger operates when the draw-bar pin becomes broken or dislodged, the injured or detached draw-bar being shown in section for the purpose. Fig. 7 is a perspective view of a draw-bar with the jack for compressing the spring-actuated plunger shown applied in operative position thereon.

Similar numerals of reference designate corresponding parts in the several figures of the drawings.

Referring to the accompanying drawings, the reference-numeral 1 indicates a draw-bar which is provided with a longitudinal perforation extending entirely through the same from end to end and also through the draw-head represented at 2. The draw-bar and its head are similar in general construction and outline to the ordinary Janney coupler, with the very important exception that the draw-head contemplated in this invention is not cut out centrally or formed with the usual central recess or cavity for the reception of the locking tongue or bar on the knuckle. To provide a draw-head with such central recess or cavity means to materially reduce the strength of the draw-head and to weaken the construction thereof to such an extent as to render the same liable to be broken when an unusual strain or blow is applied thereto. In order to remedy this serious defect in the construction of draw-heads, I leave the draw-head solid at its central portion, with the exception only of the longitudinal perforation above referred to, extending through the draw-bar and draw-head from end to end.

Instead of providing the draw-head with the usual cavity or recess in its center I form said draw-head upon its upper and lower faces with segmental depressions or recesses 3, the bases of which are inclined, as shown, said recesses or depressions being shallowest at the center and deepest at the side edge of the draw-head.

The pivoted knuckle represented at 4 is correspondingly formed with upper and lower segmental arms, which correspond in general outline to the segmental depressions or recesses 3 in which they travel. These segmental arms, indicated at 5, are tapered in such manner as to adapt them to fit snugly in said depressions 3, being thickest at or near the

center upon which they swing, and tapering from thence to their peripheral edges or the edges which are described in the arc of a circle of which the pivot of the knuckle is a center, said arms being thinnest at such peripheral edges. The knuckle pivot-pin 6 engages vertically-aligned perforations in the draw-head and knuckle in a manner similar to the Janney coupler, and said knuckle is provided with the usual slotted nose having vertically-aligned perforations for the reception of the coupling-pin whenever the knuckle or other parts of the coupler become inoperative for any reason; also enabling the draw-head to be coupled to another car having simply the usual link draw-head.

8 designates a gravity coupling-pin which is substantially square in cross-section and provided near top and bottom with notches 9 through the corner thereof, adjacent to the swinging edges of the upper and lower segmental arms of the bifurcated knuckle. This coupling-pin is provided with the usual enlarged and perforated head 10 for limiting the downward movement thereof and providing for the attachment of the usual retaining-chain. The coupling-pin 8 extends entirely through a perforation in the draw-head, said perforation corresponding in size and shape to said pin, the latter being adapted to work freely therein and to act by gravity.

In order to permit the knuckle to be vibrated outwardly preparatory to the operation of coupling cars together, the pin is lifted sufficiently to bring the notches 9 thereof into the same horizontal plane with the peripheral or swinging edges of the segmental arms of the knuckle. The bifurcated knuckle may now be vibrated outwardly, the swinging edges of the arms 5 traveling through the notches of the pin. When the bifurcated knuckle is forced inward by the action of the nose of an opposing knuckle, the inclined corners 11 of the segmental arms pass behind or within the vertical plane of the adjacent flat side of the coupling-pin, whereupon said coupling-pin drops by gravity as far as the head thereof will allow, the notches passing beneath the horizontal plane of the swinging edges of the segmental arms, the inclined corners of which afterward bear against the adjacent flat side of the pin, thereby effectually locking the bifurcated knuckle both above and below the draw-head and perfectly equalizing the pulling strain on both the draw-head and the knuckle.

It is a well-known fact that a great many derailments are caused by the breakage of the draw-bar pin and the consequent escape of said draw-bar from its socket beneath the car. In order to remedy this serious defect of construction, I extend the usual draw-bar pin indicated at 12 forward or toward the draw-head sufficiently to bring the head 13 about flush with the front or operative face of the draw-head. The usual head or shoulder 14 of said pin is retained and is adapted to operate, in connection with an internally-arranged shoulder 15, in the longitudinal perforation of the draw-bar for the purpose of limiting the backward longitudinal movement of said pin. A spiral spring 16 is disposed around said draw-bar pin and is tightly compressed between the shoulder 13 at the advance end of the pin and the internally-arranged shoulder 15 within the draw-bar perforation. The pin 12 is normally held in place by means of a small pin passing through a perforation in the draw-bar pin at the rear end thereof, which small pin, indicated at 17, is usually supported behind a yielding-plate in a manner well understood. When for any reason the pin 17 becomes broken, or should the pin or plunger within the draw-bar break, the head 13 of said pin is forced outward by the spring 16 and caused to firmly bind against the nose of the knuckle on the draw-head of the adjacent car. With the knuckles of the two draw-heads locked together and the head 13 of the plunger bearing firmly against the nose of the knuckle, as just described, it will be apparent that as the cars separate the loose draw-bar will be withdrawn from its car and be upheld and supported by the draw-bar of the adjacent car, thereby preventing said detached draw-bar from falling into engagement with the road-bed and causing derailment of the cars. The particular form of bifurcated knuckle and the absence of the usual locking tongue or bar of the Janney coupler, working within the centrally-arranged recess or cavity, leaves the center of the draw-head free from all obstructions and enables the spring-actuated plunger just described to act with perfect freedom and with absolute certainty.

The coupling device as a whole and as above described, possesses great strength and durability, retains itself in engagement with an adjacent draw-head when for any reason it becomes detached from its car, and by reason of the particular arrangement of locking mechanism perfectly equalizes the strain on the knuckle and draw-head.

In Fig. 7 I have shown the jack, by means of which the spring 16 may be compressed and the spring-actuated plunger thrust back for permitting the small retaining-pin 17 to be inserted through the perforation in the rear end of said plunger. This jack consists of a metallic open frame somewhat similar in plan to my improved knuckle, being provided with segmental arms 18 adapted to rest within the segmental depressions in the draw-head. Said arms are provided with perforations 19 in alignment with the draw-head which receives the pivotal pin, said jack being attached to the draw-head by means of said pin. The segmental arms are locked in the same manner by the coupling-pin 8 and in advance of the perforations 19. Said arms are extended forwardly and inwardly across the center of the draw-head, where they are connected by a web 20, provided with a screw-

threaded perforation in line with the longitudinal perforation in the draw-head and draw-bar for the reception of a jack-screw 21, pointed at its inner end 22 to engage the head of the spring-actuated plunger and provided at its opposite or outer end with an operating-handle 23, as shown. After the spring has been compressed and the plunger 12 forced inward and engaged by the retaining-pin 17, the screw-jack is removed from the draw-head and the regular knuckle applied in a manner that will be readily understood.

Various changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. In a car coupler, a draw-head formed with segmental depressions or recesses in its upper and lower faces and provided with a vertical perforation for the passage of a locking or coupling pin, in combination with a bifurcated knuckle pivoted to the draw-head upon one side of the longitudinal center thereof and having an oppositely disposed pair of segmental arms located above and beneath the draw-head and operating in said depressions or recesses, and a vertically movable coupling pin notched to permit the outward and inward movement of said segmental arms and also adapted to engage said arms above and beneath the draw-head and lock said knuckle in closed position, said pin being disposed upon the opposite side of the draw-head to that upon which the knuckle is pivoted, as and for the purpose specified.

2. In a car coupler, the combination with the draw-bar and draw-head provided with a longitudinal perforation extending through the same, of a plunger rod located within said perforation, and provided with a shoulder operating in connection with an internally arranged shoulder within said longitudinal perforation for limiting the inward movement of the plunger, a head at the forward end of said plunger, a spiral spring disposed around said plunger and interposed between the head at the front end thereof and the internal shoulder within the draw-bar, and a retaining pin passing through the rear end of said plunger and connecting with the car body for holding the plunger drawn back, all arranged and adapted to operate in the manner specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WILLIAM E. HOYT.

Witnesses:
R. B. WILLIAMSON,
V. M. JOHNSTON.