

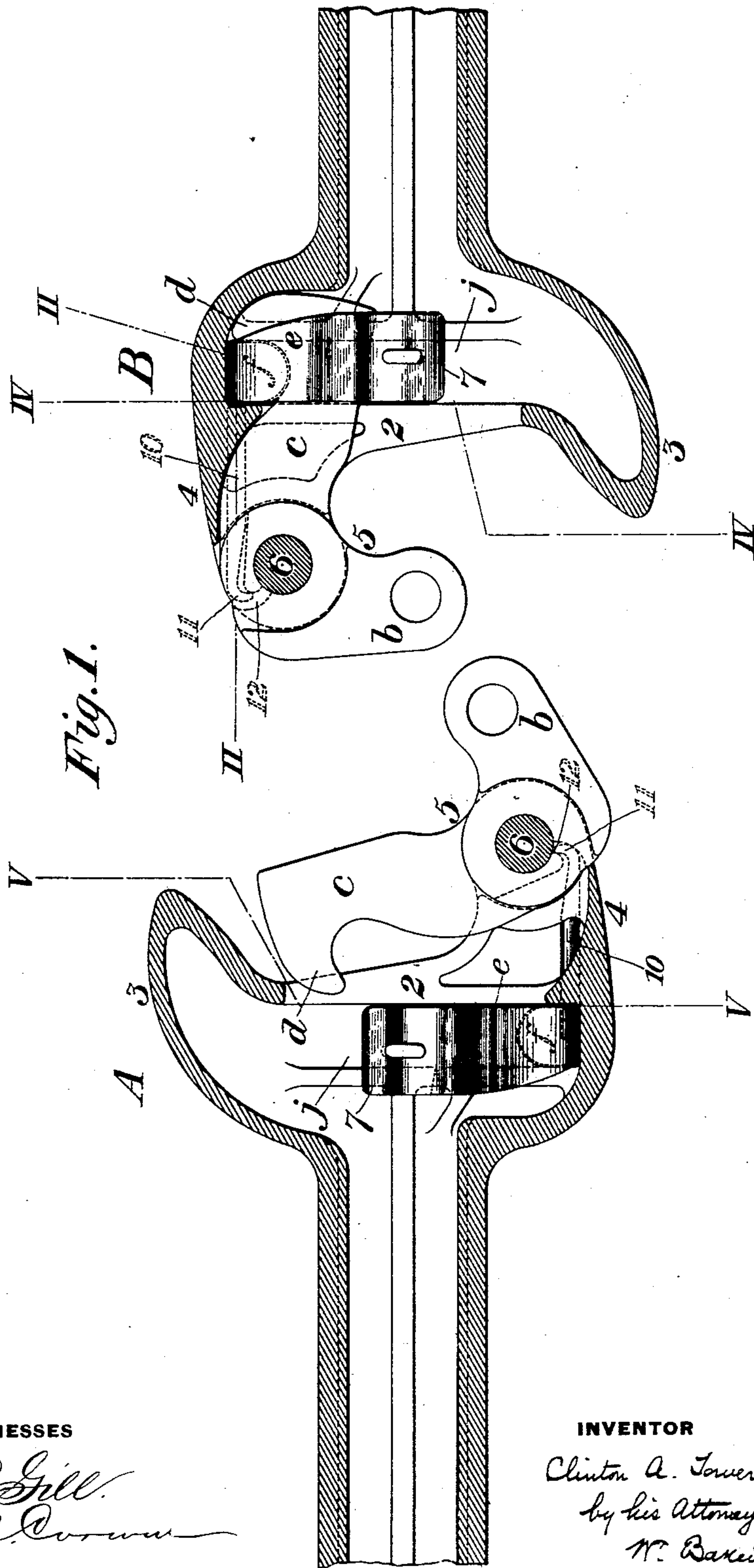
(No Model.)

3 Sheets—Sheet 1.

C. A. TOWER.  
CAR COUPLING.

No. 541,400.

Patented June 18, 1895.



WITNESSES

*H. L. Gill*  
*H. M. Corwin*

INVENTOR

*Clinton A. Tower*  
*by his Attorneys*  
*W. Baxendell & Sons*

(No Model.)

3 Sheets—Sheet 2.

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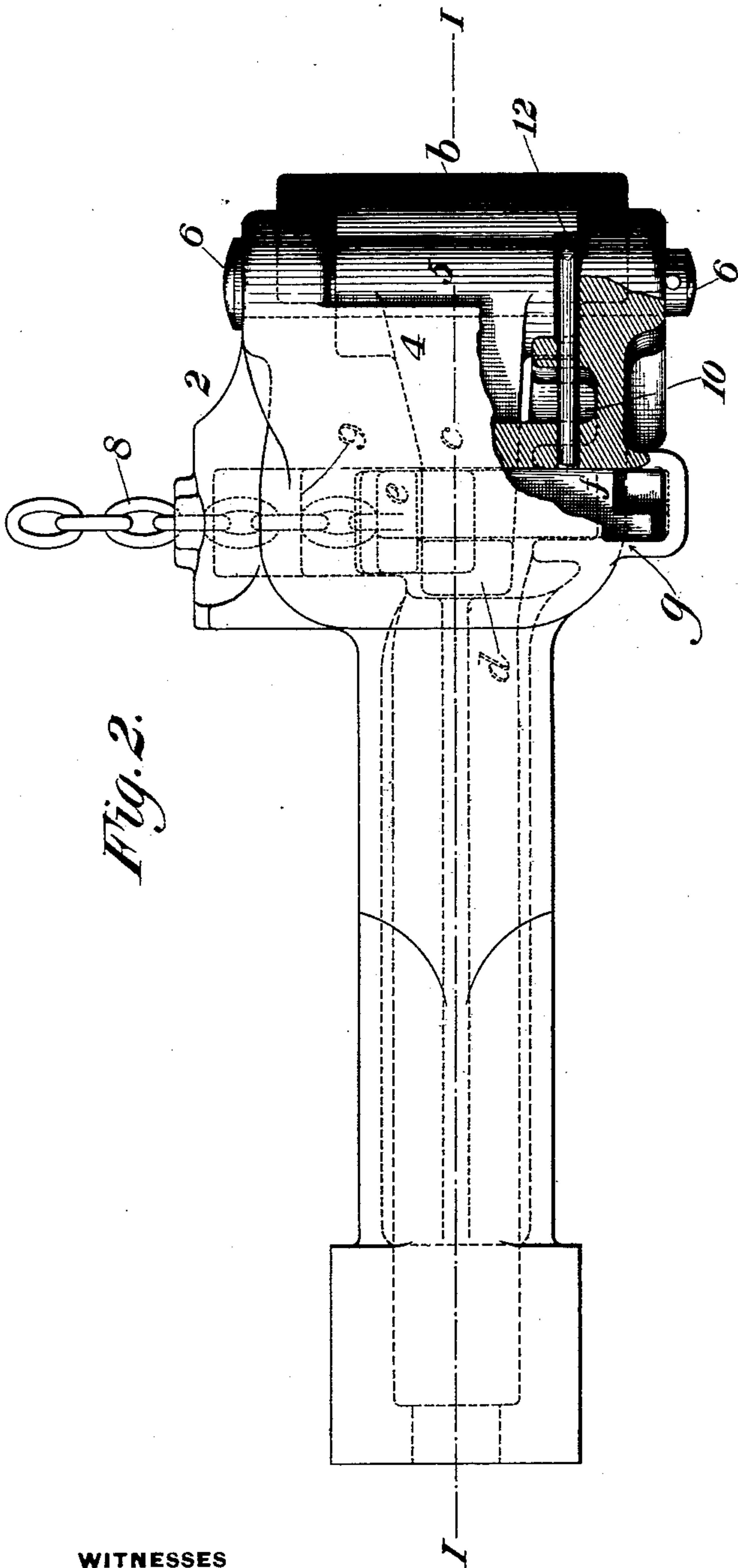


Fig. 2.

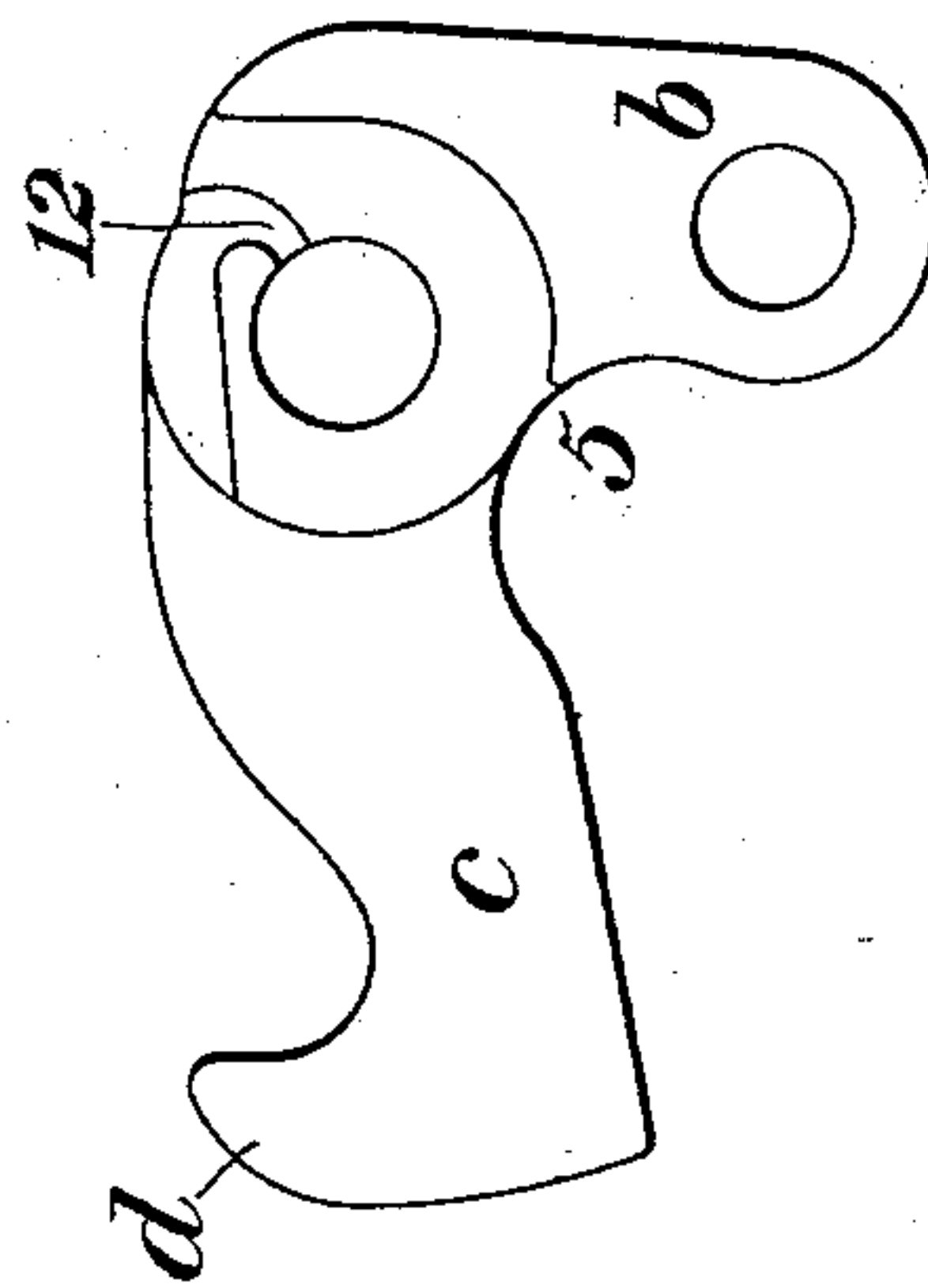


Fig. 3.

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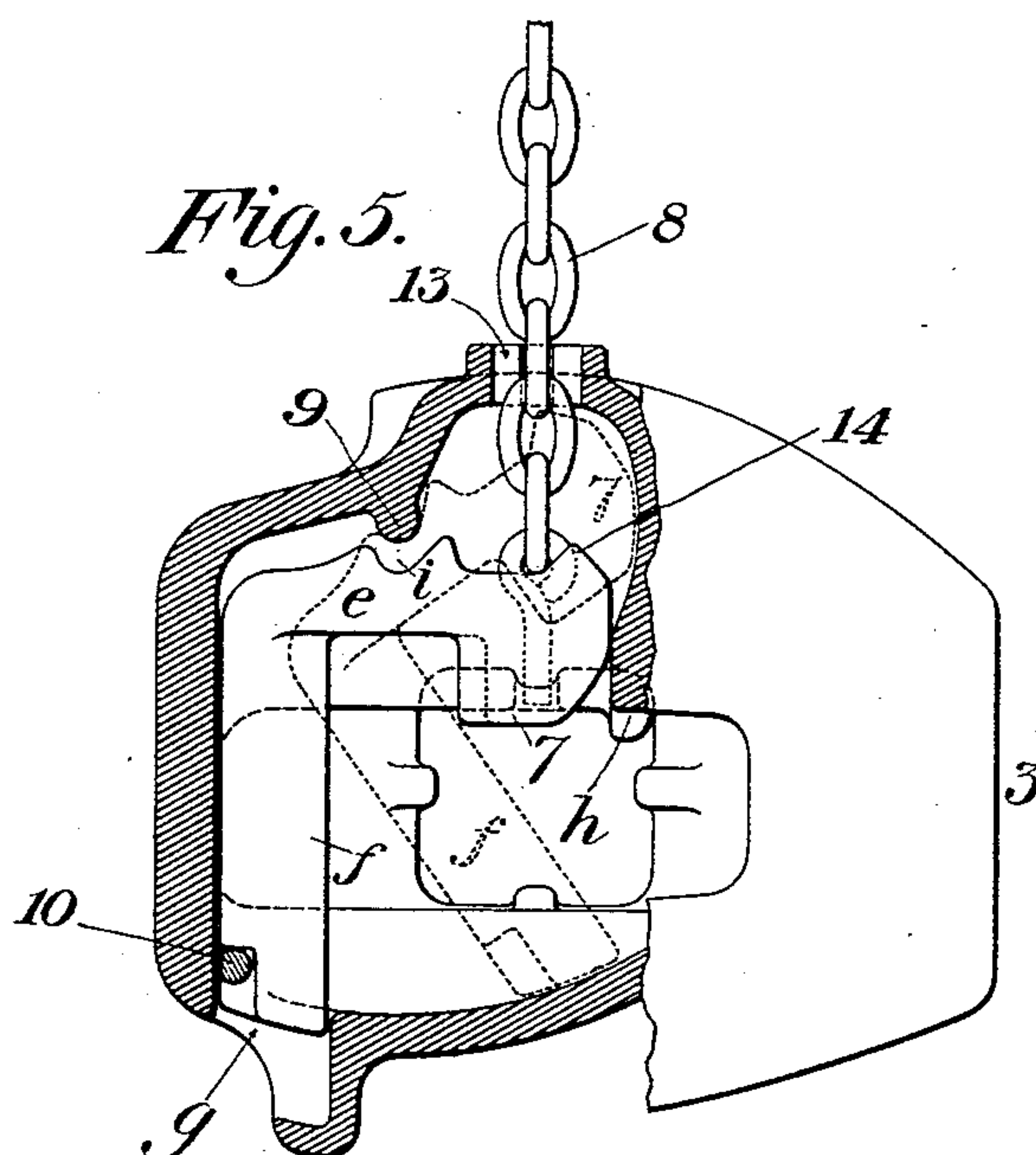
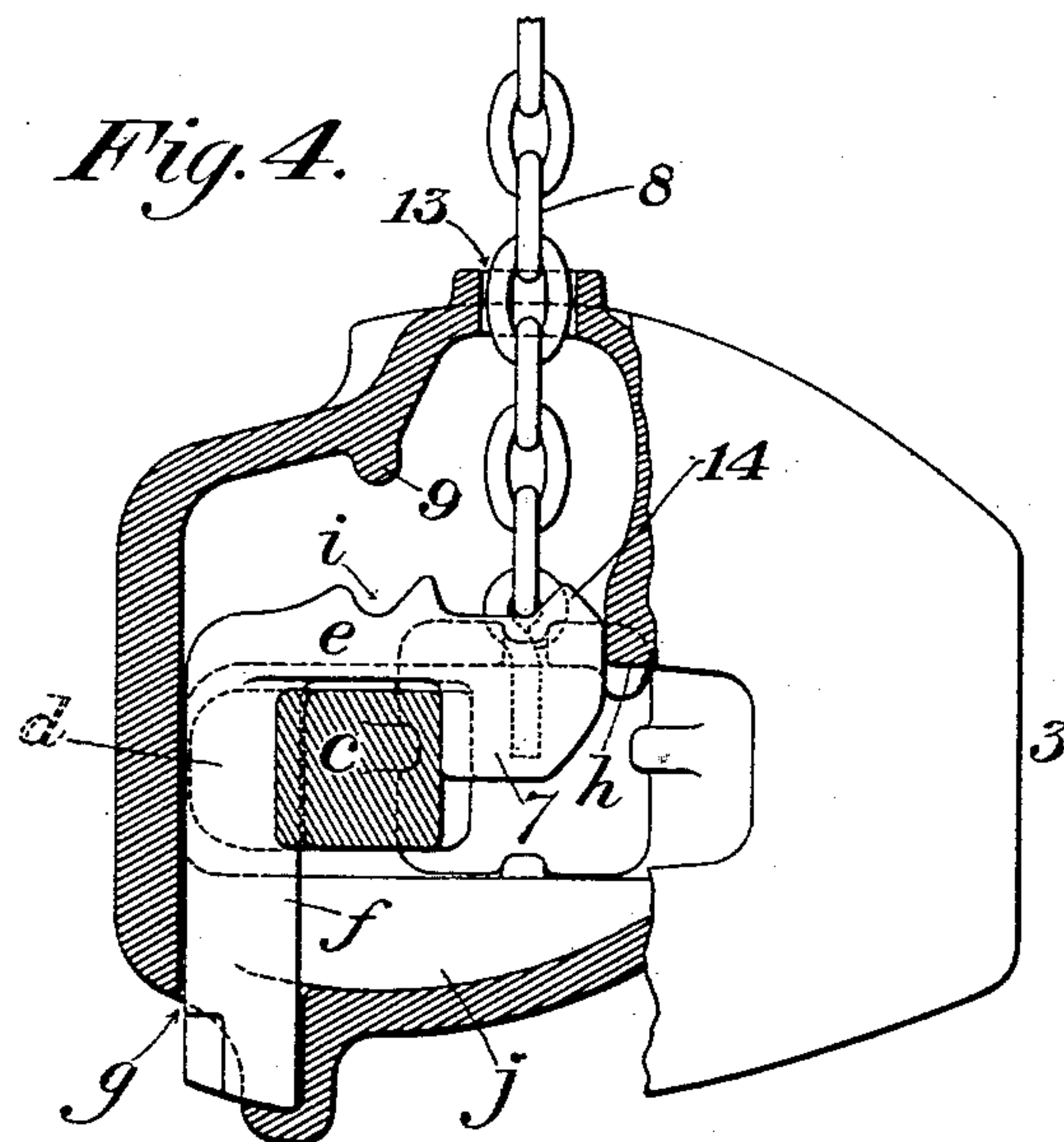
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# UNITED STATES PATENT OFFICE.

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. 541,400, dated June 18, 1895.

Application filed June 2, 1894. Serial No. 513,300. (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  
5 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 horizontal sectional view of  
10 two of my improved couplers, taken on the line I I of Fig. 2. Fig. 2 is a side elevation of one of the couplers, partly broken away, as on the line II II of Fig. 1. Fig. 3 is a bottom plan view of one of the knuckles. Fig. 4 is a ver-  
15 tical cross-section on the line IV IV of Fig. 1, showing the coupler when the knuckle is locked; and Fig. 5 is a cross-section on the line V V of Fig. 1 with the knuckle unlocked and open.

20 My invention relates to that class of car couplers known as twin-jaw couplers in which the coupling-head has a swinging knuckle adapted to engage a similar knuckle in the coupler of another car and is provided with  
25 an angled locking device, and its purpose is to provide improved means by which, when the locking device has been raised so as to free the knuckle and the knuckle swung open or partly open, the locking device is prevented  
30 from dropping down into the path of the knuckle in such a manner as to prevent it from being swung back or to make it necessary for the locking device to be raised by engagement with a beveled surface on the knuckle in order  
35 to permit the knuckle to swing back behind it into closed position, and also to provide means for limiting the tipping motion of the locking device to prevent jamming thereof.

The coupler which I show in the drawings  
40 is of the construction described and shown in a prior patent, No. 507,511, granted to me on October 24, 1893. I shall first describe the construction and operation of those parts of the same as are shown in said patent, and shall  
45 then describe my improvement 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, extending later-  
50 ally into the jaw 4, and 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  
55 tail is formed with a hook *d*. In order to hold the knuckle in locked position, (the position shown at B in Fig. 1,) I employ an angled locking and opening piece set within the coupling-head, and shown most clearly on Sheet 3 of  
60 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 lock the knuckle when in closed position, and its  
65 dependent arm *f* extends downwardly at the rear of the knuckle. This arm is substantially upright when the knuckle is in locked position and passes through a hole *g* in the floor of the coupler. In the initial lifting here-  
70 inafter described, the hole acts as a guide to insure the vertical movement of the angled piece. When the knuckle is locked, the head 7 of the angled piece fits between the front side of the knuckle-tail and a shoulder *h* on  
75 the coupler-head, as shown in Fig. 4, but is lifted therefrom, when the angled piece is raised by a link or lifting rod 8, pivotally connected to it and extending through the cou-  
80 ler-head.

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* of the angled piece fits  
85 within the hole *g* and is within the hook *d* of the tail. The angled piece is then braced by the fitting of its arm within the hole and by the bearing of its head 7 against the shoulder, and effectually prevents the knuckle  
90 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 raises the link 8, and thus lifts the angled piece above described  
95 until the end of its head 7 clears the tail of the knuckle and passes above the horizontal path of its motion, whereupon the knuckle can be swung open, either by hand or by the means described below.

The vertical recess in the coupler-head is made of sufficient height to enable the angled  
100



piece, not only to be lifted far enough to clear the tail of the knuckle, but to move beyond this point sufficiently to clear the end of its arm *f* from the hole *g*. When in the act of unlocking the knuckle, the brakeman lifts the angled piece to its full extent, it first moves vertically until its arm *f* has left the hole, and then a notch *i* on the upper side of the member *e* engages a projecting rib or shoulder 9 on the coupler-head at the upper part of the recess, and in the further lifting, the bearing of the member *e* upon this shoulder will cause the angled piece to tip radially in a vertical plane and to swing its arm *f* forwardly in a direction transverse to the length of the draw-bar, as shown by dotted lines in Fig. 5. The radial motion of the angled piece, bringing its rearwardly dependent arm into action upon the rear side of the tail of the knuckle, will move it outwardly by a positive action into the open position shown at A in Fig. 1. In order to guide the angled piece and to brace it from lateral strain, I form in the base of the coupler-head a transverse groove *j*, in which the lower end of its arm *f* moves. The base of this groove is preferably made on a curved or circular arc, whose center is the shoulder 9, since such construction prevents the angled piece from becoming displaced and jammed in the coupler-head; and when the angled piece is released after the knuckle has been opened, the end of its arm *f* will drop upon and be supported by the floor of the coupler within the groove. After the knuckle has been swung open and the lifting link 8 released, the angled piece remains in the position shown by dotted lines in Fig. 5 until the knuckle is swung back into locked position by the act of coupling or otherwise, whereupon the rear side of the tail of the knuckle will engage the arm *f* and will move the angled piece so as to carry the arm back toward a vertical position, until its lower end comes into register with the hole *g*, when 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, thus locking the knuckle, as shown in Figs. 2 and 4, and at B in Fig. 1.

It frequently happens in the use of the coupler constructed as above described that the angled locking and opening device is raised so as to free the swinging knuckle and the knuckle swung open by hand or by draft of the car without tipping the angled piece so as to cause its arm *f* to leave a vertical position. In such case, when the knuckle is swung open, the angled piece will drop so as to bring its head back of the tail of the knuckle and in the path of the horizontal swinging motion of the latter, so that when the knuckle is again swung into closed position it must first raise the angled piece so as to lift its head 7 out of its path before it can pass the same. In the construction shown in my said patent, I provide for this by forming on the side of the head a beveled surface

with which the tail of the knuckle engages in its rearward swing and on which it acts in the manner of a wedge so as to raise the angled piece vertically. In the coupler herein described, such construction is rendered unnecessary for I provide means by which, after the locking device has been lifted, it is prevented from dropping unless the knuckle is in closed position. This I accomplish by providing a finger 10, which is adapted to move transversely in the coupler-head back and forth over the guide-hole *g*, and is connected with the middle part or elbow of the knuckle preferably by a hook 11 at the end of the finger, which engages a notch 12 in the knuckle, the construction being such that as the knuckle is swung on its axis, the finger is moved lengthwise thereby, it being retracted as shown in Figs. 2 and 4, and at B in Fig. 1, when the knuckle is in closed position, and being projected so as to extend over the hole when the knuckle is in open position, as shown in Fig. 5, and at A in Fig. 1. To guide the finger in its movements I fit it in a guide-way or hole in the coupler-head, shown in Figs. 1 and 2, so that it shall move back and forth over the hole *g* as the knuckle is open and closed.

When the angled locking device is raised so as to free the knuckle and the knuckle is then swung open, the act of turning it on its pivot will project the finger over the hole *g*, and if the locking device be not tipped for the purpose of opening the knuckle this finger will support it in elevated position by preventing its arm *f* from dropping into the hole and will thus hold it above the path of motion of the knuckle. The knuckle can therefore be swung back into closed position without engaging the head of the locking device.

To limit the swinging or radial motion of the angled locking and opening device so that in moving the knuckle open it cannot be tipped far enough to cause it to jam in the recess in the coupler, I provide the following improved means: The lifting-chain 8 passes through the hole 13 in the top of the coupler-head, which hole is of  $\ast$  shape, formed of two intersecting slots so that it shall serve as a guide for the links of the chain. On the upper side of the head 7 of the angled piece is a shoulder 14, the inclination and position of which is such that when the angled piece has been lifted and the last link of the chain is in the hole 13, the inner side of said shoulder shall engage the link and shall press against one side of the same, forcing the other side of the link against the wall of the cross-slot of the hole 13, and thus jamming it so as to prevent further tipping or swinging motion of the angled piece. This construction is very desirable, as it is simple and altogether reliable in its action.

Within the scope of my invention as defined in the claims, many changes in the form, construction and relative arrangement of the parts may be made by the skilled mechanic,



and although I deem it desirable to arrange the supporting finger as the base of the coupler-head in the manner shown in the drawings, my broader claims are not limited thereto.

5 I claim—

1. A coupler having a swinging knuckle, a vertically movable locking device, and an upholding finger made separate from the knuckle but connected with the middle part or elbow thereof so as to be moved thereby, and being  
10 movable so that when the knuckle is open it shall be brought under the locking device and shall sustain the same; substantially as described.

15 2. A coupler having a knuckle, a radially movable angled locking and opening device whose rear arm extends back of the tail of the knuckle and is adapted to fit in the guide hole in the coupler-head, and a finger movable by  
20 the knuckle and adapted to be moved thereby to obstruct said hole when the knuckle is swung open; substantially as described.

3. A coupler having a knuckle, a radially movable angled locking and opening device

whose rear arm extends back of the tail of the  
25 knuckle and is adapted to fit in the guide-hole in the coupler-head, and a finger movable by and with the knuckle and adapted to be moved thereby to obstruct said hole when the knuc-  
30 kle is swung open, said finger being made separate from the knuckle and pivotally connected therewith; substantially as described.

4. A coupler having a swinging knuckle, a vertically movable locking device, a separate upholding finger which projects from the  
35 knuckle, said finger being pivotally connected with the knuckle, being movable therewith so that when the knuckle is open it shall be brought under the locking device and shall sustain the same, and being guided in its  
40 movement by a guide-hole or way in the coupler head; substantially as described.

In testimony whereof I have hereunto set my hand.

CLINTON A. TOWER.

Witnesses:

O. K. BROOKS,  
O. W. LOOMIS.