No. 731,416. PATENTED JUNE 16, 1903.

C. F. SPRINGER.

CAR COUPLING.

APPLICATION FILED JAN. 25, 1901. RENEWED JAN. 26, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1

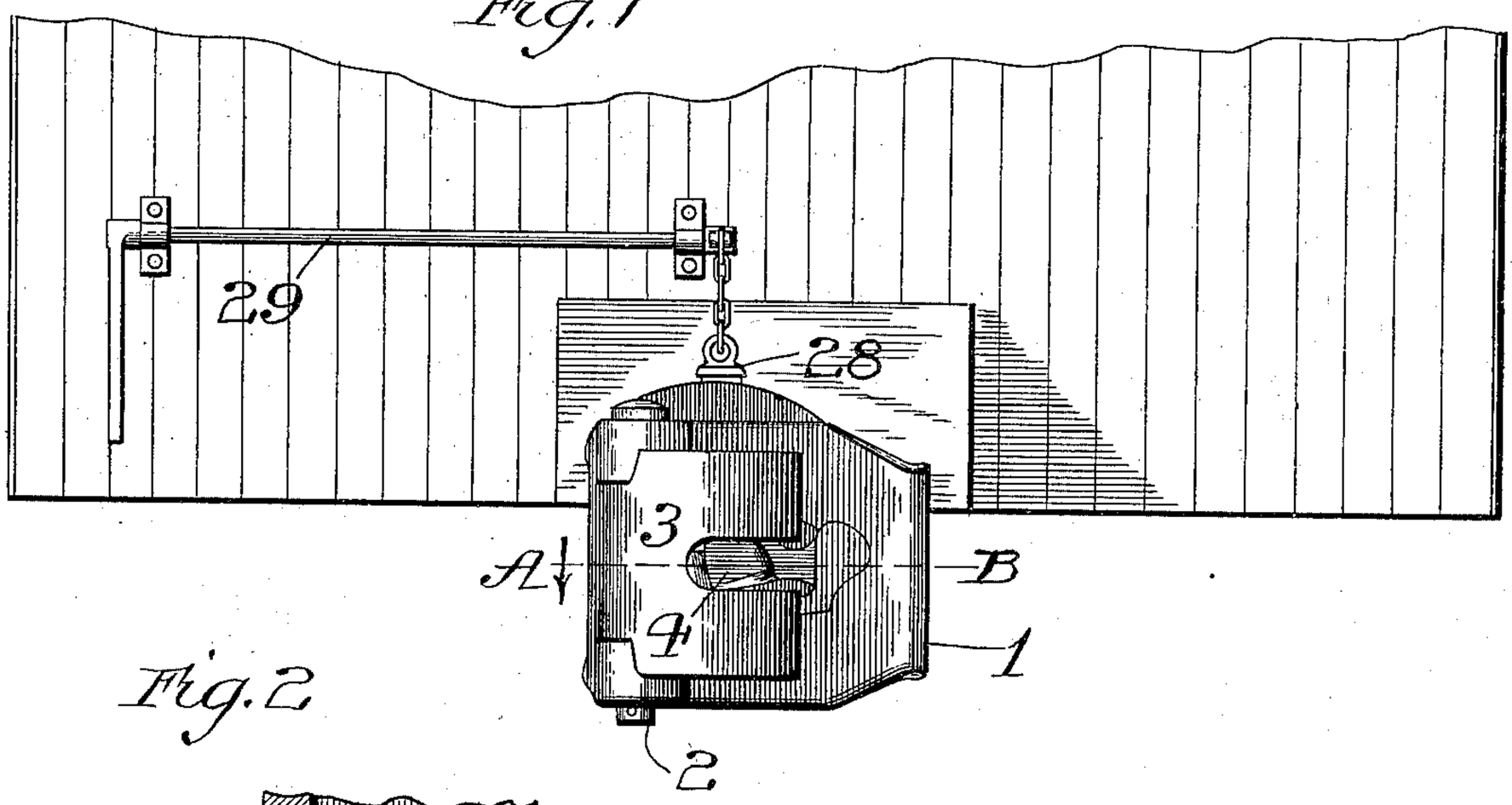


Fig. 2

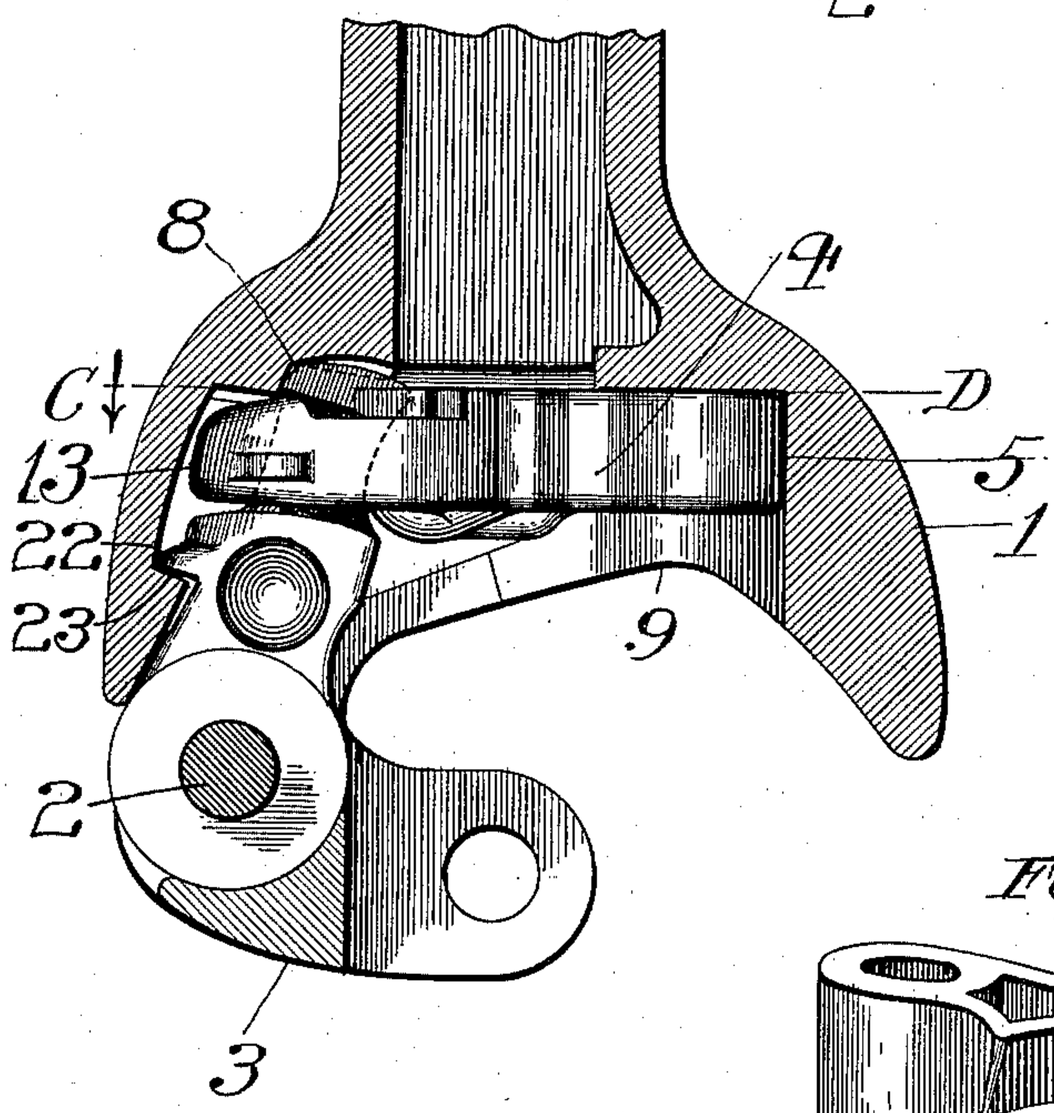


Fig. 3

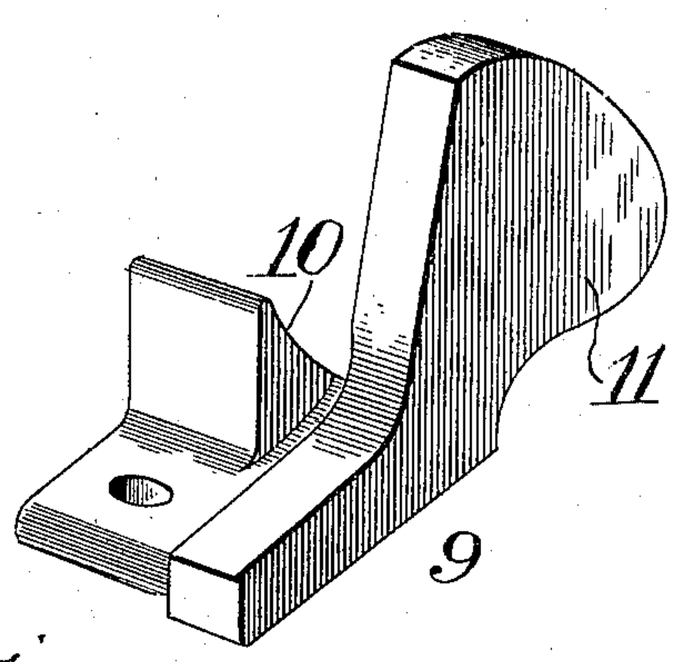
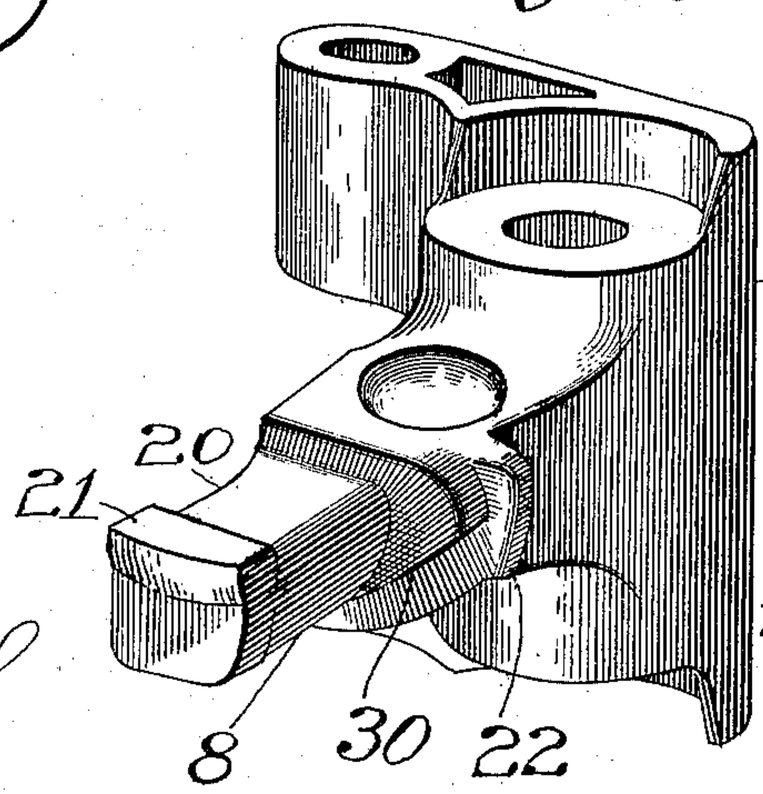


Fig. 4



Witnesses:
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Inventor
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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 5

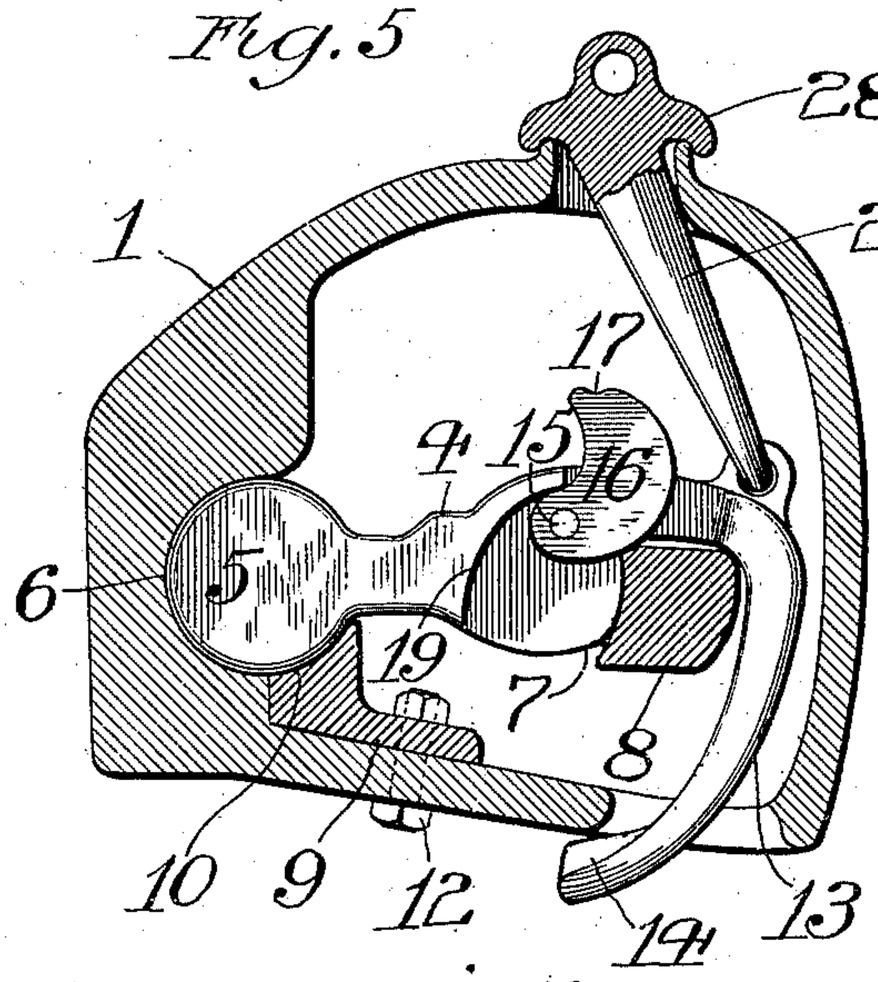


Fig. 6

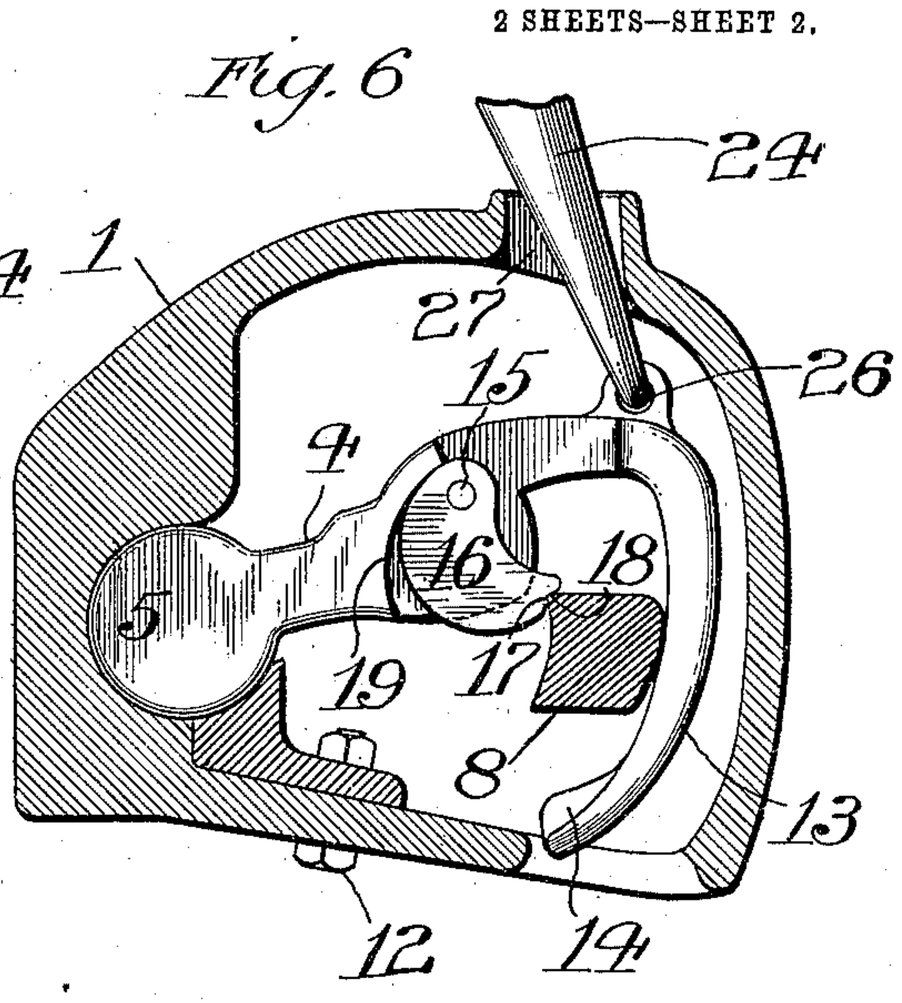


Fig. 7

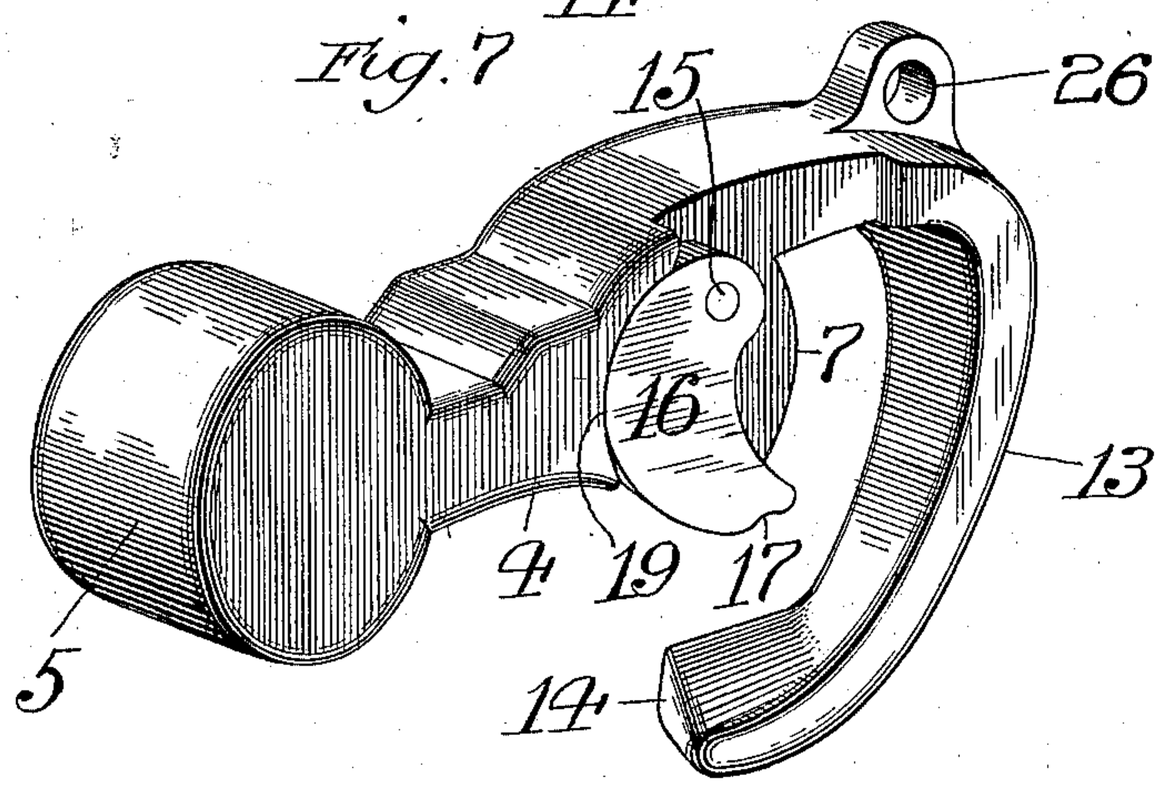


Fig. 8

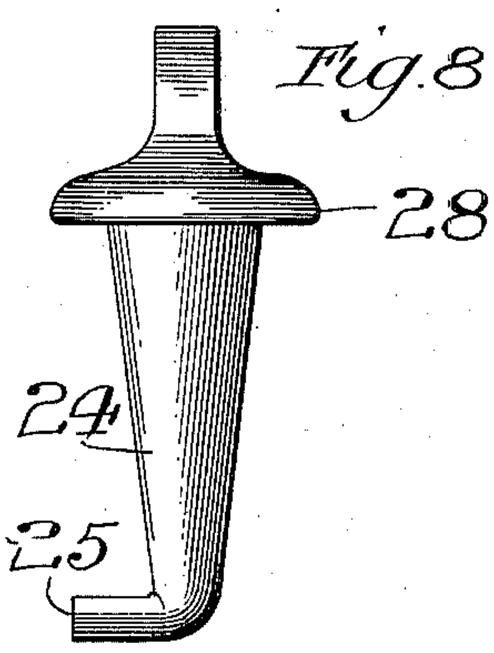
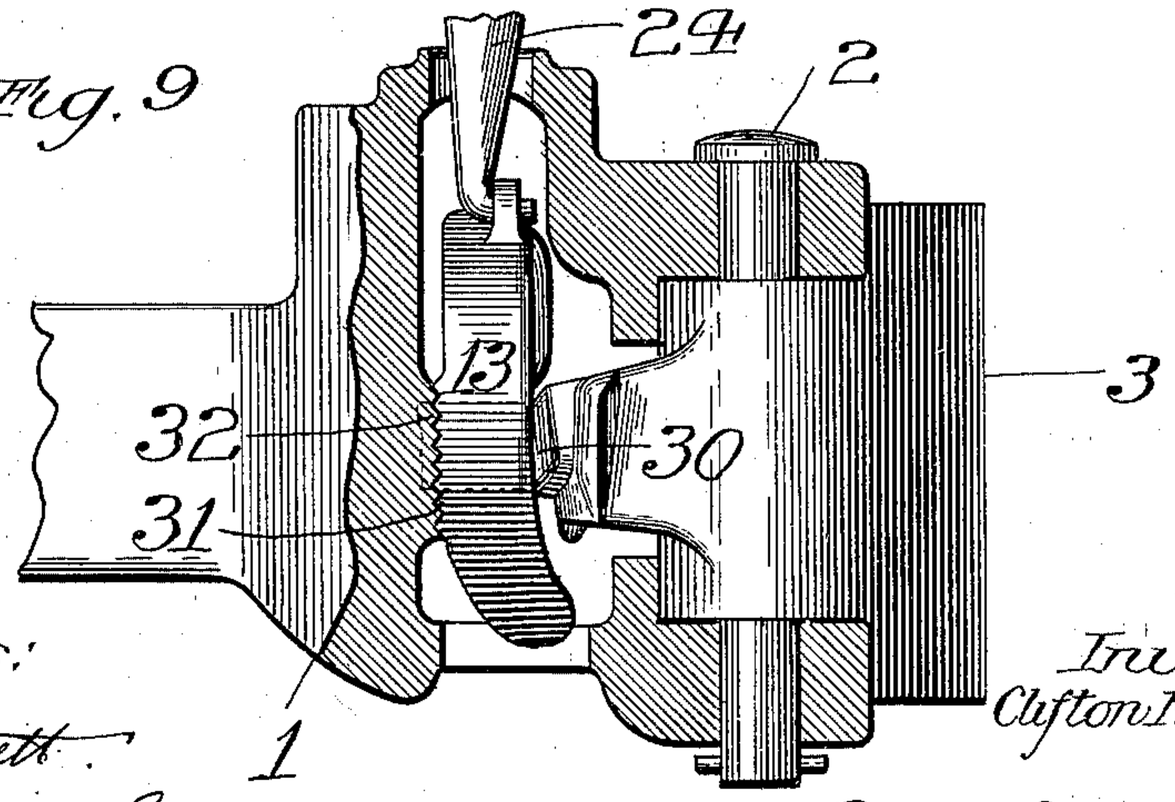


Fig. 9



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No. 731,416. Patented June 16, 1903.

UNITED STATES PATENT OFFICE.

CLIFTON F. SPRINGER, OF CHICAGO, ILLINOIS.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 731,416, dated June 16, 1903.

Application filed January 25, 1901. Renewed January 26, 1903. Serial No. 140,675. (No model.)

To all whom it may concern:

Be it known that I, CLIFTON F. SPRINGER, a resident of Chicago, Cook county, Illinois, have invented certain new and useful Improvements in Car-Couplings, of which the following is a specification.

My invention relates to car-couplings; and the object thereof is to provide a novel and efficient coupler capable of a locked position with an automatically-setting lock ready for uncoupling and with a self-opening knuckle ready for coupling.

In the drawings, Figure 1 is an end elevation of a portion of a car, showing my coupler; Fig. 2, an enlarged sectional plan on line A B of Fig. 7; Fig. 3, a perspective of the retaining-block for the lock; Fig. 4, a perspective of the knuckle; Fig. 5, a sectional elevation on line C D of Fig. 2, illustrating the closed or locked position of the coupler; Fig. 6, a view similar to Fig. 5, except that the lock is in set position; Fig. 7, a perspective of the lock; Fig. 8, an elevation of the pin for raising the lock, and Fig. 9 a side elevation of a coupler with a portion of the side broken away to illustrate a modified form of construction.

The draw-head 1 is constructed in the usual manner, and upon it by means of the pin 2 is pivoted the knuckle 3, which is of the ordinary construction except as to the tail portion thereof.

The lock 4 is preferably curved at both ends and is, in fact, substantially dumb-bell shaped in cross-section. The rounded end 5 of the lock fits in a socket 6, such end and socket forming in a general way a ball-and-socket joint, except that its movement may not be as universal as such a joint, but sufficient for the purposes hereinafter set forth. The other end 7 of the lock is received by a concavity in the tail 8 of the knuckle.

For removably securing the lock in place a retaining-block 9 is bolted or otherwise secured to the bottom of the draw-head in front of the end 5 of the lock. This block has a curved surface 10, fitting somewhat under the end 5 and forming a portion of the socket 6. The block also has a side extension 11, bearing against the end 5. A bolt 12 serves to hold the block to the draw-head.

The lock has a hook 13, which extends forwardly from the upper corner, then downwardly, and finally inwardly beneath the tail of the knuckle. The tip 14 of this hook is preferably turned slightly laterally.

Pivoted at 15 on one side of the lock is a plate or catch 16, preferably of the form shown and having a recess or notch 17, adapted when the lock is raised to engage the corner 18 of the tail of the knuckle, as shown in Fig. 6. The side of the plate is preferably cut away to accommodate the catch and to provide a shoulder 19, forming a stop against which such catch strikes when the lock is fully elevated.

As is more clearly shown in Fig. 4, the tail of the knuckle is cut away at 20, leaving a raised portion 21 at the extreme end of the tail. The lower face of the lock rides upon this portion of the tail, and the object of providing the raised end portion 21 is to decrease the area of surface of contact between the tail and the lock, thereby lessening the possibility of catching or slowness of action of the parts.

As shown in Fig. 2, it is preferred to form a projecting lug 22 on the face of the tail of the knuckle adjacent to an interior side wall of the draw-head, which lug engages a suitable shoulder 23 on such side wall. When the knuckle is closed, the lug and shoulder substantially engage, so that in case of the loss or breakage of the pivot-pin the knuckle will be held in place at least long enough to enable the train to be pulled along to a switch or other place.

Suitable means may be provided for operating the lock—as, for instance, the pin 24, having a hook 25, engaging an eye 26 on the top surface of the hook 13 of the lock. The pin passes through the top opening 27, and the head 28 of the pin rests on the draw-head. The pin may be connected to the usual bell-crank lever 29 on the car or be operated in any other suitable way.

The operation of the coupler as above described is as follows: Assuming that the parts are in the normal closed position (shown in Fig. 5) and that it is desirable to uncouple at this point, the brakeman moves the bell-crank, so as to slightly raise the lock to the position shown in Fig. 6. The catch 16, which was in the position shown in Fig. 5,

falls by gravity until its recess 17 engages the corner 18 on the tail of the knuckle. The lock will now be sustained in this raised or set position, and the cars will pull apart wherever the coupler is so set. When the lock is raised to its full extent, the tip of the hook 13 will contact and press forcibly upon an inclined surface 30, formed on the tail of the knuckle, as clearly shown in Fig. 4, whereupon the knuckle will be thrown open ready for coupling. When the coupler is being closed, the knuckle raises the lock and its catch, which will always be substantially above the tail of the knuckle. The lock will then drop, and the catch will stand upright, as shown in Fig. 5, and ready to again engage the tail of the knuckle when the lock is raised to set position. The catch is preferably curved, so that when the knuckle is being closed and the lock riding upon the tail of the knuckle such tail will strike the outer curved face of the catch and swing it upward to the position shown in Fig. 5. The catch will therefore always be set automatically ready for another operation without the necessity of an inspection.

In addition to that shown the coupler may have another setting device for holding the lock in set position, such as the device illustrated in Fig. 9, wherein the hook 13 has side corrugations or roughened surface 31, adapted to engage the roughened surface 32 in the interior of the draw-head. In this construction the hook 13 when slightly raised will contact the inclined surface 26 on the tail of the knuckle and be moved laterally, so that the corrugations will be put into engagement with each other to hold the lock in such set position. Although each form of setting device may be used alone, yet to insure operativeness under all conditions both forms may be used in the same structure.

I claim—

1. In a car-coupler, the combination of a draw-head, a knuckle, a lock in the draw-head, and a pivoted catch device adapted to hold the lock in partially raised or set position, and comprising a member having a cam or eccentric surface and movable in a plane substantially transverse to the plane of movement of the knuckle and at all times interposed between the lock and the knuckle, and as to its said cam-surface, continually bearing upon a corner or edge of the knuckle, in the closed and set position of the coupler, said member having means of engagement with said knuckle when the lock is sufficiently raised and also at all times having a relatively contrary movement with respect to the lock.

2. In a car-coupler, the combination of a draw-head, a knuckle, a lock movable transversely of the draw-head, and a catch device pivoted at one end of the lock and at all times interposed between the lock and knuckle, such catch device in normally locked position having its free end elevated above its pivotal point and also above the plane of the tail of the knuckle, said catch device being in continual contact with an edge or corner of the knuckle during closed and set position of the coupler, and adapted to drop by gravity when the lock is raised and to engage the knuckle when the lock is sufficiently raised, said catch device at all times having a relatively contrary movement with respect to the lock.

3. In a car-coupler, the combination of a draw-head, a knuckle having a substantially square tail, a lock in the draw-head and a catch device pivoted at one end on the lock and with its free end normally elevated above its pivotal point and above the top plane of the knuckle-tail and having a cam-surface bearing at all times against the inner upper corner of the knuckle-tail, during closed and set position of the coupler, said catch device being adapted to move by gravity and to engage said corner of the knuckle-tail when the lock is partially raised.

4. In a car-coupler, the combination of a draw-head, a knuckle, a lock in the draw-head, and a catch device comprising a substantially semicircular plate pivoted at one end on the lock and continually contacting, as to its curved edge, a corner of the knuckle-tail, and thereby held elevated as to its free end above the plane of such tail, said plate having a notch on said curved edge to engage the tail of the knuckle when the latter is raised and the plate moves downwardly.

5. In a car-coupler, the combination of a draw-head, a knuckle, a lock in a draw-head, and a catch device pivoted at one end on one side of the lock and having its free end in elevated position when the coupler is locked and in a lowered position when the coupler is opened, such lock being cut away to accommodate such a device and form a stop for its downward and inoperative movement, the catch device bearing against a corner of the knuckle-tail both when the coupler is closed and when it is in set position, such device being adapted to engage said corner of the knuckle-tail and to hold the lock in partially-raised position and at all times having a relatively contrary movement with respect to the lock.

6. In a car-coupler, the combination of a draw-head, a knuckle having a tail provided with a corner 18, a lock on the draw-head, and a catch device comprising a plate 16 pivoted on a pivot 15 on the lock and having a cam-face adapted to ride or bear, as to its cam-face against said corner of the knuckle when the coupler is in closed position and also when it is in set position, such cam-face having a recess or notch 17 to engage said corner 18 when the lock is partially raised, said plate having a downward movement transverse of the knuckle as the plate locks the coupler in set position.

7. In a car-coupler, the combination of a draw-head, a knuckle having a tail provided with a corner 18, a lock in the draw-head hav-

ing a side cut away to form a curved shoulder 19, a catch device pivoted in such cut-away portion of the lock and comprising a plate 16 having a cam face or surface and pivoted at one end with its outer or free end normally elevated above the plane of the knuckle-tail by contact of its cam-surface therewith and having a recess or notch 17 near its other end, which notch is adapted to engage said corner 18 and hold the lock in set position after being partially raised, said plate having a downward movement transverse of the knuckle as the plate locks the coupler in set position.

8. In a car-coupler, the combination of a draw-head, a knuckle, a lock pivoted at one end in the draw-head and a catch device pivoted on the lock intermediate of the length of such lock, and when the coupler is closed contacting the knuckle-tail whereby the free end of such catch device is held elevated above the plane of the knuckle-tail, such catch device being adapted to fall and engage the inner upper corner of the tail of the knuckle and hold the lock in set position after such lock is partially raised, said plate having a downward movement transverse of the knuckle as the plate locks the coupler in set position.

9. In a car-coupler, the combination of a draw-head, a lock and a knuckle having its tail cut away to form a raised end portion 21 over which alone the lock rides, and against which a portion only of the lower face of the lock bears.

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Witnesses:
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