(No Model.) 2 Sheets—Sheet 1.

J. O. PATTEE & H. H. VAUGHAN.

CAR COUPLING.

No. 501,575. Patented July 18, 1893.

Fig. 1.

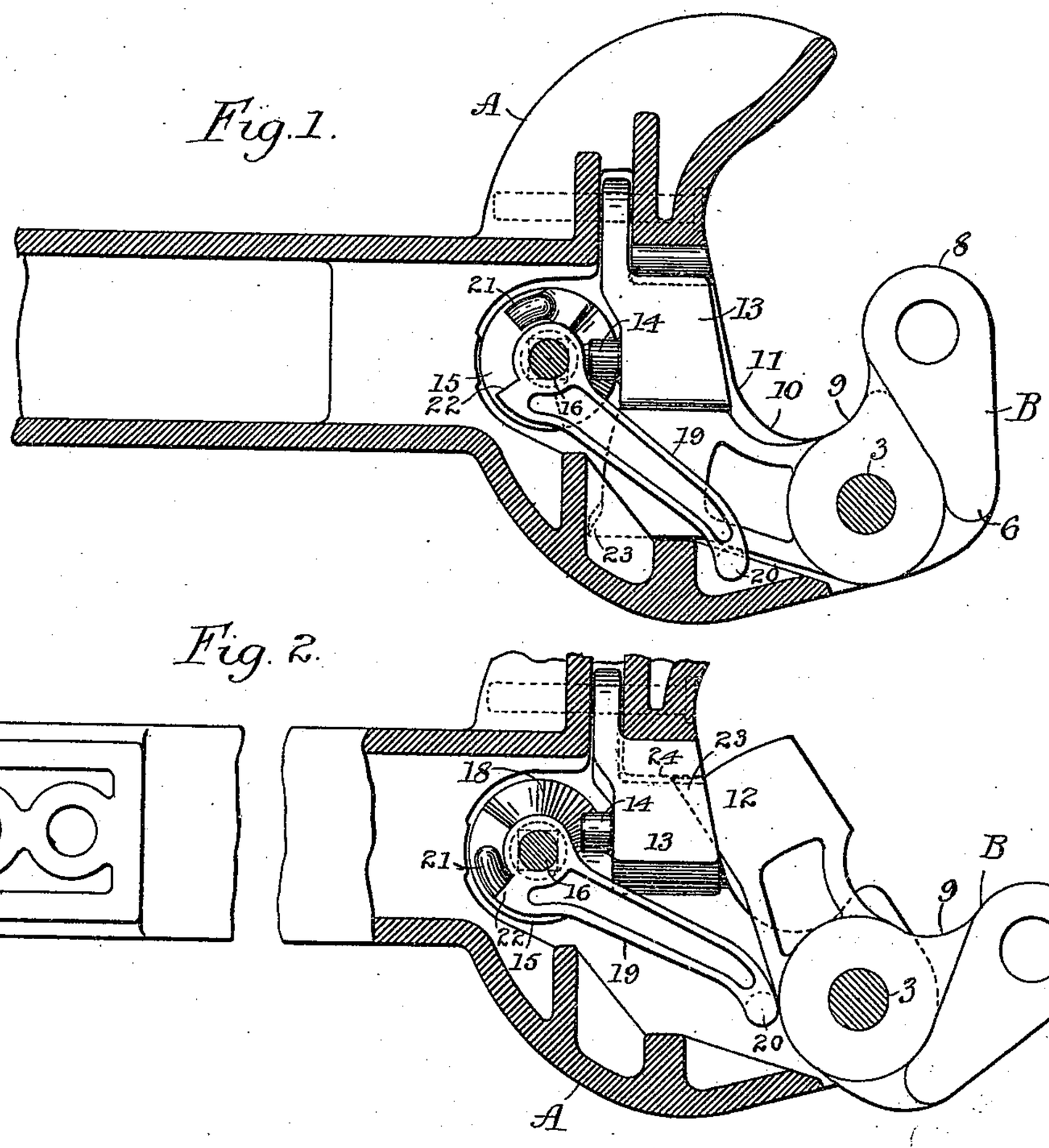
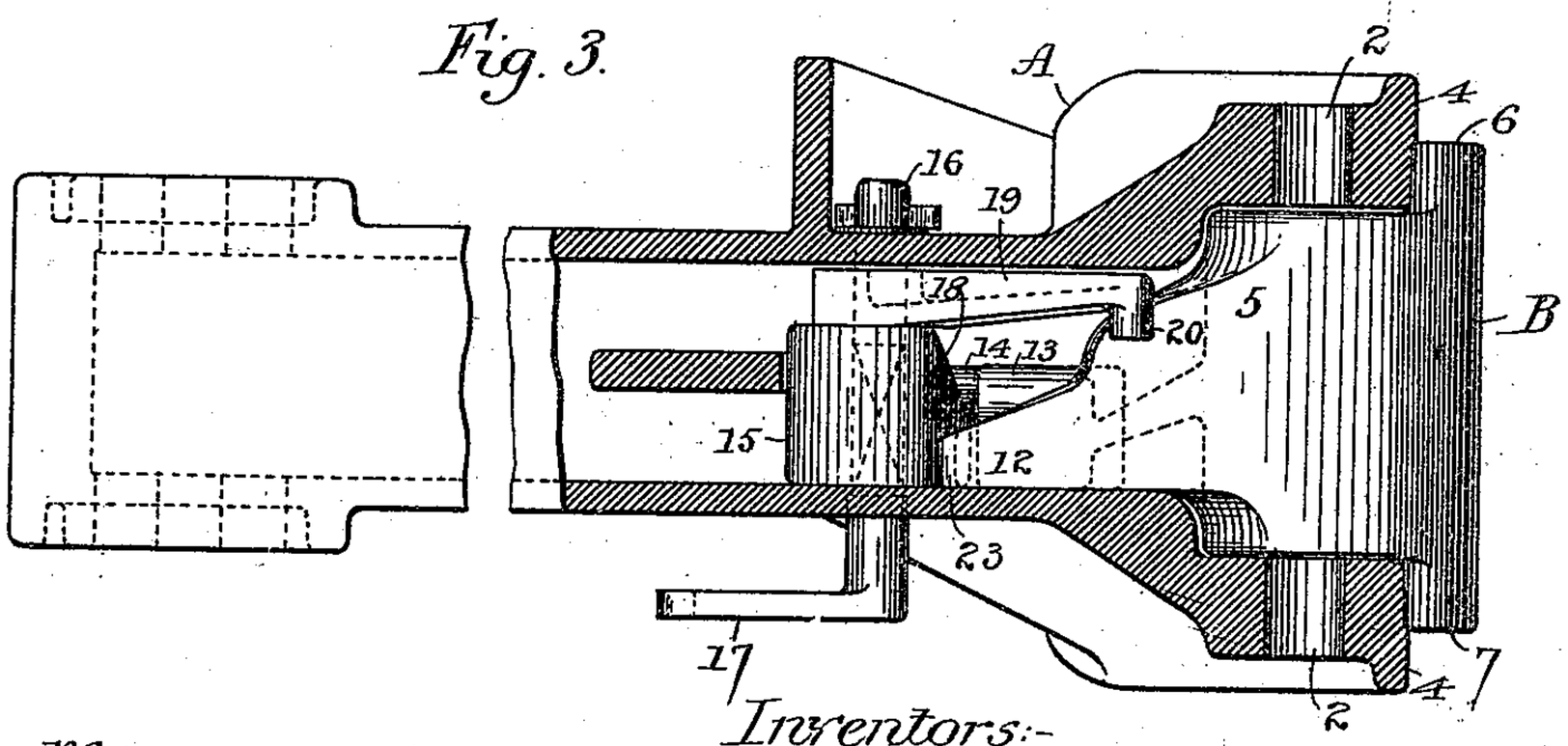


Fig. 2.

Fig. 3.



Witnesses:-

C. F. Caldwell.

H. S. Johnson.

Inventors:-

Joseph O. Pattee,

Henry H. Vaughan,

per Paul & Munn

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(No Model.) 2 Sheets—Sheet 2.

J. O. PATTEE & H. H. VAUGHAN.

CAR COUPLING.

No. 501,575. Patented July 18, 1893.

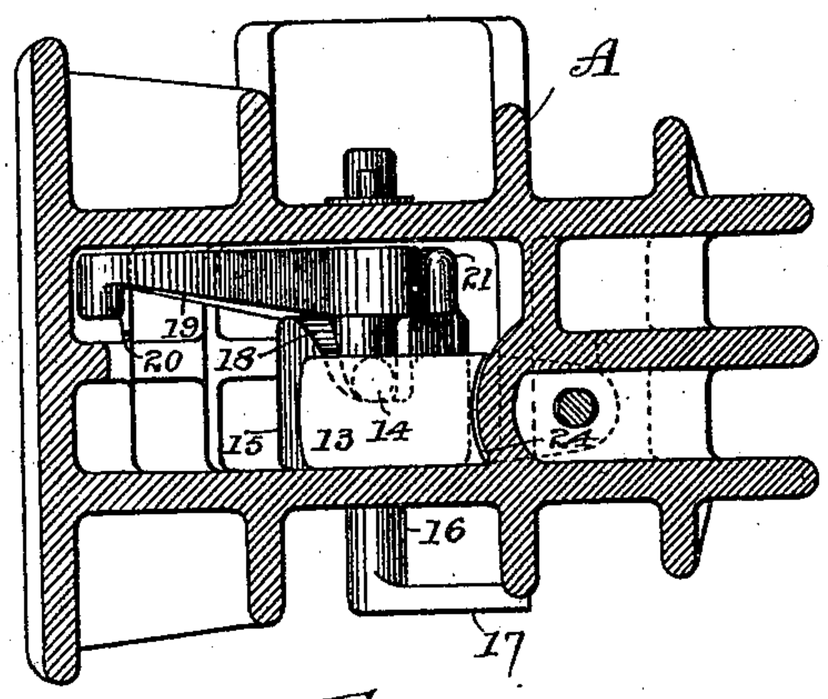

Fig. 4.

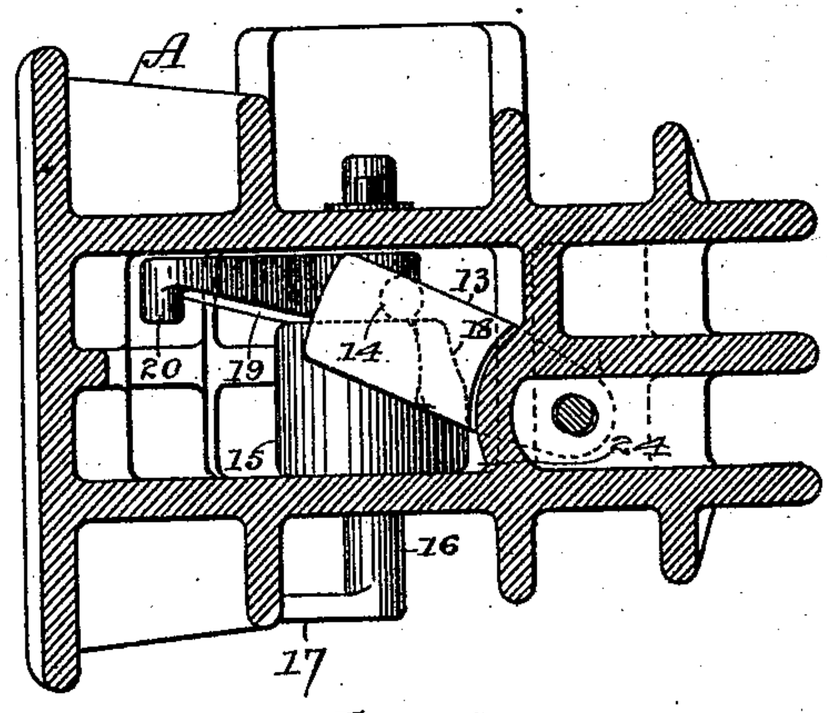

Fig. 5.

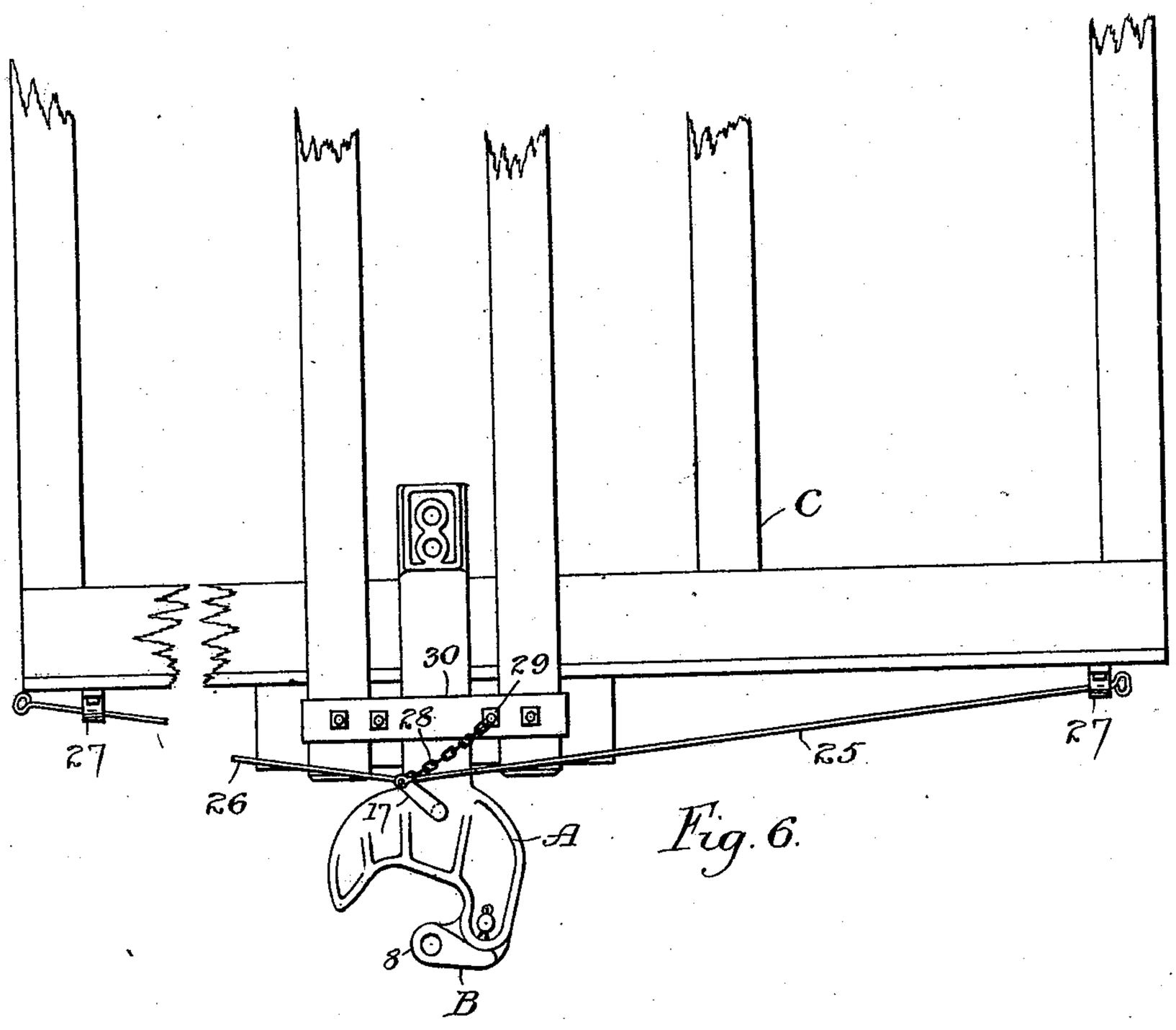

Fig. 6.

Witnesses:-
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UNITED STATES PATENT OFFICE.

JOSEPH O. PATTEE AND HENRY H. VAUGHAN, OF ST. PAUL, MINNESOTA.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 501,575, dated July 18, 1893.

Application filed February 13, 1893. Serial No. 462,084. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH O. PATTEE and HENRY H. VAUGHAN, both of St. Paul, Ramsey county, Minnesota, have invented certain new and useful Improvements in Car-Couplers, of which the following is a specification.

Our invention relates to improvements in car couplers of the vertical plane type, its object being to provide an improved form of knuckle and mechanism for automatically locking the same in closed position and for releasing and opening it.

To this end our invention consists in providing a knuckle having shoulders upon the top and bottom thereof, with circular concave faces adapted to fit to the curvature of the draw head in which the knuckle is pivoted, so as to relieve the pivot pin from the strain of impact upon the knuckle. The inner end of the knuckle is provided with a short spur or projection which, when the knuckle is opened, will bear against the opposite side of the throat of the draw head and hold the knuckle from further outward movement. The knuckle is held in locked position by means of a latch pivoted in the opposite side of the draw head and abutting against the side of the knuckle near the end. The knuckle is unlocked by means of a lever operated cam which first lifts the latch and then engages with a second lever which throws the knuckle open.

Other features of our invention will appear more fully from the following description and claims taken in connection with the accompanying drawings, in which—

Figure 1 is a plan view of our improved coupler with the top thereof removed, the knuckle being shown in locked position. Fig. 2 is a similar view, the knuckle being shown in open position and the locking and operating parts in the position in which they are brought to unlock the knuckle. Fig. 3 is a side elevation of the same, the wall of the head being broken away to show the relative position of the parts. Fig. 4 is a sectional, front elevation with the knuckle removed, showing the latch down. Fig. 5 is a similar view showing the cam turned and the latch raised, and Fig. 6 is an inverted plan view of the end of the car and attached coupler.

In the drawings A represents the draw head in one side of which is pivoted the knuckle B by means of the pin 3 fastened through the holes 2 in the head and the corresponding hole in the knuckle. The face or front wall 4 of the draw head has a circular curve, the center of the curve being the center of the pin opening 2. The hub 5 of the knuckle B fits between the upper and lower parts of the draw head and is provided with top and bottom shoulders 6 and 7 having a concave surface of the same curvature as that of the head against which they closely fit, so as to strengthen the parts and relieve the pivot pin of the strain from any impact upon the projecting or outer end 8 of the knuckle. The outer end of the knuckle is formed with a semi-circular curve connecting with which on the inner face thereof, is a reverse curve 9 of the same radius, then a short curve 10 with a slightly longer radius and next a third curve 11 of considerably greater radius, there being no line of tangency between the curve of the knuckle and the connecting reverse curve of like radius. The increase in radius of the connecting curves of the knuckle gives play to a connecting knuckle in passing round a curve. The inner end 12 of the knuckle is cut down to much less thickness than the length of the hub of the knuckle, and is locked in closed position by means of the latch 13, pivoted in the opposite side of the head and abutting against the side of the knuckle. The latch is provided with a lateral pin or spur 14 which projects over a cam 15. This cam is mounted upon a vertical pin 16 and provided with an arm or handle 17 beneath the draw head. The cam is provided with a steep incline 18 adjacent to the spur 14 of the latch, so that as the cam is turned the incline of the cam engages the spur, thereby lifting the latch. Loosely mounted upon the pin 16 and resting on top of the cam is the arm 19 having a downwardly projecting spur 20 at the end, which bears against the rear of the inner member of the knuckle. The cam is provided with a stop 21 so arranged that it will engage the shoulder 22 on the arm 19 when the cam has been turned sufficiently to lift the latch out of engagement with the knuckle. The continued movement of the cam then serves to operate the lever and thereby throw the knuckle open until its point 23 strikes

against and is stopped by the wall 24 of the other side of the head. In order to operate the arm 19 to unlock the knuckle from either side of the car, we provide rods 25 and 26 sliding in clips or guides 27 transverse of the body of the car. Each of the rods is provided with a handle near the side of the car, by means of which it may be operated.

When it is desired to couple the car the cam 15 is returned to its original position by the arm or handle 17, the latch being supported by the end of the knuckle and as the knuckle is pushed back by another coupler, the latch falls and locks the knuckle. To prevent the cam from being turned too far, a stop is provided, preferably by placing the guide 27 in such position as to engage the handle of the rod 25 and prevent its further advance movement.

In case of the pulling out of the draw head and in order to prevent its being detached from the car by the pull of the connected coupler, we connect the arm 17 to a fixed part of the car by means of a chain 28, the arm being normally in such position that when the head is drawn out from the car, the chain pulls upon the arm sufficiently to release the locking mechanism when the strain of the other coupler will open the knuckle.

We claim—

1. In a vertical plane coupler, the combination with the knuckle locking mechanism, of the rotary cam adapted to engage and release said locking mechanism, and a pivoted arm engaging said knuckle and engaged by said cam, substantially as described.

2. In a vertical plane coupler, the combination with the knuckle, of means for automatically locking the same in closed position, means for opening the same when unlocked, and a rotary cam successively engaging both said locking and said opening mechanisms, substantially as described.

3. In a vertical plane coupler, the combination with the knuckle and the locking mechanism therefor, of a rotary cam adapted to release said locking mechanism, and the opening mechanism for said knuckle adapted to be actuated by said cam when it is turned sufficiently to release said locking mechanism, substantially as described.

4. In a vertical plane coupler, the combination with its knuckle, of the pivoted locking latch therefor, the rotary cam engaging said latch, the pivoted arm engaging said knuckle and engaged by said cam when it has been turned through a sufficient angle, to lift said latch substantially as described.

5. In a coupler of the class described, the combination with the knuckle, of the locking latch having a concave shoulder adapted to bear against the convex surface of the draw head between its pivotal point and the knuckle, substantially as described.

6. In a coupler of the class described, the combination of the knuckle, the pivoted locking latch therefor, the rotary cam engaging said latch, the arm mounted loosely on the pivot of said cam and engaging the knuckle, and the stop on said cam engaging said arm, substantially as described.

7. In a coupler of the class described, the combination with the knuckle, of the locking latch engaging the knuckle, the lateral spur upon said latch, the rotary cam engaging said spur, the arm mounted loosely upon the pivot pin of said cam and engaging said knuckle, and the stop on said cam engaging said arm when said cam has been turned through a sufficient angle to lift said latch out of engagement with the knuckle substantially as described.

8. In a car coupler, the combination with its knuckle, and the locking and opening mechanisms therefor, of the cam for releasing said locking mechanism and operating said opening mechanism, the arm carried by said cam and the sliding rod attached to said arm, substantially as described.

9. In a coupler of the class described, the combination with the knuckle and its locking and opening mechanisms, of the rotary cam adapted to release said locking mechanism and to operate said opening mechanism, the crank arm carried by said cam, and the operating rods connected to said arm and extending to the sides of the car, substantially as described.

10. In a coupler of the class described, the combination with the knuckle and its locking and opening mechanisms, of the rotary cam adapted to release said locking mechanism and to operate said opening mechanism, the crank arm carried by said cam, the rods for operating said arm, and the stop limiting the movement of said cam, substantially as described.

11. In a car coupler of the class described, the combination with the knuckle and its locking and opening mechanisms, of the rotary cam for releasing said locking mechanism and operating said opening mechanism, the crank arm carried by said cam and means connecting said arm with the car, whereby if the draw head is pulled out the cam is operated sufficiently to unlock the knuckle, substantially as described.

In testimony whereof we have hereunto set our hands this 7th day of February, 1893.

JOSEPH O. PATTEE.
HENRY H. VAUGHAN.

In presence of—
H. S. JOHNSON,
T. D. MERWIN.