

No. 886,864.

PATENTED MAY 5, 1908.

G. P. RITTER.
CAR COUPLING.

APPLICATION FILED JUNE 30, 1904.

3 SHEETS—SHEET 3.

Fig. 6.

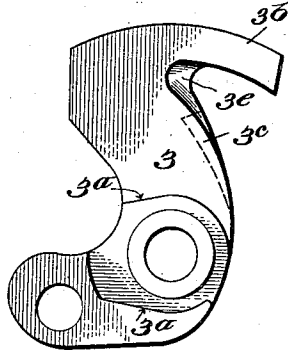


Fig. 7.



Fig. 9.

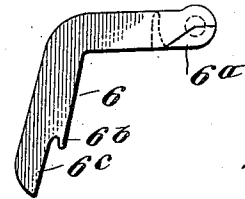


Fig. 10.

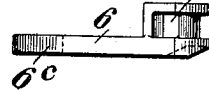


Fig. 8.

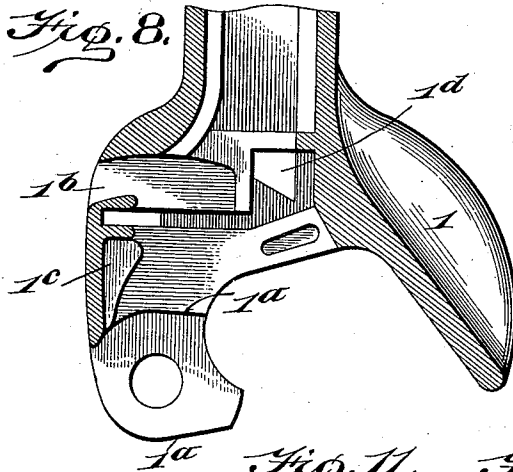


Fig. 11.

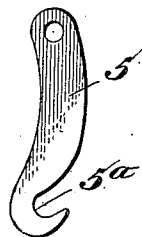


Fig. 12.



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CAR-COUPLING.

No. 886,864.

Specification of Letters Patent.

Patented May 5, 1908.

Application filed June 30, 1904. Serial No. 214,783.

To all whom it may concern:

Be it known that I, GILBERT P. RITTER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Car-Couplings; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view of a coupler embodying my invention, the parts being shown in coupled relation. Fig. 2 is a vertical section taken in the plane of the front of the lock, the parts being shown in the same relation as in Fig. 1. Fig. 3 is a view taken in a plane similar to that of Fig. 2, the parts being in the positions they occupy when the lock is supported in an unlocked position while the knuckle is closed. Fig. 4 is a side elevation, a portion of the coupler head being broken away to show the parts in the positions they occupy when the lock is supported in an unlocked position while the knuckle is closed. Fig. 5 is a top plan view of the knuckle. Fig. 6 is an inverted plan view of the knuckle. Fig. 7 is a vertical transverse section of the knuckle (Fig. 5) taken through the lock-set seat and the undercut portion adjacent thereto. Fig. 8 is a horizontal central section of the coupler head. Figs. 9 and 10 are a side elevation and plan, respectively, of the lower member of the lock-set and knuckle-opening device. Figs. 11 and 12 are two views in elevation, taken at right angles to each other, of the upper member of the lock-set and knuckle-opening device.

Like symbols refer to like parts wherever they occur.

My invention relates to the construction of car couplers of the vertical plane type, and has for its principal objects to produce simple, effective and secure means for locking the knuckle in closed or coupled position; for retaining the knuckle-locking means in such a position while the knuckle is closed or in locked position as that the knuckle may be subsequently opened; for returning the knuckle-locking means to a position in which it performs its normal function, the knuckle being closed and the said knuckle-locking means having been antecedently caused to assume a position in which the knuckle may be opened; and for opening the knuckle when

the same is free to rotate, the last purpose being effective in such manner that movement of the knuckle lock is of but small extent.

A further object of my invention is the production of a knuckle adapted to be used with car couplers in which the lock-set and knuckle opener functions are performed by the same elements, and in which the lock-set member rests upon the knuckle to retain the knuckle-locking mechanism in unlocked position while the knuckle is closed.

To attain the several objects hereinbefore noted, I combine with the knuckle of a vertical plane coupler a lock therefor and a combined lock-set and knuckle opening device consisting of a plurality of flexibly connected members, the knuckle being provided with a seat thereon for the reception of the lock-set and having an undercut portion adjacent thereto.

Thus, the main feature of my invention resides in combining with a coupler head, its knuckle and knuckle lock, a plurality of flexibly connected members adapted to actuate the lock to permit the knuckle to be opened, to retain said lock in such position and also adapted to open the knuckle.

There are other, minor, features of invention, corresponding to the several objects to be attained, all as will hereafter more fully appear.

I will now proceed to describe my invention more fully, so that others, skilled in the art to which it appertains, may apply the same.

In the drawings chosen to illustrate my invention, 1 is a coupler head to which is attached by the usual knuckle pin 2 the knuckle 3, said knuckle 3 preferably having at points adjacent to each end of the knuckle-pin hole a plurality of oppositely disposed faces or abutments 3^a, 3^a substantially transverse to the longitudinal axis of the coupler and to the line of applied buffing strain, such abutments being adapted to engage corresponding abutments 1^a, 1^a on the coupler head when the knuckle is in closed position, but if desired these transverse faces or abutments may be omitted.

The inner end of the knuckle 3 has a hook portion 3^b which passes through the opening 1^b in the wall of the coupler head when the knuckle is locked, thus preventing the withdrawal of the knuckle should the knuckle-pin

be broken, and said hook portion 3^c also serves to support the lock when the knuckle is rotated outward.

The rear face of the knuckle tail is preferably also provided with a socket 3^c (see Fig. 5, also dotted line Fig. 6) which by its reception of and engagement with a corresponding lug or projection 1^c on the coupler head likewise prevents the knuckle from pulling out in case the knuckle-pin should be broken, reduces the strain upon the hook portion 3^b of the knuckle and upon the lock, and distributes the same more uniformly upon the coupler head, an advantage in a device of this character which is subject to suddenly applied force.

The lock 4 is of the gravity type, but may be of other character if desired, and is preferably in the form of a vertically sliding pin which may have the downwardly extending guide member 4^a, the latter passing through an opening 1^d in the lower wall of the coupler head and having thereon a lug or projection 4^b which, when the coupler is subjected to draft strains stands beneath the bottom wall of the coupler head and prevents any upward creeping movement of the lock.

Above that portion 4^c of the lock which stands in apposition to the knuckle when the latter is in closed position, the face of the lock is preferably inclined upwardly and away from said knuckle for a suitable distance and thence curves forwardly towards said knuckle as shown at 4^d, thus forming a hook by which said lock may be lifted by the flexibly connected members as will hereinafter appear.

The upper portion 4^e of the lock has a passage or slot 4^f, preferably curved in form, which extends from the upper end of the lock downwardly to intersect the hook portion 4^d thereof, said slot 4^f being adapted to receive one member of the flexible lock-set and knuckle opening device and to permit a slight sliding movement of the latter therein.

Passing through the passage or slot 4^f of the lock is the lock lifting or lock actuating member 5 which is provided at its upper end with an eye or other means of connection with the usual uncoupling chain and uncoupling lever, said member 5 being flexibly connected to the lock-set and knuckle-opener member 6, preferably by means of a hook 5^a at the lower end of the member 5 and an eye 6^a at the upper end of the member 6, but other means of effecting a flexible connection may be employed if desired.

The combined lock-set and knuckle-opener member 6 is so constructed that it is adapted to flexibly engage the lock-actuating member 5, preferably having for that purpose an eye 6^a at the upper end thereof, said eye 6^a being of sufficient width to bridge the opening or slot 4^f at the point of intersection of said slot 4^f with the hook portion 4^d of the lock 4, there-

by communicating the upward movement of the lock-actuating member 5 to the lock 4 and causing an unlocking movement thereof.

For the purpose of supporting the lock 4 in an unlocked position while the knuckle is closed so that the latter may be subsequently opened, I prefer to form a depending lip or projection 6^b upon the lock-set and knuckle-opener member 6 at a point intermediate its length, said stud or lip 6^b being adapted to engage a depressed lock-set seat 3^d upon the upper portion of the tail of the knuckle 3, but the position and relation of the stud and seat may be changed, or other means may be employed for this purpose if desired.

That portion 6^c of the lock-set and knuckle-opener member 6 which engages the rear of the knuckle to open the same lies normally somewhat more distant from the knuckle than does the portion 6^b which engages the lock-set seat 3^d, and the rear of the knuckle tail at a point proximate the lock-set seat 3^d is undercut as at 3^e, whereby the lock-set and knuckle-opener member 6 may be readily seated upon the knuckle to retain the lock in an unlocked position, the distance to which the knuckle may open before the disengagement of the member 6 therefrom is increased, and the knuckle is more easily opened by the contact of the lower portion 6^c of said member 6 with the knuckle.

The construction being substantially such as hereinbefore pointed out the operation of the device will be as follows: Assuming the several parts to be in coupled position and the knuckle, independently of its locking mechanism, restrained from rotation, an upward movement of the lock-actuating member 5, acting through the eye 6^a of the member 6 which engages the hook portion 4^d of the lock, causes an upward or unlocking movement of said lock, and when the portion 4^c of the lock which normally stands in apposition to said knuckle has entirely cleared the latter, a continued upward movement of the lock-lifting member 5 will, by reason of the engagement of the lock-set and knuckle-opener member 6 with the upper wall of the coupler head, positively pull the lip or projection 6^b of said member 6 over the lock-set seat 3^d of the knuckle, when, the upward pull upon the lock-actuating member 5 being discontinued, the said projection 6^b engages the seat 3^d and the lock is set, or maintained in such position as that the knuckle may be subsequently opened. Upon the uncoupling rotation of the knuckle after the lock has been brought to a set position, as above noted, the lock-set and knuckle-opener member 6 rests upon the knuckle and rides outwardly therewith for a portion of the total extent of rotation, thus supporting the lock until such time as the lip 6^b of said member 6 is disengaged from the lock-set seat 3^d, thus releas-

ing the lock which thereafter rests and rides upon the hook portion 3^b at the inner end of the knuckle until such time as the said knuckle is fully closed, when the lock drops to a locked position and the lock-set and knuckle-opener member 6 is returned to its normal or coupled position. The lock 4 having been brought to an unlocked position and being supported in such relation while the knuckle is in closed position as previously noted, and it being desired to return the said lock to its normal or coupled position without rotating the knuckle outward, the lock lifting member 5 is pushed or forced downwardly so that it has a relative movement with respect to said lock in the slot 4^f, such movement of the member 5 causing a downward movement of the eye 6^a with respect to said lock and a consequent rocking movement of the lock-set and knuckle-opener member 6 about the overhanging edge of the lock, the projection 6^b of said member 6 being thereby disengaged from the depressed lock-set seat 3^d, and the lock 4 returned to a locked position. The lock may also be returned to a locked position by withdrawing the lock-set member 6 from engagement with the knuckle, the same being reached for this purpose through the proper opening in the bottom wall of the coupler-head, and, if desired, the lock-actuating member 5 need therefore have no relative movement with respect to said lock to accomplish this purpose.

Assuming the parts to be in coupled relation and the knuckle free to rotate, an upward movement of the lock-actuating member 5 causes the lock 4 to assume an unlocked position, and a further slight upward movement causes the lower end 6^c of the lock-set and knuckle-opener member 6 to engage the undercut portion 3^e of the knuckle 3 and swing the latter into open position, the lock 4 thereafter resting and riding upon the knuckle tail until it is permitted to return to normal or coupled position as heretofore explained.

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

1. In a car coupler, the combination with a coupler head and its knuckle, of a lock for said knuckle, a lock-actuating member, and a lock-set member flexibly connected to said lock-actuating member and adapted to retain said lock in unlocked position by engagement with said knuckle, substantially as and for the purposes specified.

2. In a car coupler, the combination with a coupler head and its knuckle, of a lock for said knuckle, a lock-actuating member, and a lock-set member flexibly connected to said lock-actuating member, said lock-actuating member and said lock-set member being adapted to move both with and also inde-

pendently of said lock, substantially as and for the purposes specified.

3. In a car coupler, the combination with a coupler head and its knuckle, of a lock for said knuckle, a lock-set member engaging said lock, and a lock-actuating member flexibly connected to said lock-set member and adapted to actuate said lock through such lock-set member, substantially as and for the purposes specified.

4. In a car coupler, the combination with a coupler head and its knuckle, of a vertically sliding lock, a lock-set member engaging said lock, and a lock-actuating member flexibly connected to said lock-set member and engaging said last named member adjacent to its point of engagement with said lock, substantially as and for the purposes specified.

5. In a car coupler, the combination with a coupler head and its knuckle, of a vertically sliding lock, a knuckle-opener member engaging said lock, and a lock-actuating member flexibly connected to said knuckle-opener member and engaging said last named member adjacent to its point of engagement with said lock, substantially as and for the purposes specified.

6. In a car coupler, the combination with a coupler head and its knuckle, of a vertically sliding lock having a slot therein, a lock-actuating member within said slot, and a lock-set member flexibly connected to said lock-actuating member, substantially as and for the purposes specified.

7. In a car coupler, the combination with a coupler head and its knuckle, of a vertically sliding lock having a slot therein, a lock-actuating member in said slot, and a lock-set member having a hook and eye connection with said lock-actuating member, substantially as and for the purposes specified.

8. In a car coupler, the combination with a coupler head and its knuckle, of a vertically sliding lock having a slot therein, a lock actuating member in said slot, and a knuckle-opener member flexibly connected to said lock-actuating member, substantially as and for the purposes specified.

9. In a car coupler, the combination with a coupler head and its knuckle, of a vertically sliding lock having a slot therein, a lock-actuating member within said slot, and a knuckle-opener member having a hook and eye connection with said lock-actuating member, substantially as and for the purposes specified.

10. In a car coupler, the combination with a coupler head and its knuckle, of a vertically sliding lock having a slot therein and a hook portion below said slot, of a lock-actuating member within said slot, and a lock-set member engaging the hook portion of said lock and flexibly connected to said lock-actuating member, substantially as and for the purposes specified.

11. In a car coupler, the combination with

a coupler head and its knuckle, of a vertically sliding lock, a lock-set member engaging said lock, and a lock-actuating member flexibly connected to said lock-set member within the coupler head, substantially as and for the purposes specified.

12. In a car coupler, the combination with a coupler head and its knuckle, of a vertically sliding lock, a knuckle-opener member engaging said lock, and a lock-actuating member flexibly connected to said knuckle-opener member within the coupler head, substantially as and for the purposes specified.

13. In a car coupler, the combination with a coupler head and its knuckle, of a vertically sliding lock, a lock-actuating member, and a lock-set member flexibly connected to said lock-actuating member at a point within the coupler head and adapted to retain said lock in unlocked position by engagement with said knuckle, substantially as and for the purposes specified.

14. In a car coupler, the combination with a coupler head and its knuckle, of a lock for said knuckle, a lock-actuating member, and a combined lock-set and knuckle-opener member, said lock-actuating member and said combined lock-set and knuckle-opener member being flexibly connected within the coupler head, substantially as and for the purposes specified.

15. In a car coupler, the combination with a coupler head and its knuckle, of a vertically sliding lock, a combined lock-set and knuckle-opener member engaging said lock and adapted both to open said knuckle and to be seated upon said knuckle to support said lock, and a lock-actuating member flexibly connected to said combined lock-set and knuckle-opener member within the coupler head, substantially as and for the purposes specified.

16. In a car coupler, the combination with a coupler head, of a knuckle, a lock for said knuckle, and flexibly connected members adapted to actuate the lock to permit the knuckle to be opened and to retain said lock in such position by engagement of one of said flexibly connected members with said knuckle, said flexibly connected members also adapted to open said knuckle, substantially as and for the purposes specified.

17. In a car coupler, the combination with a coupler head and its knuckle, of a vertically sliding lock, and a combined lock-set and knuckle-opener member provided with means intermediate its length for engaging said knuckle to support said lock, substantially as and for the purposes specified.

18. In a car coupler, the combination with a coupler head and its knuckle, of a lock for said knuckle, and a combined lock-set and knuckle-opener member provided with means intermediate its length for engaging said knuckle to support said lock, said com-

bined lock-set and knuckle-opener member being independent of said lock, substantially as and for the purposes specified.

19. In a car coupler, the combination with a coupler head and its knuckle, of a lock for said knuckle, and a combined lock-set and knuckle-opener member having a portion adapted to engage said knuckle to open the same and having a projection intermediate its length adapted to engage said knuckle and thereby support said lock, said combined lock-set and knuckle-opener member being independent of said lock, substantially as and for the purposes specified.

20. In a car coupler, the combination with a coupler head, of a knuckle having a lock-set seat upon the upper portion thereof, a vertically sliding lock for said knuckle, and a combined lock-set and knuckle opener member independent of said lock, said combined lock-set and knuckle opener member being provided with means intermediate its length adapted to engage the lock-set seat of said knuckle and thereby retain said lock in unlocked position, and being also provided with a portion adapted to actuate said knuckle to open the same, substantially as and for the purposes specified.

21. In a car coupler, the combination with a coupler head, of a knuckle having a lock-set seat upon the upper portion thereof, a vertically sliding lock having a slot therein, a lock actuating member within said slot, and a combined lock-set and knuckle-opener member flexibly connected to said lock-actuating member, said combined lock-set and knuckle-opener member being provided with means intermediate its length adapted to engage the lock-set seat of said knuckle and thereby retain said lock in unlocked position, and being also provided with a portion adapted to actuate said knuckle to open the same, substantially as and for the purposes specified.

22. In a car coupler, the combination with a coupler head, of a knuckle having a lock-set seat upon the upper portion thereof, a vertically sliding lock having a slot therein, a lock actuating member within said slot, and a combined lock-set and knuckle-opener member flexibly connected to said lock-actuating member, said lock-actuating member and said combined lock-set and knuckle-opener member being independent of said lock, and said combined lock-set and knuckle-opener member being provided with means intermediate its length adapted to engage the lock-set seat of said knuckle and thereby retain said lock in unlocked position and being also provided with a portion adapted to actuate said knuckle to open the same, substantially as and for the purposes specified.

23. In a car coupler, the combination with a coupler head, of a knuckle such as 3 having

a lock-set seat such as 3^d, a lock 4 having a slot 4^f, a lock-actuating member such as 5, and a combined lock-set and knuckle-opener member such as 6 having a projection such as 6^b and a portion such as 6^c, such lock-actuating member 5 and such combined lock-set and knuckle-opener member being flexibly connected, substantially as and for the purposes specified.

10 24. A knuckle for vertical plane car couplers, said knuckle having a hook portion at its

rear end and a socket on the rear face of the knuckle-tail, said hook and said socket being adapted to engage a coupler head.

In testimony whereof I affix my signature, 15
in presence of two witnesses this 29th day of
June 1904.

GILBERT P. RITTER.

Witnesses:

M. D. BALLAUF,
HUGH M. STERLING.