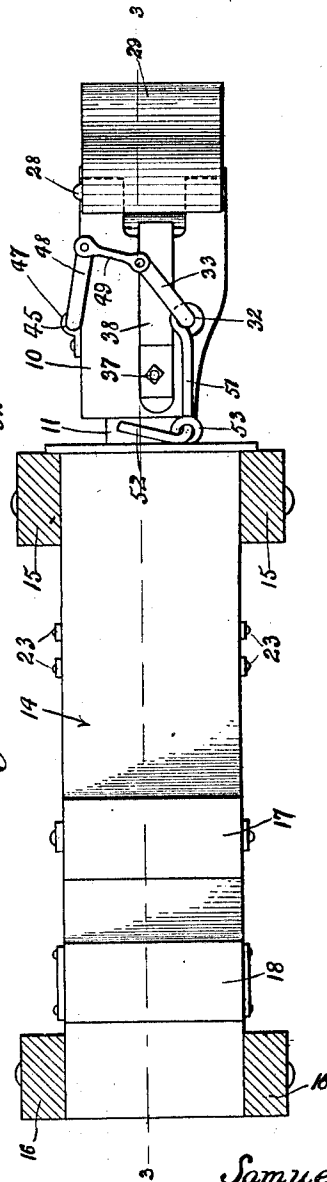
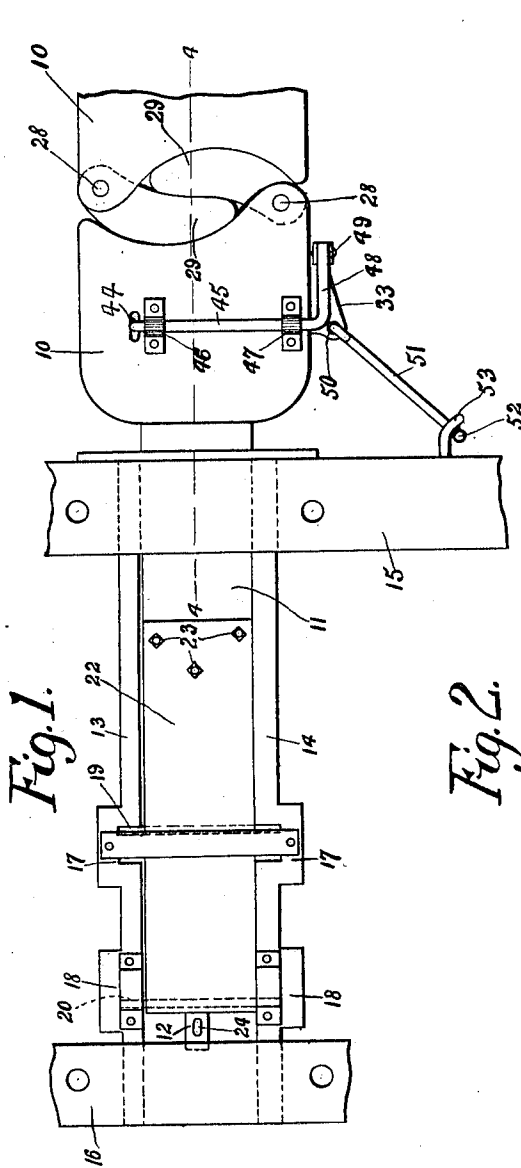


S. L. SMITH.
CAR COUPLING.
APPLICATION FILED JULY 6, 1909.

1,020,850.

Patented Mar. 19, 1912.

2 SHEETS-SHEET 1.



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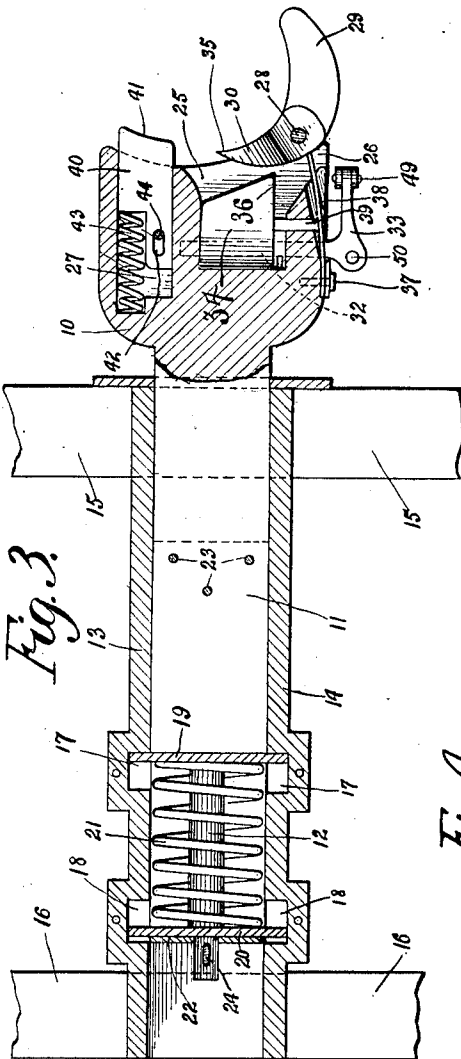


Fig. 3.

Fig. 4.

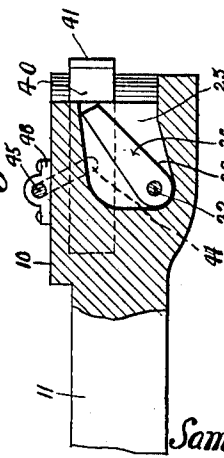


Fig. 5.

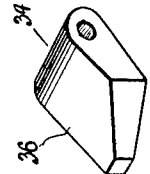
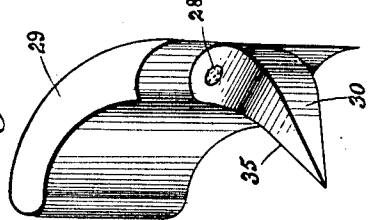


Fig. 6.



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UNITED STATES PATENT OFFICE.

SAMUEL L. SMITH, OF SPOKANE, WASHINGTON.

CAR-COUPLING.

1,020,850.

Specification of Letters Patent.

Patented Mar. 19, 1912.

Application filed July 6, 1909. Serial No. 506,187.

To all whom it may concern:

Be it known that I, SAMUEL LUTHER SMITH, a citizen of the United States, residing at Spokane, in the county of Spokane, State of Washington, have invented certain new and useful Improvements in Car-Couplings; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to car couplings, of the class known as automatic couplers, and has for one of its objects to provide a simply constructed device of this character of improved construction and increased utility and efficiency, and wherein provision is made for automatically opening the knuckle members when released, to obviate any danger of the parts becoming "locked" in position.

Another object of the invention is to provide a device of this character embracing a trip mechanism maintained in inoperative position when two of the couplers are united and which operates to open the knuckle members when the same are uncoupled.

The improved device comprises in general a draw head having a knuckle member mounted to swing therein, a movable stop member extended into the path of the tail portion of the knuckle, a trip mechanism connected with the stop member, and a spring supported bolt connected to the trip mechanism, and adapted to be maintained in withdrawn position by the pressure exerted thereon by the knuckle member of the opposite draw head. By this means when the two couplers are united the stop members are maintained in operative position by the pressure of the opposing knuckle members, but when released will permit the knuckle members to open, and thus effectually prevent any tendency of the knuckle members to become jammed.

The invention consists in certain novel features of constructions as hereafter shown and described and then specifically pointed out in the claims, and in the drawings illustrative of the preferred embodiment of the invention, Figure 1 is a plan view of the improved device together with portions of the supporting elements which constitute part of the car. Fig. 2 is a side elevation with the supporting elements in section on the line 2—2 of Fig. 1. Fig. 3 is a section

on the line 3—3 of Fig. 2. Fig. 4 is a side view of a portion of the draw head in section on the line 4—4 of Fig. 1. Fig. 5 is a perspective view of the stop member detached. Fig. 6 is a perspective view of the knuckle member detached.

The improved device comprises a draw head member, represented as a whole at 10 with a draw bar 11 extending from its rear end, the draw bar having the usual draw bolt 12 extending from its inner end. The draw bar 11 is arranged to operate between guide members 13—14 suitably and rigidly connected to the frame work of the car, portions of which are represented at 15—16. The guide members 13—14 are provided with spaced guideways 17—18 in their confronting faces, and slidably disposed in these guideways are plates 19—20, the draw bolt 12 extending through these plates, as shown, and with a spring 21 surrounding the draw bolt and bearing at its ends respectively against the confronting faces of the plates 19—20. Connected to the draw bar 11 is a U-shaped plate 22, the plate bearing by its sides over the inner portion of the draw bar and secured thereto by bolts 23 or other suitable fastening means. The plates 19—20 extend through the U-shaped member 22 and project at their ends beyond the same and into the guide ways 17—18. The draw bolt 12 extends at its free end through the inner end of the member 22 and is secured in position by a key 24 or other suitable fastening devices. By this means the draw pin 11, draw bolt 12, plates 19—20 and the strap plate 22 are all firmly united, and yieldably supported by the spring 21. By this arrangement when a pulling force is applied to the coupling the plate 20 will be drawn outwardly against the resistance of the spring 21, and thus give the requisite cushioning effect, which is so essential to devices of this character; and then when the inward pressure is applied the plate 19 exerts pressure against the spring and the resistance of the latter gives the requisite cushioning effect.

The draw head 10 is provided with an intermediate longitudinal recess 25 and a lateral recess 26 communicating with the intermediate recess, while another smaller longitudinal recess 27 is formed in the draw head in the side opposite to the lateral recess 26. The knuckle member of the improved coupler is pivoted at 28 within the

lateral recess 26 and is formed with the outer horn 29 and the inner stop member 30, as shown more clearly in Fig. 6. The stop portion 30 is of less width than the body or horn portion 29 of the knuckle, as shown. The outer portion 29 of the knuckle is of the same width as the vertical thickness of the draw head, while the inner portion of the stop 30 is equal in thickness to the vertical width of the intermediate recess 25, and is adapted to enter the same when the knuckle is disposed in its operative or holding position.

Extending into the draw head and through the inner portion of the intermediate recess 25 is a relatively heavy pin 32, the outer end of the pin being provided with a lateral rocking arm 33. Rigidly connected to the pin 32 within the recess 25 is a stop member 34, of less width than the recess 25, the pin 32 being connected to the stop member at its inner edge, thus leaving the free end of the stop member in position to be moved vertically within the recess 25 and likewise to be moved laterally to a limited extent, as hereafter explained. The free end of the stop member 34 is inclined as shown in Fig. 3, and is adapted to coact with the inclined horn 30 of the knuckle so that when the knuckle is oscillated upon its pivot 28 to throw the horn portion inwardly or into the recess 25, the inclined surface or portion will pass beneath the inclined portion of the stop member 34 until its inner face 35 passes beyond the side face 36 of the member 34, when the latter drops by gravity in front of the horn portion 30, and thus holds the knuckle in its closed position as will be obvious. Connected at 37 to the draw head 10, is a leaf spring 38, the free end of the spring extended to bear against the rear side of the horn 30 adjacent to the pivot 28 of the knuckle and hold the knuckle yieldably in its open position, as shown in Fig. 3.

Rotatably and reciprocally mounted in a suitable bore in the head 10 is a pin 39 one end of which bears against the lock member 34 while its other end bears against the spring 38 when the locking member 34 is shifted toward the spring 38, and serves as a means for moving the member 34 inwardly when the spring 38 is permitted to push the horn portion outwardly, as hereafter explained. Slidably disposed in the recess 27 is a bolt 40, the free end 41 of the bolt projecting beyond the outer face of the draw head, and preferably concaved to correspond to the outer face of the knuckle member, so that when two of the couplings are united as indicated in Fig. 1, the knuckles of the opposing draw heads bear against the bolts 40 of the opposing coupler and maintain them in their rearward positions. The bolt 40 is provided with a longitudinal slot 42, and located within the recess 27 is a spring 43 exerting its force against the bolt to

maintain it yieldably in its outward position. A slotted aperture is formed in the draw head opposite the slot 42, and extending downwardly through this aperture is a pin 44, the pin extended at right angles over the upper surface of the draw head as shown at 45 and operating in bearings 46—47 upon the draw head. The outer end of the pin 44 is extended laterally into an arm 48, and connecting the arms 48 and 33 is a rod 49. By this means any movement imparted to the pin 32 will be transmitted to the rock shaft portion 45 of the pin 44. By this arrangement it will be understood that the spring 43 by exerting its force to maintain the bolt 41 outwardly also maintains the lower end of the pin 44 in its outward position and through its connection with the pin 32, the latter is likewise maintained yieldably in raised position. When the improved coupler is disconnected from its opposite coupler, the knuckle member 29 and the bolt 40 will be maintained in their normal or outward positions as shown in Fig. 3. When the coupler of the approaching car is likewise in the same position, and when the points of the knuckle members of the opposing couplers engage respectively against the bolts 40 and the horn portions 30, the knuckles are moved inwardly into coupling position, the bolts 40 being likewise moved inwardly and the reduced terminals 30 passing beneath the free ends of the lock members 34 until the surfaces 35 of the horns 30 pass beyond the edges 36 of the stop members. By this arrangement the bolts 40 when moved inwardly do not affect the other parts by reason of the slots 42 in the bolts which permit the bolts to move inwardly without striking the pin 44. The couplers are thus automatic in their locking action, and will remain in their coupled position until released by some power being applied to the pin 32.

The improved coupler herein shown and described remains unlocked when not in use, but will readily take hold and become firmly united when the cars come together. The "hooks" are formed of the "standard" shape so that the improved coupler will engage with any "standard" coupler. The manner of actuating the pin 32 is shown comprising the elbow portion 33 having an aperture 50 in which a rod 51 is coupled, with the opposite end of the rod up-turned at 52 and mounted for oscillation and movement longitudinally in a bearing 53. The bearing 53 will be located upon the end of the car, preferably near the outer side, so that it can be manipulated by the brakeman from the outside of the car, and thus rendering it unnecessary for the brakeman to go between the cars to perform the uncoupling action. It will be obvious that by simply applying relatively slight force to the up-

turned terminal 52 of the rod 51 the pin 32 will be oscillated and the uncoupling action performed as above described.

The pin 39 is designed to shift the member 34 into working position as soon as the knuckle horn is permitted to pass outwardly by the separation of the cars. The recess 25, as before stated, is wider than the stop member, being wide enough to permit the member 34, after being released, to be shifted toward the spring 38 by pulling the member 51 longitudinally by power applied to the upturned end 52, this movement drawing the member 34 laterally of the head 10. The recess 25 is wider than the width of the member 34, as shown, so that the member 34 may be moved laterally by power applied to the rod 32, this movement causing the bottom member 34 near the edge 36 to bear upon the top of a small portion of the inner end of the horn 30 when closed, thereby causing a "set," if it is desired to do so, otherwise the pin does not do anything. The coupling may thus be "set" without going between the cars. Then again the "set" member may be restored to its working position as soon as the temporary "set" is no longer required. To this end the pull rod 51 is arranged so that it may be moved rotatively or longitudinally in the bearing 53, as will be understood.

The improved device is simple in construction, and can be adapted to cars of various forms without material structural changes therein.

What is claimed, is:—

1. A coupler, comprising a draw head provided with an intermediate recess, a bolt guide way, bores communicating with said recess and a longitudinal slot communicat-

ing with said guide way, a bell crank lever having one arm rotatably and slidably mounted in one of said bores, a lock seated in said recess and secured to and rotatable and slidable with said lever arm, a spring pressed bolt seated in said guide way and provided with a longitudinal slot, a second bell crank lever rotatably secured to said draw head and with one arm passed through the slot of the draw head and engaging the slot of the bolt, a rod connecting the free arms of said levers, manually actuated means for operating said levers, a knuckle mounted to swing in said head, a tail carried by said knuckle and adapted to be engaged by the lock when in closed position, a spring carried by the head and bearing against said tail to normally maintain the same in open position, and a pin slidable in said second bore, one end of said pin bearing against the lock and the other end bearing against said spring.

2. In a coupler, the combination with a draw head having a lock movable therein of a bell crank lever having one arm rotatably and reciprocally mounted in said head and secured to said lock, thereby adapting it to actuate the same, a pin reciprocally mounted in said head with its inner end resting against said lock, a spring carried by said head and bearing against the outer end of said pin, and means for manually actuating said lever to move the lock against the action of said spring and pin.

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

SAMUEL L. SMITH.

Witnesses:

J. B. VALENTINE,
J. OAKLAND.