No. 799,532. PATENTED SEPT. 12, 1905.

O. P. CALLAHAN.

CAR COUPLING.

APPLICATION FILED MAY 5, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

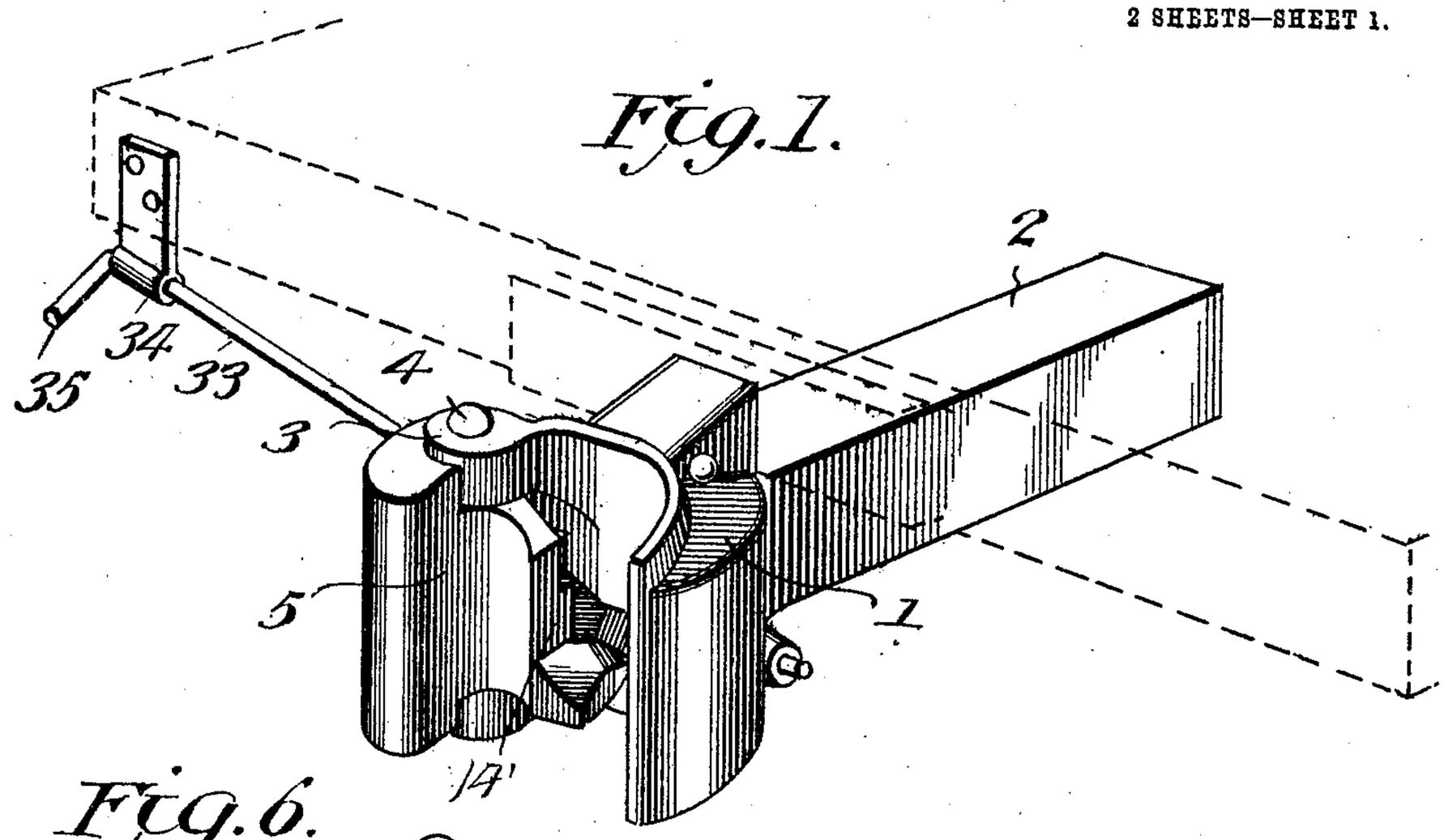


Fig. 6.

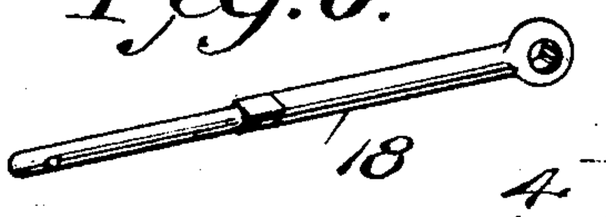


Fig. 2.

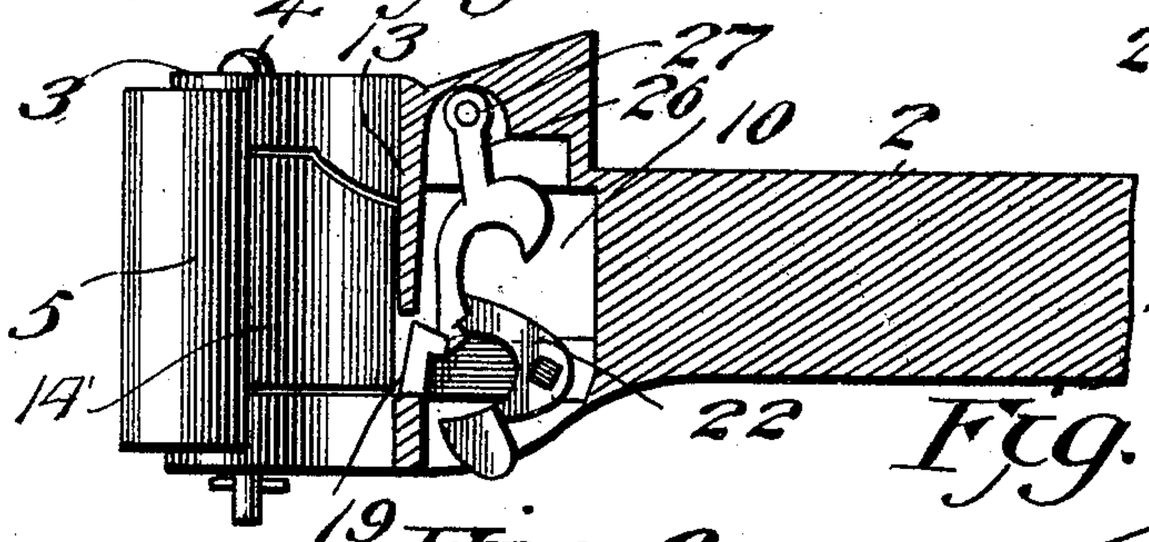


Fig. 7.

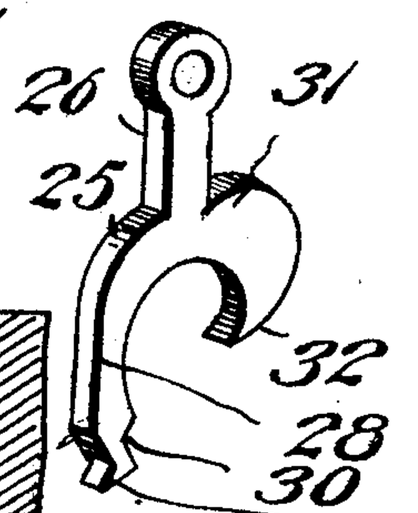


Fig. 8.

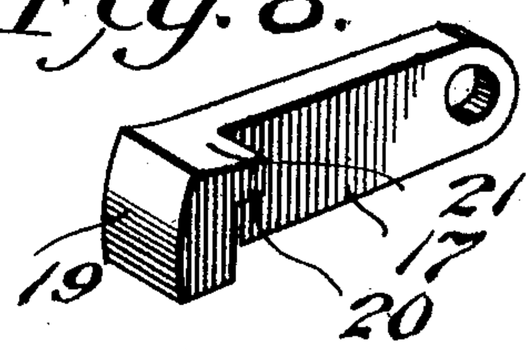
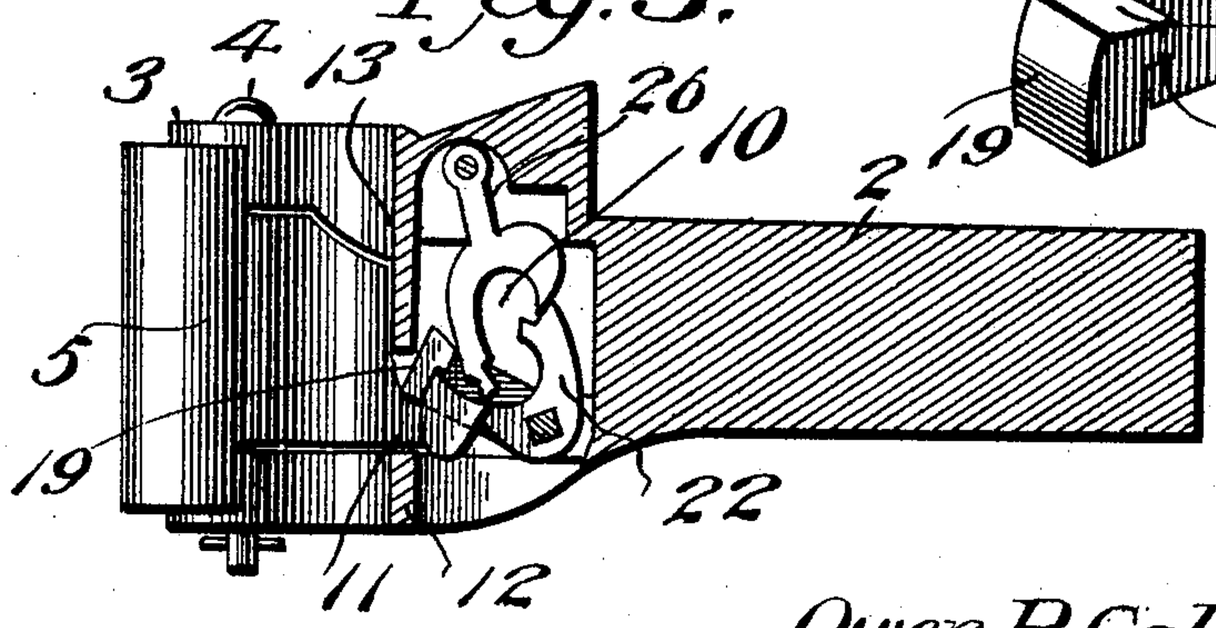


Fig. 3.



Witnesses

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2 SHEETS—SHEET 2.

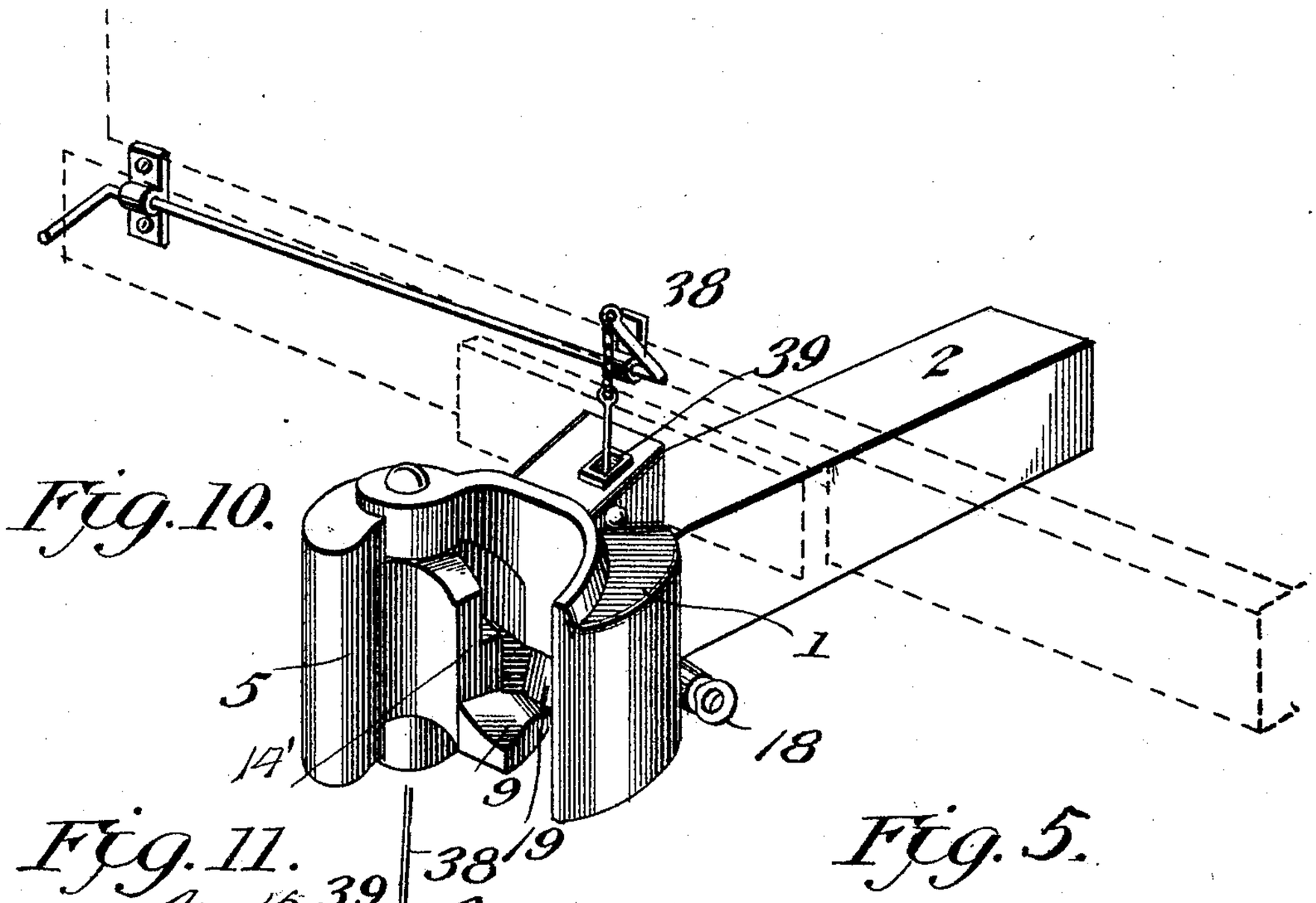

Fig. 10.

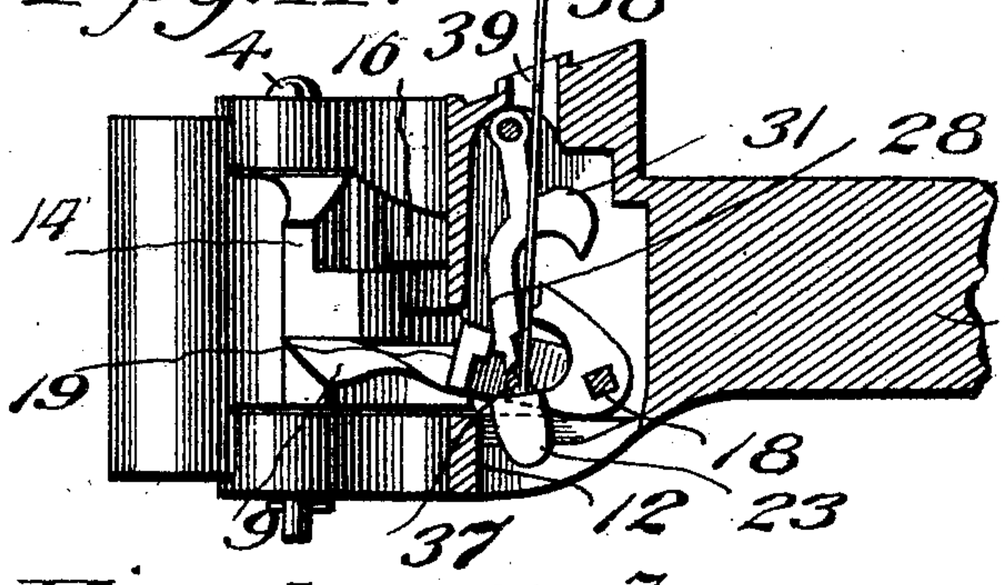

Fig. 11.

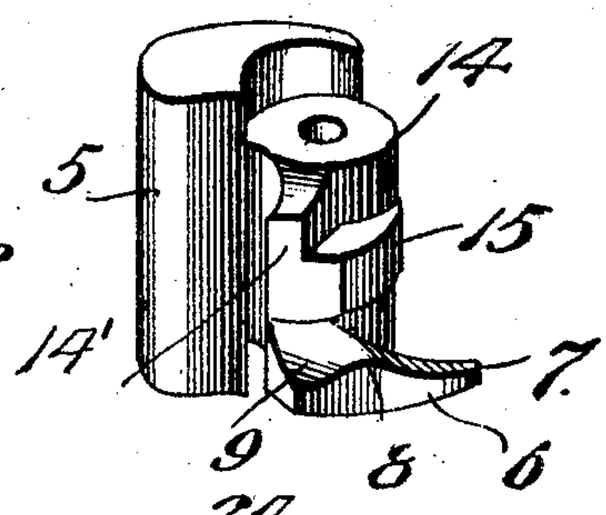

Fig. 5.

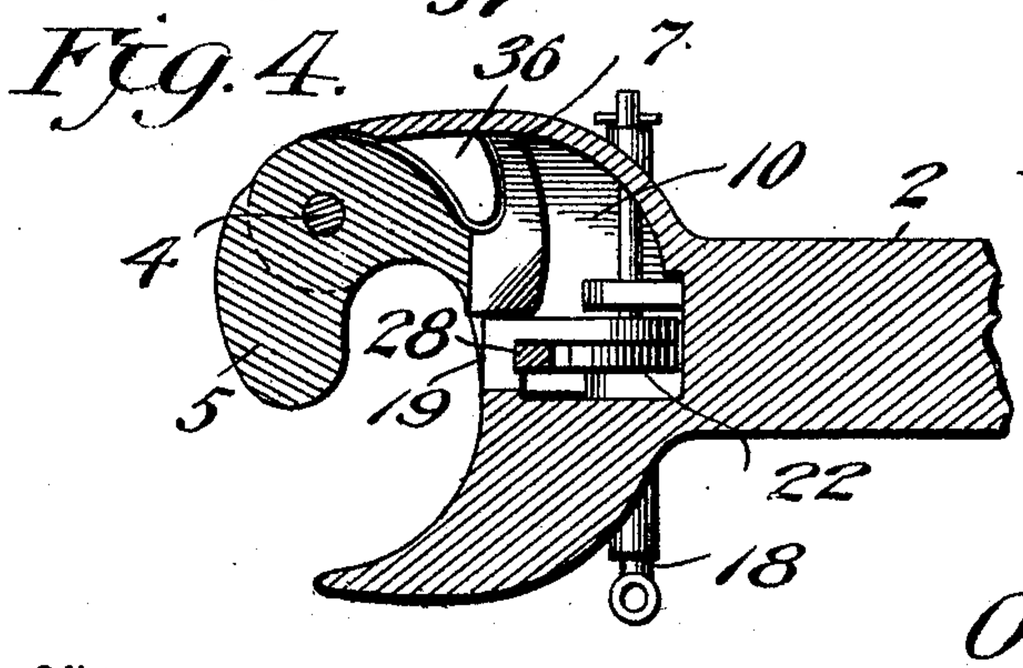

Fig. 4.

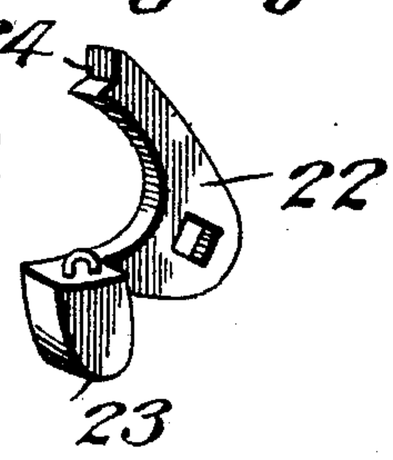

Fig. 9.

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UNITED STATES PATENT OFFICE.

OWEN P. CALLAHAN, OF NEW YORK, N. Y.

CAR-COUPLING.

No. 799,532. Specification of Letters Patent. Patented Sept. 12, 1905.

Application filed May 5, 1905. Serial No. 259,021.

To all whom it may concern:

Be it known that I, OWEN P. CALLAHAN, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented new and useful Improvements in Car-Couplers, of which the following is a specification.

My invention relates to certain new and useful improvements in car-couplers.

The objects of the invention are, first, to provide a car-coupler having novel means for securely locking the knuckle in closed or coupling position; second, to provide novel means for setting the locking mechanism in position for automatically engaging the knuckle; third, to provide means for retaining the knuckle in locking position in the event of the casual breakage of its pivot-pin, and thus preventing disconnection of the knuckle and the consequent uncoupling of cars; fourth, to provide a coupler having improved means for receiving and sustaining the buffing strain when two couplers are brought into locking engagement; fifth, to provide a coupler which by slight variation in the form of the draw-head may be used in connection with platform or box cars, and, finally, to generally improve and simplify the construction and increase the practical efficiency of devices of this character.

With these and other objects in view the invention consists of the novel construction, combination, and arrangement of parts hereinafter fully described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of a coupler embodying my invention, the knuckle appearing in its open position for coupling engagement with the knuckle of a coöperating coupler. Fig. 2 is a central longitudinal section of the same, showing the knuckle locked in closed position. Fig. 3 is a similar view showing the latch raised to permit the knuckle to swing open. Fig. 4 is a horizontal section showing the knuckle closed and the tailpiece thereof in engagement with the retaining-lug. Fig. 5 is a detail view of the knuckle detached. Fig. 6 is a detail view of the operating shaft or rod of the latch-bar and lifting-dog. Figs. 7 and 8 are similar views of the locking-dog and latch, respectively. Fig. 9 is a detail view of the lifting-dog. Fig. 10 is a view similar to Fig. 1, showing a slight modification; and Fig. 11 is a central vertical section through the form of coupler shown in Fig. 10, illustrating the knuckle in its open position.

Referring now more particularly to the drawings, the numeral 1 designates the draw-head of the coupler, provided with the usual shank 2 and having ears 3, pierced for the passage of a pivot-pin 4, on which the knuckle 5 is pivotally mounted. The knuckle 5 is formed with an inwardly and laterally curved finger or tailpiece 6, formed with a reduced or tapered terminal 7, an intermediate hump or raised portion 8, and an outer beveled or downwardly-inclined surface 9. The tailpiece 6 normally projects into a chamber or compartment 10 in the body of the draw-head through an opening 11 in the front of said body, and below said opening is a transverse shoulder or supporting-plate 12 and above the opening a plate 13. This plate 13 forms a stop against which an extension 14′ on the pivot-boss 14 of the knuckle strikes when the knuckle swings to closed position, and thereby receives and sustains a portion of the shock or impact resulting during the connection of the knuckle with the knuckle of an adjoining car, the strain of impact being in this manner more effectually distributed, so as to prevent concentration of the strain upon the shank or any one part and liability of injury thereto or breakage thereof. The boss 4 of the knuckle is formed with a short shoulder or rib 15, adapted when the knuckle is closed to fit within a recess 16 in the buffer wall or plate 13, the upper and lower walls of said recess serving as stops to limit the upward and downward strain on the coupler from the vertical oscillations of the cars.

Locking mechanism of novel construction is arranged within the chamber 10. This mechanism comprises a latch, a locking-dog, a lifting-dog, and means for operating the two dogs. The latch comprises an arm 17, which is fixed at its inner end to a rock shaft or rod 18, extending transversely through the lower portion of the chamber, and at the forward end of this arm 17 is a head 19, having at its inner end a shoulder 20 and formed with an upper beveled or inclined face 21. Also fixed to the rod 18 is a rocking lifting-dog 22 in the form of a curved bell-crank lever, and one arm of this dog is formed with an enlarged weighted end 23, which is adapted to engage the shoulder 20 of the latch, while the other arm of the dog is formed with a locking-notch 24. A similar-shaped locking-dog

25 is disposed in the upper portion of the chamber 10 and provided with an upwardly-projecting substantially central hanger 26, pivotally mounted on a pin 27. The forward arm 28 of this dog 25 is provided at its end with front and rear locking-notches 29 and 30, adapted to respectively engage the surface 21 of the latch 17 and the notched end 24 of the lifting-dog 22 to lock said latch and dog in their projected positions. The other or rear arm 31 of the locking-dog 25 terminates in a locking projection 32, adapted to engage the notched locking end 24 of the lifting-dog 22 to lock the latter in retracted position. The rod or shaft 18 is suitably connected in the form of the invention shown in Fig. 1 to an operating-rod 33, journaled in a hanger 34, secured to the end of the car and provided with an operating crank-arm 35. The rod 33 is employed for actuating the shaft 18 when the coupler is applied to a platform-car, so as to obviate the use of upwardly-projecting operating devices, which are liable to interfere with the loading of the car when long timbers and other lengthy freight are to be loaded for transit.

The reduced or tapered end 7 of the tailpiece 6 of the knuckle 5 normally rests on the shoulder 12 and between the same and the head 19 of the latch 17 when the knuckle is in its swung-open position for engagement with the knuckle of the coupler of another car. Fig. 2 shows the knuckle locked in closed position, from which it will be seen that the head 19 of the latch-arm 17 lies in advance of the tailpiece and rests upon the shoulder 12, while the locking portions 29 and 30 of the locking-dog 25 engage or interlock with the cöoperating locking portions 21 and 24 of the latch and lifting-dog and hold the same in locked or projected position. When it is desired to release the knuckle to permit the same to swing open, the shaft 18 is turned by the operating-rod 33 to swing the notched arm of the lifting-dog 22 upward, whereupon said arm will be moved out of engagement with locking-dog 25, and the weighted end 23 of the lifting-dog will engage and lift the latch 17, thus permitting the knuckle to swing open as the upward movement of the latch releases it from engagement with the tailpiece 6. When the knuckle is swung fully outward, the tapered terminal 7 of the tailpiece rests under the head 19 of the latch, and upon the subsequent inward movement of the knuckle the head 19 will ride upon said tapered extremity and be lifted by the hump or raised portion 8 and will then slide down over the inclined or beveled surface 9 and drop in front of the front of the tailpiece, thus locking the knuckle against outward movement, the gradual elevation and downward movement of the latch thus produced adapting it to move into locking engagement with the tailpiece without undue jar or strain. Upon the dropping of the latch into engagement with the tailpiece the locking and lifting dogs will swing by gravity into locking engagement therewith and with each other, thus securing the tailpiece against outward movement and effectually retaining the knuckle in closed or coupling position.

In order to prevent disconnection of the knuckle from the draw-head and the consequent separation of the coacting coupler therefrom in the event of casual breakage of the pin 4, I provide the draw-head with a retaining-lug 36, projecting from the side of the draw-head to which the knuckle is pivoted and projecting into the front portion of the chamber 10, as clearly shown in Fig. 4. This lug is of such form as to fit between the boss 14 of the knuckle and the tailpiece 6, which latter lies in rear thereof when the knuckle is closed, so that when the pin 4 breaks the knuckle will be held by the engagement of the tailpiece with the lug against outward movement, thus preventing separation of the knuckle and accidents liable to result therefrom.

In the slight modification of the invention illustrated in Figs. 10 and 11 I have shown the weighted end 23 of the lifting-dog provided with an eye 37 for the attachment thereto of the lower end of an operating-rod or other connection 38, extending upward through an opening 39 in the top of the draw-head and adapted to be connected at its upper end to a suitable operating device (not shown) upon the top or upper portion of the adjacent end of the car. This construction and arrangement of operating means is designed to be used upon box-cars, where such means may extend upwardly for operation without interfering with the loading of the car.

From the foregoing description, taken in connection with the accompanying drawings, the construction and mode of operation of the invention will be understood without a further extended description.

Changes in the form, proportions, and minor details of construction may be made within the scope of the invention without departing from the spirit or sacrificing any of the advantages thereof.

Having thus described the invention, what is claimed as new is—

1. In a coupler, a draw-head provided with a buffer-wall, a knuckle provided with a pivoted boss pivoted to the draw-head, said boss having an extension to abut against said buffer-wall when the knuckle swings to closed position, and means for locking the knuckle in coupled position.

2. In a coupler, a draw-head, a knuckle provided with a boss pivotally connected with the draw-head and formed with an extension, and a stop-lug projecting therefrom, a buffer-wall upon said draw-head adapted to be en-

gaged by said extension when the knuckle swings to closed position, said wall having a recess to receive the lug, whereby the knuckle is reinforced from vertical strain.

3. In a coupler, a draw-head having a compartment therein and provided with an entrance-slot thereto, a supporting-wall at the base of said slot and an abutment-wall above the same, a pivoted latch device adapted to be supported by said supporting-wall, a knuckle pivoted to the draw-head and provided with a tailpiece adapted to lift said latch and to be engaged thereby and a portion to engage said abutting wall when the knuckle swings to closed position, and means arranged within said compartment for locking and releasing said latch.

4. In a coupler, the combination with a draw-head having a compartment therein, and a knuckle pivoted to the draw-head and provided with a tailpiece, of a latch pivoted within the compartment and adapted to be raised by said tailpiece and to engage and lock the same when the knuckle swings to closed position, a locking-dog to engage said latch, and a releasing-dog for retracting said latch and locking the same in retracted position.

5. The combination with a draw-head having a compartment therein, a knuckle pivoted to the draw-head and provided with a tailpiece, of a pivoted latch arranged within the compartment and adapted to be raised by said tailpiece and to engage and lock the same when the knuckle swings to closed position, a locking-dog adapted to engage and hold the latch-piece in locking position, and a lifting-dog for retracting said locking-dog, said dogs being provided with interengaging means to hold them in retracted and projected position.

6. The combination with a draw-head having a compartment therein, a knuckle pivoted to the draw-head, and a finger extending from the knuckle; of an arm pivoted within the compartment and normally in the path of the finger, a head thereon having an extension, a lifting-dog pivoted within the compartment and adapted to contact with the extension, and a locking-dog pivoted within the compartment and adapted to contact with the extension, said dogs being adapted to interlock and hold the arm in raised or lowered position.

7. The combination with a draw-head having a compartment therein, a knuckle hinged to the draw-head, and a finger extending therefrom; of an arm pivoted within the compartment and normally in the path of the finger, a head upon the arm having an extension thereon, oppositely-disposed dogs pivoted within the compartment and adapted to alternately contact with the extension, said dogs being adapted to engage each other and support the head.

8. The combination with a draw-head having a compartment therein, a knuckle pivoted to the draw-head, and a finger extending therefrom; of an arm pivoted within the compartment and normally in the path of the finger, a head upon the arm having an extension, a lifting-dog pivoted within the compartment and adapted to contact with the extension, said dog having a recessed end, a locking-dog pivoted within the casing and adapted to contact with the extension and lifting-dog, the two dogs being adapted to interlock and hold the head in raised position, and means for operating the lifting-dog.

9. The combination with a draw-head having a compartment therein, a knuckle pivoted to the draw-head, a tapered finger extending therefrom, and a tapered extension upon the finger; of an arm pivoted within the compartment and normally in the path of the finger and extension, a head on the arm having an extension, a rod revolubly mounted within the draw-head and extending laterally therefrom, a lifting-dog secured to the rod and movable therewith, said dog being adapted to contact with the extension of the head and having a recessed end, a locking-dog pivoted within the compartment and adapted to contact with the extension of the head and with the lifting-dog to lock the arm, an extension upon the locking-dog adapted to engage the recessed end of the lifting-dog, and a rod slidably mounted within the draw-head and connected to the lifting-dog.

10. In a coupler, the combination of a draw-head provided with a compartment having an entrance thereto, the bottom wall of said entrance forming a supporting portion, a latch pivoted within the compartment, a knuckle pivoted to the draw-head and provided with a tailpiece adapted to rest upon said supporting portion and to lift the latch and to be locked thereby when the coupler is in coupling position, a locking-dog adapted to engage the latch device and hold the same projected, and a releasing-dog adapted to retract said locking-dog, said dogs having interengaging means to interlock and hold them in projected and retracted position.

11. The combination with a draw-head having a compartment therein, and a knuckle pivoted to the draw-head and provided with a tailpiece, of a latch pivotally mounted within the compartment and adapted to be raised by said tailpiece and to engage the same to lock the knuckle in coupling position, a swinging locking-dog for holding said latch projected and a swinging lifting-dog for disengaging said locking-dog, said dogs having arms provided with interlocking portions adapted to engage each other to lock them in projected and retracted position.

In testimony whereof I affix my signature in presence of two witnesses.

OWEN P. CALLAHAN.

Witnesses:
WM. J. STEIN,
J. HYNES.