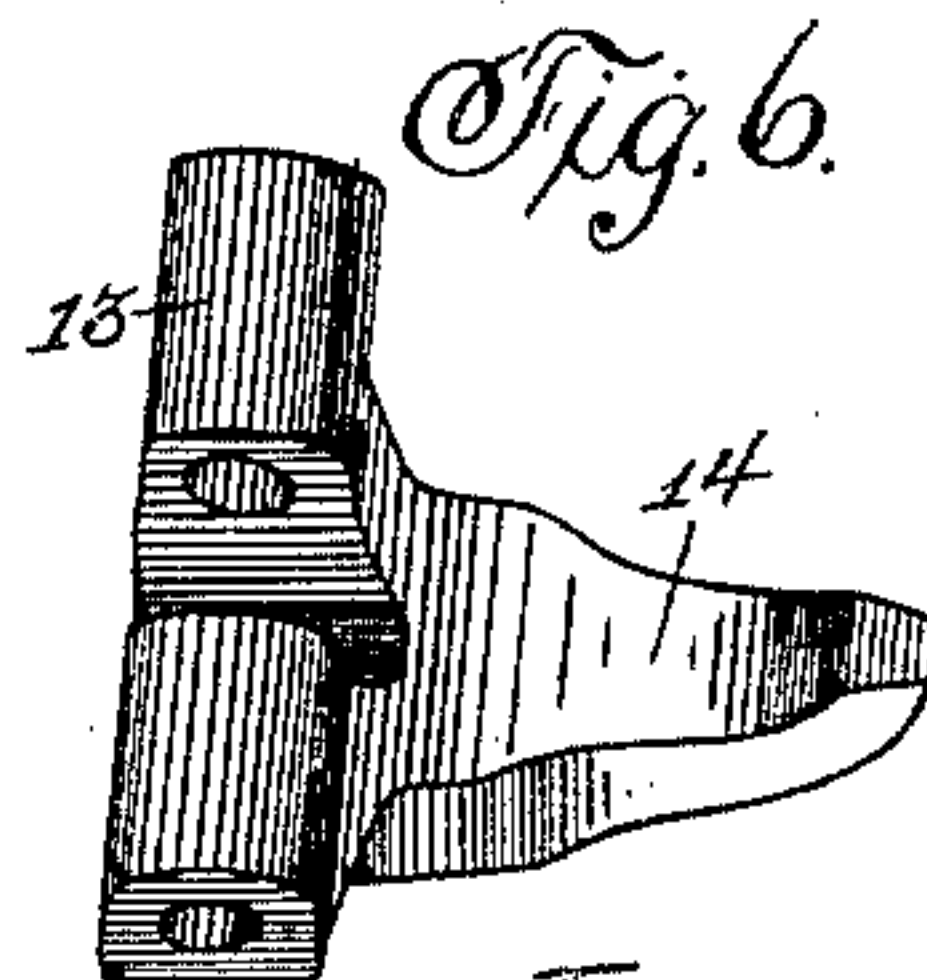
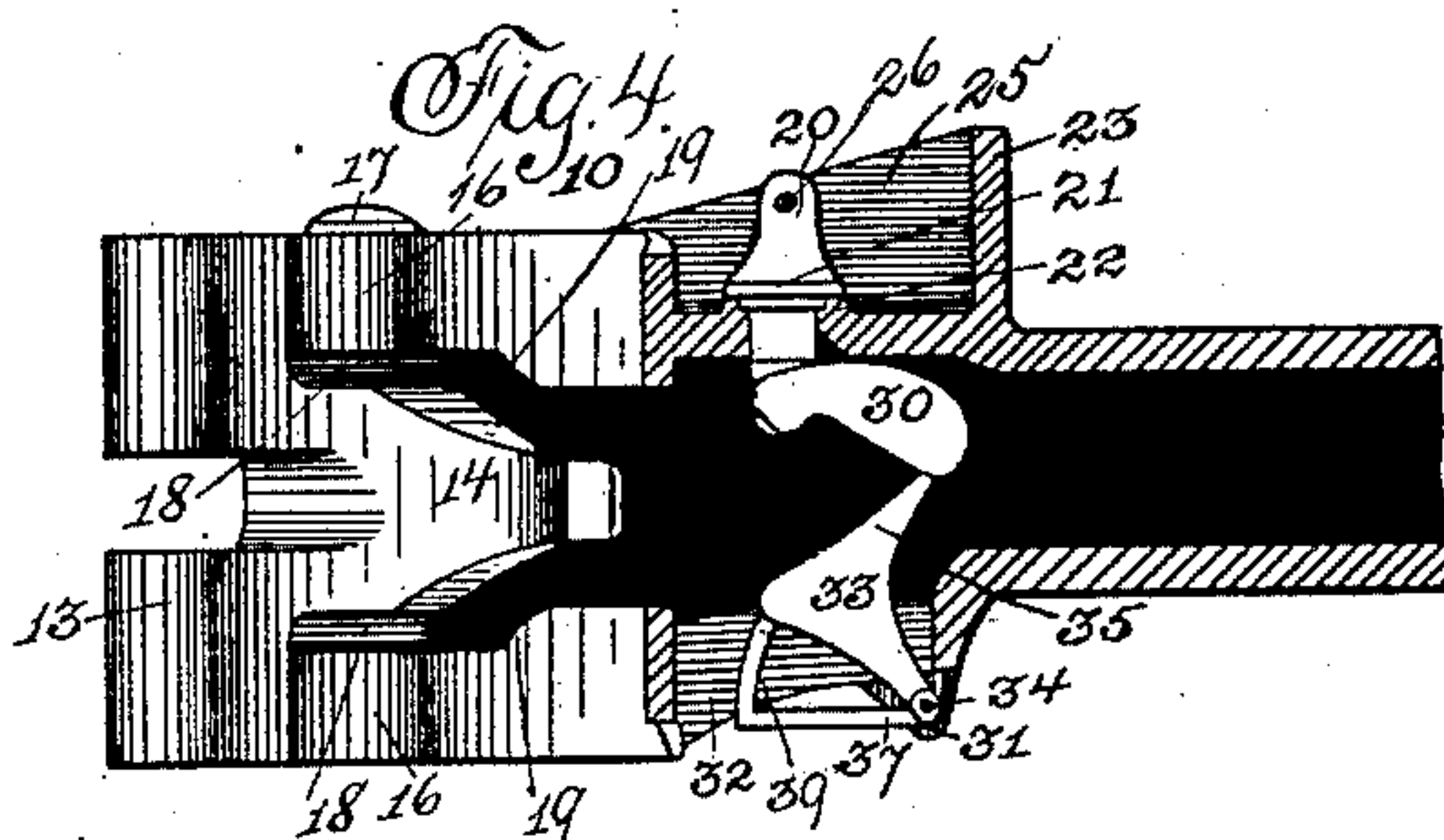
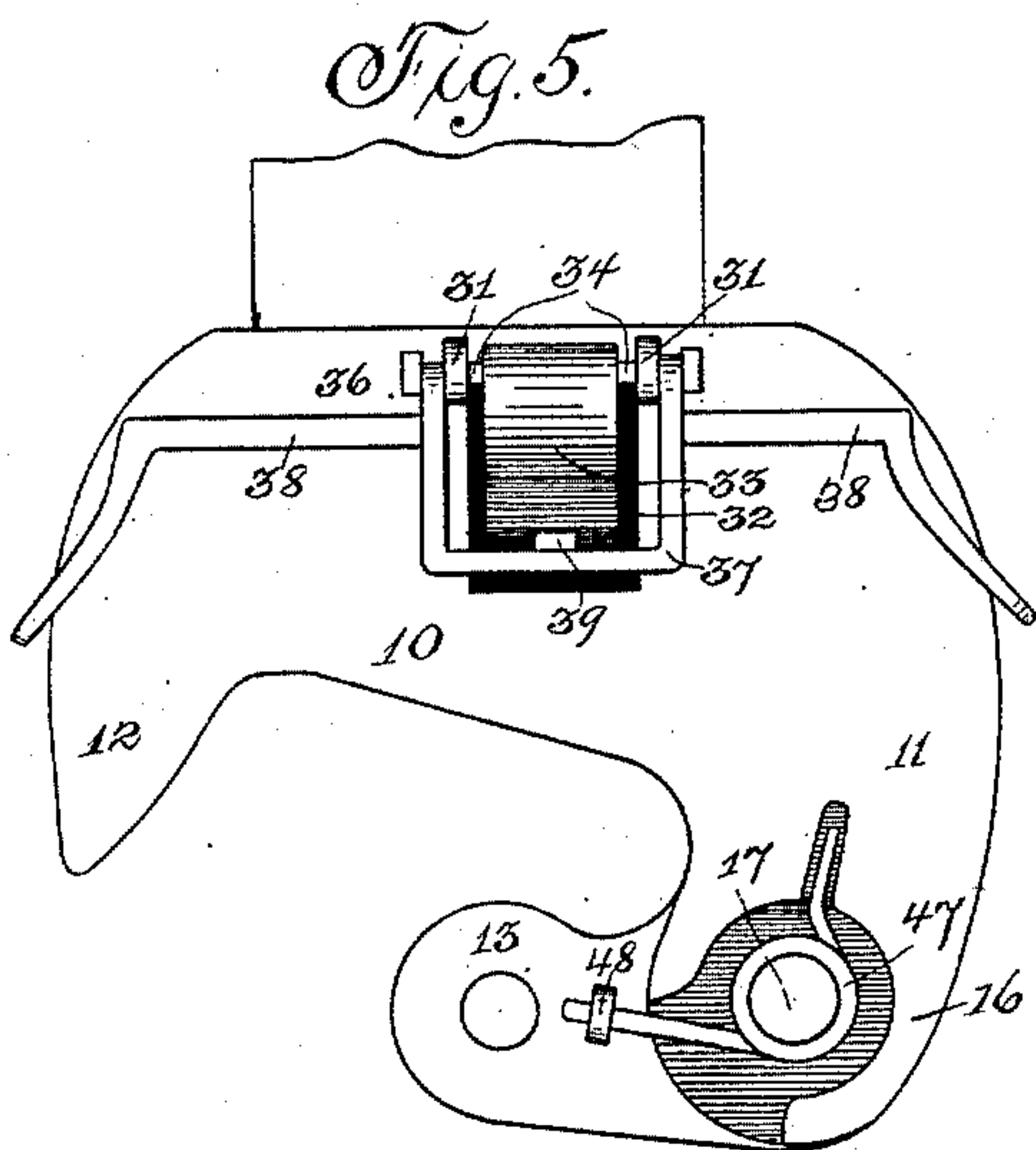
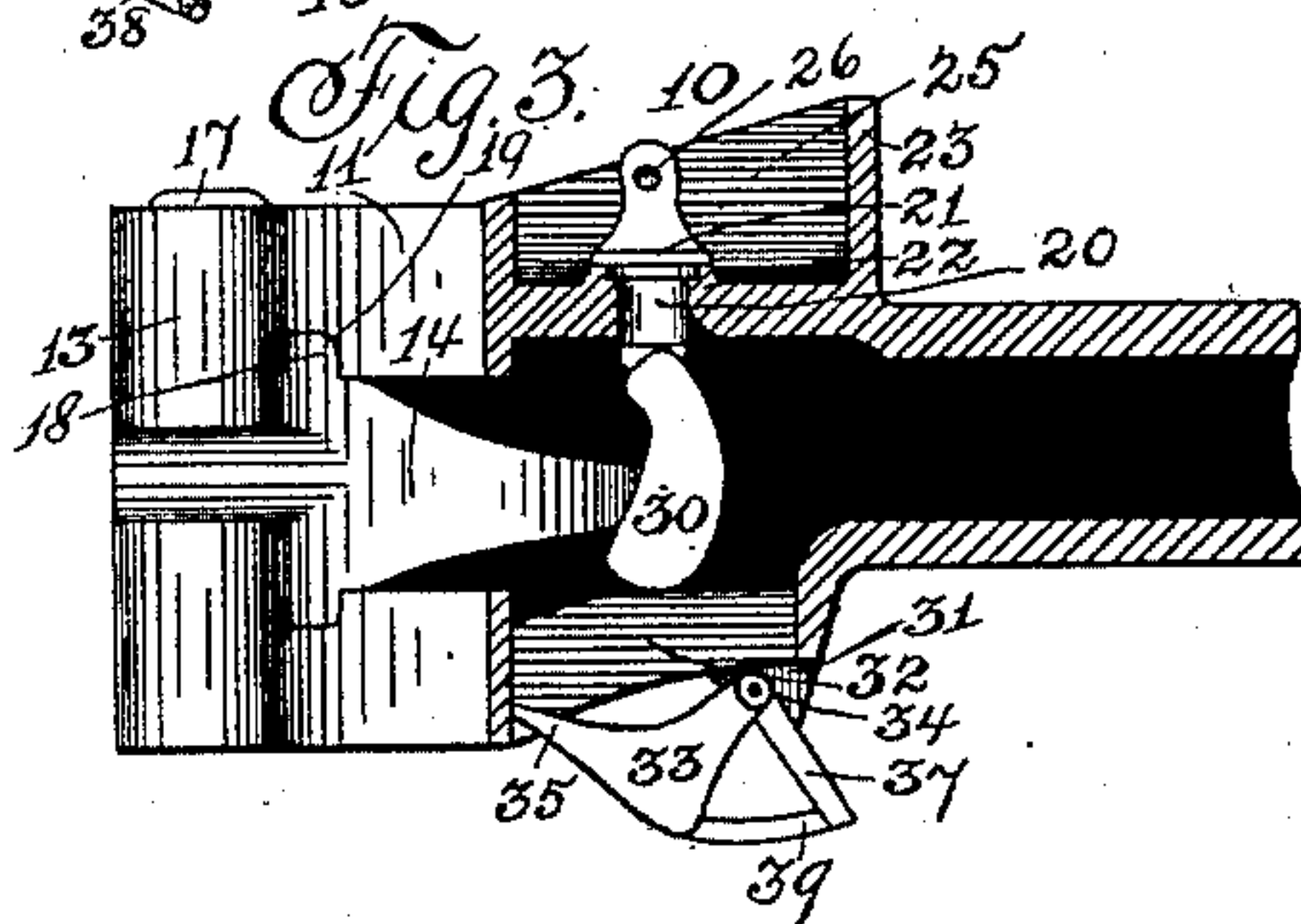
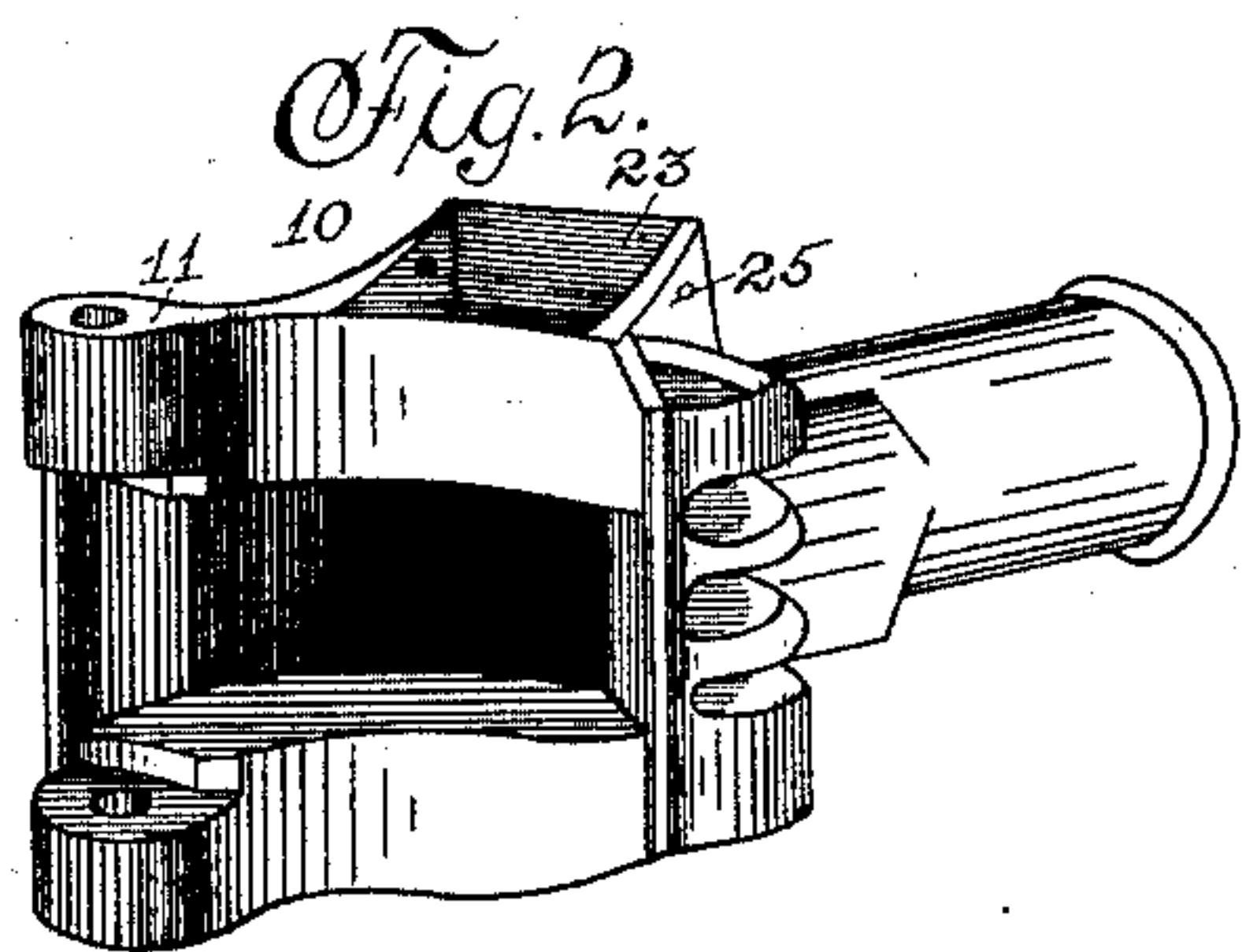



2 Sheets—Sheet 1.

No. 485,249.

Patented Nov. 1, 1892.



Witnesses
F. C. Tate
G. R. Greene

 *Inventor.*
Eugene D. Whipple,
by *Bulkeley & Sweet,*
Attys.

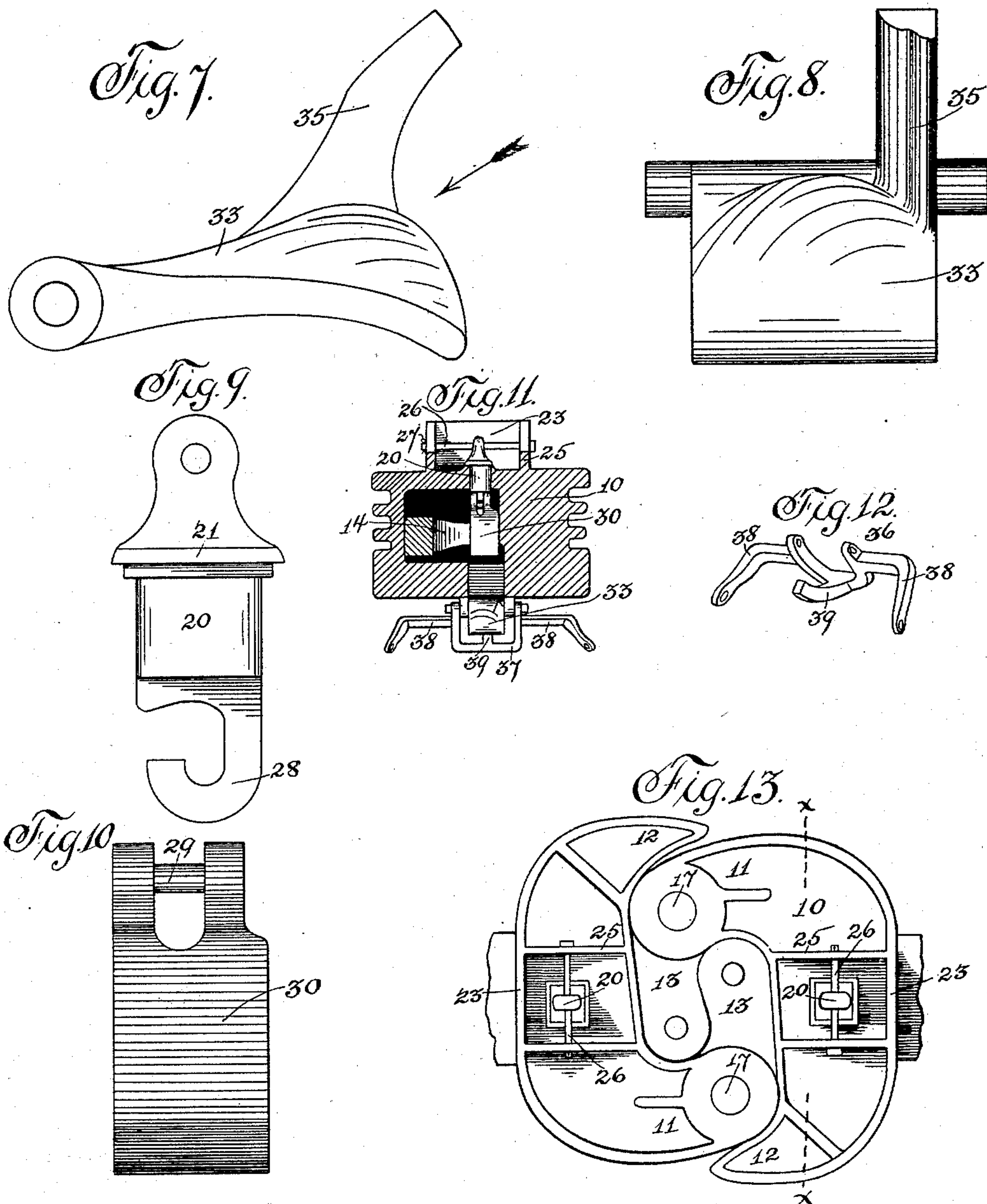
(No Model.)

2 Sheets—Sheet 2.

E. D. WHIPPLE.
CAR COUPLING.

No. 485,249.

Patented Nov. 1, 1892.



Witnesses
T. C. Tate.
J. R. Green.

Inventor:
Eugene D. Whipple,
by Bulkley & Sweet,
his Attys.

UNITED STATES PATENT OFFICE.

EUGENE D. WHIPPLE, OF CRESTON, IOWA.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 485,249, dated November 1, 1892.

Application filed October 19, 1891. Serial No. 409,101. (No model.)

To all whom it may concern:

Be it known that I, EUGENE D. WHIPPLE, a citizen of the United States, and a resident of Creston, in the county of Union and State of Iowa, have invented certain new and useful Improvements in Car-Couplers, of which the following is a specification.

This invention relates to that class of devices for which Letters Patent No. 450,620 were granted to me jointly with John M. Igoe on the 21st day of April, 1891.

The object of this invention is to be found in the provision of means whereby in the vertical-plane type of car-couplings an increased strength of knuckle is attained.

A further object of this invention is to be found in the provision of means whereby in the vertical-plane type of car-couplings the line of draft is direct from the true center of the draw-head.

A further object of this invention is to be found in the provision of means whereby the strain or shock on the locking mechanism is materially lessened, thus obviating frequent breakage of the parts.

My invention consists in the combination, in a car-coupling of the vertical-plane type, of a vertically-hinged knuckle having an impact-arm extending rearwardly and transversely from the plane of hinging of the knuckle to a point approximately in the center of the draw-head, centrally-located locking mechanism comprising a gravity locking-block normally engaging said arm of the knuckle when the latter is locked, and a pivoted cam-lever located in juxtaposition to said locking-block and adapted to be acted upon by a manually-operated unlocking-lever, whereby said locking-block is disengaged from the said arm to effect an uncoupling.

My invention consists, further, in the combination, in a car-coupling, of a locking-block located within the draw-head, a removable hanger mounted in the draw-head, and pivotal connections between said hanger and the locking-block, whereby the locking-block can be readily mounted within or disengaged from its supports within the draw-head to facilitate the substitution of the parts.

My invention consists, further, in the combination, with the unlocking-lever of a car-coupling, of a double-ended lever arranged

approximately horizontally in juxtaposition to the unlocking-lever and so secured within and positioned relative to its supports as that two alternate fulcrums and lever-arms of equal efficiency are provided, thus enabling the train or yard man to actuate the unlocking-lever from either side or top of the car by the exertion of a like power at all times.

My invention consists, further, in certain details of construction and combination of parts, hereinafter set forth, pointed out in my claims, and illustrated by the accompanying drawings, in which—

Figure 1 is an end elevation of a portion of a car, showing my improved coupler in position thereon, together with the manually-operated actuating-levers. Fig. 2 is a perspective view of the draw-head, the knuckle being removed to show the interior cavity. Fig. 3 is a side elevation of the draw-head, partly in section, to show the locking mechanism, the knuckle being closed and held in a locked position. Fig. 4 is a like view, the parts being in the position assumed when in readiness to effect a coupling. Fig. 5 is an enlarged plan view of the under side of the draw-head, showing the lever for actuating the gravity-trigger, and also the yielding pressure devices normally tending to cause the knuckle to assume an open position. Fig. 6 is a detail perspective view of the knuckle and impact-arm. Fig. 7 is an enlarged detail side view of the gravity-trigger. Fig. 8 is an enlarged detail end view of the gravity-trigger in the direction of the arrow, Fig. 7. Fig. 9 is an enlarged detail side elevation of the removable and replaceable hanger. Fig. 10 is an enlarged detail front or face view of the locking-block. Fig. 11 is a transverse vertical section on the line X X of Fig. 13. Fig. 12 is a perspective view of the lever for actuating the gravity-trigger. Fig. 13 is a plan view showing two draw-heads engaged and coupled.

In the construction of the coupling as shown the numeral 10 designates the draw-head, having an arm portion 11 and a guiding-arm 12, respectively formed integrally with and projecting forward from opposite sides thereof. A knuckle 13, having an integral rearwardly-extending impact-arm 14, is vertically hinged to the forward end of the arm

portion 11 by means of the ear 15, which latter is formed on the knuckle 13 and secured to the ears 16, formed on the arm portion 11 by the vertically-positioned knuckle-pin 17.

5 The impact-arm 14 when the coupling is locked extends within a cavity in the draw-head 10, as shown in Fig. 2, transversely of said cavity to an approximately-central point of the draw-head, and when the parts are in

10 a position about to effect a coupling said impact-arm is so positioned as that its free end is in proximity to the outer end of the guiding-arm 12. The impact-arm 14 is of less vertical dimension than the ear 15 of the knuckle 13,

15 thereby forming shoulders 18 18 on said knuckle, which shoulders contact with and are stopped by shoulders 19 19, positioned, respectively, above and below the forward opening in the draw-head when the said knuckle is

20 closed. A vertical aperture is formed in the top portion of the draw-head, extending from the upper surface of said draw-head to the interior cavity therein, and a hanger 20 depends through and beyond said aperture into said

25 cavity. The said hanger 20 has a head 21, which rests upon a seat 22, formed integrally with the top of the draw-head. A bumper-plate 23 is formed integrally with the upper surface of the draw-head in the rear of the

30 hanger 20, which plate extends transversely of the said draw-head and projects upward therefrom in front of the dead-wood 24. Braces or webs 25 are formed integrally with the bumper-plate 23 and the draw-head 10 in

35 front of the said plate and on either side of said hanger 20. A pin 26 is passed through coinciding perforations in the head of the hanger 20 and the webs 25, whereby said hanger is secured to the webs, the pin being

40 prevented from accidental displacement by means of a split key 27, which is passed through a perforation in the projecting end thereof. On the lower end of the hanger 20

45 a hook 28 is formed, which hook engages a transverse journal 29, formed in the bifurcated upper end of the depending locking-block 30, said locking-block being of such a thickness of material as to give it sufficient weight for its gravity fall. Ears 31 31 are

50 formed integrally with the lower face of the draw-head 10 on either side of and in proximity to the aperture 32 in said draw-head, and a gravity-trigger 33 is pivotally mounted between said ears on a pin 34, which pin passes

55 through coinciding perforations in said ears and the trigger. Said trigger 33 normally lies in a horizontal position slightly in advance of the normal vertical position of the locking-block 30, the free end of the projecting integral tang 35 of said trigger contacting with

60 the draw-head at the forward side of the aperture 32, which aperture provides means of access from the under side of the draw-head to the interior cavity in said draw-head.

65 The numeral 36 designates a bent lever, consisting of a yoke 37, fulcrumed at its ends to the outer ends of the pin 34, and integral arms 38, adapted to be connected to the manually-operated lever, to be described. A curved lifting-finger 39 is formed integrally 70 with the center of said yoke and projects at right angles therefrom to a point of engagement with the forward end of the gravity-trigger 33. A lever 40 is mounted in two supporting and guiding clips 41 and 42, which 75 clips are secured to the end of the car on which the coupling is carried. The lever 40 is constructed with its handles in a plane parallel with its body portion, thereby forming shoulders 43 44, which engage against 80 the clips 41 42, respectively, and prevent a longitudinal movement of said lever. A connecting-rod 45 is pivotally secured by one end to the approximate center of the lever 40, its other end being connected to one of 85 the arms 38 on the bent lever 36. An actuating-rod 46 is pivotally connected by its lower end to the lever 40, and extends through bearings (not shown) to a point at the top of the car on which the lever 40 is secured. A niche or recess is formed in the under side of the lower one of the ears 16, and a torsional spring 47 is mounted about the lower end portion of the knuckle-pin 17, one end of said torsional spring being confined in a slot in 95 said ear 16, the other end of said spring being confined within a lug 48 on the knuckle 13 and operating to open the same when the locking mechanism is released. The aperture through which the hanger 20 depends may be 100 made of sufficient size to admit the locking-block 30 into the interior cavity of the draw-head through said aperture, in which event the head 21 of the hanger 20 is made larger in order to cover the aperture. The hook 28 105 on the hanger 20 may be closed, if desired, thus forming an eye through which the journal 29 of the gravity locking-block passes to form a pivotal connection between said hanger and the locking-block. In this instance in 110 order to effect an adjustment of the parts the locking-block and hanger are passed through the upper aperture after being joined. It will be observed that the locking-block 30 is of such width as to fit snugly between the 115 end of the impact-arm 14 and the wall of the interior cavity in the draw-head opposite to said impact-arm, thus providing a backing for said locking-block of such strength and firmness as that no amount of strain on the 120 impact-arm can effect a displacement of said locking-block. The parts being in the position shown in Fig. 4 in readiness to effect a coupling in the approximation of the draw-heads, the vertical plane of the knuckles 13 125 impinge against the impact-arms 14, and, moving said impact-arms rearward, are guided into interlocking engagement with each other by the guiding-arm. The impact-arms in their rearward movement impinge against 130 the inclined faces of the gravity-triggers 33 and crowd the said triggers downward, thus releasing the locking-blocks 30, permitting said blocks to fall by gravity in front of the said

arms and lock the same against an opposite movement outwardly from the draw-heads. It is now evident that when a strain is brought upon the knuckles the broad end faces of the impact-arms are bearing directly upon the side of the locking-blocks. In case the knuckle 13 of one of the draw-heads be open and the locking-block 30 depending in a vertical position the rearward movement of the impact-arm will crowd the said block upward, permitting the impact-arm to pass underneath the locking-block, which latter will then fall automatically into engagement with the end of said arm and lock the same. The parts being in a locked position, as shown in Fig. 3, the locking-block 30 depending vertically from the hanger 20 in such a manner as to engage the end of the impact-arm 14, Figs. 2 and 3, the gravity-trigger 32 resting in its normal inoperative position, the free end of its tang 34 engaging the draw-head at the forward side of the aperture 35, in order to unlock the knuckle 14 and swing the same open to effect an uncoupling or for any other purpose the train or yard man applies to either end of the handles of the lever 40 a lifting force, thereby elevating the arm 38 of the bent lever 36 through the medium of the connecting-rod 45. The same result of lifting the arm 38 may be accomplished from the deck by means of the actuating-rod 46. The elevation of the arm 38 causes the bent lever 36 to turn upon the pin 34, carrying the lifting-finger 39 into contact with the gravity-trigger 33, moving the same in an upward arc, causing the free end of its tang 35 to contact with the locking-block 30, in turn causing the latter to describe an upward arc out of engagement with the arm 14, the spring 47, Fig. 4, now acting upon the knuckle 13 to cause the same to automatically open. The release of the lifting force upon the lever 40 permits the gravity fall of the bent lever 36 into the position shown in the drawings. The lever 40, it will be observed, is mounted in two clips 41 42, which provide alternate fulcrums for said lever in the actuation of the latter from either side of the weight. It will be observed that by reason of the location of the locking devices approximately in the center of the draw-head ready access may be had to the parts for the purpose of readjustment or repair and a longer leverage afforded by the extension of the impact-arm from the knuckle to said approximate center. Since the bent lever 36, carrying the lifting-finger 39, is mounted upon the same pivot as that of the gravity-trigger, it is evident that the respective arcs described by the end of the finger and the gravity-trigger are concentric.

In the operation of couplers of the vertical-plane type the impact end of the rearwardly-extending arm becomes worn in the constant operation of the coupler, which displaces the proper alignment of the knuckle, occasioning an undue slack in the train heretofore requiring that the draw-bar be discarded when in

this condition. In my present form of coupler, by virtue of the removable and replaceable locking-block this objectionable feature may be overcome by providing sets of locking-blocks of two sizes, the one being thicker in cross-section than the other.

When the coupler is first used, the locking-block of lesser thickness is adjusted in place, and when the impact end of the arm becomes worn this locking-block is removed and one of the thicker set adjusted in place and the removed locking-block retained to be used for new couplers, thus accomplishing the result of maintaining proper alignment of the knuckle and bringing the strain of the impact-arm upon the side of the draw-head instead of upon the locking-block, as hereinbefore described. It will be apparent that this result is accomplished without additional expense, since the locking-block after removal may be again used.

Having thus described my invention, what I claim as new therein, and desire to secure by Letters Patent of the United States, is—

1. In a car-coupling of the class described, the combination, with a vertically-hinged knuckle normally tending to assume an open position, of an impact-arm secured to and extending rearwardly from said knuckle within a cavity in the draw-head to a point approximately at the center line of the draw-head, a gravity locking-block pivoted at its upper end in such a manner as to depend normally vertical and in the plane of the impact-arm, engaging the end of the impact-arm to lock the knuckle, and a pivoted trigger manually actuated to disengage the locking-block from the end of the impact-arm.

2. In a car-coupling of the class described, the combination, with a vertically-hinged knuckle normally tending to assume an open position, of an impact-arm secured to the said knuckle, extending rearwardly within a cavity in the draw-head to a point approximately at the center line of the said draw-head, a removable and replaceable hanger held within the draw-head, a locking-block hinged to the hanger and depending normally vertical within the cavity of the draw-head and in the plane of the end of the impact-arm, and a manually-actuated gravity-trigger adapted to disengage the locking-block from the impact-arm.

3. In a car-coupling, the combination, with a vertically-mounted knuckle acted upon by yielding pressure devices to normally tend to assume an engaging position, of an impact-arm secured to and extending from said knuckle within a cavity in the interior of the draw-head to a point approximately at the center of the draw-head, a hanger extending from the exterior of the draw-head to the interior thereof and removably secured thereto in position, a locking-block hinged to said hanger and adapted to engage and hold the impact-arm, and a gravity-trigger adapted to be manually actuated to withdraw and withhold the locking-block.

4. In a car-coupler, the combination, with a vertically-hinged knuckle acted upon by yielding pressure devices to normally tend to assume an open position and a rearwardly-extended impact-arm, of a hanger removably depending within a cavity in the draw-head approximately at the center thereof, and a locking block detachably secured to said hanger and adapted to describe an upward arc, the end of said arm engaging the side face of the locking-block to lock the knuckle, together with a gravity-trigger pivoted to the draw-head and manually operated by a system of levers from the sides or top of the car to impact against and withdraw the locking-block from engagement with the impact-arm.

5. In a car-coupling, the combination, with a knuckle vertically hinged and having a rearwardly-extending impact-arm, of a locking-block hinged within the draw-head approximately at the center thereof and adapted to engage the end of the impact-arm, a gravity-trigger also hinged within the draw-head, and a lifting-finger operated by a system of levers to rotate the gravity-trigger, which latter impinges against and withdraws the locking-block from engagement with the impact-arm, the arc described by the lifting-finger being concentric with the arc of gravity-trigger.

6. In a car-coupling, the combination, with a vertically-hinged knuckle from which extends rearwardly to a point approximately at the center of the draw-head an impact-arm, of a locking-block vertically hinged within the draw-head approximately at the center thereof and adapted to engage the end of the impact-arm, a gravity-trigger manually operated to withdraw the locking-block from

engagement with the end of the impact-arm, a transverse bar constituting the pivot for said gravity-trigger and also for a bent lever, operated by a system of levers from the side or top of the car, and a lifting-finger adapted to impinge against and cause the gravity-trigger to describe an upward arc.

7. In a car-coupling, the combination, with a vertically-hinged knuckle having a rearwardly-extending impact-arm, of centrally-located locking devices comprising a removable hanger extending through an aperture in the upper face of the draw-head, said hanger being removably secured by means of a key, and a locking-block detachably hinged to said hanger and adapted to engage the end of the impact-arm when in its normal vertical position, together with a gravity-trigger manually operated to impinge against and withdraw the locking-block from engagement with the end of the impact-arm.

8. In a car-coupler, the combination, with a vertically-hinged knuckle having a rearwardly-extending impact-arm, of a hanger extended through a centrally-located aperture in the draw-head, and a locking-block hinged to said hanger, against one side of which block the end of the impact-arm bears when the knuckle is locked, the said block being so positioned as that the side thereof opposite to that against which the impact-arm bears rests against the side of the draw-head.

In testimony whereof I have affixed my signature in the presence of two witnesses.

EUGENE D. WHIPPLE.

Witnesses:

JAS. G. BULL,
T. J. DAVIS.