(No Model.) 3 Sheets—Sheet 1.

C. A. TOWER.

CAR COUPLING.

No. 557,917. Patented Apr. 7, 1896.

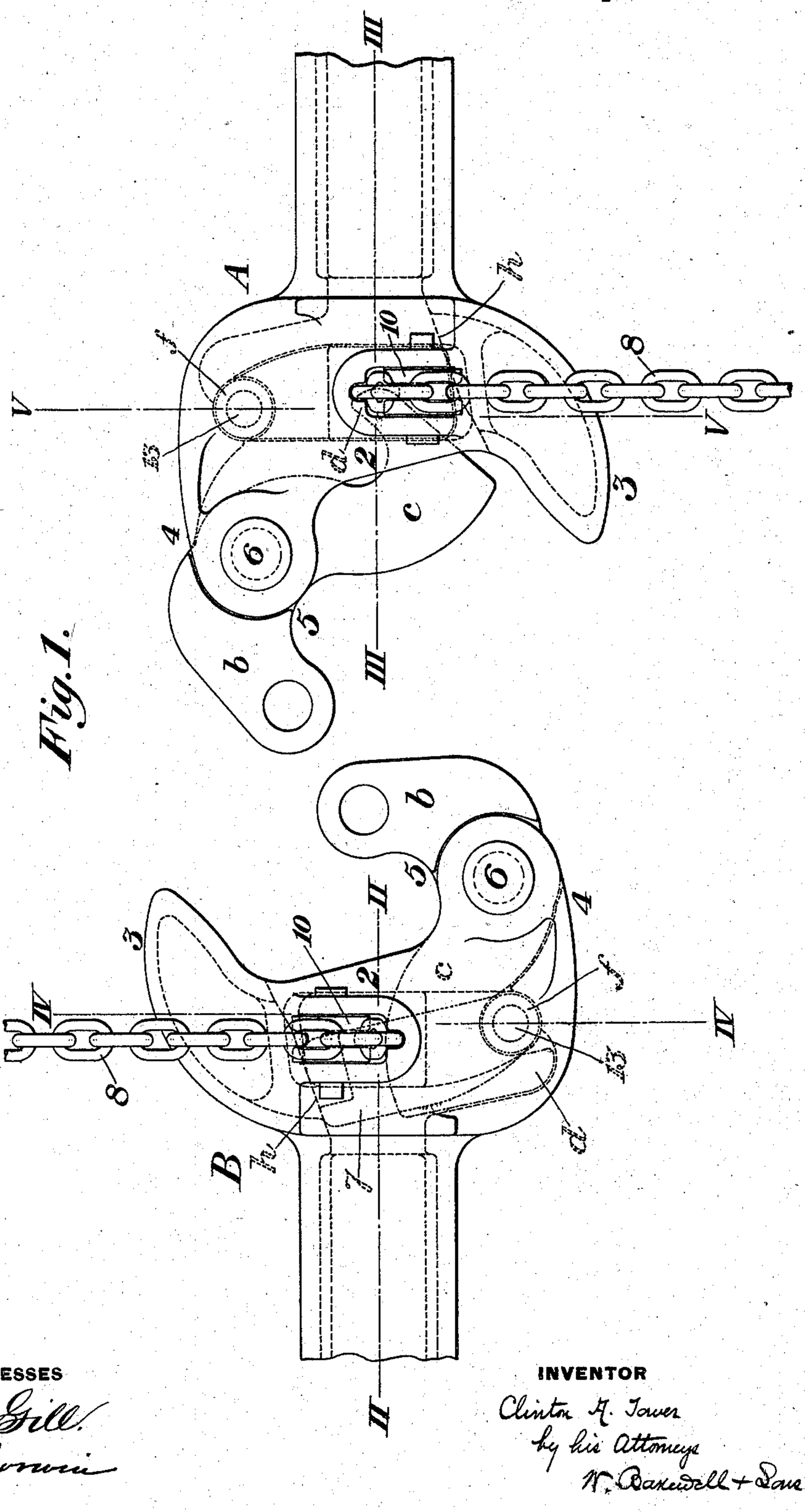

Fig. 1.

WITNESSES

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(No Model.) 3 Sheets—Sheet 2.

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Fig. 3.

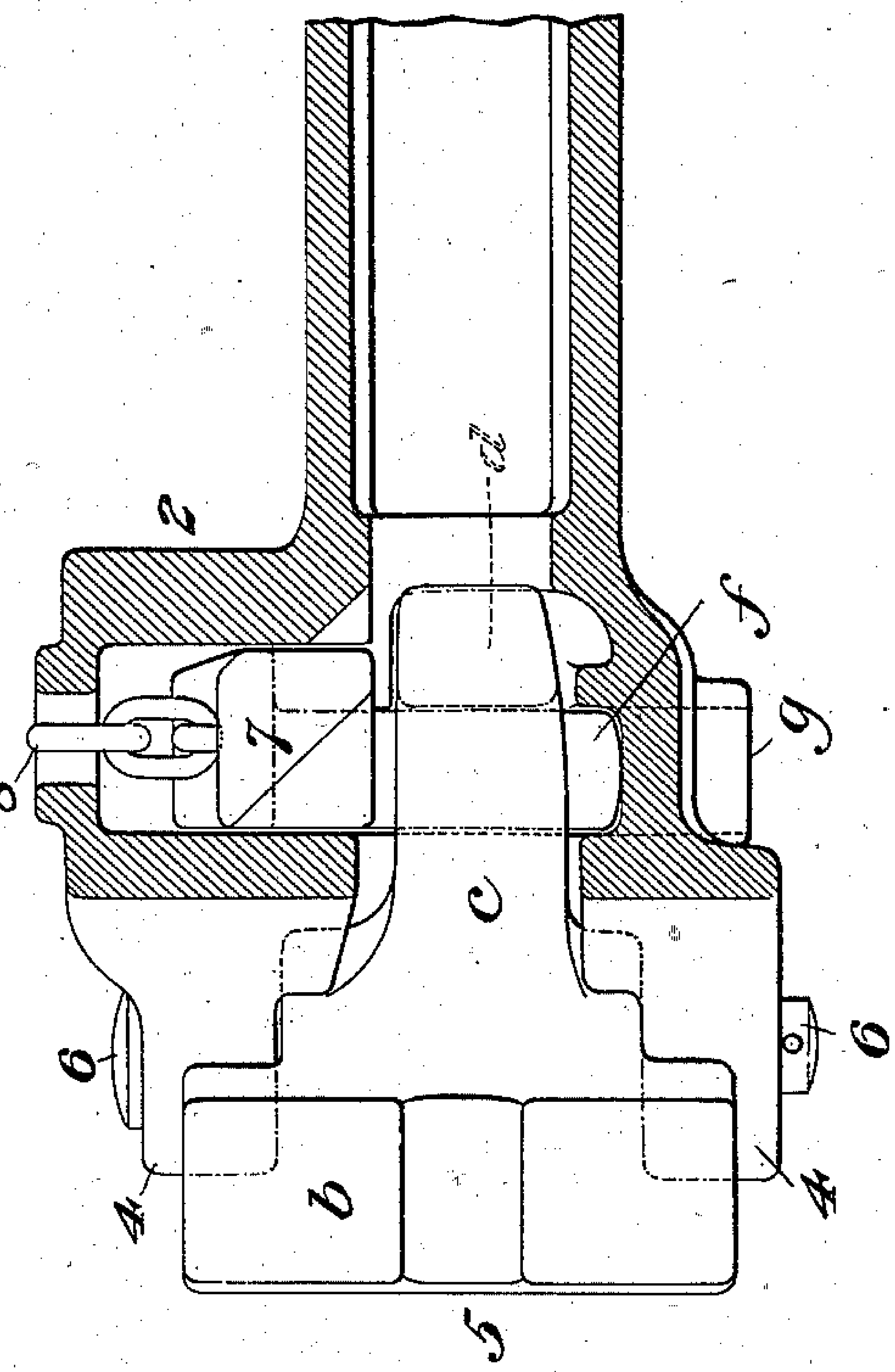
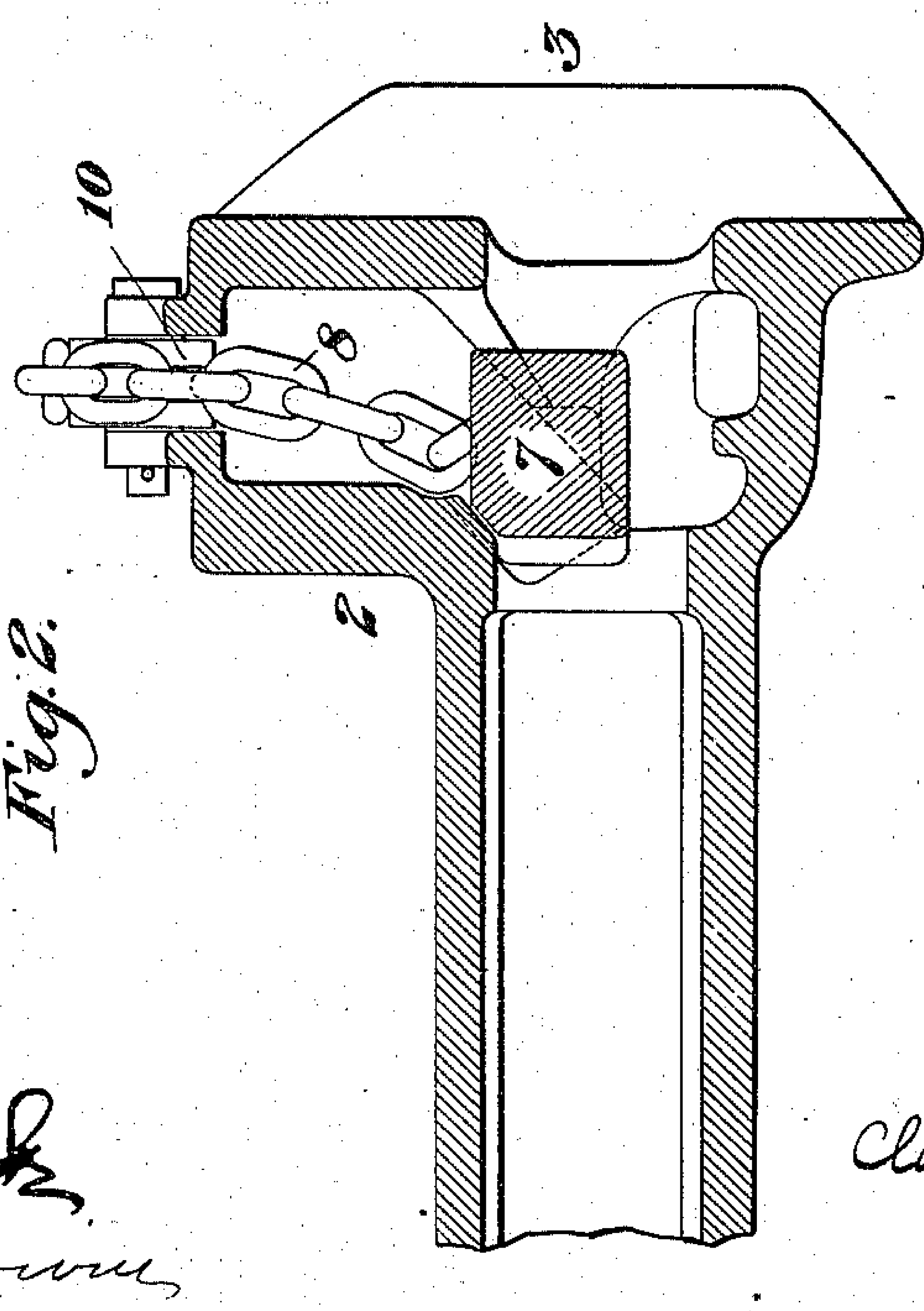


Fig. 2.



WITNESSES

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(No Model.) 3 Sheets—Sheet 3.

C. A. TOWER.

CAR COUPLING.

No. 557,917. Patented Apr. 7, 1896.

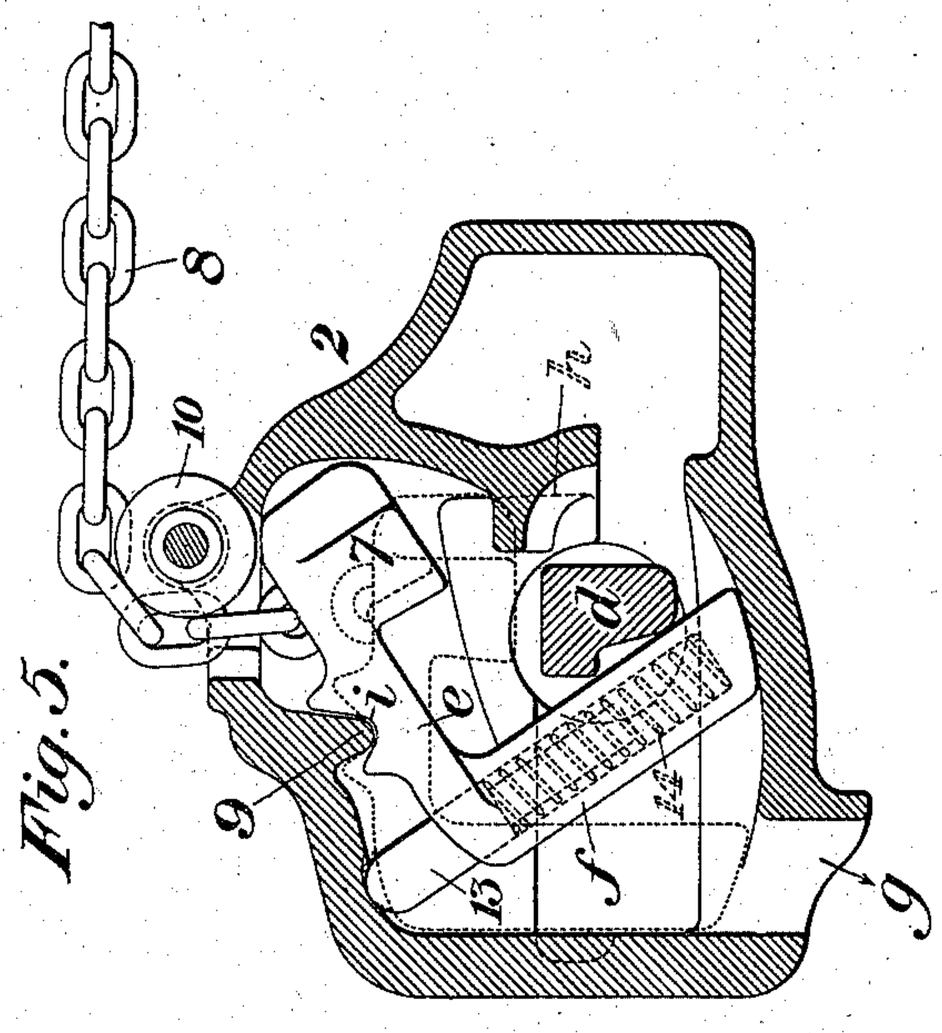

Fig. 5.

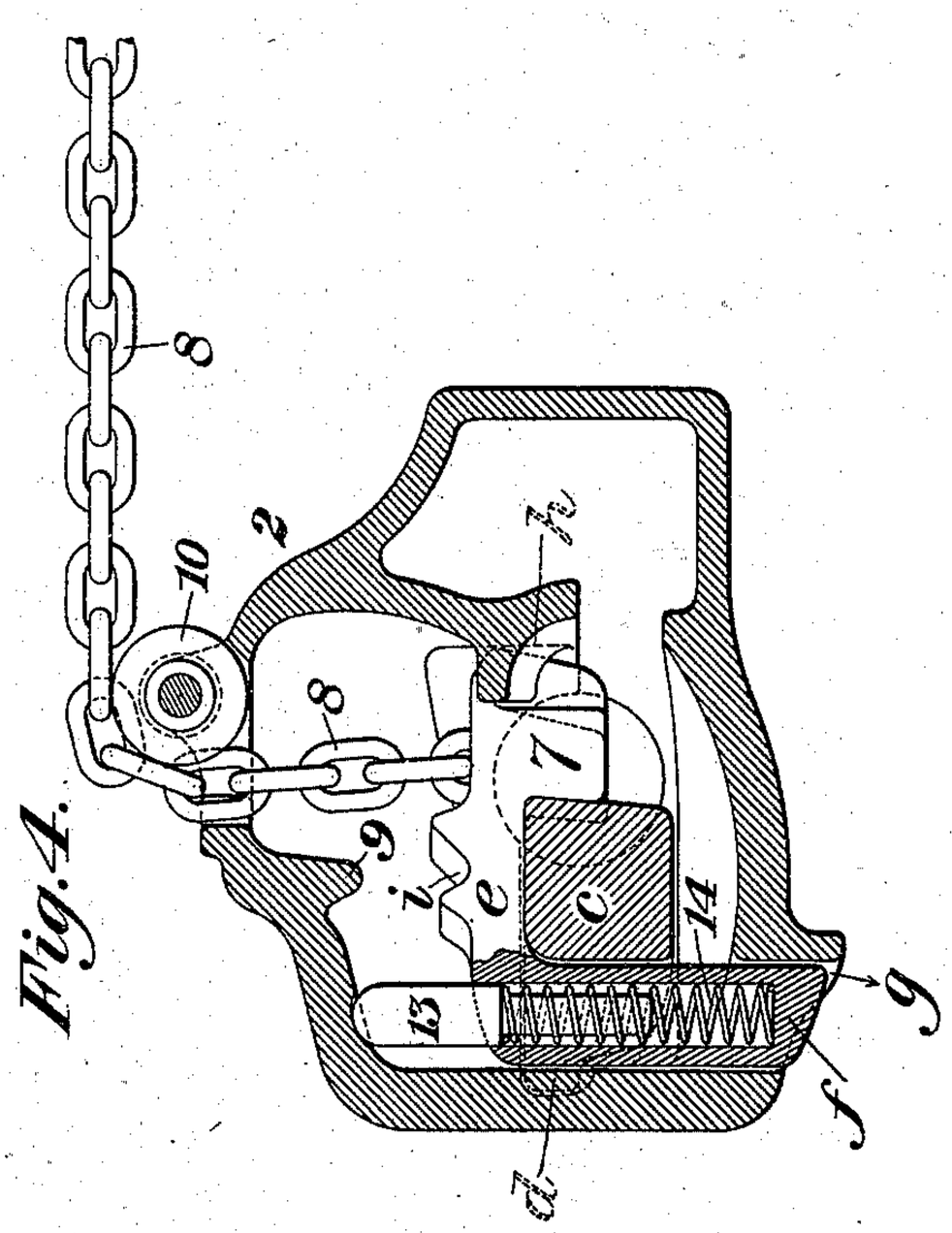

Fig. 4.

WITNESSES

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UNITED STATES PATENT OFFICE.

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

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 557,917, dated April 7, 1896.

Application filed February 11, 1895. Serial No. 537,904. (No model.)

To all whom it may concern:

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

Figure 1 is a plan view of two of my improved couplers A and B, the knuckle of the coupler A being in an open position and the knuckle of the coupler B being locked. Fig. 2 is a vertical longitudinal section on the line II II of the coupler B in Fig. 1, and Fig. 3 is a vertical longitudinal section of the coupler A on the line III III of Fig. 1. Figs. 4 and 5 are vertical cross-sections on the lines IV IV and V V of Fig. 1, respectively.

Like symbols of reference indicate like parts.

My invention relates to improvements on the car-coupler which I have described and claimed in my prior patents, Nos. 507,511 and 521,092, and although my improvements may with advantage be applied to freight-cars, the purpose for which I have especially designed them is to adapt the car-coupler to use on passenger-cars, where the coupler is subjected to conditions not ordinarily met with when applied to freight-cars.

I effect the purposes of my invention as follows: first, by providing novel means which adapt the locking and opening device of the coupler to be operated by a horizontal pull, transmitted directly to the locking and opening device through a chain from the operating lever or shaft commonly employed on passenger-cars, and, second, by providing novel means by which the locking and opening device is prevented from jarring or creeping upwardly and thus freeing the knuckle.

The tendency of the locking and opening device to creep is aggravated on passenger-cars by the tension which the buffer-springs impart to the platforms; but by the improvement which I am about to describe such tendency is effectually overcome and the coupler can be used without danger of having the locking device accidentally jarred out of engagement with the knuckle.

My improved device has also the function of putting a tension upon the operating-lever and its connecting-chain, which, in the operation of locking the coupler, tends to draw them back into their proper positions.

I shall first describe the coupler constructed as set forth in my said Patent No. 507,511, and shall then indicate the nature of the improvements which I have made thereon.

In the drawings, 2 represents the coupler-head which in general may be of usual type. It has two jaws 3 and 4, and is provided with an internal cavity or recess which extends laterally into the jaw 4 and is adapted to permit the coupling-knuckle 5 to swing upon its pivot-pin 6. This knuckle is formed with an outer arm *b* and an inner and preferably longer arm or tail *c*, which project substantially at right angles to each other, and the rear side of the tail is formed with a hook *d*. In order to hold the knuckle in locked position (the position shown in Fig. 4 and at B in Fig. 1) I employ an angled locking and opening piece set within the coupler-head and shown most clearly on Sheets 2 and 3 of the drawings. The upper and transversely extending member or arm *e* of this angled piece reaches over the tail of the knuckle, its dependent block or head 7 is adapted to fit in front of and to lock the knuckle when in closed position, and its dependent arm *f*, which extends downwardly at the rear of the knuckle and is substantially upright when the knuckle is in locked position, passes through a guide-hole *g* in the floor of the coupler.

When the knuckle is locked, the head 7 of the angled piece fits between the front side of the knuckle-tail and the shoulder *h* on the coupler-head; but when the brakeman raises the angled piece by operation of the lifting-chain 8 it is raised above the knuckle and out of its path of motion.

When the knuckle is locked, as shown in Figs. 2 and 4 and at B in Fig. 1, the member *e* is above the tail of the knuckle, the head 7 fits in front of it and bears against the shoulder *h*, and the arm *f* fits within the hole *g* and is within the hook *d* of the tail. The angled piece, being then braced by the fitting of its arm within the hole and by the bearing of its head against the shoulder, effectually

prevents the knuckle from swinging open. To release the knuckle and to permit it to be swung into the open position shown at A in Fig. 1, the brakeman operates the chain 8, and thus lifts the angled piece until the end of its head 7 clears the tail of the knuckle and passes above the horizontal path of its motion, as shown in Fig. 3 and by dotted lines in Fig. 5, whereupon the knuckle can be swung open, either by direct action of the hand or by continuing the lifting of the angled piece until a notch *i* on the upward side of its member *e* engages a projecting rib or shoulder 9 on the coupler-head, whereupon the angled piece will tip radially in a vertical plane in a direction transverse to the length of the draw-bar. Such radial motion of the angled piece, by bringing its rearwardly-depending arm into action upon the rear side of the tail of the knuckle, will move the knuckle outwardly into open position. When the angled piece is released, after the knuckle has been swung open, the end of its arm *f* will drop upon and will be supported by the floor of the coupler-head, and it will remain in this position, as shown in Fig. 5, until the knuckle is swung back into locked position by the act of coupling or otherwise. The rear side of the knuckle-tail will then engage the arm *f* and will move the angled piece so as to carry said arm back toward a vertical position until its lower end comes into register with the hole *g*, and then the angled piece will drop by gravity, its arm *f* entering the hole and its head 7 adjusting itself in front of the knuckle-tail and locking the knuckle, as shown in Figs. 2 and 4 and at the coupler-head B in Fig. 1.

The parts above described are shown and claimed in my said Patent No. 507,511, and, as stated in the specification thereof, the use of said angled piece, which, as a single-acting device, accomplishes the double function of rising to free the knuckle and of swinging radially to move it open without the accession of cams or levers, is distinctly new and is of great utility. The simplification of construction and the increased safety and durability of the coupler obtained by means of this single and individual body, with its unique attributes while at rest and while in action, and which in the proper order, in the proper time, and in a novel manner performs satisfactorily all the necessary functions of locking, unlocking, and opening the knuckle, distinguish the invention of said patent practically from all prior devices.

In my prior patent, No. 507,511, the lifting chain or link 8 is shown as extending vertically up through a hole in the top of the coupler-head to a horizontally-projecting lifting arm or crank. In my present improvement, however, I preferably journal a sheave 10 on the coupler-head at the side of the hole, so that the sheave shall extend within the hole, and I pass the chain over the sheave and thence horizontally to the end of the upright operating-lever, (not shown,) which has its fulcrum at the platform of the car, so that by moving said lever laterally the brakeman can draw upon the chain and thus lift and tip the locking and opening device, as above described. A rotatory shaft or drum may be substituted for the lever. The hole in the coupler-head through which the chain 8 passes is preferably of cross shape, so as to permit free passage of the links and to constitute a guide for the chain, and, as shown in the drawings, one half of it is formed by grooving in appropriate form the side of the hole in the coupler-head, and the other half is constituted by grooving correspondingly the periphery of the sheave.

By journaling the sheave on the coupler-head and within the chain-hole the sheave is sheltered, the device is rendered compact and not liable to be broken or disordered.

It is within the scope of my invention, as broadly defined, to dispense with the sheave, and, preserving the cross shape of the hole, to round its margin over which the chain passes in order to diminish the friction.

I effect the second part of my improvement by setting in the arm *f* of the angled piece an upwardly-projecting tongue or rod 13. The arm *f* is made hollow to receive said tongue, and a spring 14 is set in the base of the tubular cavity so that it shall bear upon the tongue and shall tend to project it upwardly. Because of the fact that this tongue is projected by the spring it has a bearing upon the corner at the top of the cavity of the coupler-head, and thus exerts a constant downwardly-pushing force upon the angled piece. Thus when the coupler is locked the spring opposes any tendency which the angled piece may have to creep vertically. It prevents entirely the difficulties which I have mentioned above, and by pushing down upon the angled piece it tends to draw the chain 8 and the operating-lever to their proper position when the coupler is being locked.

The advantages of the several parts of my improvement will be appreciated by those skilled in the use of car-couplers, and within the scope of my invention, as defined in the following claims, modifications may be made in the form, construction, and position of the parts.

Some features of my invention may be used without the others, and may be applied to coupler-locks of forms different from the angled piece which I have illustrated.

I claim—

1. A car-coupler, having a vertically-movable locking device, a lifting-chain by which it is operated and which extends up through a hole in the coupler-head, and a sheave which is journaled in an enlargement of the walls of said hole or orifice and thereby protected and partially inclosed; substantially as described.

2. A car-coupler having a vertically-movable locking device, a lifting-chain by which it is operated and which extends up through a hole in the coupler-head, and a sheave at

said hole over which the chain passes and from which it extends transversely, said hole being of cross shape and being constituted by opposite appropriately-shaped conjoined grooves in the coupler-head and in the sheave, which being combined constitute a chain-guide; substantially as described.

3. A car-coupler having a knuckle and a vertically-movable and tipping angled locking device, part of which extends over the knuckle, and the rear part of which extends back of the knuckle, and a spring interposed between the roof of the coupler-head and the rear part of the locking device; substantially as described.

4. A car-coupler having a vertically and radially movable angled locking device which has an upwardly-projecting spring-tongue bearing upon the roof of the coupler and tending to push the locking device downward; substantially as described.

5. A car-coupler having a vertically and radially movable angled locking device which has an upwardly-projecting spring-tongue bearing upon the roof of the coupler and tending to push the locking device downward, said locking device having a vertical arm which is hollow and which contains the tongue and an actuating-spring; substantially as described.

In testimony whereof I have hereunto set my hand.

CLINTON A. TOWER.

Witnesses:
O. K. BROOKS,
EMIL W. JAITE.