

No. 757,366.

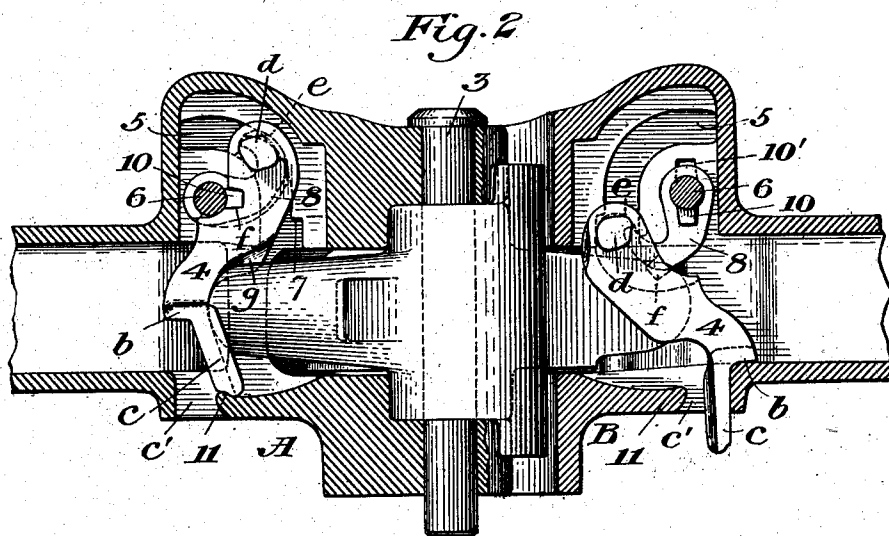
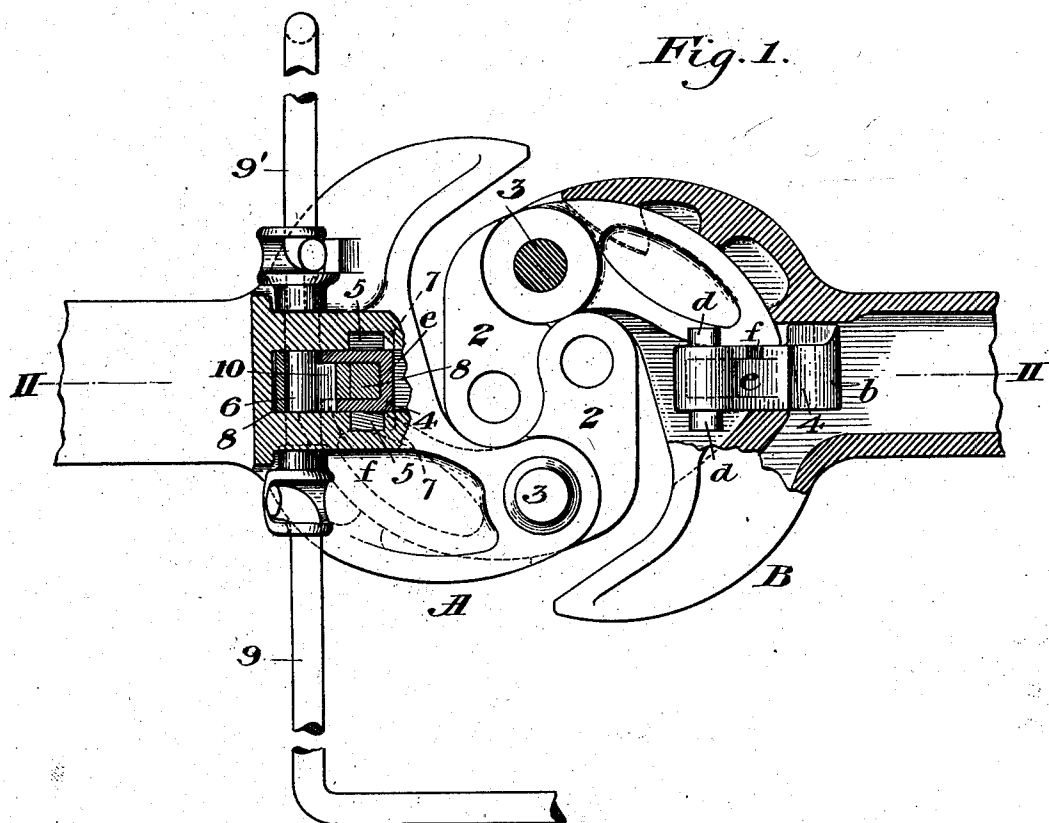
PATENTED APR. 12, 1904.

C. A. TOWER.  
CAR COUPLING.

APPLICATION FILED JUNE 18, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



WITNESSES

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INVENTOR

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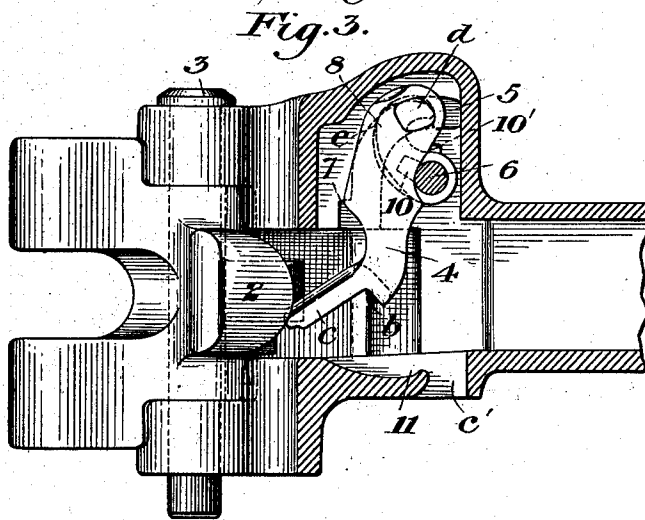
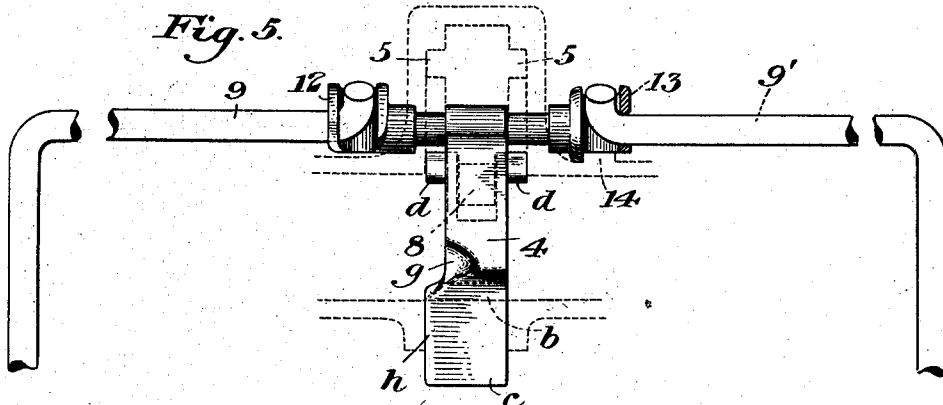
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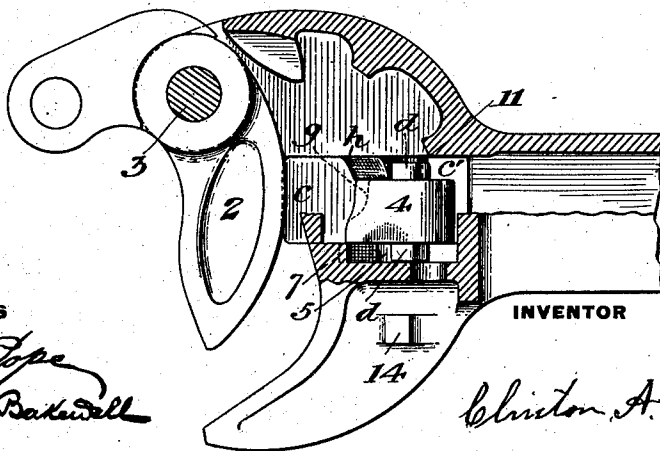
APPLICATION FILED JUNE 18, 1903.

NO MODEL.

3 SHEETS—SHEET 2.



*Fig. 4.*



WITNESSES

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No. 757,366.

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NO MODEL.

3 SHEETS—SHEET 3.

Fig. 6.

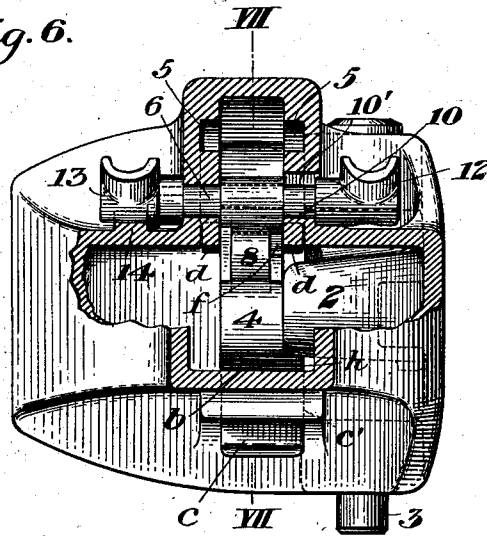


Fig. 7.

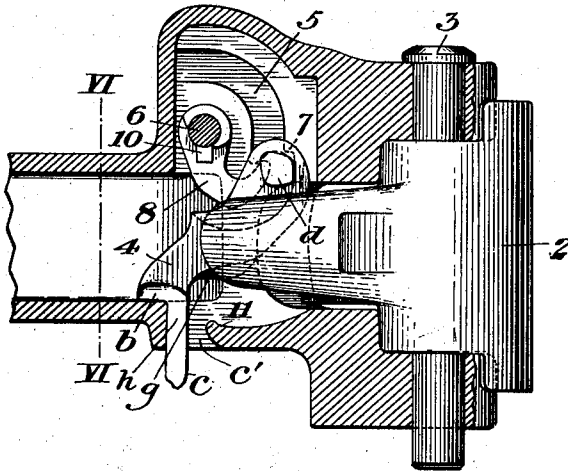
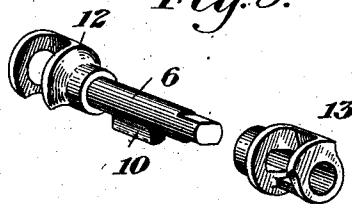


Fig. 8.



WITNESSES

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# UNITED STATES PATENT OFFICE.

CLINTON A. TOWER, OF CLEVELAND, OHIO, ASSIGNOR TO THE NATIONAL MALLEABLE CASTINGS COMPANY, A CORPORATION OF OHIO.

## CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 757,366, dated April 12, 1904.

Application filed June 18, 1903. Serial No. 161,995. (No model.)

*To all whom it may concern:*

Be it known that I, CLINTON A. TOWER, of Cleveland, Cuyahoga county, Ohio, have invented a new and useful Car-Coupler, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a top plan view showing two of my improved couplers A B partly broken away to expose the interior construction, the operating-lever of the coupler A being shown in position to bring the parts into lock-set position. Fig. 2 is a vertical section on the line II II of Fig. 1. Fig. 3 is a longitudinal section of the coupler, showing the knuckle open. Fig. 4 is a plan view, partly broken away, of the coupler, showing the knuckle open. Fig. 5 is a detail view of the operating mechanism, showing the locking and opening piece in locked position, the wall of the coupler being indicated by dotted lines. Fig. 6 is a vertical cross-section on the line VI VI of Fig. 7, part of the coupler-head being broken away. Fig. 7 is a vertical section on the line VII VII of Fig. 6, and Fig. 8 is a detail view of the spindle for operating the locking and opening piece.

Difficulty has been experienced in devising a car-coupler suitable to be operated by a side lift for the lock. The side lift is often desirable, especially for use with gravel-cars and the like where it is important that the coupler should have no top opening for the entrance of dirt. With other cars also there is often insufficient room to accommodate the ordinary top-opening coupler, so that in any of such cases it is important that the coupler should be capable of operation from the side. I have devised a coupler which meets these requirements perfectly. It is adapted to be operated from either side or from both sides, and in addition it possesses certain advantages of strength and ease of operation which are of value, irrespective of the side-opening features.

In Fig. 1 I show two couplers A B of my construction coupled together and locked. Each coupler has a swinging knuckle 2, piv-

oted to the coupler-head by a pivot-pin 3. The tail of the knuckle when locked is held by a locking and opening piece 4. (Shown in detail in Fig. 5.) When in the locked position shown in Figs. 2 and 7, a heel *b* on said piece rests upon the floor of the coupler, and a downwardly-projecting portion *c* extends through a hole *c'* in the floor of the coupler. At the upper portion of the locking and opening piece 4 there are two trunnions *d*, one on each side, which travel within grooves 5, formed in the side walls of the coupler-head concentric with a spindle 6, hereinafter described. At the base of the grooves 5 there is a recess or recesses 7, under which the trunnions *d* fit when the parts are in locked position, being held thereunder by the forward tipping of the piece 4 on its seat at *b* on the floor of the coupler. These recesses serve to hold the locking and opening piece in locked position and to prevent it from creeping upwardly under the jarring motion of the train. For the purpose of raising the locking and opening piece 4 in order to unlock and free the knuckle and to move the knuckle open I employ a lifting device consisting of a lever 8, of hook form, which when the knuckle is in locked position engages the edge of a recess *e* in the back of the piece 4, and which as it is raised enters the said recess and finally engages the piece 4 within the recess firmly, so that the further motion of the lever will move the piece 4 with it as if they were an integral construction. The lever 8 is keyed to the spindle 6, which extends transversely through the upper portion of the coupler-head and is connected at its ends with operating crank-rods 9 9'.

The parts being in the position shown in Fig. 7 and at the right of Fig. 2, if it is desired to unlock the knuckle and to set the lock in unlocked position without moving the knuckle forward the operator standing at either side of the car turns the crank-shaft 9 or 9', thereby rotating the lever 8. The first motion of the lever draws back the piece 4, so as to free the trunnions *d* from engagement with the recesses 7, and the continued motion thereof will cause the piece 4 to rise until it reaches the position shown at the left of Fig.

2, the lower end of the part *c* then being lifted above the floor of the coupler and caused to rest thereon in lock-setting position, and the hook 8 having completely entered and fitted itself into the interior of the recess in the back of the piece 4, and the key 10 on the spindle 6 having entered an open slot *f* in the rear of the piece 4, and being thus rigidly connected therewith both by the interfitting of the hook with the recess and the engagement of the key with the slot. If the crank-handle 9 or 9' be then released, the piece 4 remains in the position shown at the left of Fig. 2, being then lifted clear of the knuckle, so as to unlock the knuckle and to permit it to be moved open either by hand or by draft of a car with which it is connected. When the knuckle is thus moved open, it will engage a beveled projection *g* on the front of the piece 4 and will raise the piece 4, so as to lift its lower end over a ledge 11 at the margin of the hole *c'* in the floor of the coupler and will also move it back, so as to bring the portion *c* in line with the hole *c'*. Then as the knuckle moves forward past the piece 4 the latter will drop into the position shown in Fig. 7. When the knuckle is next moved back into closed position, its tail will engage the piece 4 and will first throw it back slightly, so as to clear the trunnions *d* from the recesses 7. Continued motion will lift the piece 4 upwardly, causing the trunnions to travel within the groove 5 until it has been raised far enough to allow the knuckle to pass, and when the knuckle has passed back of the piece the latter will drop into the locking position shown in Fig. 7 and at the right of Fig. 2.

If instead of leaving the piece 4 in lock-set position, as above described, it is desired to continue its motion far enough to throw the knuckle open, the operator continues to turn the crank-shaft 9 or 9' beyond the extent required to bring the parts into the lock-set position, and the further turning of the spindle 6 which results therefrom will cause the piece 4 to move radially with it as if it were an integral part thereof, and the trunnions *d* will continue to travel within the grooves 5 until the parts are brought into the position shown in Fig. 3, the lower end of the locking and opening piece 4 meanwhile engaging the tail of the knuckle and throwing it open to its full extent. The initial engagement of the piece 4 with the knuckle is effected by a lateral projection *h* at the lower end of the piece. When the operating-crank 9 9' is released after the knuckle has been moved into open position, the piece 4 will drop and the spindle 6 will turn back into its original position. The piece 4 will then be supported on the floor of the coupler or will drop into the hole in the floor of the coupler, as the case may be.

It will be noticed that the arrangement of the parts is such that a very strong leverage is exerted by the operation of the crank-shaft,

so that the knuckle can be opened with but little exertion.

The preferable construction of the spindle above described is shown in Fig. 8. It is provided with a key 10, which enters a slot in the lever 8, and its outer ends are formed with coupling-eyepieces 12 13, adapted to receive and engage the angled ends of the crank-shafts 9 9', respectively. The piece 13 is made separate from the spindle and has a squared socket taking over a correspondingly-shaped end thereon. In assembling the parts the key 10 on the spindle 6 is entered into the coupler through a corresponding keyway 10', situate in the side of the latter at such inclination that the key 10 can only be brought into register therewith when the piece 4 and the lever 8 are raised beyond the limit of motion of the knuckle. The spindle therefore cannot be removed unless the knuckle is first taken from the coupler. The piece 13 is held by lateral engagement with a shoulder 14 on the coupler, as shown in Fig. 5, and cannot be removed until the spindle 6 is first withdrawn from said piece. The part 13 may be omitted, but it is desirable to use it, as it enables the employment of two crank-shafts, one extending to each side of the car. When so employed, either crank-shaft may be used without disturbing the crank-shaft at the other side of the car.

Within the scope of my invention as defined in the claims the parts of the coupler may be modified in form and construction, since

What I claim is—

1. A coupler having a locking and opening piece, a lever by which it is raised and swung forwardly, and a curved guide for said piece concentric with the lever; substantially as described.

2. A coupler having a locking and opening piece, a lever by which it is raised and swung forwardly, said lever engaging the piece freely during its lifting motion, and engaging it rigidly when moving the knuckle open, said locking and opening piece extending into an opening in the floor of the coupler and being adapted when raised to rest upon the margin of said opening; substantially as described.

3. A coupler having a locking and opening piece, a lever by which it is raised and swung forwardly, said lever engaging the piece freely during its lifting motion, and engaging it rigidly when moving the knuckle open, said piece being adapted to engage a recess in the coupler-head, and said lever being adapted to draw it out of contact with the recess during the initial motion of the parts; substantially as described.

4. A coupler having a locking and opening piece, a lever adapted to engage a recess therein, and trunnions at the upper portion of the piece; substantially as described.

5. A coupler having a locking and opening

piece, a lever adapted to engage the same freely during its initial movement and then to engage it rigidly, and a recess on the coupler-head adapted to engage said piece, said lever being arranged to impart to the piece an initial motion to free it from the projection, succeeded by a lifting motion to release the knuckle and a swinging motion to move the knuckle open; substantially as described.

6. A coupler having a locking and opening piece, a lever contained within the coupler-head, by which the piece is raised and swung forwardly, said lever engaging the piece freely during its lifting motion and engaging it rigidly when moving the knuckle open, and an operating device exterior to the coupler-head and connected detachably to the lever; substantially as described.

7. A coupler having a locking and opening piece, a lever contained within the coupler-head, by which the piece is raised and swung forwardly, said lever engaging the piece freely during its lifting motion and engaging it rigidly when moving the knuckle open, and an operating-spindle connected detachably to the lever; substantially as described.

8. A coupler having a locking and opening piece, a lever contained within the coupler-head, by which the piece is raised and swung forwardly, said lever engaging the piece freely during its lifting motion and engaging it rigidly when moving the knuckle open, and an operating-spindle connected detachably to the lever by a key; substantially as described.

9. A coupler having a locking and opening piece, a lever contained within the coupler-head, by which the piece is raised and swung forwardly, said lever engaging the piece freely during its lifting motion and engaging it rigidly when moving the knuckle open, an operating-spindle connected detachably to the lever, and a coupling-eyepiece on the spindle adapted to receive loosely an operating-crank; substantially as described.

10. A coupler having a locking and opening piece, a lever contained within the coupler-head, by which the piece is raised and swung forwardly, said lever engaging the piece freely during its lifting motion, and engaging it rigidly when moving the knuckle open, an operating-spindle connected detachably to the lever, and a coupling-eyepiece fitted detachably to the spindle and held by a projection on the coupler-head; substantially as described.

11. A coupler having a lock, an operating-spindle having a connecting-key, and a slot on the coupler-head adapted to permit withdrawal of the spindle only when the lock has been moved past its normal limit; substantially as described.

12. A coupler having a locking and opening piece, a lever contained within the coupler-head, by which the piece is raised, and swung forwardly, said lever engaging the piece freely during its lifting motion and having a hook portion adapted to engage it rigidly when moving the knuckle open; substantially as described.

13. A coupler having a locking and opening piece, a lever contained within the coupler-head, and an operating-spindle connected detachably to the lever; substantially as described.

14. A coupler having a locking and opening piece, a lever contained within the coupler-head, an operating-spindle having a crank connection, and a coupling-eyepiece fitted to the spindle and constituting a second crank connection; substantially as described.

15. A coupler having a locking and opening piece, a lever contained within the coupler-head, an operating-spindle, and a coupling-eyepiece fitted detachably thereto; substantially as described.

16. In a coupler having a locking and opening piece, a lever by which it is raised and swung forwardly, and a curved guide, said locking and opening piece fitting at the upper end in the guide and having at the lower end a portion adapted to engage the knuckle; substantially as described.

In testimony whereof I have hereunto set my hand.

CLINTON A. TOWER.

Witnesses:

E. W. WHITEMORE,  
D. W. CALL.