

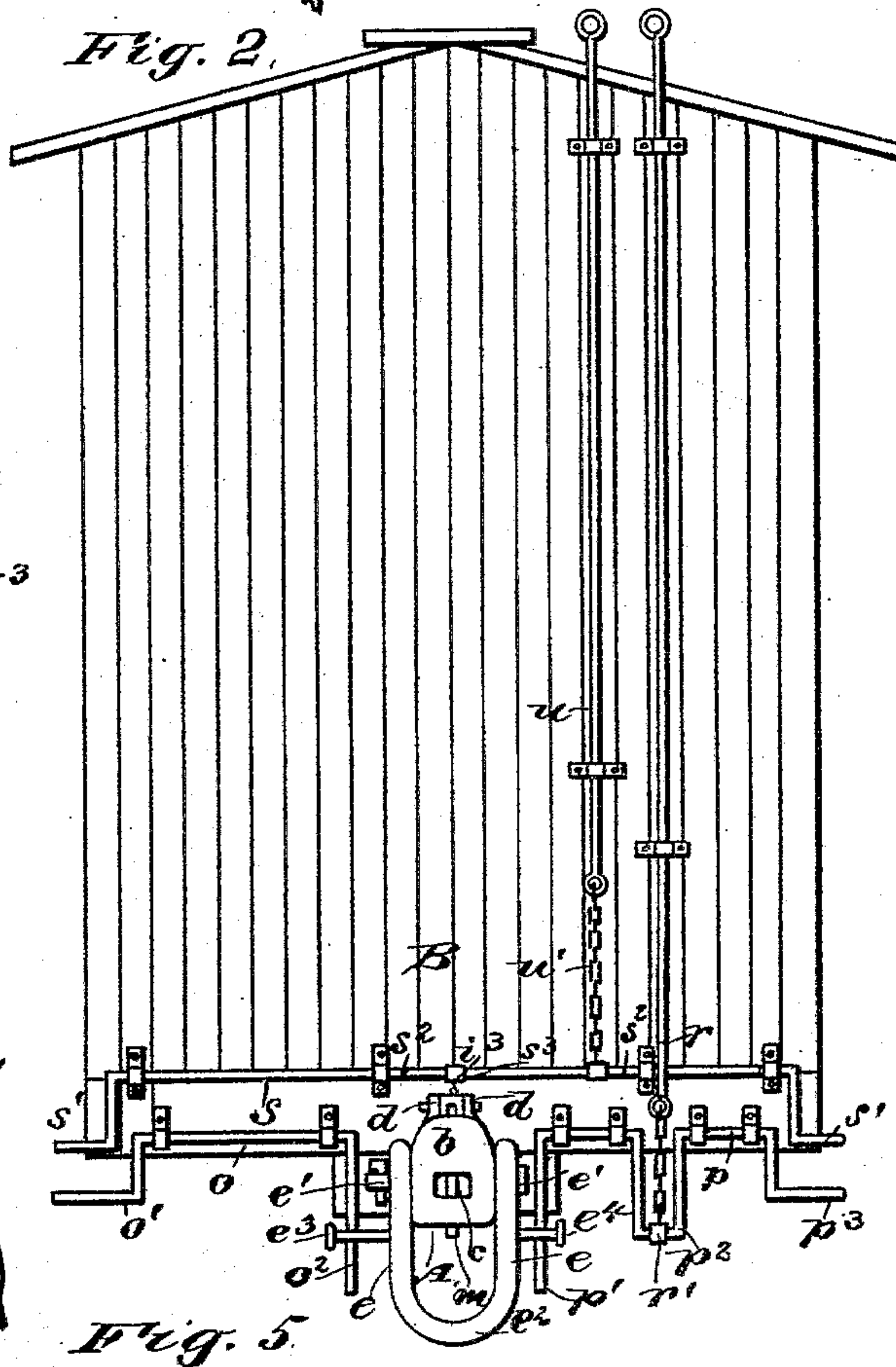
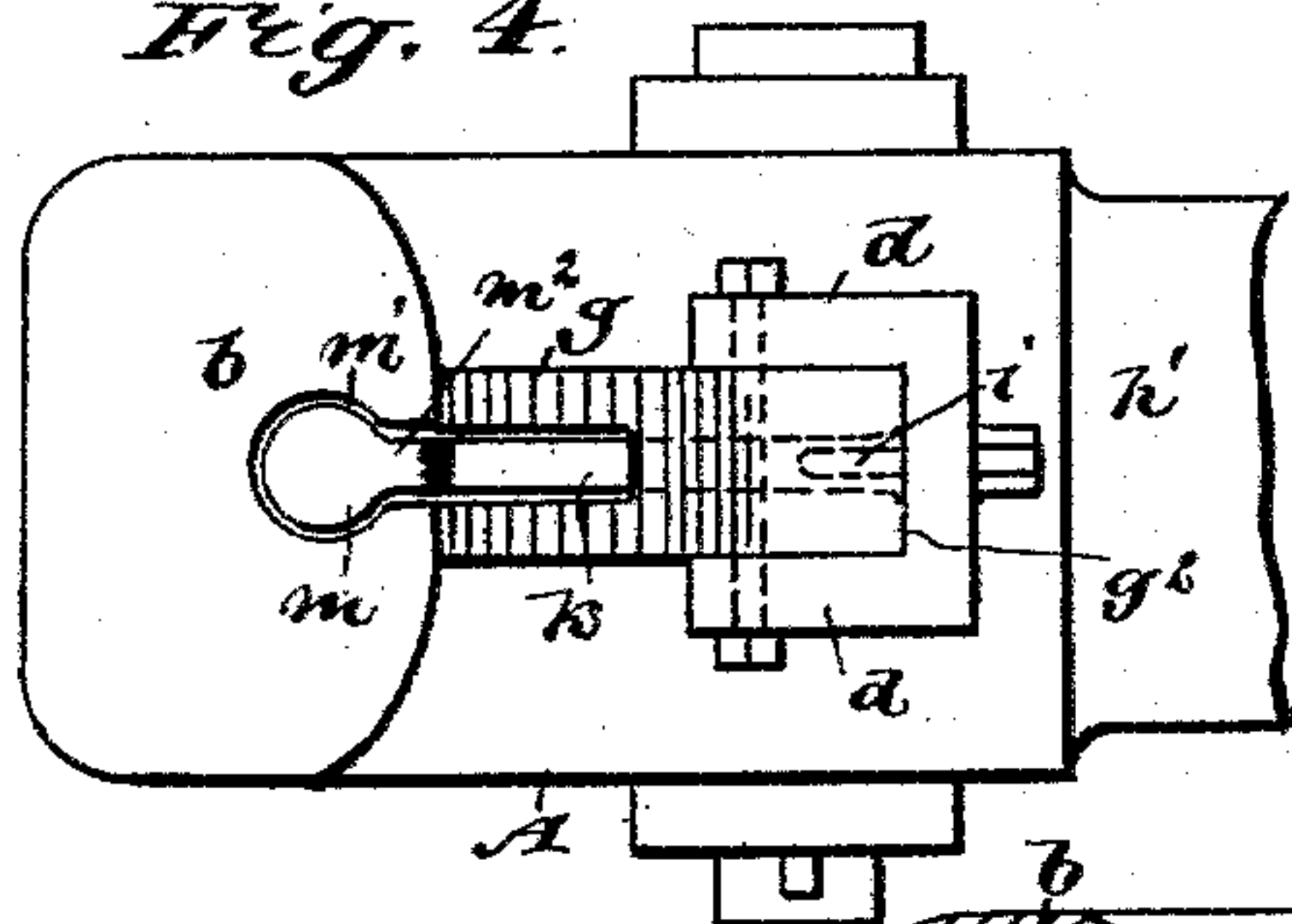
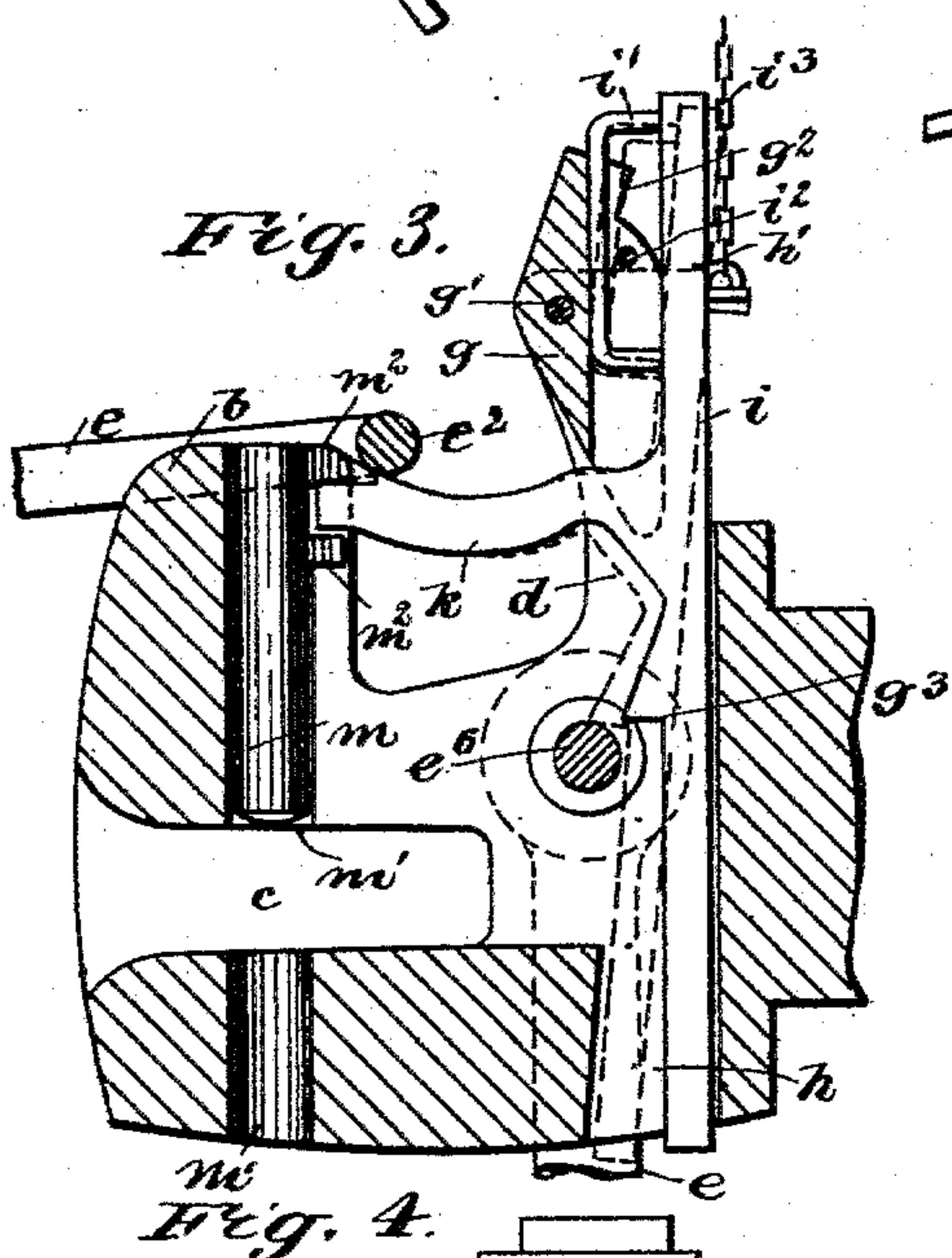
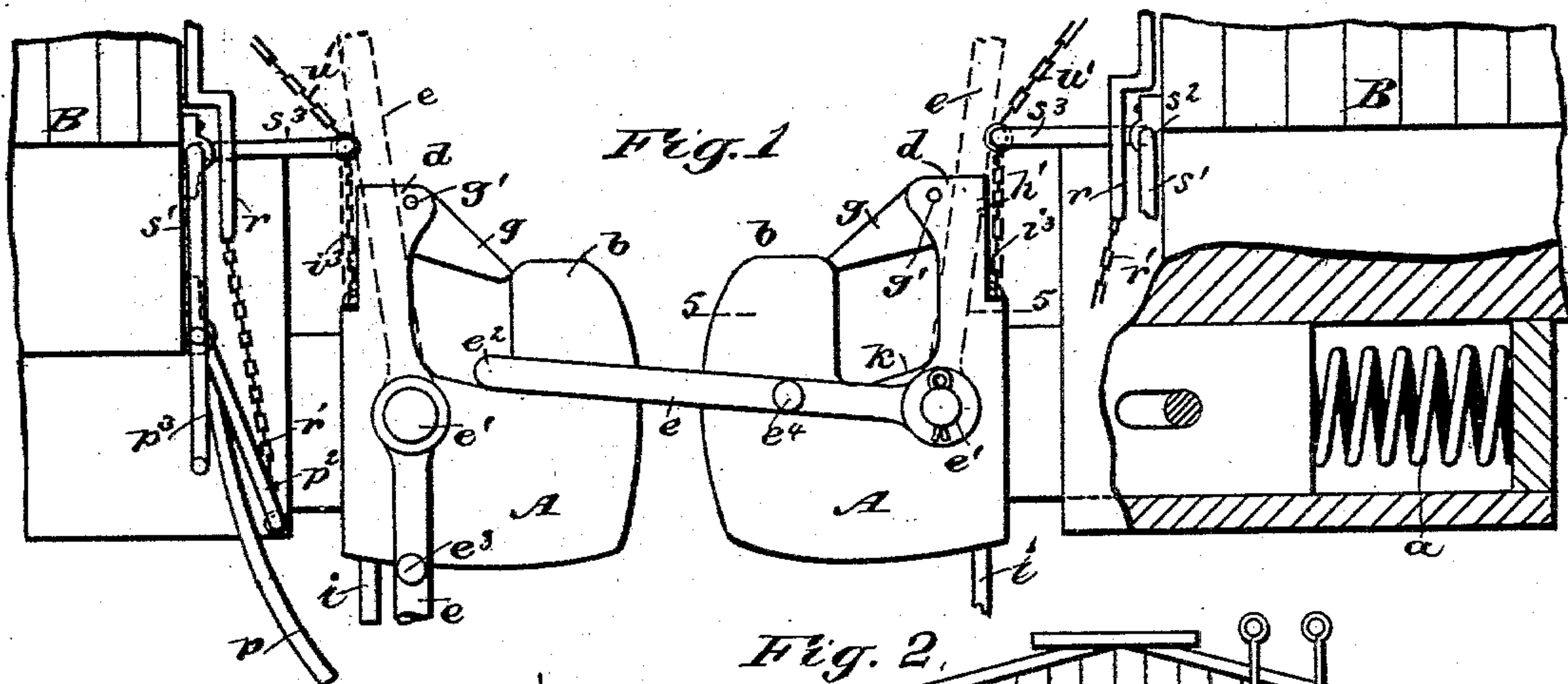
(No Model.)

2 Sheets—Sheet 1.

J. L. SMITH.
CAR COUPLING.

No. 490,169.

Patented Jan. 17, 1893.



WITNESSES :

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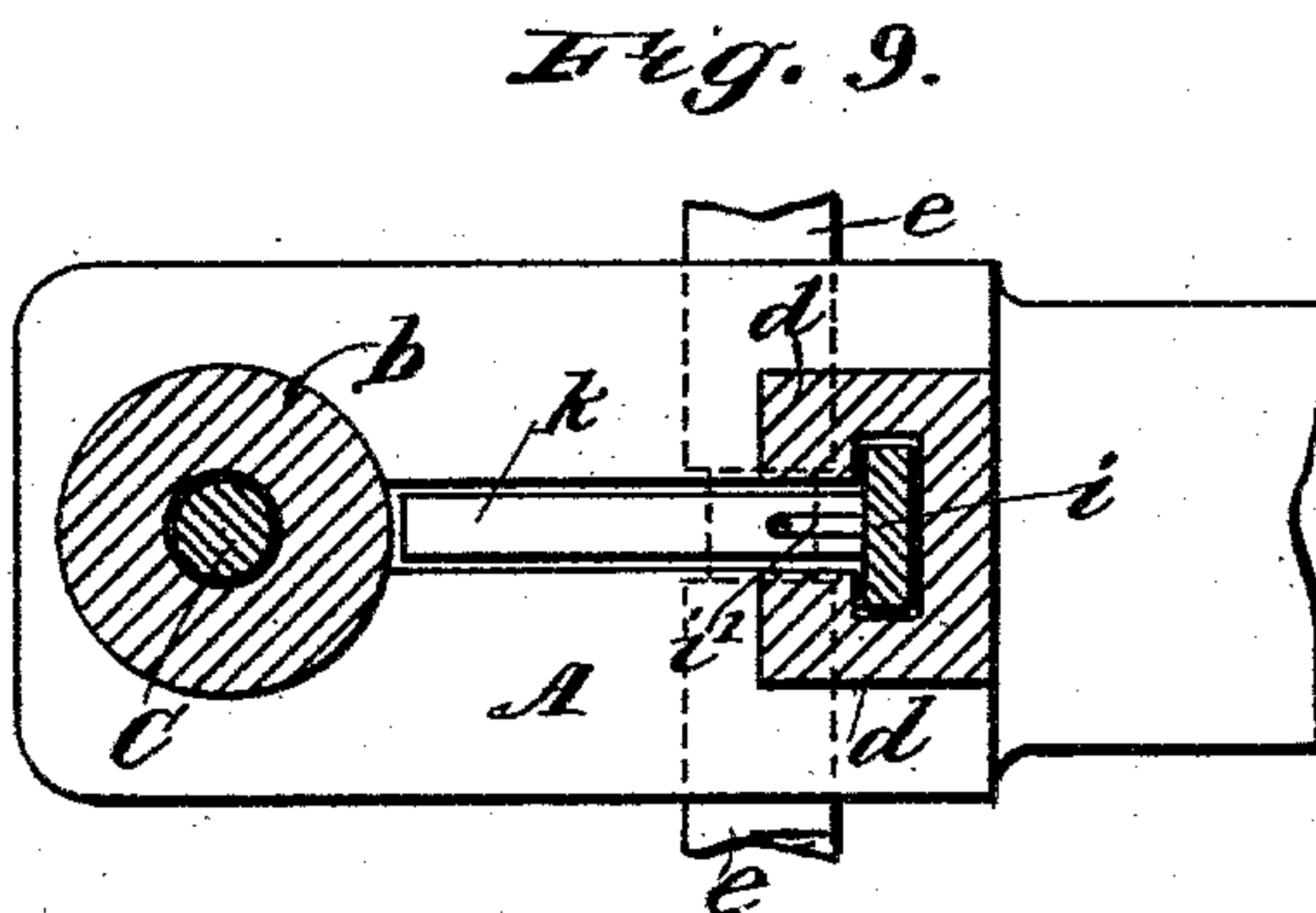
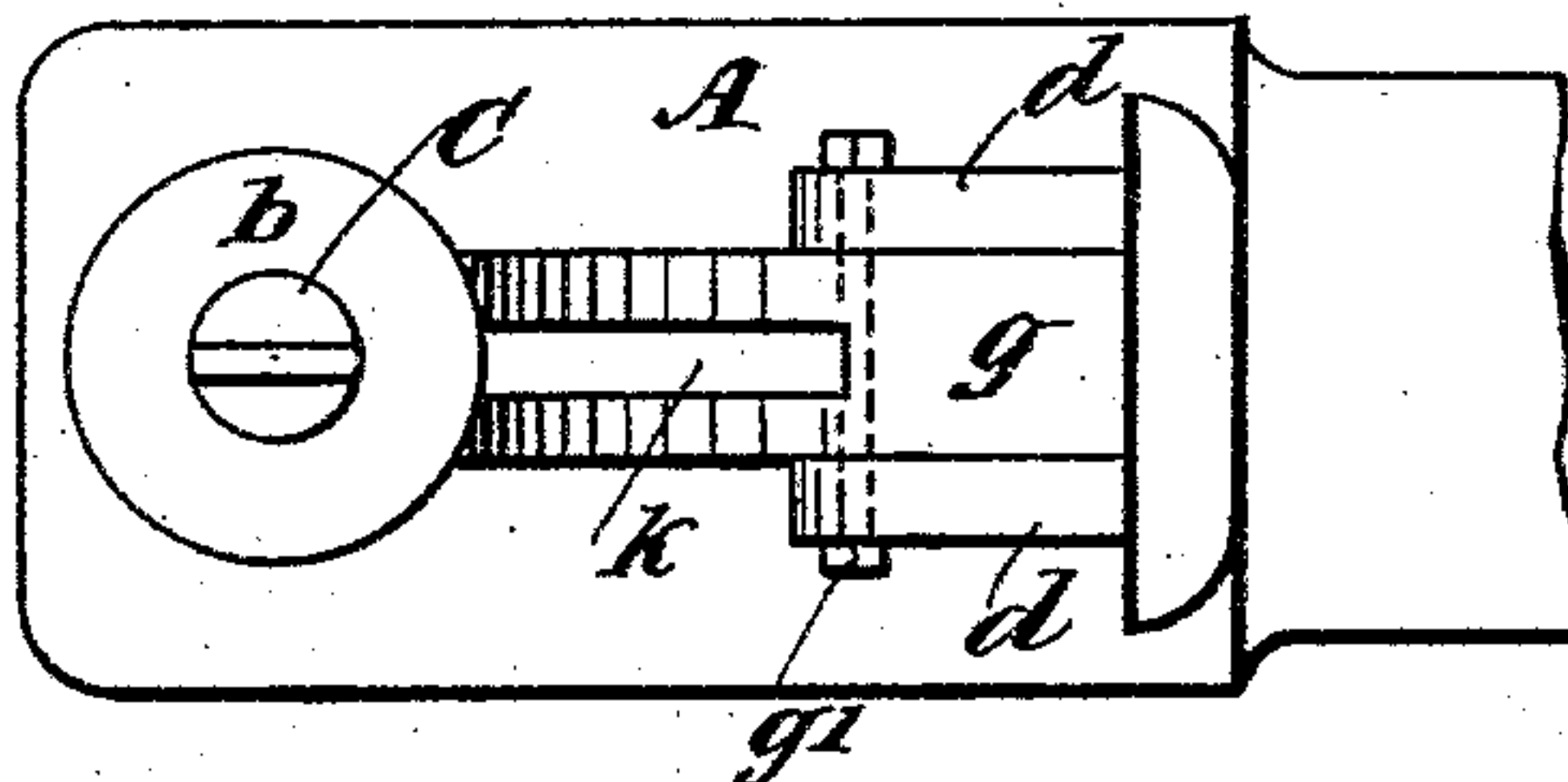
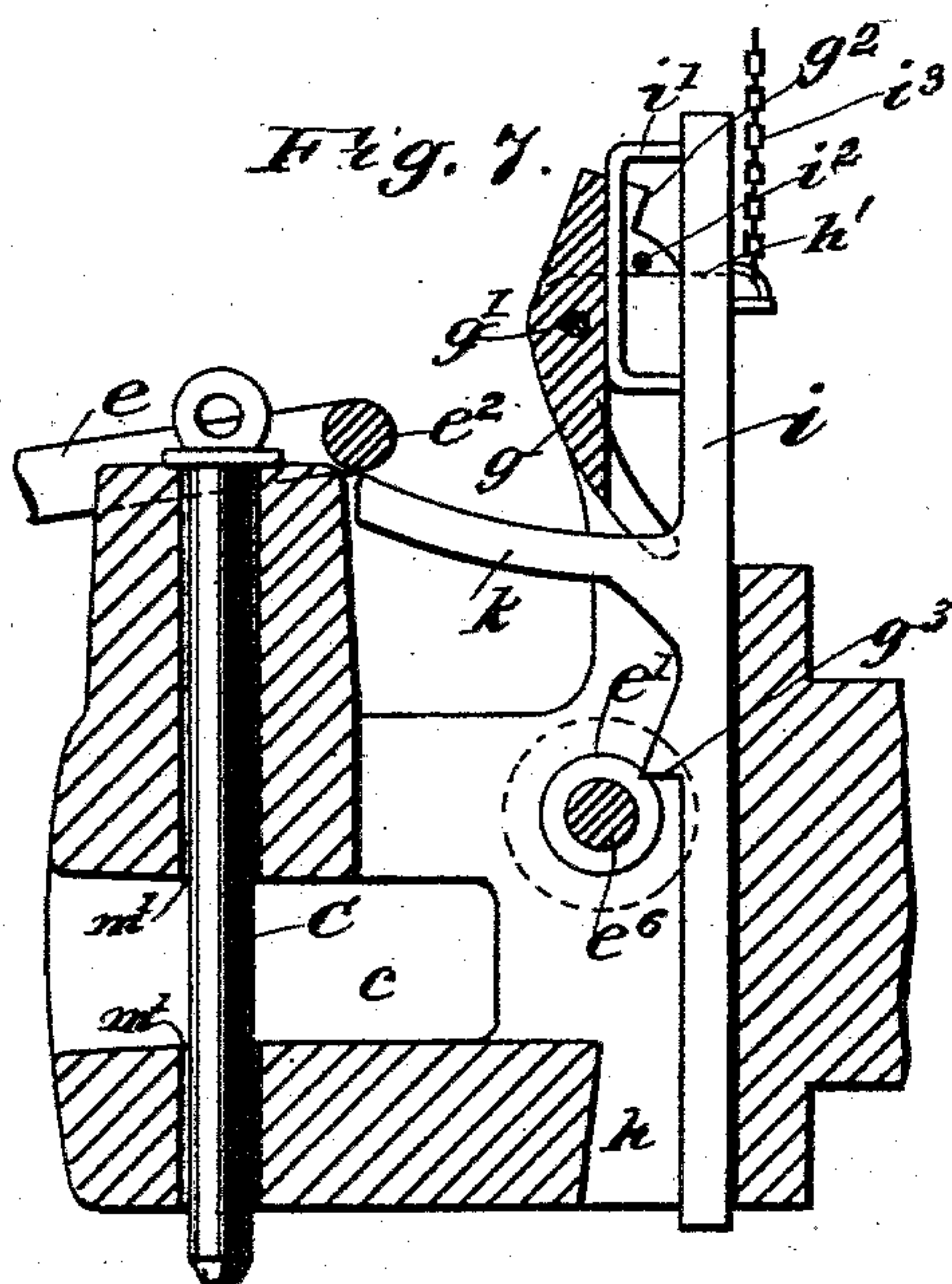
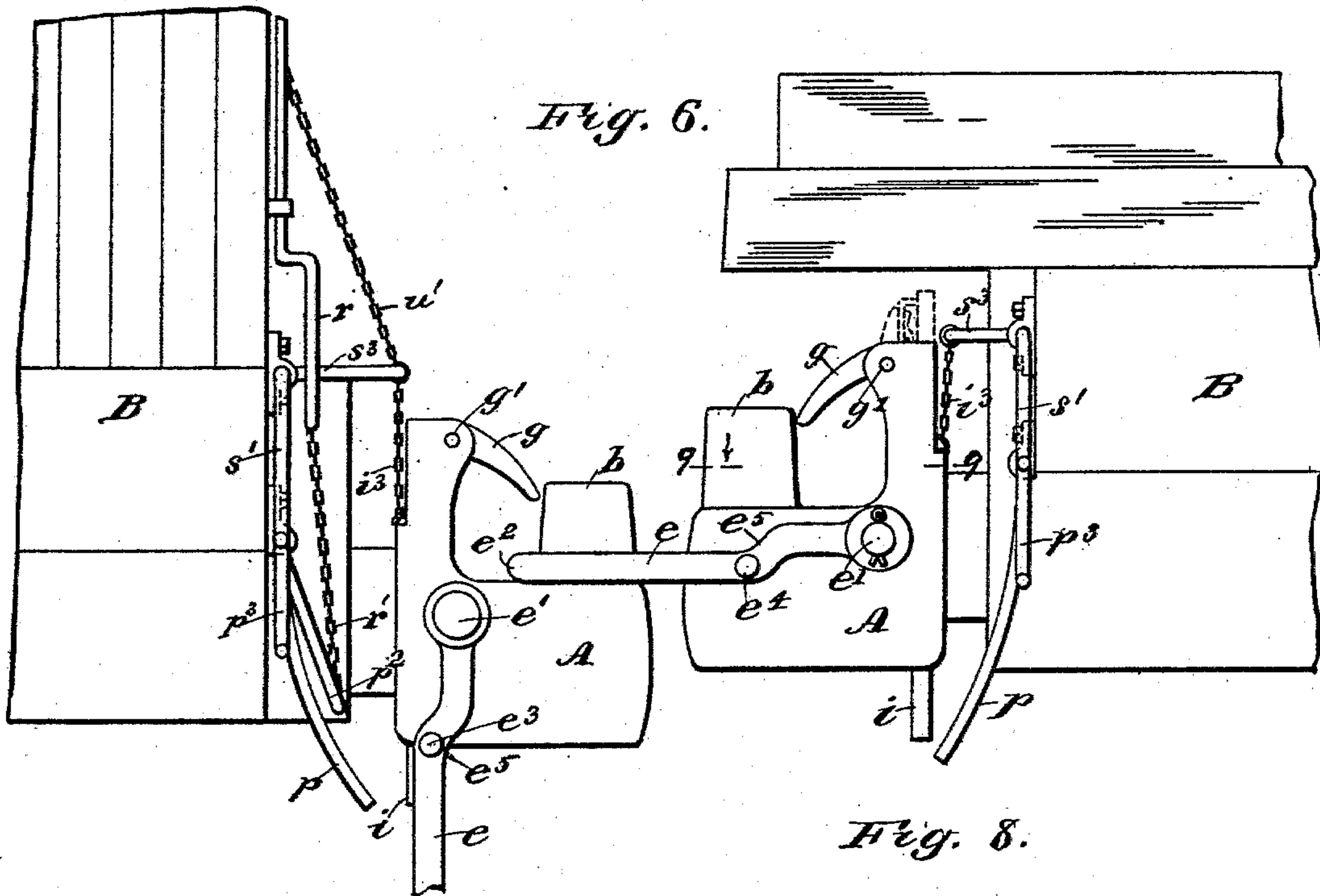
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2 Sheets—Sheet 2.

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CAR COUPLING.

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UNITED STATES PATENT OFFICE.

JOHN LAWRENCE SMITH, OF OGDEN, UTAH TERRITORY.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 490,169, dated January 17, 1893.

Application filed June 10, 1892. Serial No. 436,209. (No model.)

To all whom it may concern:

Be it known that I, JOHN LAWRENCE SMITH, of Ogden, in the county of Weber and Territory of Utah, have invented a new and useful Car-Coupling, of which the following is a full, clear, and exact description.

This invention relates to improvements in car couplings of the automatic type, in which two couplings are adapted to interlock without special manipulation while the coupling is being effected; the object being to provide a simple and efficient car coupling of the type indicated, which will afford means for a secure connection of two cars having the improvement, and their easy disconnection from either the sides or top of a car, by a proper manipulation of parts.

To these ends my invention consists in the peculiar construction and combination of parts, as is hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side view of two cars in part, and two of the improved couplings in position thereon, in coupled condition; Fig. 2 is an end elevation of a car body and frame, with the improvement secured thereto in uncoupled condition; Fig. 3 is an enlarged longitudinal section of the improved coupling broken away rearwardly, and a part of a coupling loop of a similar coupling in position to effect a coupled connection; Fig. 4 is a plan view of the improved coupling enlarged and broken away rearwardly; Fig. 5 is a plan view in section, enlarged, of the improved coupling, taken on the line 5—5 in Fig. 1; Fig. 6 is a side elevation of a box car and a platform car broken away rearwardly, and a modified form of the improved coupling on each car and in coupled condition, the coupling loop of one coupling being broken away at its looped end; Fig. 7 is a broken sectional side elevation of the modification detached and enlarged; Fig. 8 is a detached plan view of the modified form of the improved coupling; and Fig. 9 is a sectional plan view on the line 9—9 in Fig. 6.

The drawhead A, is preferably cast into form, and is supported in the usual manner

to slide longitudinally on a car end portion B, the rearward portion of the draw-head being cushioned by a spring *a*, that limits its rearward movement and absorbs shock when two draw-heads of like form are caused to abut upon each other.

The front end portion of the draw-head A, is provided with an upwardly projecting limb *b*, that for strength is made the full width of the draw-head, and below the nose of the limb a horizontal aperture *c* is formed in the draw-head from the front rearwardly and near its transverse center. Rearward of the limb *b*, two vertical flanges *d*, are formed on the draw-head body, properly spaced apart so as to afford room between for other parts, and forwardly of the flanges an open channel is formed that joins the aperture *c*, with the vertical slot between the flanges *d*. Upon the exterior of the flanges *d*, a bail coupling link *e*, is pivoted by its ends as at *e'*, the bow portion *e²* of which is adapted to project over and beyond the limb *b*, and engage the similar limb of a like car coupling that is to be coupled thereto.

The flanges *d* are upwardly extended a proper degree, and between their upper end portions a guard plate *g* is pivoted by one end at *g'*, so as to swing into the position shown in Fig. 1, or hang pendent as represented in Fig. 3.

The plate *g* is vertically slotted on its rear side near the center of width and behind the pivot *g'*, as represented in Fig. 3, and in the draw-head body A, a vertical aperture is formed at *h*, that aligns with the slot or channel in the plate *g*, when the latter is pendent.

There is such a proportionate length given to the guard plate *g*, as will allow its front end to nearly touch the upper portion and rear side of the draft limb *b*, when the plate is rocked outwardly, and when so adjusted a heel-portion *g²*, of the plate will impinge on the top edge *h'*, of the drawhead rearward of the flanges *d*.

A link lifter bar *i*, is provided, which works vertically in the slot *h*, and also through the longitudinal slot in the guard plate *g*, said bar having a staple loop *i'* projected from its front face near the upper end.

There is a cross pin *i²*, inserted through the

walls of the slotted portion of the guard plate *g* near its top end, which pin also passes through the bow of the staple loop *i'*, thus connecting the lifter bar *i* and staple loop *i'* thereon loosely with the guard plate.

An arm *k*, is formed on or secured to the lifter bar *i* so as to project forwardly and have a loose connection with a cylindrical coupling pin *m*, that is inserted in a vertical hole *m'*, formed for its reception in the limb *b*, at its transverse center and near the rear upright wall of said limb, which wall is slotted to admit the parallel ears *m²*, of the pin that receive the front end of the arm *k* between them, and thus adapt said arm to slide the coupling pin upwardly, when the lifter bar *i*, is correspondingly moved.

It will be seen, that the upward movement of the lifter bar *i* will cause the elongated loop *i'*, to bear upon the bottom of the groove or slot in the guard plate *g* and throw said plate into a vertical position, and it will also be evident that a depression of the lifter bar will cause the upper limb of the staple loop *i'* to strike upon the cross pin *i²*, and rock the guard plate outwardly, the contact of the heel *g²*, of this plate with the top of the draw-head at *h'*, arresting the downward movement of the bar, that also strikes the projection *g³*, that is formed on its front face, upon the bottom of the open channel in the draw-head that is a rearward continuation of the aperture *c*.

It is essential for the proper operation of the coupling, that the lifter bar *i* be held elevated, so as allow a coupled engagement of its limb *b*, with the bail loop *e*, of an approaching coupling so that the coupling of the cars may be effected automatically when the two drawheads impinge. To this end, the pin *e'* which pivotally secures the bail loop upon the drawhead A, is reduced in diameter near the transverse center of said drawhead, as shown in Figs. 3 and 7 at *e⁶*, so that the lifter bar projection *g³* may be located upon the reduced part of the pivot bolt or pin *e'*, when it is inclined as shown by dotted lines in said figure, and thus maintain the bar *i*, elevated, the percussion of the two drawheads in colliding causing a dislodgment of the bar that then falls and throws the guard plate *g*, into the position shown in Fig. 1.

A preferred means for rocking the pendent bail coupling link *e* into a vertical position, ready to fall forwardly and engage with another car coupling limb *b*, consists of the rock shafts *o*, *p*, that are loosely secured to the end of the car frame on opposite sides of the coupling preferably in alignment with each other as shown in Fig. 2. The shaft *o*, has a crank handle *o'*, formed at the end nearest to the side of the car body B, and at the other or inner end an arm *o²*, is projected at a right angle to the body of the shaft; this arm being designed to have contact with a stud *e³*, that is projected laterally from the bail link *e*, which will enable an operator at this side of

the car body to rock the bail coupling link into an upright position by manipulation of the crank handle *o'*. On the rock shaft *p*, an arm *p'*, is formed on its inner end for an engagement with a stud *e⁴*, that projects from the link *e*, oppositely of the stud *e³*, and a crank handle *p³*, is formed on the outer end of the shaft for its rocking movement at the side of the car toward which the shaft *p* projects. Between the crank handle *p³*, and arm *p'*, a double crank *p²*, is formed in the shaft *p*, which is loosely connected as at *r'* to an upright draft rod *r*, that extends vertically on the end wall of the car body B, and is loosely held thereto so that an operator on the roof of the car can rock the shaft *p*, and throw the bail coupling link *e* into an upright position.

There is an upper rock shaft *s* provided which is intended to afford means for uncoupling the link *e* from either side of the car, or from its roof, said shaft being rotatably supported above the shafts *o*, *p*, upon the car end wall. A crank handle *s'*, is formed on each end of the shafts *s*, and between the points *s²* on the shaft a double crank portion *s³*, is formed on it, so as to project a part of the shaft beyond the main portion and parallel with the latter. The degree of outward projection of the double crank *s³* is such as will adapt it to form a rest for the link *e*, when the latter is rocked upwardly, the link being slightly inclined rearward when so engaged, whereby its weight will be adapted to hold the crank portion *s³*, projected horizontally; the pendent crank handles *s'*, co-acting to effect such an adjustment of parts.

A pull bar *u*, is loosely secured in an upright position on the car end wall B, near to the draft rod *r*, which bar is connected at its lower end with the double crank *s³*, by a chain *u'*, or similar means and upon the rear side of the lifter bar *i*, near its upper end, a chain *i³*, is connected by one end, the other end having a connection with the double crank portion *s³*, of the rock shaft *s*.

In use, the rocking movement of the shaft *s* from either side of the car body, or an upward sliding movement of the pull bar *u*, will elevate the lifter bar *i*, and carry the bail link *e*, to the top of the draft limb *b*, from which it will slip off forwardly when the detached cars are moved away from each other.

In order to effect an automatic coupling of two of the improved couplings, the link *e*, of one coupling is rocked into an upright position as shown by dotted lines in Fig. 1, so that it will rest against the double crank *s³*, slightly inclined rearward, and the projection of the crank portion *s³*, in a horizontal position will elevate the lifter bar *i*, which will be maintained so by its projection *g³* engaging the pin *e'* as before explained; this will throw the guard plate *g* into a vertical plane, and when the drawheads of the two couplings impinge upon each other, the shock will throw the bail coupling link *e*, forwardly and over the adjacent draft limb *b*, of the other coupling

and thus connect the two draw-heads, as the impact of the couplings will release the lifter bar that will then drop and throw the guard plate over the link.

5 In case one of the improved draw-heads is to be attached to an ordinary car coupling of the link and pin type, the coupling pin *m*, may be utilized for the purpose indicated, the ordinary elongated link of the common coupling being inserted in the aperture *c*, of the improved drawhead and the pin *m*, lowered to enter the inserted link.

15 In Figs. 6, 7, 8, and 9, a modified form of the car coupling is shown, the change consisting partly in the formation of the limb *b*, that is therein shown as an upright cylindrical projection on the front of the drawhead *A*, its vertical aperture *m'*, being adapted to receive an ordinary coupling pin *C*, which will also pass downwardly through the lower wall of the drawhead wherein a corresponding extension of the aperture *m'*, is formed. A further change consists in the peculiar formation of the bail loop coupling link *e*, that is shown as having an offset bend at *e*⁵ formed on each side near the studs *e*³, *e*⁴, which will facilitate the coupling together of cars having draw-heads of different heights; as by withdrawing the cross bolt *e'* of a coupling the link *e* may be reversed and its forward portion thrown into a higher plane, as shown by dotted lines in Fig. 6.

25 The arm *k* in Fig. 7, is of such a proportionate length, as will permit its free end to reciprocate vertically and nearly in contact with the cylindrical body of the limb *b*, its function being the same as the like member in Fig. 3.

35 It will be observed in Fig. 6, that the projection of a load on a car above the improved coupling will not obstruct its free operation whether it be on a box car or a platform car.

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

45 1. In a car coupler, the combination with a draw head provided with an upwardly projecting limb, and a pivoted coupling link, of a pivoted guard plate, a sliding lifting bar, and a connection between the guard plate and lifting bar for operating the former from the latter, substantially as described.

50 2. In a car coupling, the combination with a slotted and apertured draw head provided with a draft limb, and a pivoted bail coupling link, of a pivoted guard plate, a sliding lifting bar provided with a forwardly projecting arm, and a connection between the guard plate and lifting bar for operating the former from the latter, substantially as described.

60 3. The combination with a drawhead hav-

ing a vertical limb thereon at its forward end and having an axial perforation, vertically slotted flanges rearward of the limb, and a longitudinal aperture intersecting the perforation and slot, of a lifter bar adapted to slide vertically in a slot in the drawhead and between the flanges thereon, an arm on said lifter bar projected toward the drawhead limb, and a guard plate adapted to vibrate when the lifter bar is reciprocated, substantially as described.

4. The combination with a drawhead having a vertical limb thereon at its front axially perforated to receive a coupling pin, and vertical slotted flanges intersecting a vertical slot in the drawhead and joining a longitudinal aperture in said drawhead, of a lifter bar having a forward projection, an arm on the lifter bar above said projection, extending toward the vertical limb, a vibratable guard plate, an offset bail loop link, and a cross pivot bolt for the loop and centrally reduced to receive the projection of the lifter bar, substantially as described.

5. The combination with a draw-head having a forward vertical draft limb, a longitudinal channel at the top, two vertical spaced flanges rearward, and a vertical slot at the bottom and between the flanges, of a lifter bar in the slot, a staple loop thereon, a vertical slotted guard plate pivoted at one end between the flanges, a cross pin in the guard plate and projecting through the loop, and means to slide the lifter bar from the sides and roof of a car, substantially as described.

6. The combination with a draw-head, apertured longitudinally, a vertical draft limb on the front end of the drawhead, two spaced vertical flanges in rear of said limb, and a vertical slot between said flanges at the base of the drawhead, of a lifter bar in the slot and between the flanges, an elongated staple loop on the front and upper end of the lifter bar, a vertically slotted guard plate pivoted by one end between the vertical flanges on the drawhead, the staple loop sliding in the slot of the guard plate, a cross pin passing through the guard plate and through the staple loop, a rock arm provided with a double crank intermediate of crank handles on its ends, a bail loop link pivoted by its ends on the draw-head, two rock shafts journaled on the drawhead, and arms on said shafts adapted to engage studs on the bail loop link and lift it when the shafts are rocked, substantially as described.

JOHN LAWRENCE SMITH.

Witnesses:

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A. H. DRAKE.