No. 877,365. PATENTED JAN. 21, 1908.

W. A. PALMER.

AUTOMATIC CAR COUPLING.

APPLICATION FILED FEB. 28, 1907.

2 SHEETS—SHEET 1.

Fig. 1.

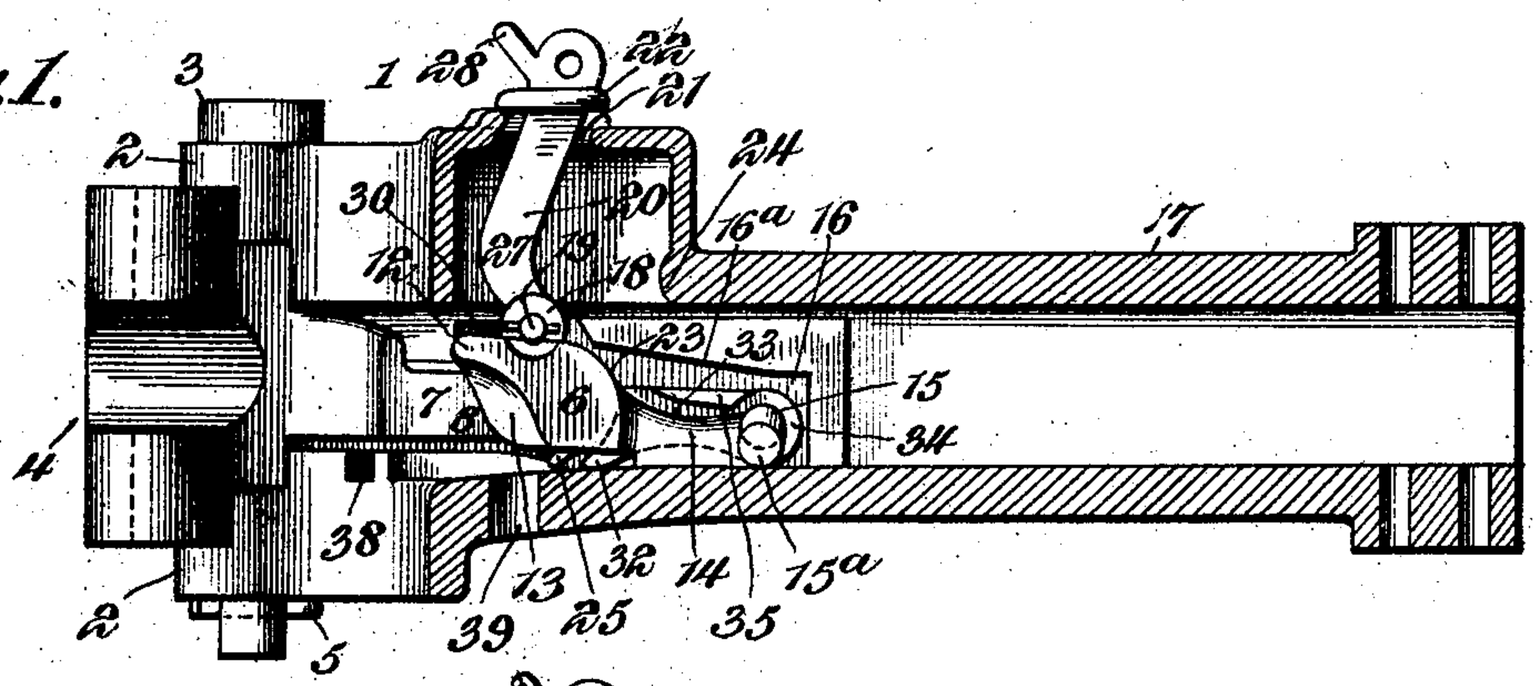


Fig. 2.

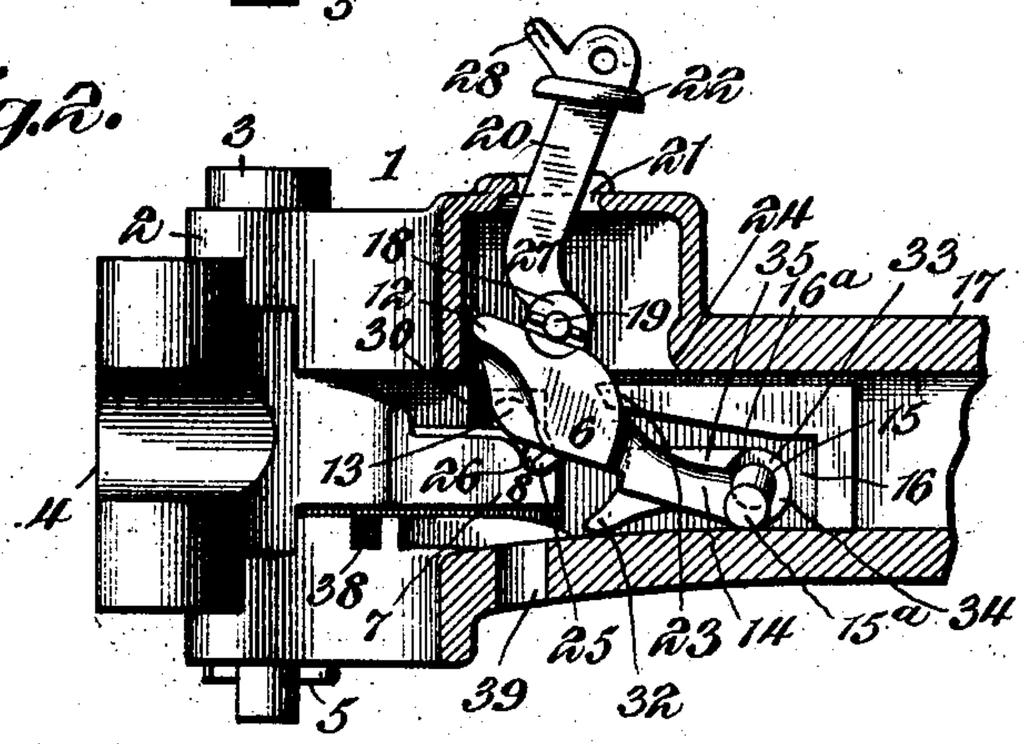


Fig. 8.

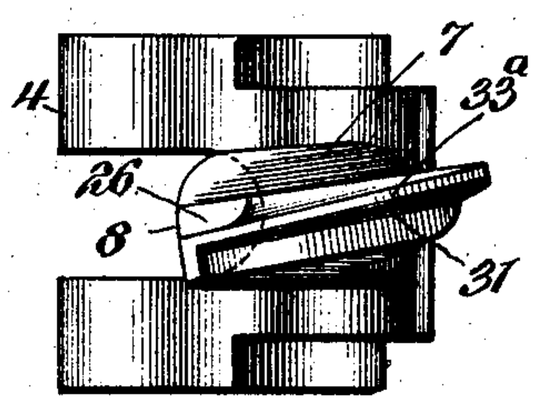


Fig. 3.

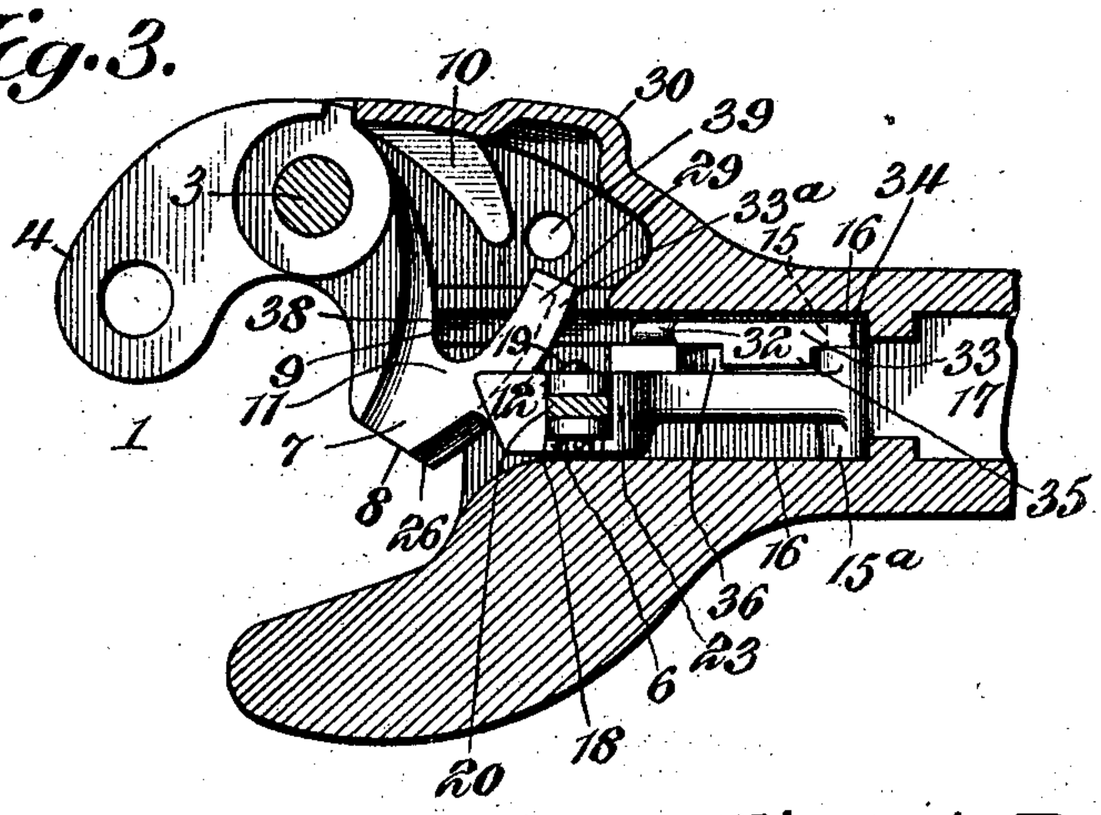
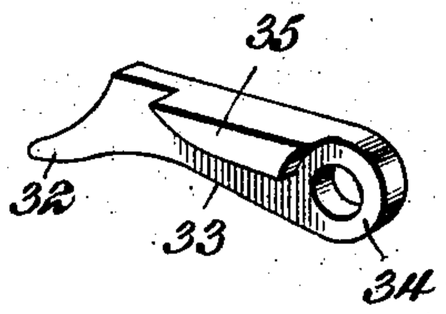


Fig. 10.



Witnesses
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AUTOMATIC CAR COUPLING.

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2 SHEETS—SHEET 2.

Fig. 4.

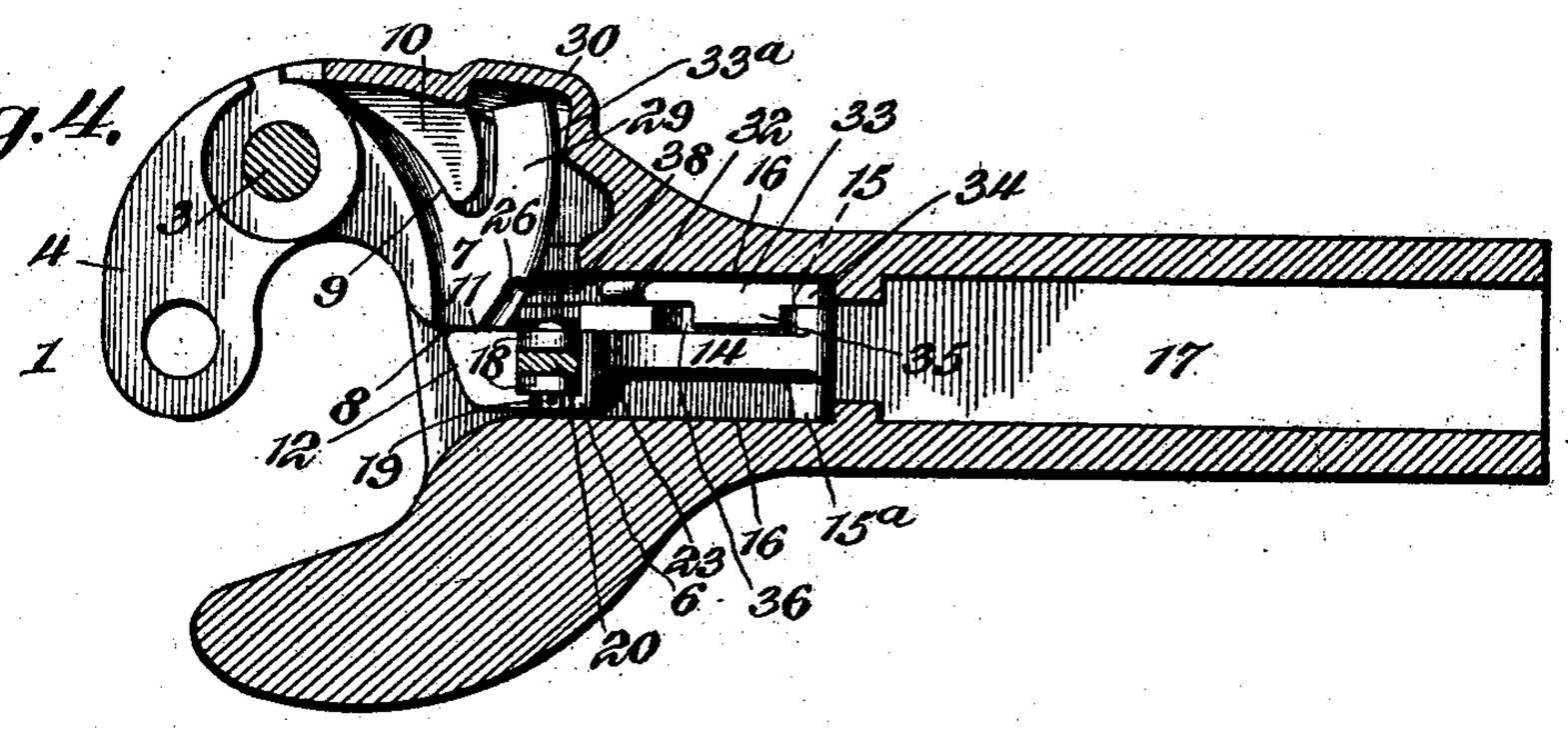


Fig. 5.

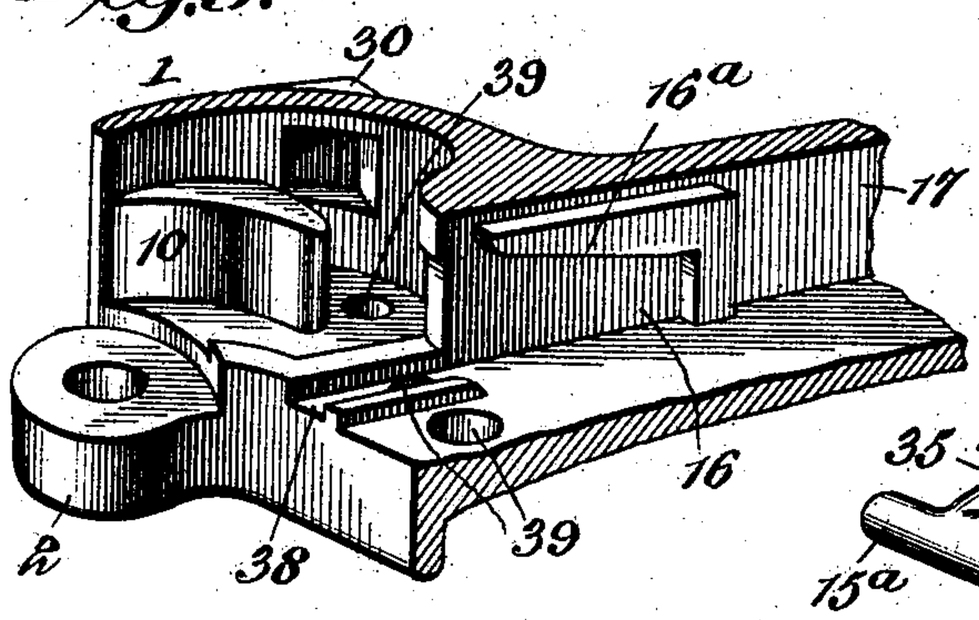


Fig. 9.

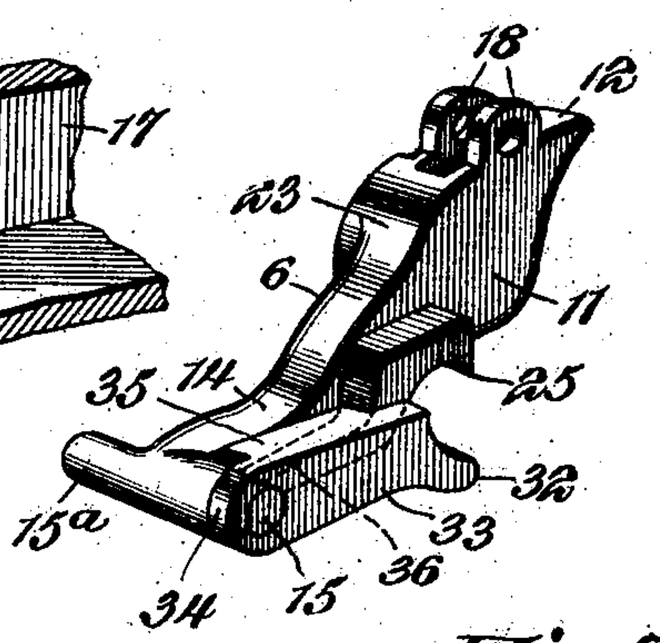


Fig. 6.

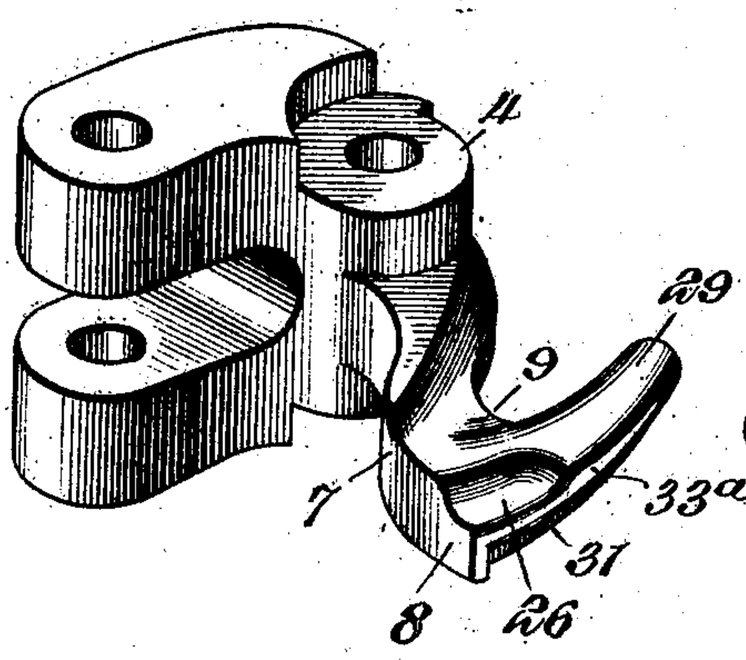
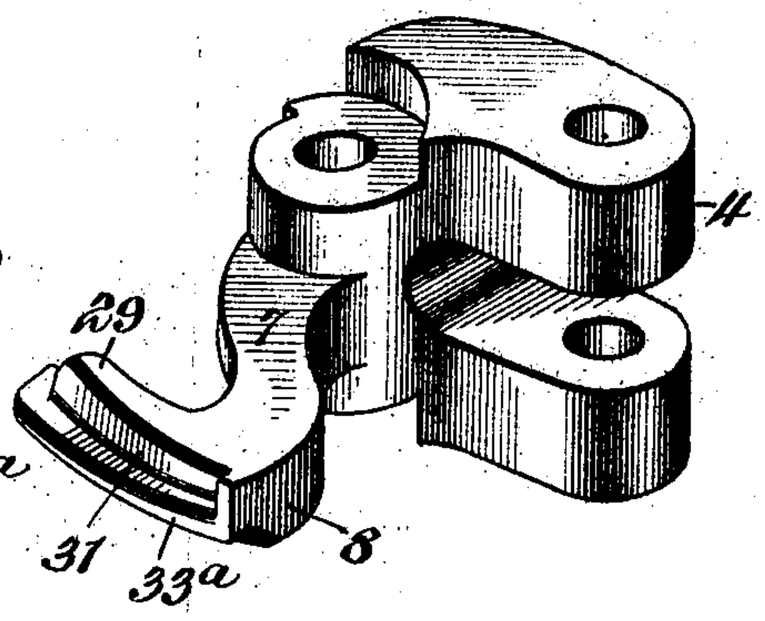


Fig. 7.



Witnesses

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UNITED STATES PATENT OFFICE.

WILLIAM ASBURY PALMER, OF ST. LOUIS, MISSOURI.

AUTOMATIC CAR-COUPLING.

No. 877,365. Specification of Letters Patent. Patented Jan. 21, 1908.

Application filed February 28, 1907. Serial No. 359,807.

To all whom it may concern:

Be it known that I, WILLIAM ASBURY PALMER, a citizen of the United States, residing at St. Louis and State of Missouri, have invented a new and useful Automatic Car-Coupling, of which the following is a specification.

The invention relates to improvements in automatic car couplings.

The object of the present invention is to improve the construction of automatic car couplings, more especially that shown and described in Patent, No. 804,031, granted to me Nov. 7, 1905, and to provide a simple, strong and durable construction capable of coupling automatically, and adapted to be readily set for automatic uncoupling and to be conveniently released from such position, when it is desired to relock the knuckle, thereby obviating the necessity of an engineer pulling his train out and running back to couple the cars.

A further object of the invention is to provide simple and efficient means for positively opening the knuckle preparatory to automatic coupling, and to enable the knuckle to be held in its open position sufficiently to prevent it from being closed or partially closed, by jarring or jolting, and necessitating reopening in order to couple.

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 vertical longitudinal sectional view of a car coupling, constructed in accordance with this invention, the knuckle being locked. Fig. 2 is a similar view, the parts being set for automatic uncoupling. Fig. 3 is a horizontal sectional view, the parts being arranged for holding the knuckle in its open position. Fig. 4 is a horizontal sectional view, the knuckle being closed and locked. Fig. 5 is an enlarged detail perspective view, partly in section showing a portion of the draw head. Figs. 6, 7 and 8 are detail views of the knuckle. Fig. 9 is a detail perspective view of the locking block and the knuckle opening lever. Fig. 10 is a detail perspective view of the knuckle opening lever.

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

1 designates a draw head or coupler head of the Janney type, provided at one side with the usual upper and lower eyes 2 for the reception of a knuckle pin 3, which pivots a knuckle 4 to the draw head or coupler head 1 in the usual manner. The knuckle pin is provided at its upper end with a head, and it is held against accidental upward movement by a suitable key 5, which pierces the lower end of the knuckle pin and which is located beneath the draw head. The outer or engaging portion of the knuckle is provided with the usual slot or bifurcation and perforations for enabling it to be coupled, by a link with other forms of car couplings, when necessary.

The knuckle is held in its closed position by a locking block 6, arranged to engage the inwardly or rearwardly extending arm 7 of the knuckle, as clearly illustrated in Figs. 1 and 4 of the drawings. The arm 7 of the knuckle is provided at one side with a straight edge or face 8 for engagement with the locking block 6, and it has a recess 9 at the opposite side to receive a projecting stop lug 10 of the draw head, whereby the arm of the knuckle is interlocked with the draw head. The lug 10, which extends from one of the side walls of the draw head, forms a stop for preventing the knuckle from being forced inward. This will, in a great measure, prevent the knuckle pin from breaking, when the cars are coupled. Also by interlocking the arm of the knuckle with the draw head, the knuckle is prevented from pulling out, should the knuckle pin break from any cause.

The locking block is provided with a straight side face 11 to fit against the straight face or edge 8 of the arm of the knuckle, when the latter is closed and locked. The locking block, which is slidably and pivotally mounted within the draw head, as hereinafter explained, is provided at its front face with a forwardly or outwardly projecting portion 12, having an inclined lower face, and the lower portion 13 of the front face of the locking block is inclined and set at an angle. When the knuckle

closes, its arm is adapted to engage the front face of the locking block, which is lifted by the said arm, and when the latter has passed the locking block, and has assumed the position illustrated in Fig. 4 of the drawings, the said locking block drops into engagement with the straight face or edge 8, and holds the knuckle firmly and securely locked in its closed position.

The locking block has a rearwardly or inwardly extending shank 14, provided at its ends with laterally extending pivots or trunnions 15 and 15ª, which are arranged to slide in guide-ways 16, located at opposite sides of the opening of the shank or draw bar 17 of the draw head. The guide-ways, which extend longitudinally of the draw bar, are open at their front or outer ends, and are closed at their inner or rear ends, being preferably formed by substantially L-shaped ribs, as clearly illustrated in Fig. 5 of the drawings. The longitudinally disposed portions of the ribs are provided with inclined lower edges 16ª, but these guide-ways, which receive the pivots or trunnions 15 of the locking block 6, may be constructed in any other manner that will permit the locking block to be moved backwardly and forwardly, and to swing upwardly and downwardly. The upper and lower walls of the guide-ways 16 cause the pivots or trunnions to positively slide backwardly and forwardly, and limit the upward movement of the same. The pivots or trunnions are also adapted to rotate in the guide-ways to permit the swinging movement of the locking block. The locking block is provided with rearwardly extending flanges 18, which are perforated for the reception of a pin 19, which also passes through a lifting bar or link 20, and the latter extends through a slot or opening 21 of the top of the draw head. The lifting bar or link, which is provided with a flange 22 for covering the slot 21, has a perforation at its upper end for permitting it to be connected with any suitable lifting mechanism, for enabling the operation of uncoupling to be performed from the top and sides of freight cars, or from the platform of a coach.

The car coupling is designed for use on all kinds of railroad cars, and any suitable operating mechanism may be employed. The locking block is provided at its back with an upper inclined face 23, adapted to engage a rounded edge 24 of the upper portion of the draw head, when the locking block is raised, whereby the locking block will be thrown forward or outward, to carry a projection or toe 25 into engagement with a groove or recess 26 of the arm of the knuckle. The groove 26 which is arranged at the upper face of the arm of the knuckle, extends transversely of the same, and is located near the end of the straight face 8 of the arm 7, as clearly illustrated in Fig. 6 of the drawings. The projection or toe is substantially hook-shaped, and is located adjacent to the engaging face 11 of the locking block, and when the latter is drawn upward, the projection or toe is carried forward, and is adapted to drop into engagement with the said groove 26. As the projection or toe depends below the body portion of the locking block, the latter is supported above the arm of the knuckle to permit the knuckle to open freely. This construction obviates the danger and inconvenience of holding the locking block in an elevated position until two cars are actually separated.

The lifting bar or link 20 is provided adjacent to its lower end with an angular bend 27 forming a projecting convex portion and providing a short lower arm or portion and a long upper arm or portion, and when the locking block is set for automatic uncoupling, as illustrated in Fig. 2 of the drawings, the long upper arm of the lifting bar or link is arranged at an inclination, and extends backwardly and upwardly and engages the top of the draw head at the rear or inner end wall thereof. The upper end of the lifting bar or link is provided with a projecting horn 28, adapted to be engaged by the finger or hand for tilting or oscillating the lifting bar or link, whereby the toe or projecting portion is carried out of engagement with the groove or recess 26, and the locking block is dropped from its position for automatic uncoupling to the locked position, illustrated in Fig. 1 of the drawings. The upper end of the lifting bar or link is tilted forwardly to effect the disengagement of the toe or projecting portion from the arm of the knuckle. This construction obviates the necessity of an engineer pulling his train out and running it in again, in order to recouple cars set for automatic coupling. The projecting horn is located in advance of the eye, to which any suitable operating mechanism may be connected.

The recess 9 of the arm of the knuckle forms a projecting transversely disposed bill or portion 29, which is substantially concentric with the knuckle pin, and which is arranged to engage the stop lug 10 at the inner or rear side thereof. The adjacent wall of the draw head is provided with an off-set or projecting portion 30 to receive the end of the bill or transversely disposed curved portion 29 of the arm of the knuckle, when the latter is closed.

The transversely disposed portion 29 of the arm of the knuckle is provided with a recess 31, extending longitudinally of the transversely disposed portion 29 of the arm of the knuckle, and having a curved edge arranged to be engaged by a nose or projecting portion 32 of a lever 33. The recess 31 forms an in-

clined top wall 33ª, which, when the nose or projecting portion 32 of the lever 33 is thrown forwardly and upwardly, causes the knuckle to positively open.

The knuckle opening lever 33, which is provided at its inner or rear end with an eye 34 to receive the pivot or trunnion 15 of the locking block, has a flange 35, extending longitudinally of the upper edge of the body portion of the lever, which is arranged in substantially a horizontal position, when the knuckle is locked, as illustrated in Fig. 1 of the drawings. The locking block is provided at one side of the shank 14 with a laterally extending supporting ledge or flange 36, which receives the longitudinal flange 35 of the knuckle opening lever 33, whereby when the locking block is swung upward to carry the nose or projecting portion 32 of the knuckle opening lever into engagement with the curved extension of the arm of the knuckle, the said lever 33 will be maintained rigid with the locking block, and will positively operate to open the knuckle, without "kicking" the same from its closed to its open position. The supporting flange or ledge 36 is enlarged, and extended at its front end to form the projecting toe 25, which is substantially hook-shaped, as clearly illustrated in Fig. 9 of the drawings. After the knuckle is opened, the locking block is dropped to carry the upper projecting portion of its front face into engagement with the upper face of the curved extension of the arm, whereby the knuckle will be maintained in its open position, and will be prevented from being closed or partially closed by jarring or jolting, thereby obviating the necessity of reopening the knuckle preparatory to automatic coupling. The draw head is provided at its bottom with a longitudinal guide-way 38, which receives the nose or projecting portion 32 of the knuckle opening lever, and the latter maintains an approximately horizontal position, when the locking block swings downwardly, simultaneously with its inward or backward movement. By this construction, the knuckle opening lever and the locking block have a limited relative movement, the pivoted lever being substituted for the rigid depending foot of the said patent. The pivotal movement of the lever operates to prevent the knuckle opening mechanism from being injured, when the knuckle is suddenly closed, incident to automatic coupling. Also in event of injury to the knuckle opening lever, the latter may be readily detached and replaced by a new part, without discarding the locking block.

The bottom of the draw head is provided with suitable openings 39 to permit the escape of dust or other accumulation, and the backward and forward movements of the locking block will operate to discharge much of the dust through the said openings 39.

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

1. The combination with a draw head provided with longitudinal ways having top and bottom walls, and a knuckle, of a locking block having pivots or trunnions slidable in the ways to permit the locking block to slide backward and forward and to swing upward and downward, and a pivoted knuckle opening lever carried by the locking block and arranged to engage the knuckle for opening the same.

2. The combination with a draw head provided with longitudinal ways having top and bottom walls, of a pivoted knuckle provided at its arm with an extension having an arcuate recess, said recess being provided with an inclined top wall, a locking block having pivots or trunnions slidable in the said ways to permit the locking block to be moved backward and to swing upward and downward, and a knuckle opening lever pivotally mounted on and carried by the locking block and projecting from the same to engage the recess of the knuckle.

3. The combination with a draw head, and a pivoted knuckle, of a locking block movable longitudinally of the draw head, and a knuckle opening lever carried by and extending longitudinally of the locking block and pivoted to the same at its rear portion, said locking block and lever having coöperating means for supporting the latter rigid with the former when the same is in engagement with the knuckle.

4. The combination with a draw head, and a pivoted knuckle, of a locking block provided with a laterally projecting flange, and a pivoted knuckle opening lever mounted on the locking block and having a flange arranged to rest upon that of the locking block.

5. The combination with a draw head provided with ways, and a pivoted knuckle, of a locking block having pivots or trunnions slidable in the ways, and a knuckle opening lever pivoted to the locking block by one of the said pivots or trunnions and having means for engaging the knuckle to open the same.

6. The combination with a draw head, and a pivoted knuckle, of a locking block provided with pivots or trunnions slidable in the draw head, said locking block being also provided with a supporting ledge, and a knuckle opening lever having an eye arranged on one of the pivots or trunnions of the locking block, said lever being also provided with means for engaging the supporting ledge, whereby the knuckle opening lever is held rigid when in engagement with the knuckle.

7. The combination with a draw head, and

a pivoted knuckle, of a locking block having a supporting ledge terminating at its front or outer portion in a hook-shaped projection for engaging the knuckle, and a knuckle opening lever pivotally mounted on the locking block and having a projecting portion or nose located below the projection of the locking block and arranged to engage the knuckle.

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

WILLIAM ASBURY PALMER.

Witnesses:
A. C. HEINTZ,
HARRY FRASER.