

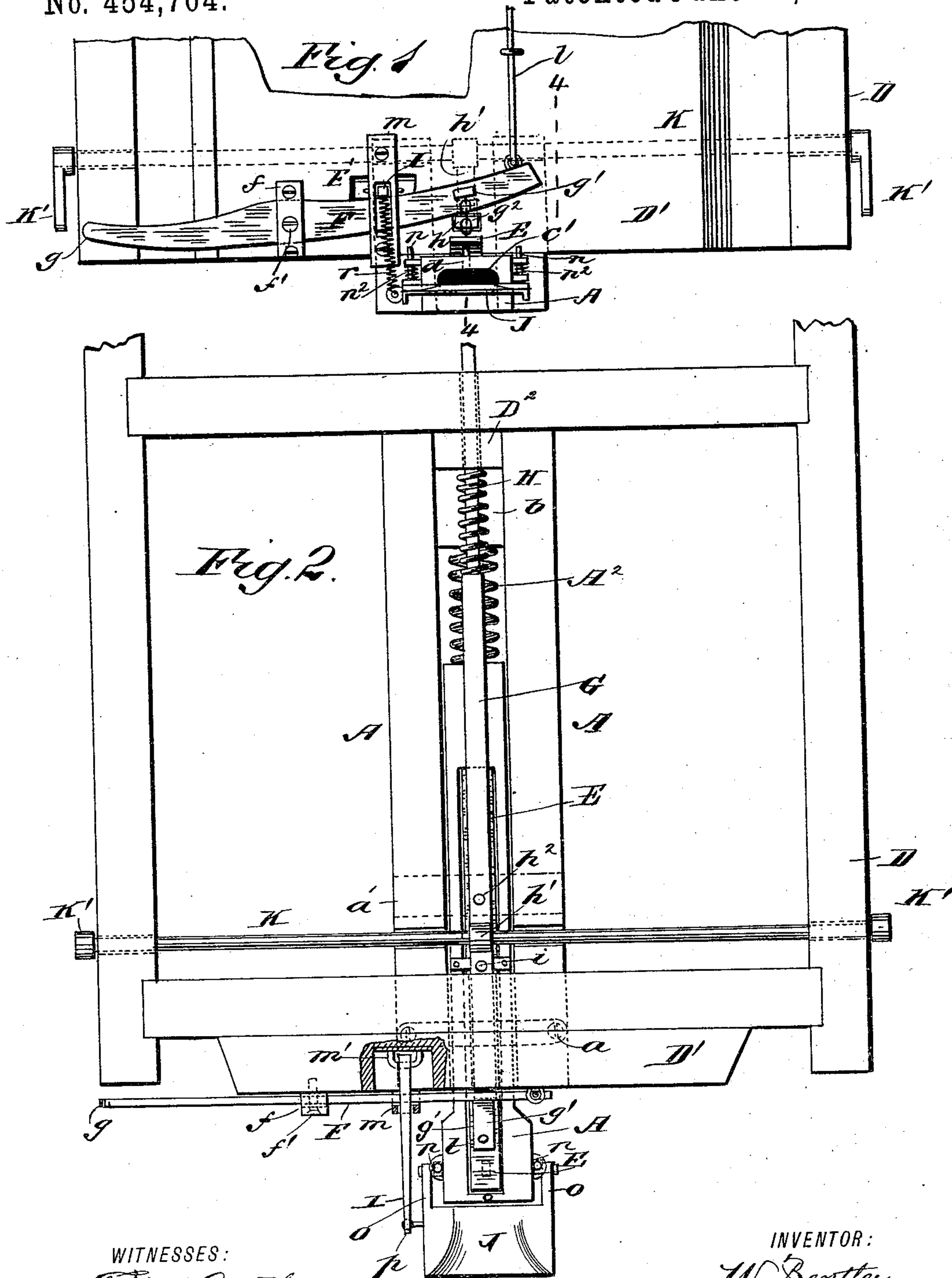
(No Model.)

3 Sheets—Sheet 1.

W. BENTLEY.  
CAR COUPLING.

No. 454,704.

Patented June 23, 1891.



WITNESSES:

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*C. Sedgwick*

INVENTOR:

*W. Bentley*  
BY *Munn & Co.*

ATTORNEYS

(No Model.)

3 Sheets—Sheet 2.

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*Fig. 3*

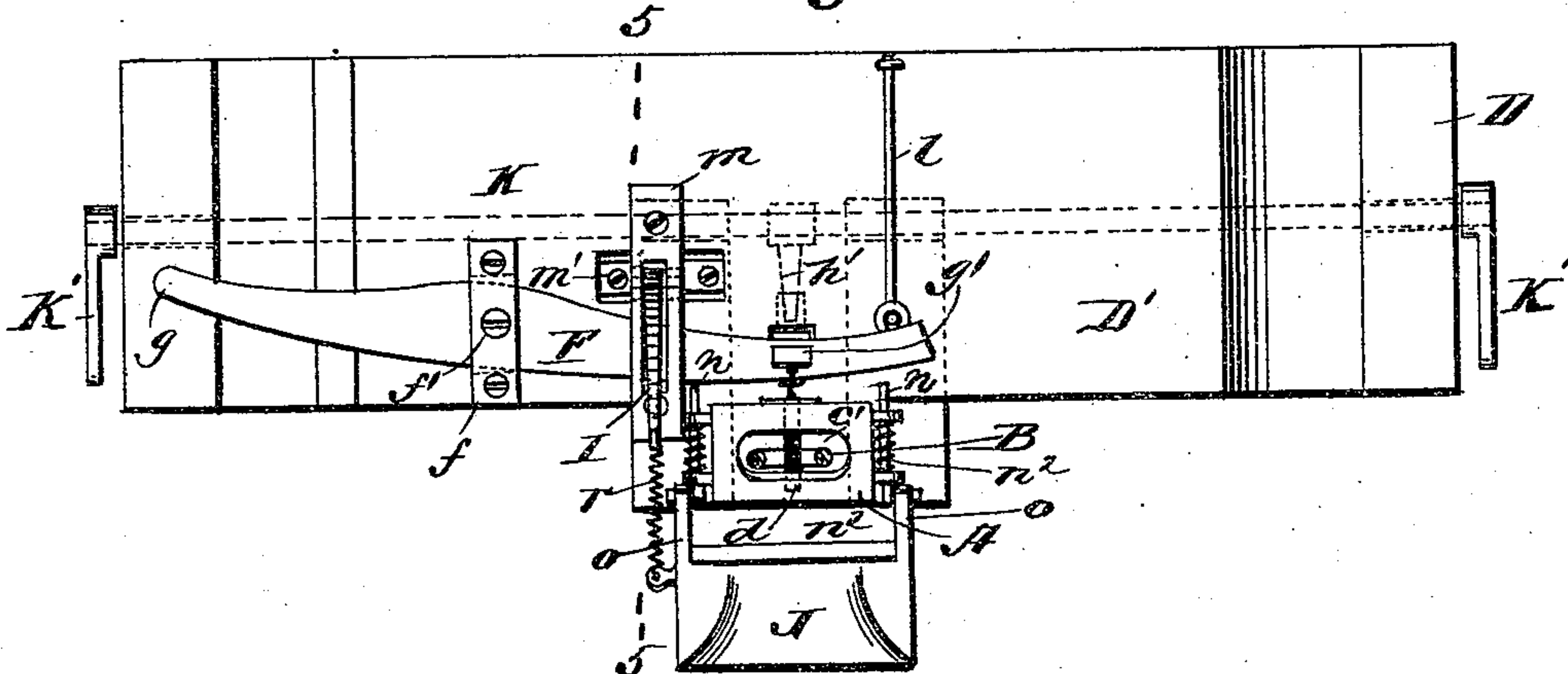


Fig. 4

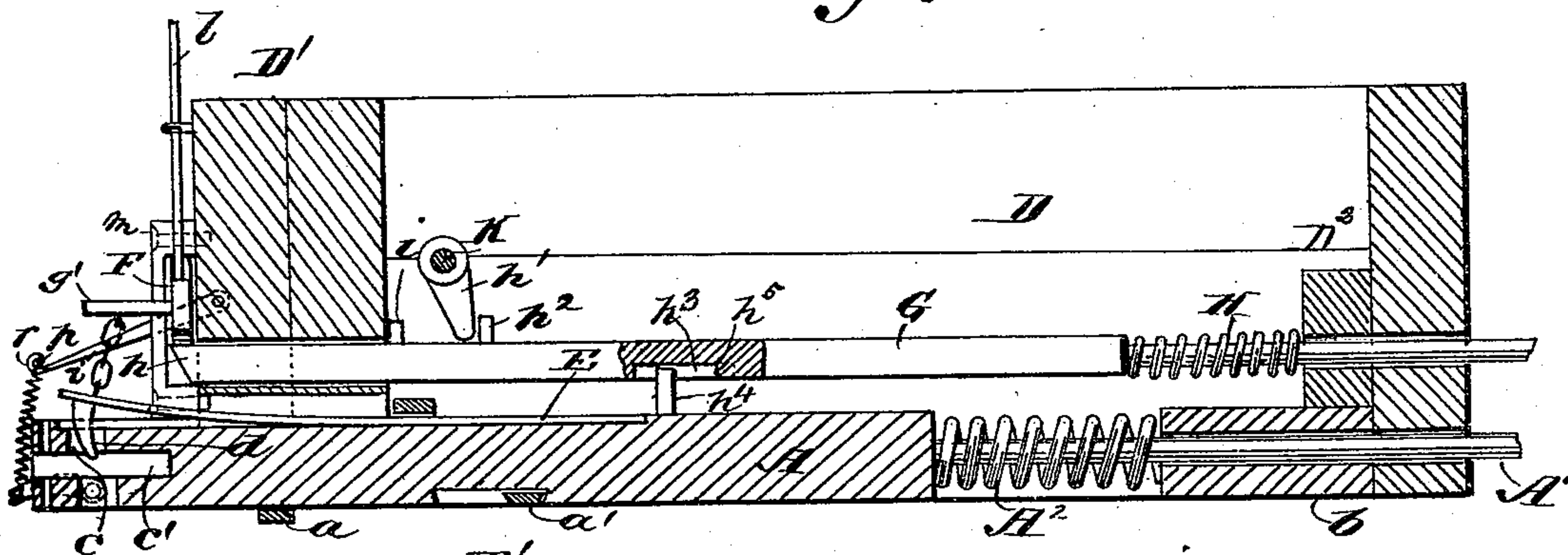
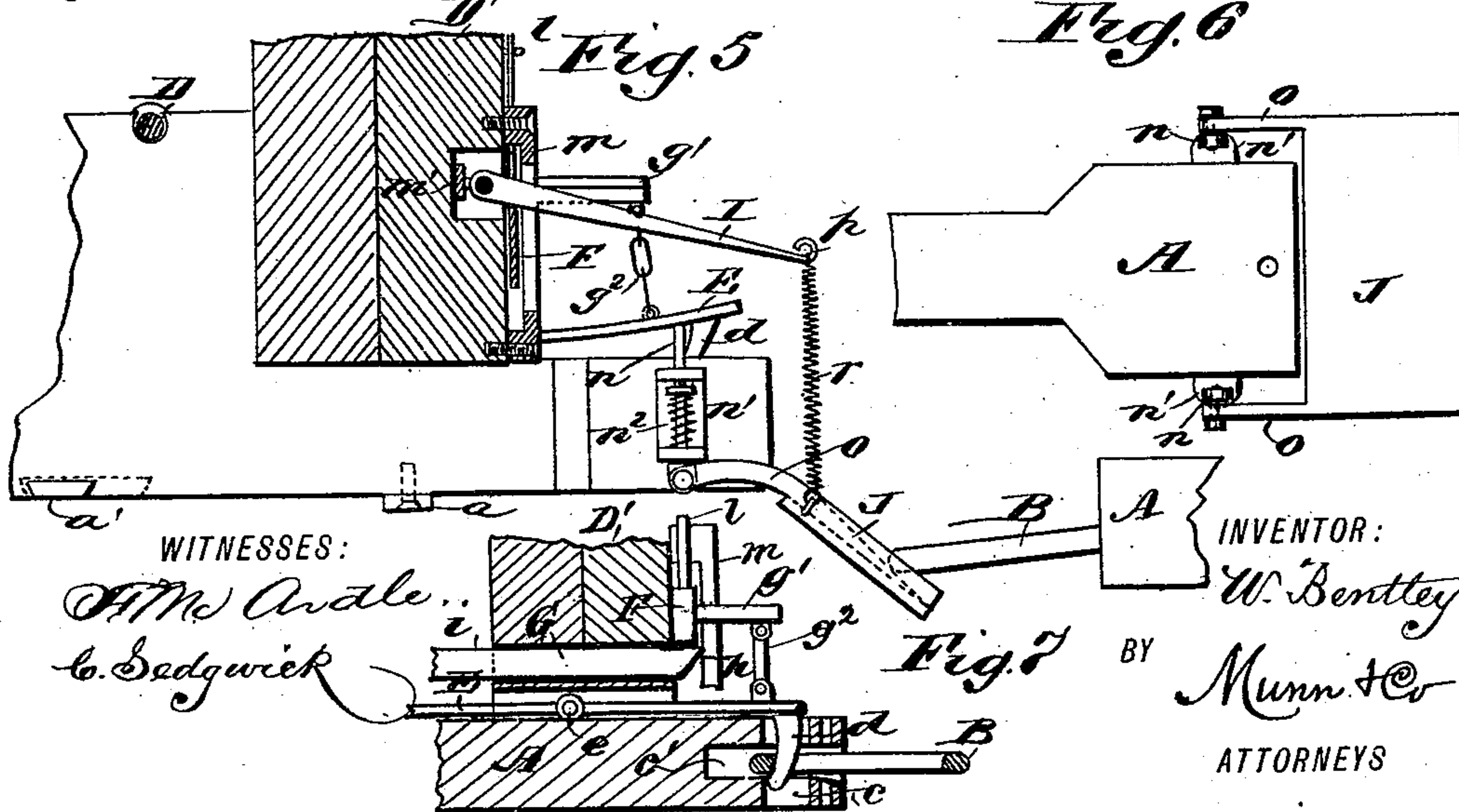
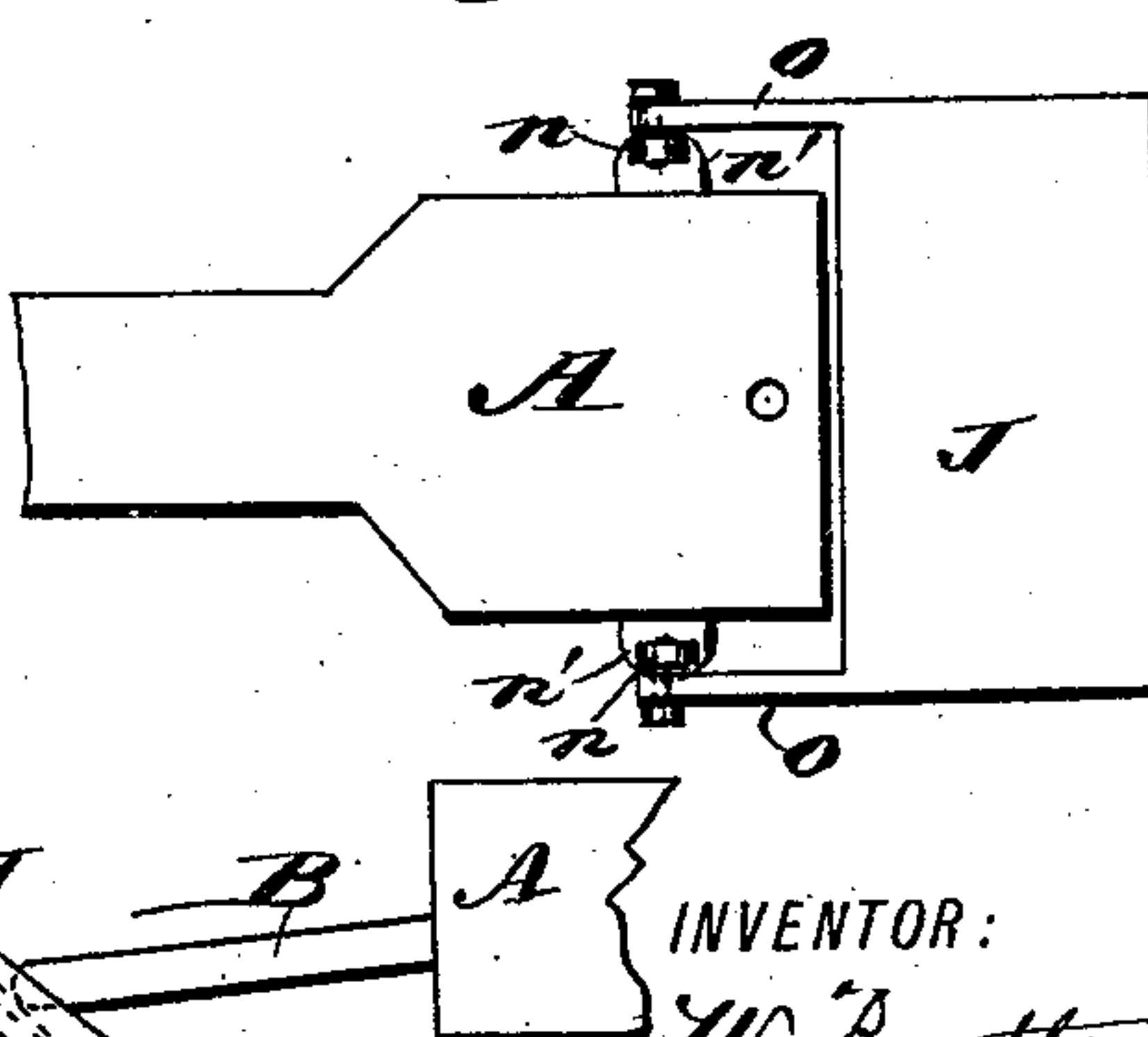


Fig. 5



*Fig. 6*



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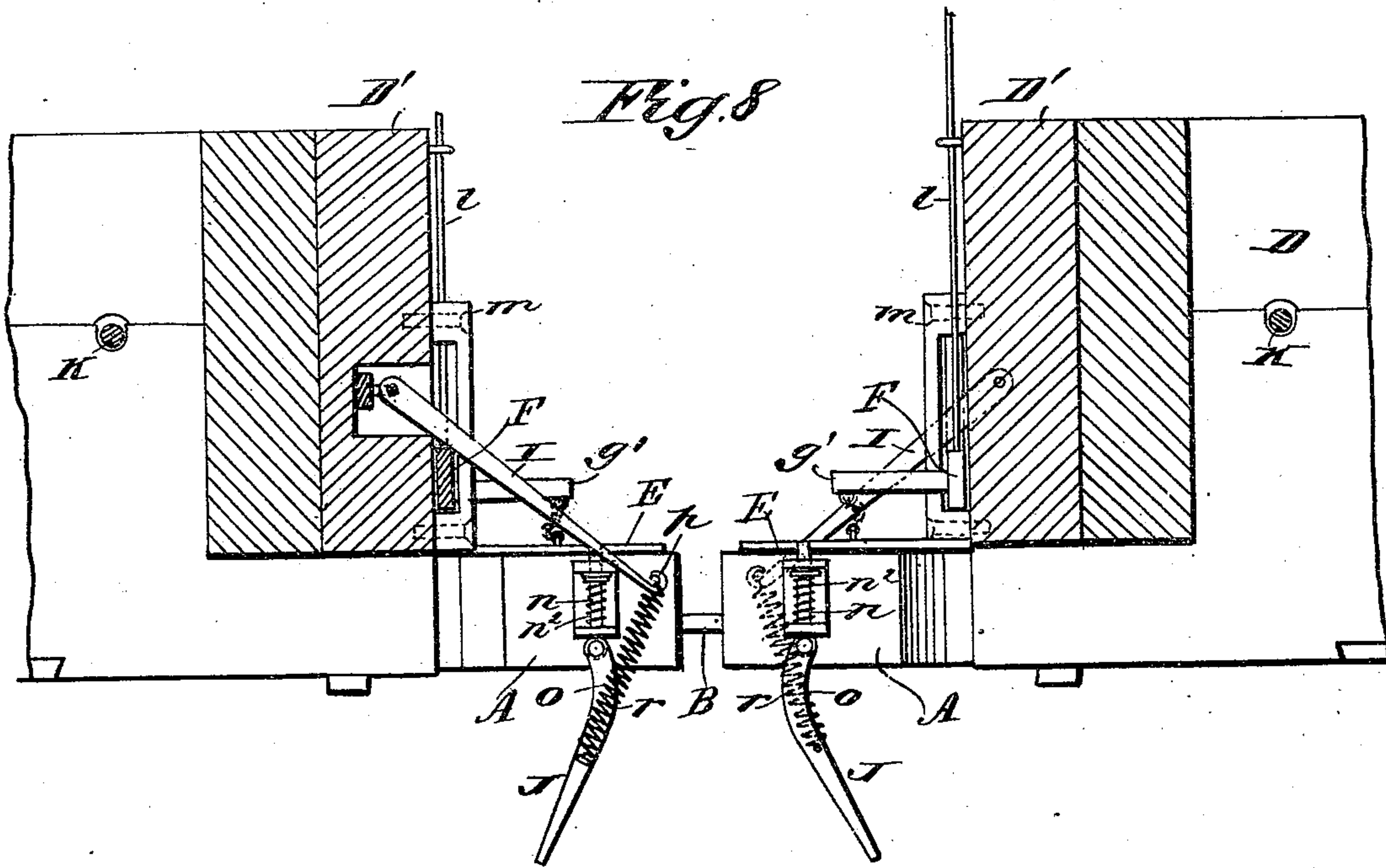
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# UNITED STATES PATENT OFFICE.

WILLIAM BENTLEY, OF LETHBRIDGE, CANADA.

## CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 454,704, dated June 23, 1891.

Application filed October 23, 1890. Serial No. 369,089. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM BENTLEY, of Lethbridge, North-West Territory, Canada, 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 link and hook or pin type, and has for its objects to produce a coupling which is of simple construction, adapted to connect cars automatically that vary in height from the rails to the draw-head, and which may be manipulated to uncouple cars from the side or roof of the car.

To these ends my invention consists in the construction and combination of parts, as 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 front elevation of the improved car-coupling in position on the lower portion of a car, the parts of the device being in uncoupled condition. Fig. 2 is a plan view of the coupling in place on a car-bottom frame, the car-body being removed and the frame broken. Fig. 3 is a front elevation of the coupling mechanism on a car-frame, broken, the parts being adjusted to hold a link. (Shown in position broken.) Fig. 4 is a longitudinal elevation in section of the coupling device on the lower portion of a car, broken, taken on the line 4 4 in Fig. 1. Fig. 5 is an enlarged sectional side elevation of an end portion of a car-frame and coupling mechanism thereon adjusted to receive the coupling-link on an approaching car. (Coupling also shown, taken on the line 5 5 in Fig. 3.) Fig. 6 is an enlarged reversed plan view of the front end of the coupling-draw-head and an attached apron or link lifter. Fig. 7 is a sectional side elevation of the end portion of a car-frame, showing the coupling partly in section with a link coupled, the link-lifter device removed, and the latch-bar for the connection of the link to the draw-head slightly modified in form; and Fig. 8 represents the partly-sectional end portions of two cars with the improved couplings thereon in coupled adjustment.

The draw-head A is of the usual elongated form, rectangular in cross-section, and apertured forwardly for the reception of a coupling-link B, as shown in Figs. 3 and 7, the lower edge of the entrance-throat being cut away, so as to incline outwardly and downwardly for the free introduction of the coupling-link, which is further facilitated by a link-lifting apron J, which, with its operating mechanism, will be further described.

The main portion of the draw-head A is located between longitudinal timbers of the car-frame D, near its transverse center, and is thereon supported and adapted for a sliding movement endwise by the cross-bars *a a'*, which afford a seat for the draw-head, these bars being secured by their ends to two parallel timbers of the car-frame, between which the draw-head reciprocates.

At the inner end of the draw-head A a cylindrical guide-bar *A'* is secured, that slides through an aperture in a cross-timber and block *b*, which latter is affixed between the longitudinal frame-timbers of the car, and between the end of the draw-head and said block *b* a buffer-spring *A<sup>2</sup>* is mounted on the guide-bar, and is thus adapted to cushion the draw-head body in the usual manner. A vertical slot *c* is formed in the draw-head A near its forward end and at its transverse center, which aperture extends through the draw-head, intersecting its throat-cavity *c'*.

Upon the draw-head body A the draw-bar E is secured at its rear end, and on its forward end portion a depending and rearwardly-curved draft-pin *d* is rigidly attached, which pin is so located that it will slide in the slot *c* when the draw-bar is rocked vertically. The draw-bar E may be made in the form of a flat plate-spring, as shown in Figs. 4 and 5, or be constructed as a rigid bar in two pieces that are hinged together, as at *e* in Fig. 7, either plan of construction being efficient in operation.

Upon the vertical end wall of the car-body or its frame a transverse rocking lever F is pivotally supported to vibrate from a horizontal plane by its loose engagement with a keeper-plate *f* and fulcrum-pin *f'*, which penetrates said plate, the outer end *g* of the lever being extended sufficiently to project it in a



convenient position for manipulation at the side of the car. Near the inner end of the rocking lever F an outwardly-projecting arm  $g'$  is affixed to the side of said lever at a point 5 which will locate the arm directly above the outer end portion of the draw-bar E, to which it is loosely connected by a link or chain  $g^2$ , as shown in Figs. 5 and 7.

If the draw-bar E is made of spring form, 10 the resilience of its body will return the hook-shaped draft-pin  $d$  into the slot  $c$  when the draw-bar is elevated by a manipulation of the rocking lever F to release an engaged link, and when the draw-bar is constructed with a 15 hinge-jointed non-elastic body the gravity of said bar or a manipulation of the lever is depended upon to depress the draw-bar.

An elongated latch-bar G is provided, which is inserted in apertures formed in the car- 20 frame cross-timbers directly above and parallel to the draw-head A and adapted to move longitudinally in conjunction with the draw-bar E, the front end of said latch-bar being normally projected a short distance beyond 25 the outer face of the cross-timber D' of the car-frame D, through which the latch-bar slides, by the spiral spring H, which is placed on a reduced rounded portion of the latch-bar at its inner end, and which, by its abutment 30 on the cross-timber D<sup>2</sup> and a shoulder on the bar, forces the bar outwardly, as stated, until the pin  $i$  abuts against the cross-timber D' on its inner face, which limits the forward movement of the latch-bar G.

35 The normally-projected latch-bar G has its front end, that extends beyond the cross-timber D', cut sloping downwardly and inwardly from its upper front edge, and the relative position of the rocking lever F and sliding latch- 40 bar G is such that the depression of the outer end  $g$  of the lever will retract the latch-bar and elevate its inner end above said latch-bar, in which position the draw-bar E is sufficiently elevated to release a coupling-link 45 from the draft-pin  $d$ , and the transverse rocking lever F may then be located on the projecting end  $h$  of the latch-bar to retain the draw-bar in uncoupled condition.

At a proper point between the front of the 50 draw-head A and the buffer-spring A<sup>2</sup> a vertically-projecting pin  $h^4$  is secured on the draw-head body, which pin enters a longitudinal groove  $h^3$  on the lower side of the latch-bar G, the terminal shoulder  $h^5$  of which 55 is so relatively located that the pin will impinge on it and push the latch-bar rearwardly when the draw-head is longitudinally moved nearly as far as it can travel.

A transverse rock-shaft K is loosely supported at a convenient point from the end of 60 the car, so that the lever F may be reached with one hand of the operator, while the other hand may manipulate a handle-bar K', that is on the adjacent end of the rock-shaft. The 65 shaft K is provided with a handle at each end. At such a point near the center of length of

the rock-shaft K as will locate it above the latch-bar G a short cam-toe  $h'$  is secured on the rock-shaft, which toe is of such a relative 70 length as will allow it to strike a vertical pin  $h^2$ , which projects from the latch-bar, and by a manipulation of either of the handle-bars K' slide the latch-bar rearward, release the rocking bar, and thus permit the draw-bar E to fall and engage its hook or pin  $d$  with a 75 link B should it be desired to effect a coupling attachment of two cars manually. Near the terminal inner end of the rocking lever F a draft-rod  $i$  or its equivalent is loosely connected to it, which rod is extended vertically, 80 and is preferably supported near the top of the car, so that the lever F may be rocked from the roof of the car to uncouple two cars if this is necessary. Between the keeper- 85 plate  $f$  and arm  $g'$  the rocking lever F is loosely embraced by the guard-plate  $m$ , which is secured on the car end wall or cross-timber D', and from its shape permits a free vertical movement of the lever a proper distance to release the draft-pin  $d$  from a coupling-link B. 90

The guard-plate  $m$  is slotted vertically a proper distance to accommodate the rock-arm I, that is secured pivotally by its inner end to the bracket-plate  $m'$ , which latter is seated 95 in a recess in the cross-timber D' and secured thereto, thus permitting the body of the rock-arm to project outwardly through the guard-plate and rest its lower edge upon the upper edge of the rocking lever F, the rock-arm being upwardly vibrated at its outer end when 100 the outer end of the lever F is depressed.

Upon each side of the draw-head A a guide-rod  $n$  is supported to slide vertically by loose engagement with the perforated ears of the 105 bracket-plates  $n'$ , the rods being retained in an elevated position by the action of the springs  $n^2$ , that are located on the rods between the collars thereon and the lower ears of the bracket-plates.

There is a link-carrying apron J provided, 110 which is of a substantially-rectangular form and so shaped on its upper surface as to be adapted to guide a coupling-link toward the throat of the draw-head A, said apron having a pivotal engagement afforded between the 115 projecting ends of its parallel limbs  $o$  and the lower ends of the guide-rods  $n$ , which limbs project from opposite side edges of the apron in the same direction and are separated sufficiently to allow them to be connected with 120 the guide-rods, as stated, and hang pendent below the draw-head A when unsupported, as shown in Fig. 8.

To the outer terminal end  $p$  of the rock-arm I a strong spiral spring  $r$  is secured, 125 which spring is of such a proportionate length as will permit it to be connected to the side of the apron J and sustain it in an inclined position, so as to adapt it to receive the free end of an approaching link B and guide it 130 upwardly and inwardly till the link is entered within the throat of the draw-head A, said



adjustment of parts being effected when the draw-bar E is in elevated adjustment for the reception of a coupling-pin.

It is designed to apply this improvement to any ordinary draw-head by slight changes, and it will be evident from the description given that this improved form of car-coupling may be coupled to any type of coupling using a link, and also that cars of different heights from the track-rails to their couplings may be readily coupled if the draw-heads are provided with the improved appliances herein shown and described for the elevation and guiding of the coupling-links into the draw-heads, as the concussion of two impinging draw-heads will automatically release the lever F and permit the draw-bar to hook fast to an entering coupling-link.

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

1. The combination, with a draw-head, of a vibratory draw-bar having a draft-pin on its lower side that enters a slot in the draw-head, a transverse rocking lever loosely connected to the draw-bar, a sliding latch-bar which is moved by the draw-head, and a rock-shaft which may be rocked from the side of the car and is adapted to move the latch-bar from below the rocking lever, substantially as set forth.

2. The combination, with a draw-head, of a vibratory draw-bar having a draft-pin that enters a slot in the draw-head, a transverse lever loosely connected to the draw-bar, and a spring latch-bar having a slot which is engaged at its rear end by a pin on the draw-head, substantially as set forth.

3. The combination, with a draw-head adapted to slide longitudinally on the car-frame, of a vertically-vibrating draw-bar secured on the top of the draw-head and provided with a draft-pin which enters a vertical slot in the draw-head, a latch-bar moved

automatically by the draw-head, a transverse rocking lever which engages the latch-bar, a loose connection between the rocking lever and draw-bar, and a rock-shaft that is adapted to move the latch-bar, substantially as set forth.

4. The combination, with a draw-head and a vibratory draw-bar on the draw-head which has a curved draft-pin on its lower face that enters a vertical slot in the draw-head, of a hinged apron, a supporting device therefor, and a transverse rocking lever that is adapted to lift the bar and apron simultaneously, substantially as set forth.

5. The combination, with a draw-head which is adapted to receive a coupling-link, a vibratory draw-bar secured on the draw-head, and a curved draft-pin on the front end of the draw-bar, which pin enters a vertical slot in the draw-head, of a rocking lever, a rock-shaft having a handle-bar and a central cam-toe, and a latch-bar engaged by said toe and also by a pin on the draw-head and which is spring-actuated and normally projected to support the rocking lever, substantially as set forth.

6. The combination, with a draw-head that is forwardly and longitudinally apertured and cushioned by a spring and a spring draw-bar on the draw-head having a curved draft-pin which may engage a coupling-link that enters the draw-head, of a spring-projected latch-bar, a transverse rocking lever which rests on the projected end of the latch-bar, a transverse rock-shaft that is adapted to slide the latch-bar, a rock-arm engaged by the rocking lever, and a pivoted apron connected to the rock-arm, substantially as shown and described.

WILLIAM BENTLEY.

Witnesses:

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W. I. SPENCER.