

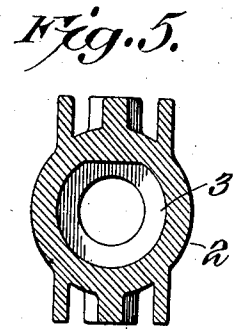
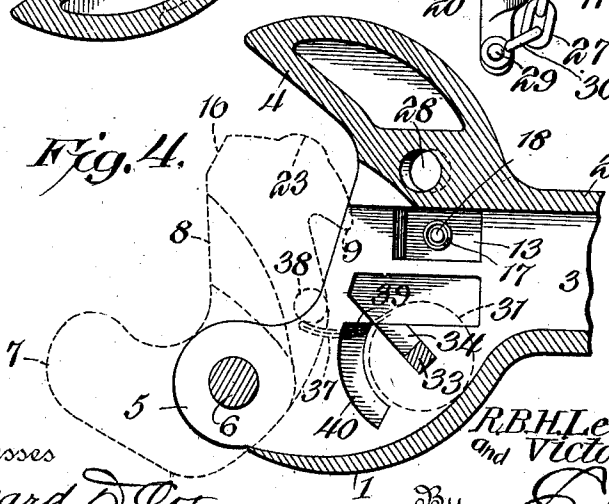
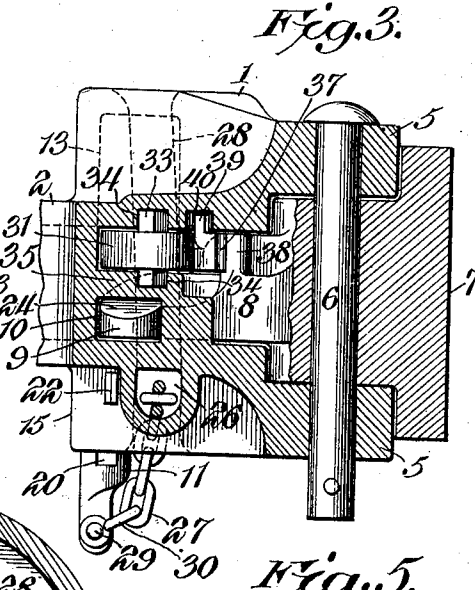
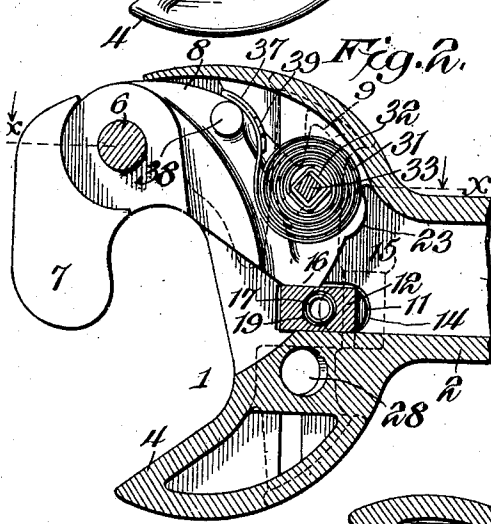
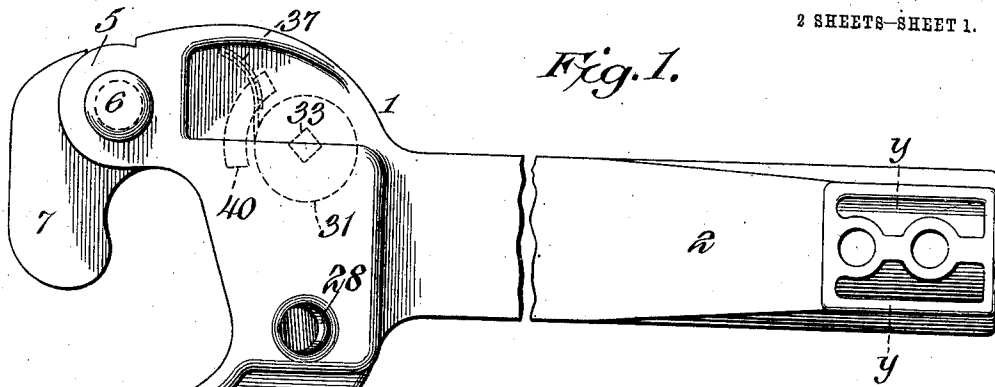
R. B. H. LEIGHTON & V. W. ZILEN.
CAR COUPLING.

APPLICATION FILED FEB. 19, 1909.

976,583.

Patented Nov. 22, 1910.

2 SHEETS—SHEET 1.



Witnesses
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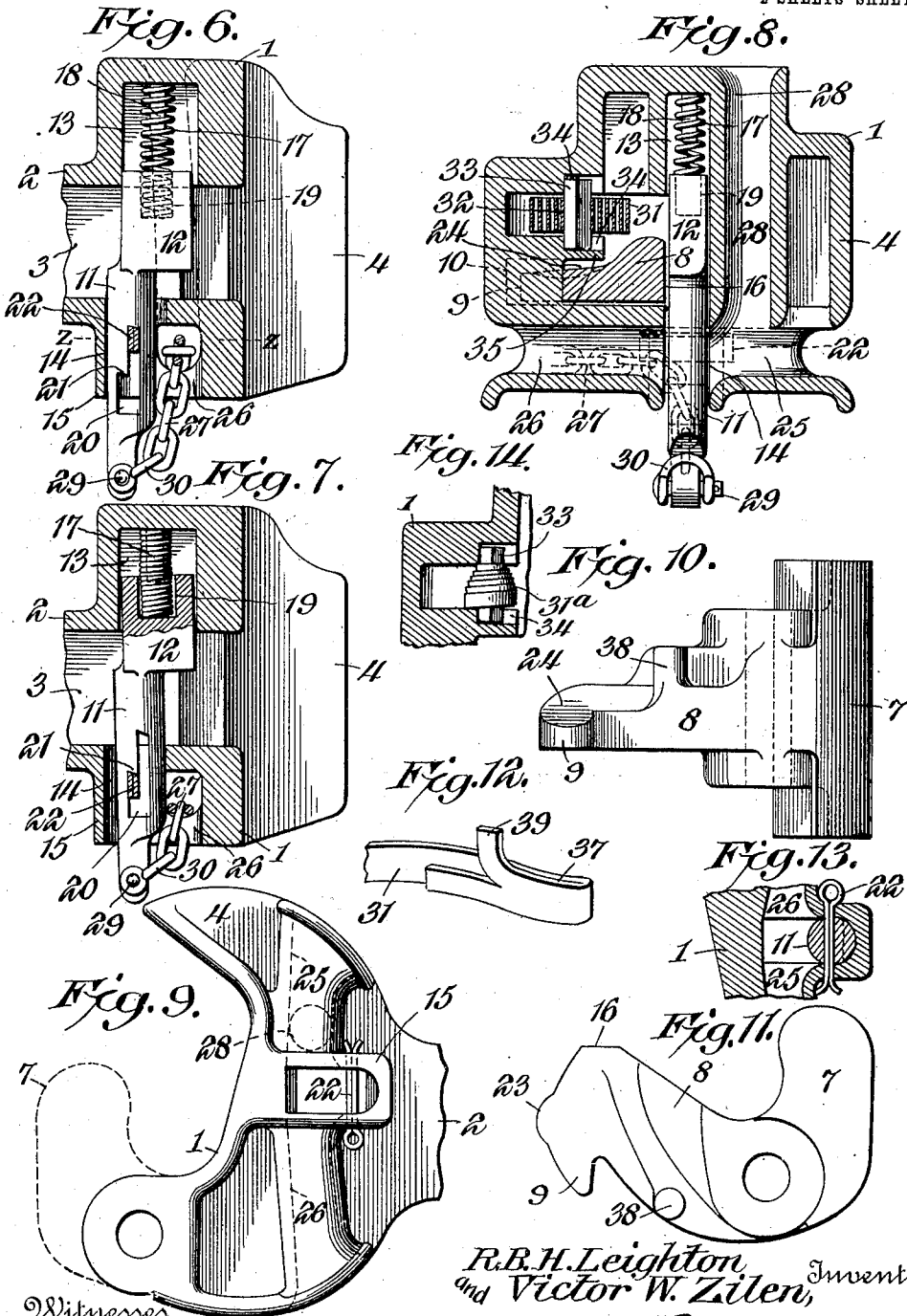
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UNITED STATES PATENT OFFICE.

RICHARD B. H. LEIGHTON AND VICTOR W. ZILEN, OF CHATTANOOGA, TENNESSEE.

CAR-COUPLING.

976,583.

Specification of Letters Patent.

Patented Nov. 22, 1910.

Application filed February 19, 1909. Serial No. 478,961.

To all whom it may concern:

Be it known that we, RICHARD B. H. LEIGHTON, a citizen of the United States, and VICTOR W. ZILEN, a subject of the Czar of Russia, residing at Chattanooga, in the county of Hamilton and State of Tennessee, have invented a new and useful Car-Coupling, of which the following is a specification.

The invention relates to improvements in car couplings.

The object of the present invention is to improve the construction of car couplings, and to provide a simple and comparatively inexpensive car coupling, adapted to meet the present requirements of the Master Car Builders' Association, and capable of automatic coupling and equipped with a lock set for enabling it to be arranged for automatic uncoupling.

Another object of the invention is to provide efficient means for automatically opening the knuckle and to enable the knuckle locking mechanism to be readily connected with the operating device at either the top or right hand side of a freight car, or the left hand side of a passenger coach.

With these and other objects in view, the invention consists in the construction and novel combination of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended; it being understood that various changes in the form, proportion, size and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings:—Figure 1 is a plan view of a car coupling, constructed in accordance with this invention. Fig. 2 is a horizontal sectional view of the same. Fig. 3 is a vertical sectional view on the line $x-x$ of Fig. 2. Fig. 4 is a horizontal sectional view of the draw head, illustrating the construction of the top wall thereof. Fig. 5 is a transverse sectional view of the draw head on the line $y-y$ of Fig. 1. Fig. 6 is a vertical sectional view, the locking pin being in its lower or engaging position for locking the knuckle. Fig. 7 is a similar view, the locking pin being supported in an elevated position by the lock set. Fig. 8 is a transverse sectional view, illustrating the arrangement of the several passages for the chain of the

operating mechanism. Fig. 9 is a reverse plan view of the draw head. Figs. 10 and 11 are detail views of the knuckle. Fig. 12 is a detail view of the knuckle-engaging end of the coiled spring. Fig. 13 is a detail sectional view on the line $z-z$ of Fig. 6, illustrating the construction and arrangement of the lock set. Fig. 14 is a detail sectional view, showing the conically coiled spring for actuating the knuckle in the opening movement thereof.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates a draw head provided with a shank or draw head 2, having a relatively large longitudinal opening 3 and adapted to afford a clear space for the attachment of a tail pin or bolt when required. The draw head is provided at one side with the usual guard arm 4, and it has spaced ears 5 at the opposite side for the reception of a knuckle pin 6 on which a knuckle 7 is pivotally mounted.

The arm 8 of the knuckle is provided at the inner side with a laterally projecting tapered portion or bill 9, arranged to enter a recess 10 at the adjacent wall of the draw head, when the knuckle is closed, whereby the knuckle is interlocked with the draw head and is effectually prevented from pulling out of the same in event of breakage of the pin. The knuckle is locked in its closed position by a vertically movable locking pin 11, consisting of a flat vertically disposed rectangular head 12, and a round lower portion or shank. The rectangular portion or head operates in a recess or cavity 13 of the top of the draw head, and the shank extends through an opening 14 of the bottom of the draw head, which is provided at the said opening with depending flanges forming a lower pocket 15. The rectangular portion of the head of the locking pin extends longitudinally of the draw head and is fitted against one of the side walls thereof, as clearly illustrated in Fig. 2 of the drawings. The said head 12 presents a flat side face to the arm of the knuckle, which is provided at the side edge with a shoulder 16, formed by cutting off the corner of the arm and adapted to be engaged by the head of the locking pin, whereby the knuckle is securely held in its closed position.

The knuckle is released by lifting the locking pin, which is maintained in engagement

with the knuckle by gravity and also by an upper coiled spring 17, adapted to assist gravity in causing the locking pin to drop into engagement with the knuckle, and capable of also cushioning the upward movement of the locking pin to prevent the same from being injured should it be thrown suddenly upward with considerable force. The draw head is provided at the top of the recess or cavity 13 with a depending pin 18, which extends into the upper portion of the coiled spring 17, and the lower end of the coiled spring is received in a socket 19, formed in the head of the locking pin.

The lower round portion or shank of the locking pin is provided with a vertical slot 20, extending longitudinally of the locking pin and enlarged at the lower portion to form a shoulder 21 and receiving a stationary lock set 22. The lock set 22 provides a fixed horizontal support and is adapted to engage with the shoulder 21 to support the locking pin in an elevated position, as illustrated in Fig. 7 of the drawings. The upper portion of the slot is of a width sufficient to receive the lock set to permit the locking pin to drop into engagement with the arm of the knuckle, and when the latter is lifted by the operating mechanism herein-after referred to, it is moved upward and its lower portion is drawn forward to carry the intermediate shoulder 21 onto the seat, formed by the upper edge of the lock set. The shoulder 21 is inclined and the upper edge of the lock set is beveled downwardly and forwardly to correspond with the inclination of the shoulder, so as to retain the locking pin in engagement with the lock set. The inclined seat afforded by the lock set, however, does not interfere with the backward movement of the lower portion of the locking pin necessary to release the latter, and the arm of the knuckle is equipped with a projecting rounded lug or portion 23, which in the closing movement of the knuckle is carried into engagement with the rounded lower portion of the locking pin. When the lug 23 strikes the locking pin it moves the latter rearwardly and disengages the intermediate shoulder 21 from the lock set and causes the locking pin to drop. The projecting head of the locking pin, when released, drops upon the knuckle, which passes inwardly from under the head 12 of the locking pin, and the latter is then positively moved downward into engagement with the knuckle by the spiral spring 13. The downward movement of the locking pin is limited by the lock set, which supports the head 12 of the locking pin a short distance above the bottom of the draw head, and the upper face of the end portion of the arm of the knuckle presents a curved, inclined plane 24, as clearly illustrated in Fig. 10 of the drawings, whereby the arm of the

knuckle in its closing movement is adapted to engage the lower edge of the head of the locking pin and lift the same, so as to pass beneath and beyond the head, thereby effecting the operation of automatic coupling. The lock set preferably consists of a split key, piercing the opposite walls of the pocket 15 and provided at one end with a head and having the terminals of the metal spread at the other end of the key, as clearly illustrated in Fig. 9 of the drawings, whereby the key is securely retained in place.

The draw head is provided at its bottom portion below the upper face of the bottom with horizontally disposed transversely arranged passages 25 and 26, extending laterally from opposite sides of the pocket 15 and adapted to permit a chain 27 to extend upward from the lower end of the locking pin through either side of the draw head. The draw head is also equipped with a vertical chain-receiving passage 28, located at one side of and in parallelism with the passage for the locking pin. These passages are flared at their terminals and present rounded surfaces to the chain for enabling the latter to be readily operated. The lower end of the locking pin is provided with an eye for the reception of a pin 29, or other suitable fastening device for securing a U-shaped link 30 to the locking pin. The chain is attached at one end to the U-shaped link, and is designed to be connected with suitable operating mechanism, which may be located at either side or the top of a car. This will enable the chain to be operated by the usual mechanism, located at the right hand side or top of a freight car, or the left hand side of a passenger coach. The chain extends upward in advance of the lower portion of the locking pin, as illustrated in Figs. 6 and 7 of the drawings, and when it is pulled upon, it lifts the locking pin and at the same time moves the lower portion forwardly and seats the intermediate shoulder upon the lock set. The lower end of the vertical chain-receiving passage 28 communicates with the horizontal passage 25 at the right hand side of the coupler.

The knuckle, when released, is free to move outward and automatically opened by a spring 31, preferably coiled horizontally, but a conically coiled spring 31^a may be employed, as illustrated in Fig. 14 of the drawings, if desired. The inner end portion of the spring is bent to form a rectangular loop 32, which receives a squared pin 33, but the inner end of the spring 31 may be attached in any other suitable manner to a polygonal pin. The pin 33 is arranged in upper and lower grooves 34, which are formed in the upper portion of the draw head and in the projecting flange 35, extending inwardly from an intermediate portion of the draw head. The outer end of the

spring is doubled or bent back upon itself to provide a thickened portion 37, which bears against an upwardly extending vertical stud 38 of the arm of the knuckle, as clearly shown in Fig. 2 of the drawings. The end portion, which is bent back to form the thickened portion, is split along the median line and the upper half is bent upwardly to provide a projecting lug 39, which operates in an arcuate slot 40 in the top wall of the draw head, whereby the outward movement of the arm of the spring is limited, and the free end of the spring is maintained in proper position for engagement with the projecting stud of the arm of the draw head. The grooves 34 are arranged substantially radially with relation to the arcuate groove 40, so that the resiliency of the spring operates to retain the pin 33 in the said grooves 34.

Having thus fully described our invention, what we claim as new and desire to secure by Letters Patent, is:—

1. A car coupling including a draw head, a knuckle pivoted therein and provided with a stud extending upward from its arm, a coiled spring mounted within the draw head in rear of the body portion of the knuckle and having one end free and engaging the stud, and means for limiting the movement of the free end of the spring, said means also serving to retain the spring within the draw head.

2. A car coupling including a draw head, a pivoted knuckle, a coiled spring provided at its inner end with a loop and having its outer end free and engaging the arm of the said knuckle, and a pin mounted within the draw head and passing through the loop and engaging the same.

3. A car coupling including a draw head provided with grooves, a pivoted knuckle, a coiled spring provided at its inner end with a loop and having its outer end engaging the knuckle, a pin removably arranged within the said grooves and passing through and engaging the loop of the said spring, and means for limiting the movement of the free end of the spring, whereby the pin is retained in the said grooves.

4. A car coupling including a draw head having an arcuate groove and provided with radially arranged grooves, a pivoted knuckle, a spring, and a pin connected with the inner end of the spring and removably arranged in the radially arranged grooves, said spring being provided at its free end with means operating in the arcuate slot to limit the movement of the free end of the spring and to retain the pin in the radially arranged grooves.

5. A car coupling including a draw head provided with an arcuate groove, a pivoted knuckle, and a spring mounted within the draw head and connected at its inner end with the same and having its outer end bent on itself to provide a thickened portion for engaging the arm of the knuckle, the outer terminal of the spring being split and bent to form a projecting lug arranged to operate in the arcuate slot.

In testimony, that we claim the foregoing as our own, we have hereto affixed our signatures in the presence of two witnesses.

R. B. H. LEIGHTON.
VICTOR W. ZILEN.

Witnesses:

DAN H. ANDERSON,
A. R. AUERSWALD.