(No Model.)

2 Sheets—Sheet 1.

W. T. VAN DORN.

CAR COUPLING.

No. 378,813. Patented Feb. 28, 1888.

Fig. 1.

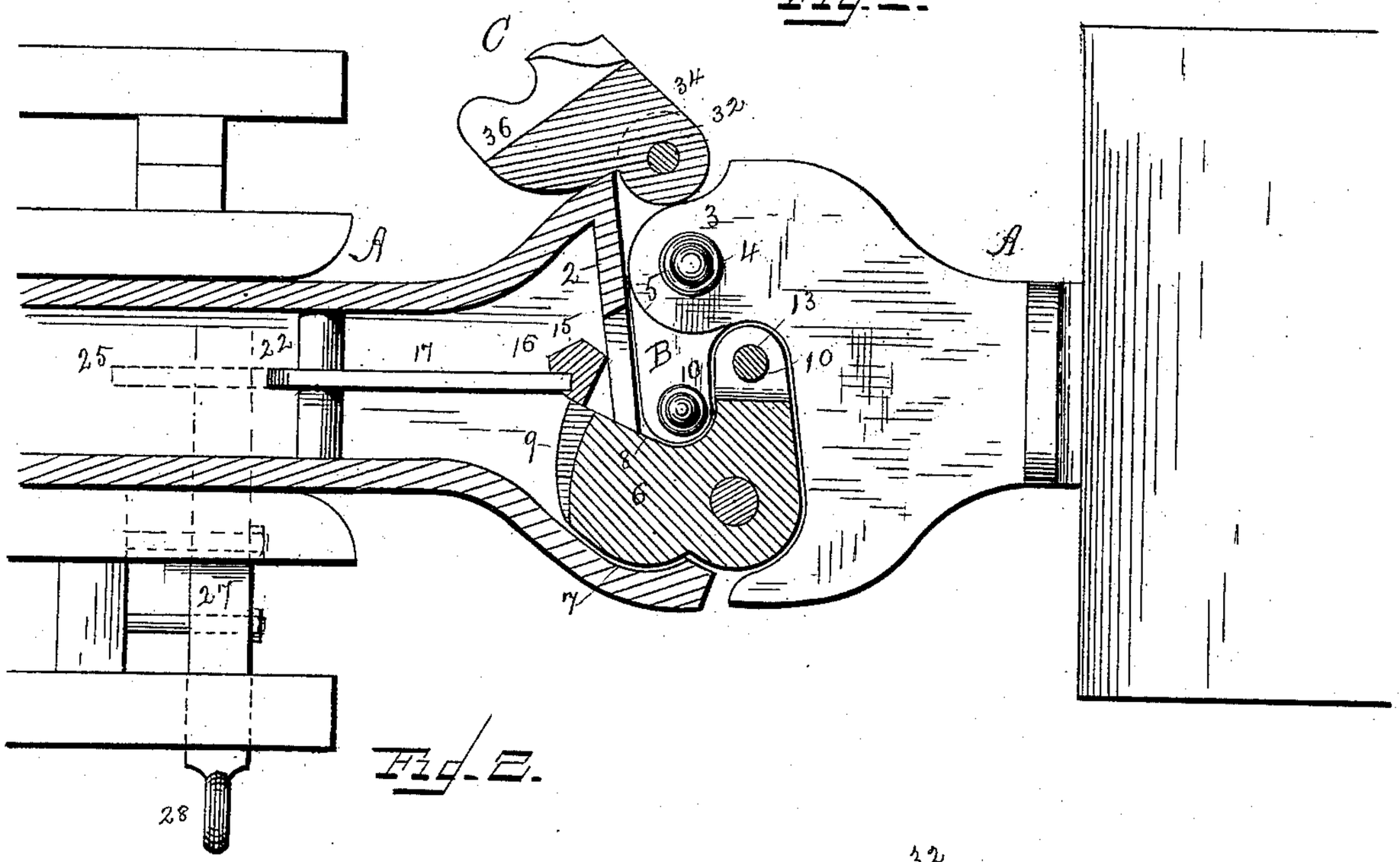


Fig. 2.

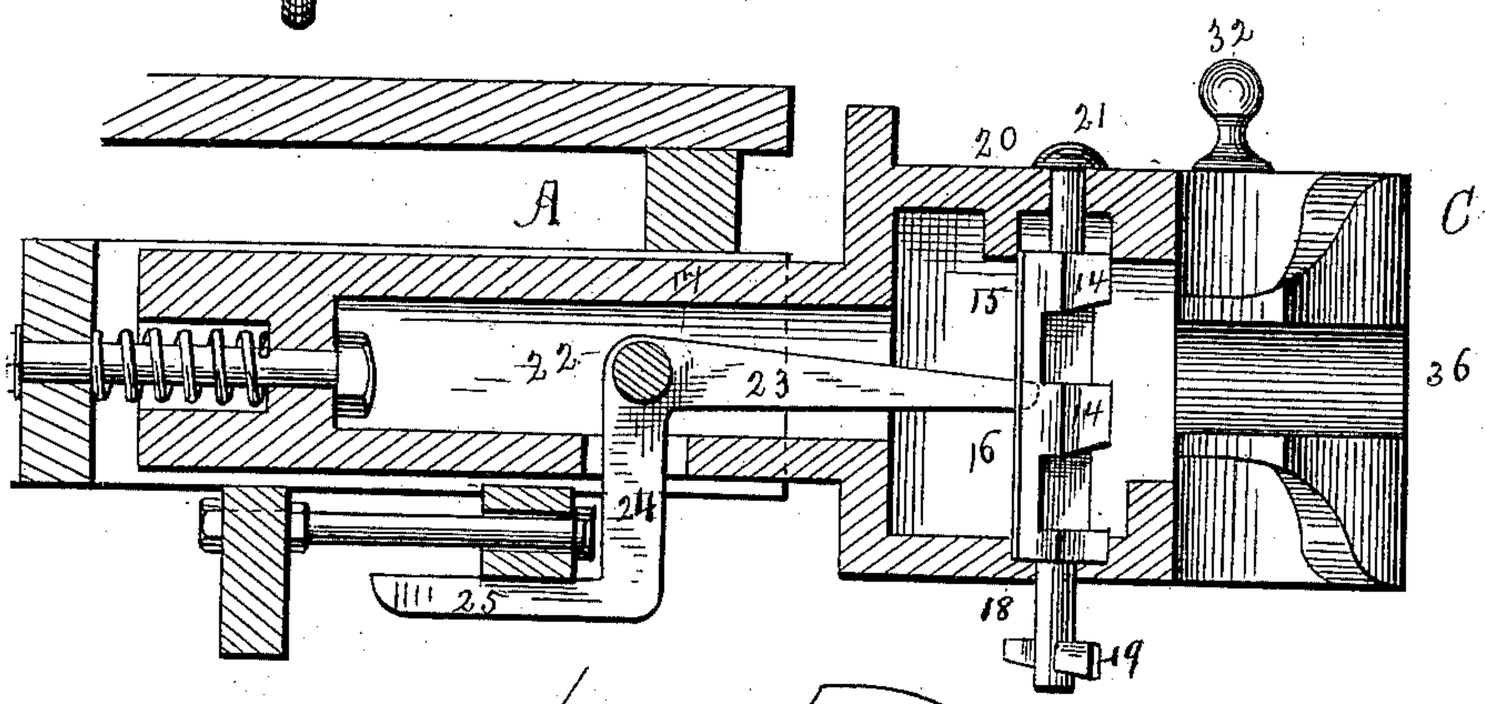
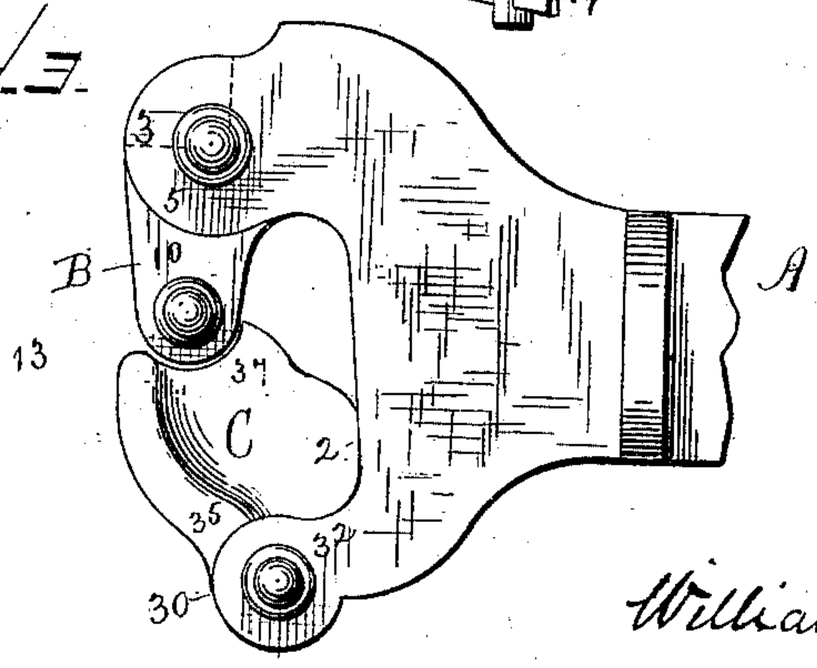


Fig. 3.



Witnesses
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(No Model.) 2 Sheets—Sheet 2.

W. T. VAN DORN.

CAR COUPLING.

No. 378,813. Patented Feb. 28, 1888.

Fig. 9.

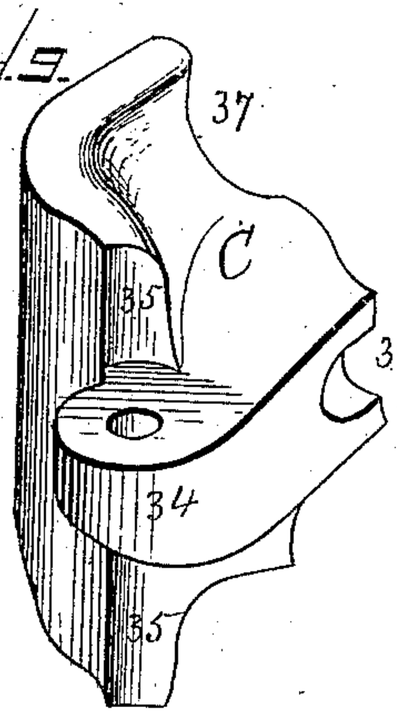


Fig. 4.

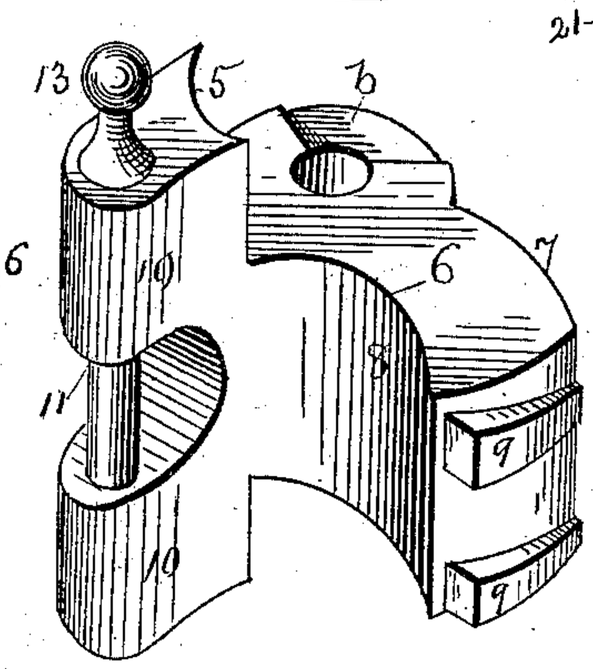


Fig. 5.

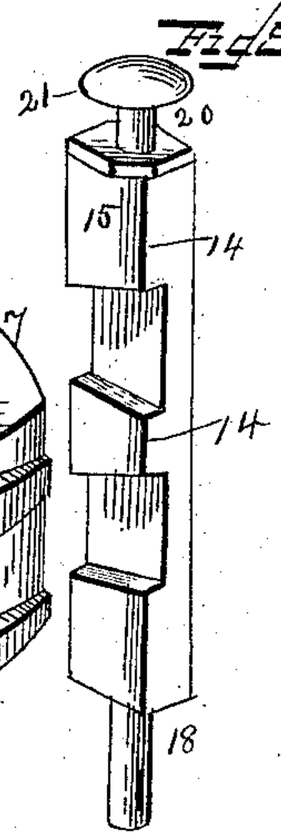


Fig. 6.

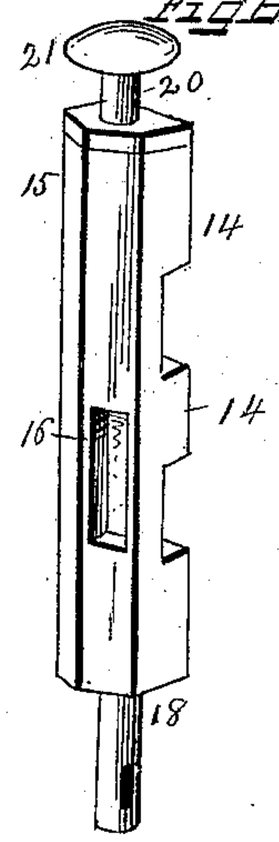


Fig. 7.

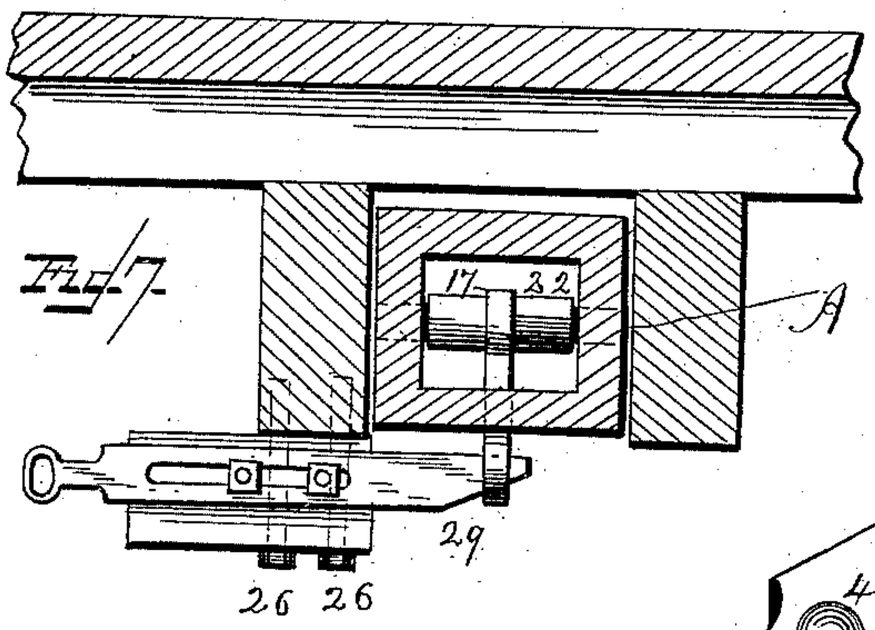


Fig. 8.

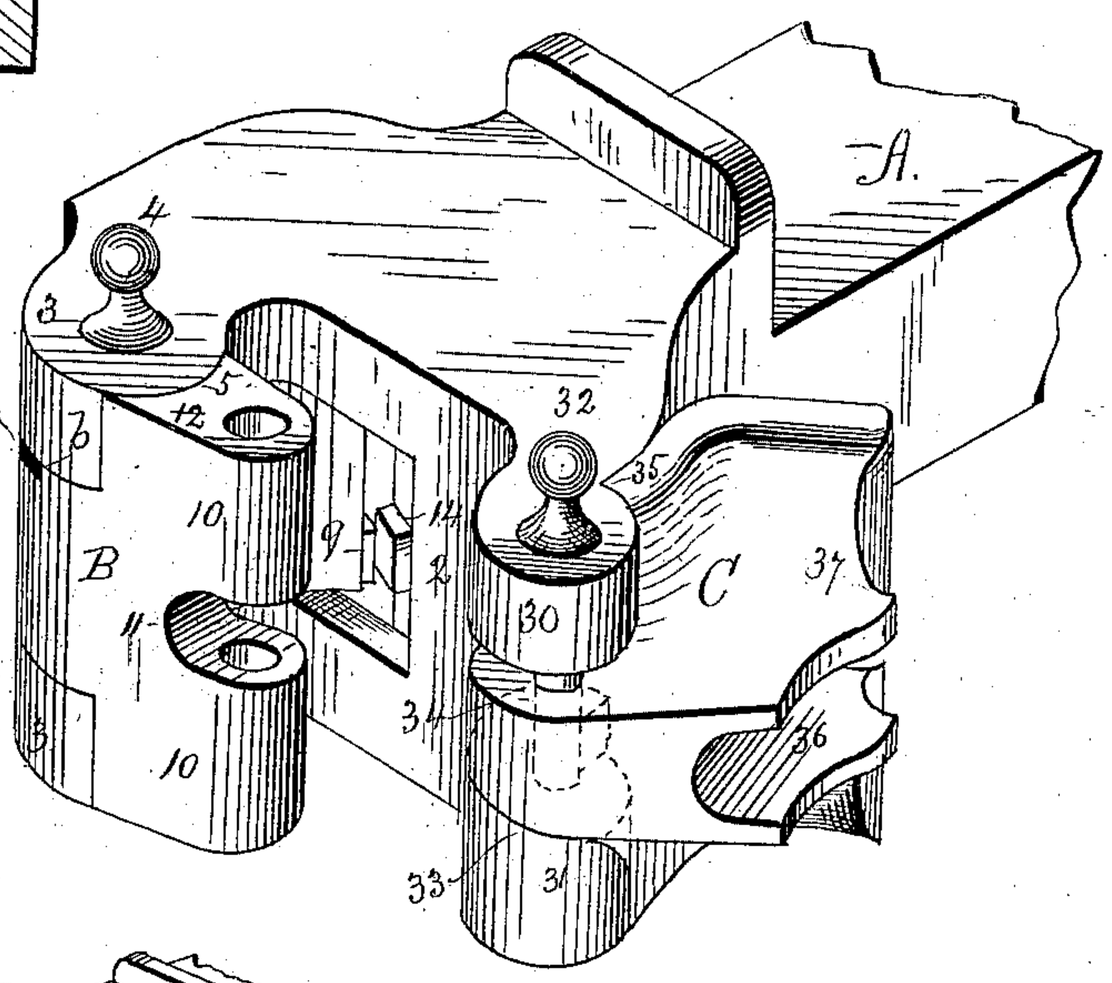


Fig. 10.

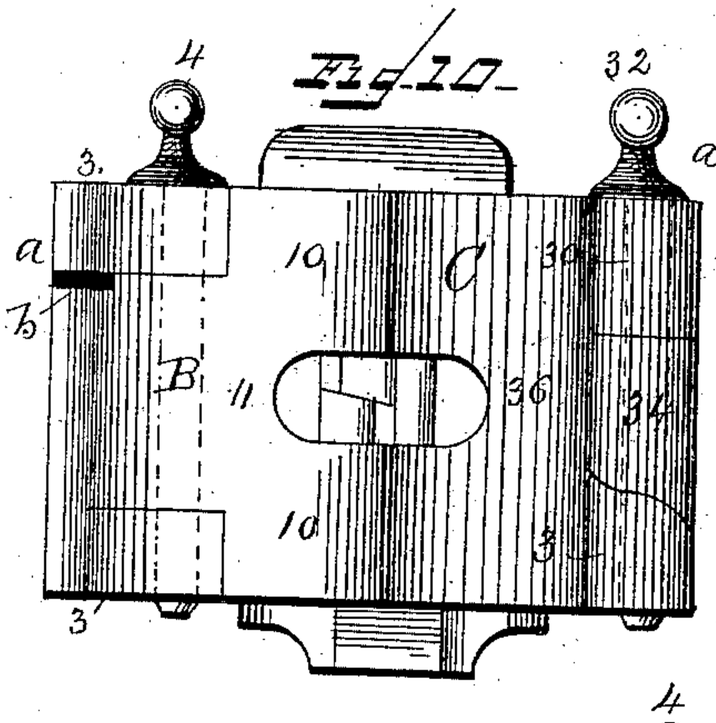
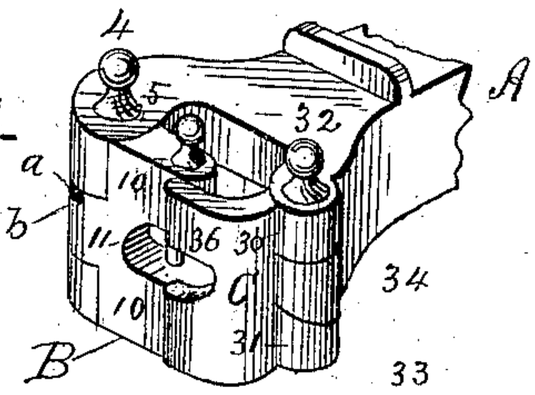


Fig. 11.



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WILLIAM T. VAN DORN, OF LINCOLN, NEBRASKA.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 378,813, dated February 28, 1888.

Application filed August 31, 1887. Serial No. 248,408. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM T. VAN DORN, a citizen of the United States of America, residing at Lincoln, in the county of Lancaster, in the State of Nebraska, have invented certain new and useful Improvements in Car-Couplings, of which the following is a specification.

My invention has relation to improvements in car-couplings of that class having interlocking coupling-jaws and a pivoted abutment-block carried by the draw-head to combine with an interlocking jaw on the same draw-head to form a draw-head for a link coupling. The object is to improve and simplify existing similar devices; and with this object in view my invention consists in the novel construction of parts and their combination, as will be hereinafter fully described, and specifically as the same are pointed out in the claims made hereto.

I have fully illustrated my improvements in the accompanying drawings, forming a part hereof, and wherein Figure 1 is a plan view of two of my improved couplings locked together, the one on the left-hand side being shown in horizontal section, showing the locking-pin in position and the lever which lifts the pin, and also showing the abutment-block swung back. Fig. 2 is a longitudinal vertical section. Fig. 3 is a plan view of the draw-head with the coupling-jaw and abutment-block in position for coupling with the ordinary link and pin. Fig. 4 is a perspective of the horizontally-swinging coupling-jaw detached from the draw-head. Fig. 5 is a perspective of the locking-pin. Fig. 6 is a similar view of the same in reverse of Fig. 5. Fig. 7 is a cross-section through the draw-bar, and showing the arrangement of the lifting-rod. Fig. 8 is a perspective of the draw-head with the coupling-jaw locked in position and the pivoted abutment-block swung back against the side of the draw-head. Fig. 9 is a perspective of the pivoted abutment-block detached from the draw-head. Fig. 10 is an end view of the draw-head, and Fig. 11 is a perspective view of the draw-head with the coupling-jaw and the abutment-block closed to take a link-coupling.

The same parts appearing in the different figures of the drawings are designated by the same notations; and reference being thereto had, A designates the draw-bar, which is cast hollow to take the lifting-pin and the rear part of the coupling-jaw, as best seen in Fig. 1 of the drawings. A wall, 2, closes that part of the end of the draw-head against which the rear face of the abutment-block impacts when swung inward, and serves as an abutment for that block, as seen in Fig. 3 of the drawings. The draw-head is formed with bearing-lugs 3, provided with holes to take a vertical bearing-pin, 4, on which is pivoted to swing in a horizontal plane the coupling-jaw B. The lower face of the upper bearing-lug, 3, or the upper face of the lower bearing-lug, or the inner faces of each, are provided at the rear of the hole through which passes the bearing-pin 4 with a raised V-shaped stop or lug, *a*.

The coupling-jaw B is made at its outer end the full vertical depth of the draw-head, the extension forming a curved knuckle-joint with the bearing-lugs 3, as seen at 5. The upper face of the coupling-jaw B, or both faces of the same, are formed on the rear part with the portion of the surface cut away, as at *b*, such depressed or cut-away portion of the face of the coupling-jaw bearing being as much larger than the V-shaped stop on the bearing-lug 3 as will permit the coupling-jaw B to swing out far enough and no farther than to stand in position to always be swung in by impact with an approaching coupling. The object and purpose of this construction are that when the coupling-jaw B swings open the stop *a* on the bearing-lug 3 comes in contact with the shoulder of the depressed part of the bearing of the coupling-jaw and prevents the coupling-jaw from swinging wide open, but stops it on less than a quarter-turn, and thus does away with all liability to break when the coupling-jaws come in contact with another jaw or draw-head. Without this limiting means the coupling-jaw might swing so far back that, being impacted by the other coupling, it would fail to swing inward and lock. By this construction it will be readily seen that the coupling-jaw, being permitted to swing open only wide enough to receive the connecting coupling-jaw, will, when impacted by such connecting jaw, swing to and lock.

The coupling-jaw B from its bearings is extended rearward nearly at right angles to the interlocking part, as at 6, the extension hav-

[redacted]

ing curved vertical faces 7 8, the former of which rests snugly and firmly against the vertical wall of the hollow draw-head, as seen in Fig. 1, when swung back into position there seen.

On the rear vertical face of the coupling-jaw B are formed lugs 9, having their upper faces inclined downward toward the rear. The coupling part or jaw of this coupling-jaw is formed with the extensions 10, which extend about half-way across the mouth of the draw-head, and is formed with a link-recess, 11, which, in conjunction with corresponding recess in the abutment-block, forms a link-bearing when the couplings are used for that kind of a coupling-connection. A pin-hole, 12, is made through the extension, and a coupling-pin, 13, of the ordinary kind is fitted thereto. When the coupling-jaw is turned inward, the lugs 9 slide under the lugs 14 of the vertically-reciprocating lock-bar 15 and lift the lock-bar until the coupling-jaw is swung back far enough to carry the lugs from engagement with the lock-bar, when it falls down to the position from which lifted, with the end faces of its lugs setting against the ends of the lugs 9, which co-operation locks the coupling-jaw in position, as seen in Fig. 1 of the drawings.

The lock-bar 15 is of the form seen in Figs. 5 and 6, being formed with the lugs 14 on that part adjacent to the lugs on the coupling-jaw, and in the rear is formed with a slot, 16, in which is loosely arranged the end of a lifting-lever, 17. The lock-bar is formed at its lower end with a foot, 18, which is arranged in a hole in the bottom of the draw-head, and has a key, 19, passed through a slot to prevent it being lifted beyond the desired limit, and at the top the lock-bar is formed with a stud, 20, which is projected through a hole in the top of the draw-head, and to the end of the stud is secured a head-piece, 21. The lever 17 is fulcrumed on a bearing, 22, arranged in the stem of the draw-bar, and consists of the arm 23, having its end loosely arranged in the slot of the lock-bar, the vertical arm 24, projected through a hole or slot in the bottom of the draw-bar, and a horizontally-arranged arm, 25, extending rearward just below the lower face of the draw-bar. On the body of the car are secured guides 26, and in these is fitted to slide a sliding rod, 27, having at one end a hand-piece, 28, and at the other end is formed with an incline, 29, having its point arranged to carry the incline between the draw-bar and the arm 25 of the lever, and thus as the sliding rod is shoved between the arm 25 and the draw-bar the arm is forced down and the other end of the lever raised, carrying up the lock-bar until the ways between its lugs register with the lugs on the coupling-jaw, and the jaw thus can be swung out on its bearing.

A feature of great merit in the means I provide for locking the coupling-jaws is to be seen in the co-operation of the lugs on the coupling-jaw with those of the lock-bar. The former slide smoothly under the latter and raise the lock-bar slowly and with a positive motion, tending to carry the coupling-jaw into the locked position with the inner curved face against the side wall of the draw-head without any jar, and thus avoiding the damage to the mechanism were the union of the parts effected by more sudden and impulsive movements.

The description thus far has relation to couplings consisting of the chambered and hollow draw head and bars, each provided with a pivoted and horizontally-swinging coupling-jaw adapted to interlock and hold in coupled connection two adjacent cars; but to provide for coupling my improvements to a common draw-head having a link-and-pin coupling I have devised the following-described means:

On the end of the draw-head are formed two bearing-lugs, 30 and 31, having a vertical bearing-bolt, 32, projected through them. The lower one of these lugs, 31, is formed with a spirally-inclined bearing-surface, 33, on which the oppositely-inclined surface of the bearing-lug of the abutment-section bears, and, as stated, between these bearing-lugs, and extending partly across the throat of the draw-head, is a solid wall, the face of which corresponds in outline to the abutting surface of the abutment-section of the coupling.

C designates the abutment-section, formed with a bearing-lug, 34, having its under face spirally inclined in correspondence with the spiral incline of the lower bearing-lug of the draw-head, and this lug, when the section is closed across the mouth of the draw-head, fills the space between the bearing-lugs, as seen in Fig. 3 of the drawings. The function of these bearings is to cause the abutment-section to swing by gravity away from the mouth of the draw-head when released from union with the coupling-jaw, and be carried around on its bearing until it lodges against the side of the draw-head, as seen in Figs. 1 and 8 of the drawings, there to rest without any fastenings. The rear face of the abutment-section is of the same plan or contour of the face of the draw-head against which it impacts when in coupling-connection, and the parts above and below the bearing-lugs are curved to form a knuckle-joint with the surfaces of the bearing-lugs on the draw-head, as seen at 35. In the abutment-section is formed a groove, 36, intended, in connection with the similar groove in the coupling-jaw, to form a link-hole when the parts are locked together. For the purpose of locking the abutment-section in position when the coupling is used for a pin-and-link connection, the abutment-section is formed with a curved seat, 37, the rear of which sets behind the projection of the coupling-jaw, as seen in Fig. 11 of the drawings. It will thus be seen that the abutment-section serves as a "buffer" to the draw-head and protection to the coupling-jaw by setting snugly with an extended surface against the face of the draw-head and by projecting somewhat in front of the coupling-jaw. It thus

takes the impact of the approaching car and presents a solid front. By making the bearing of the abutment-section on an incline, as stated, the parts are automatically opened when the lock-bar is raised, the forceful tendency of the abutment-section to swing open being sufficient to throw open the coupling-jaw into position to take the coupling-jaw of an approaching car.

The automatic operation of the coupling is as follows: The coupling-jaws are swung outward far enough to permit the jaws of the approaching couplings to pass each other and push against the rearwardly-locking parts, which action throws the jaws into connection, as seen in Fig. 1 of the drawings, and couples the cars, so they cannot pull apart until the vertical lock-bar is raised with its grooves to register with the projections on the rear of the jaws. If it is desired to adapt the apparatus to couple with a common link-and-pin connection, the abutment-block is swung inward to set across the face of the draw-head, and then the coupling-jaw is swung into locked position, and the coupling is ready to take a link-and-pin coupling.

It will be observed that the draw-heads are formed with a recess, which, with the coupling-hook of the coupling-jaw, forms a seat for the coupling-jaw of the next car when the two jaws are interlocked, as seen in Fig. 1 of the drawings, and when so arranged in coupled connection the front faces of the coupling-hooks abut with their surfaces against the solid parts of the draw-heads, thus making a buffer connection which is without jerk or disconnection throughout the train. This gives the hooks only play enough to meet the exigencies of curves in the road and preserves them from the wear and tear consequent on a looser connection.

What I claim is—

1. The combination, with the draw-head, of the vertically-pivoted coupling-jaw B, formed with the rearward extension 6, having inclined lugs 9 on its vertical face end, the vertically-sliding lock-bar 15, having slots to permit engagement of the lugs on the vertical face end of the coupling-jaw, and provided with a slot or seat in the rear, and a lever fulcrumed within the draw-bar for lifting the locking-bar, substantially as described.

2. The combination, with the draw-heads formed with recesses to fit and take the coupling-jaws of the opposite car, of coupling-jaws adapted to interlock and set in interlocked position with the entire end faces impacted against substantially the entire area of the recesses in the draw-head, and means, substantially as described, for locking the coupling-jaws in interlocked connection, substantially as specified.

3. The combination, with the draw-head and the vertically-pivoted coupling-jaw, of the vertically-pivoted abutment-block mounted on the draw-head opposite to the coupling-jaw, said abutment-block being mounted on inclined bearings, whereby it is carried by gravity from connection with the coupling-jaw to a position against the side of the draw-head, substantially as described.

4. The combination, with the draw-head formed with a solid face-piece extended partly across its mouth, and the vertically-pivoted coupling-jaw, of the vertically-pivoted abutment-block mounted on the draw-head opposite to the coupling-jaw, and formed with an extended abutting surface to set against the solid face-piece of the draw-head, substantially as described.

5. The combination, with the draw-head and the vertically-pivoted coupling-jaw formed with a link-recess and to take a coupling-pin, of the vertically-pivoted abutment-block mounted on inclined bearings on the draw-head opposite to the coupling-jaw and formed with a link-recess, said abutment-block being arranged to impact the face of the draw-head with its entire rear face, and formed with a curved projection to set behind the end of the coupling-jaw, and with its front face extended beyond the front face of the coupling-jaw, substantially as described, and for the purpose stated.

6. The combination, with the draw-head and the vertically-pivoted coupling-jaw, of the abutment-block mounted on vertical bearings on the draw-head opposite to the coupling-jaw, and formed to set with its rear face against the face of the draw-head and with its front face in advance of the coupling-jaw, whereby the impact of the couplings is on the abutment-block, substantially as described.

7. The combination, with the draw-head, of the vertically-pivoted coupling-jaw formed with inclines on the end of its inner arm, the vertically-sliding lock-bar formed with lugs on its outer face, a lever fulcrumed in the draw-bar to lift the sliding lock-bar, and a slide-bar mounted to actuate the lever, substantially as described.

8. The combination of the draw-head A, having bearing-lugs 3, one or both of which are formed with a stop or lug, as *a*, on the bearing-face, and the vertically-pivoted coupling-jaw B, formed with a bearing to rest between the lugs 3, said bearing having a shouldered recess, as *b*, to engage a stop on the bearing-lugs, whereby the outward swing of the coupling-jaw is limited, substantially as and for the purpose stated.

In witness whereof I have hereunto set my hand in the presence of two attesting witnesses.

WILLIAM T. VAN DORN.

Attest:
W. S. HAMILTON,
C. S. HOMIDELL.