

No. 618,754.

Patented Jan. 31, 1899.

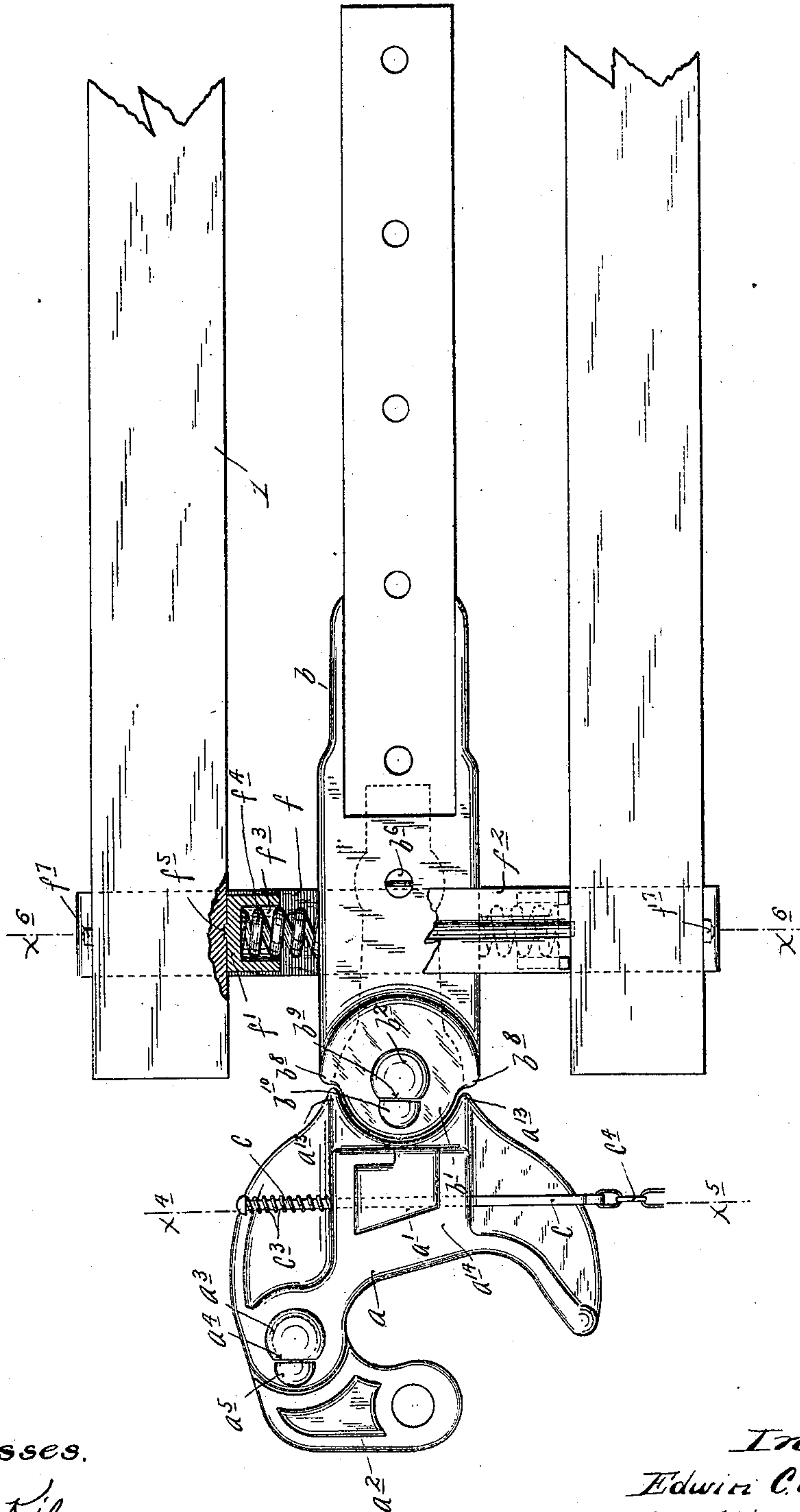
E. C. WASHBURN.  
CAR COUPLING.

(Application filed Aug. 23, 1898.)

(No Model.)

4 Sheets—Sheet 1.

Fig. 1.



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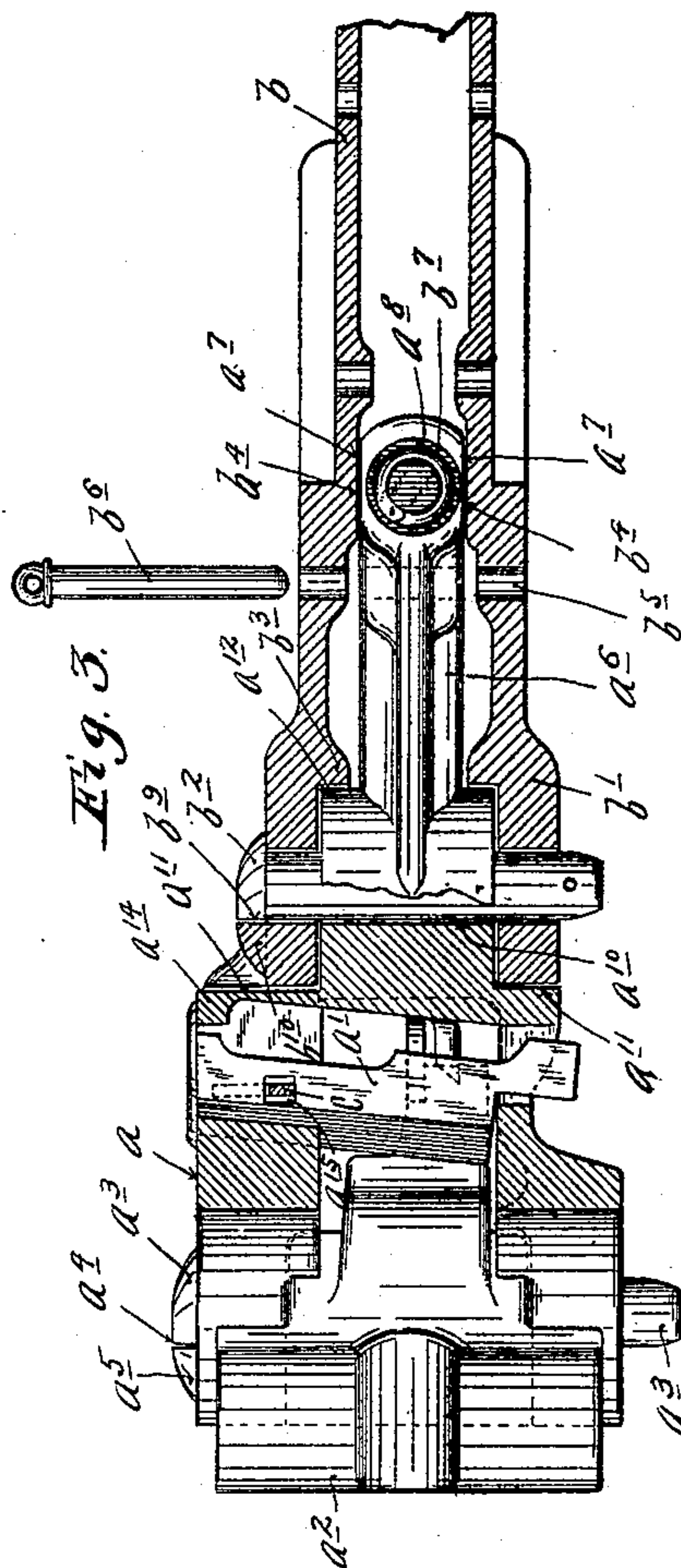
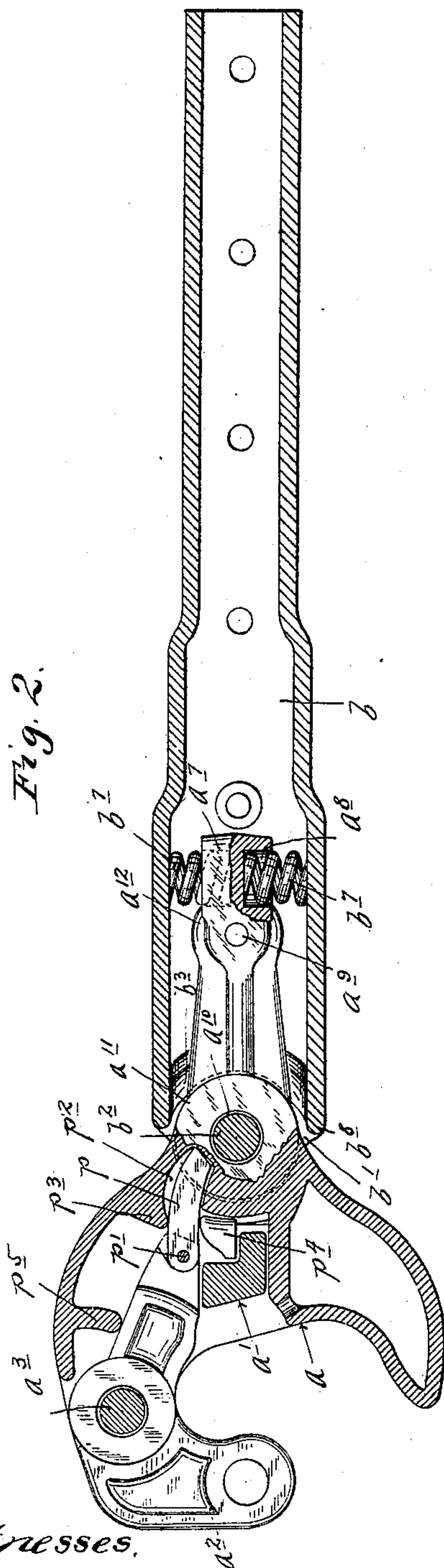
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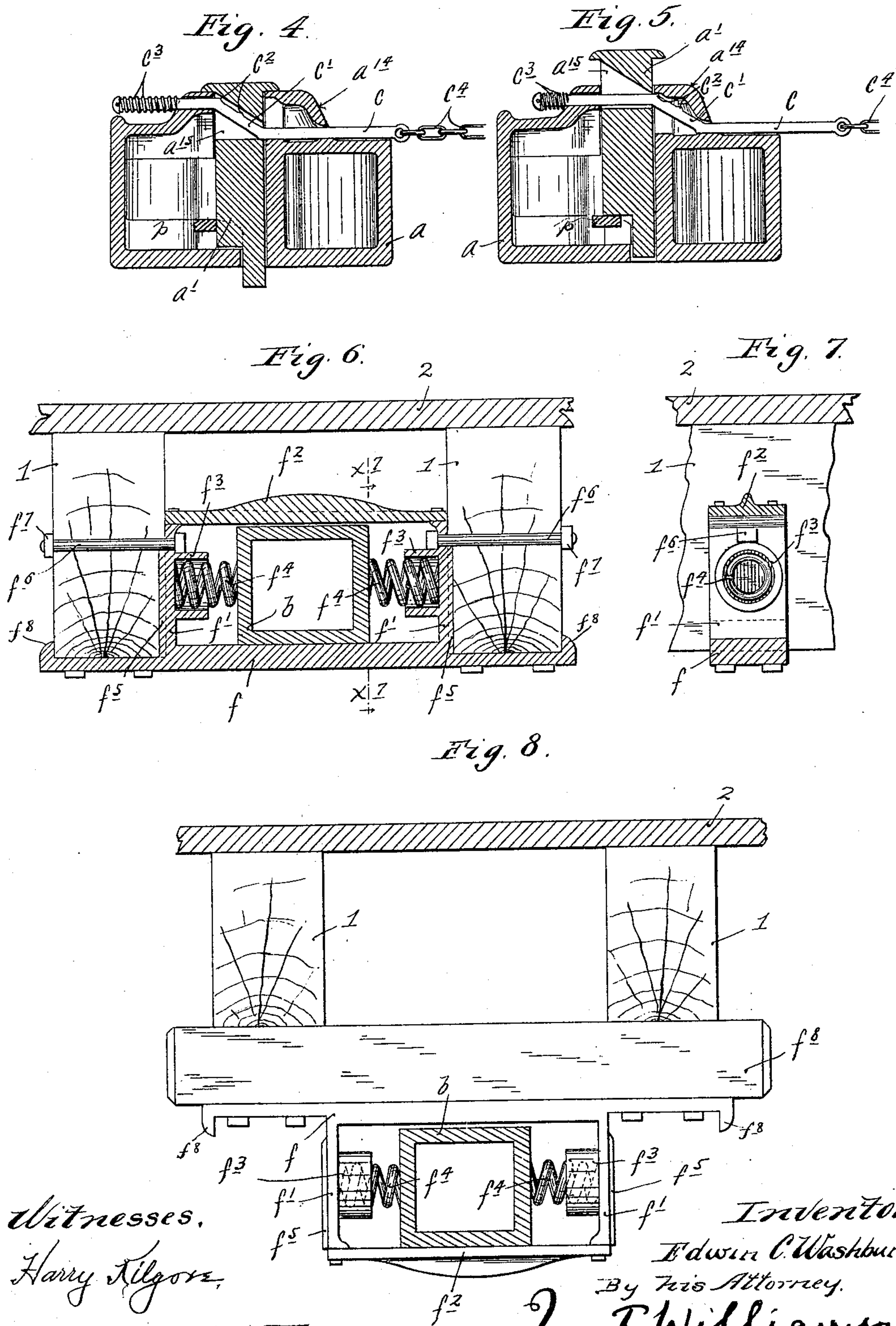
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4 Sheets—Sheet 3.



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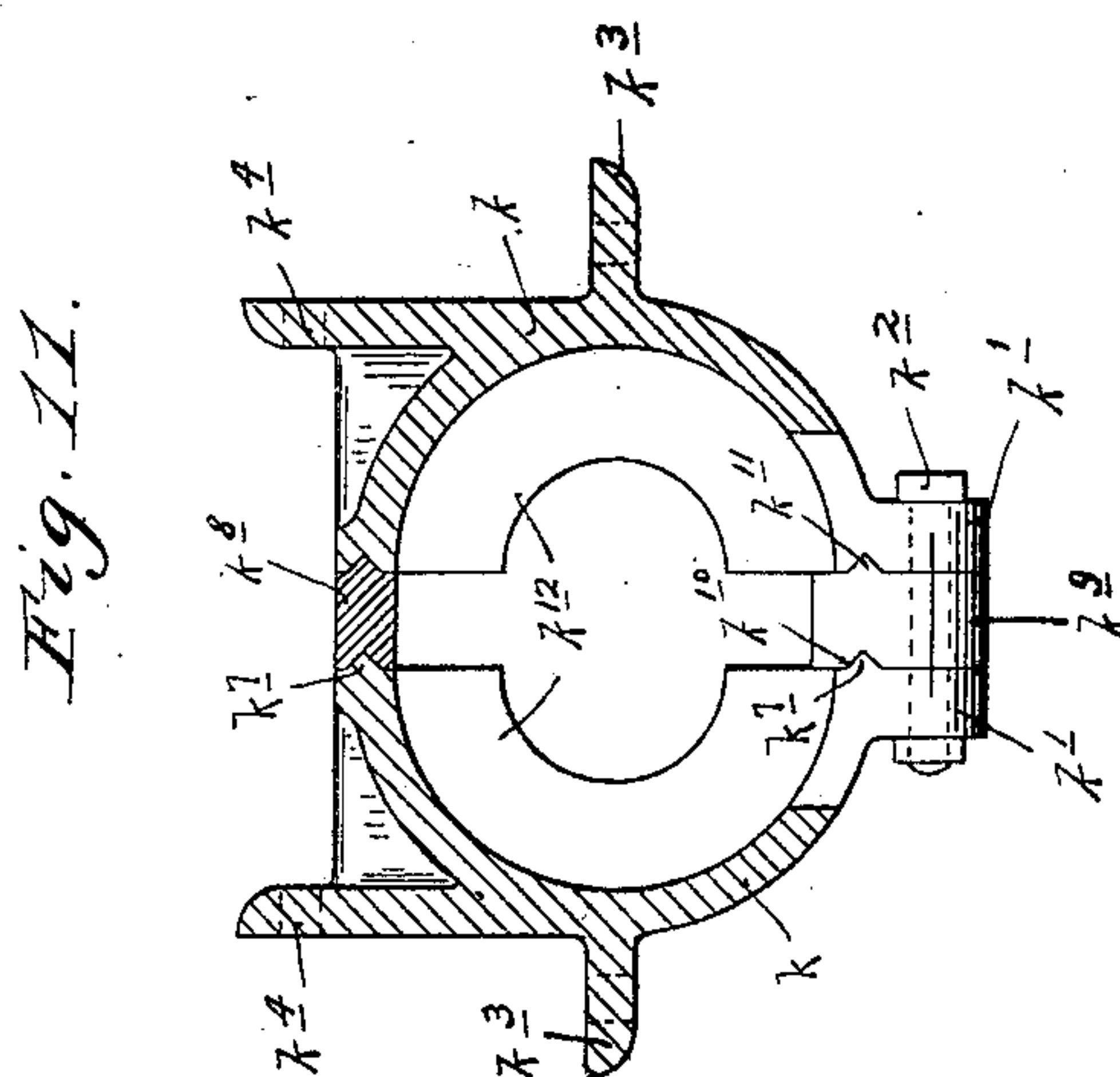
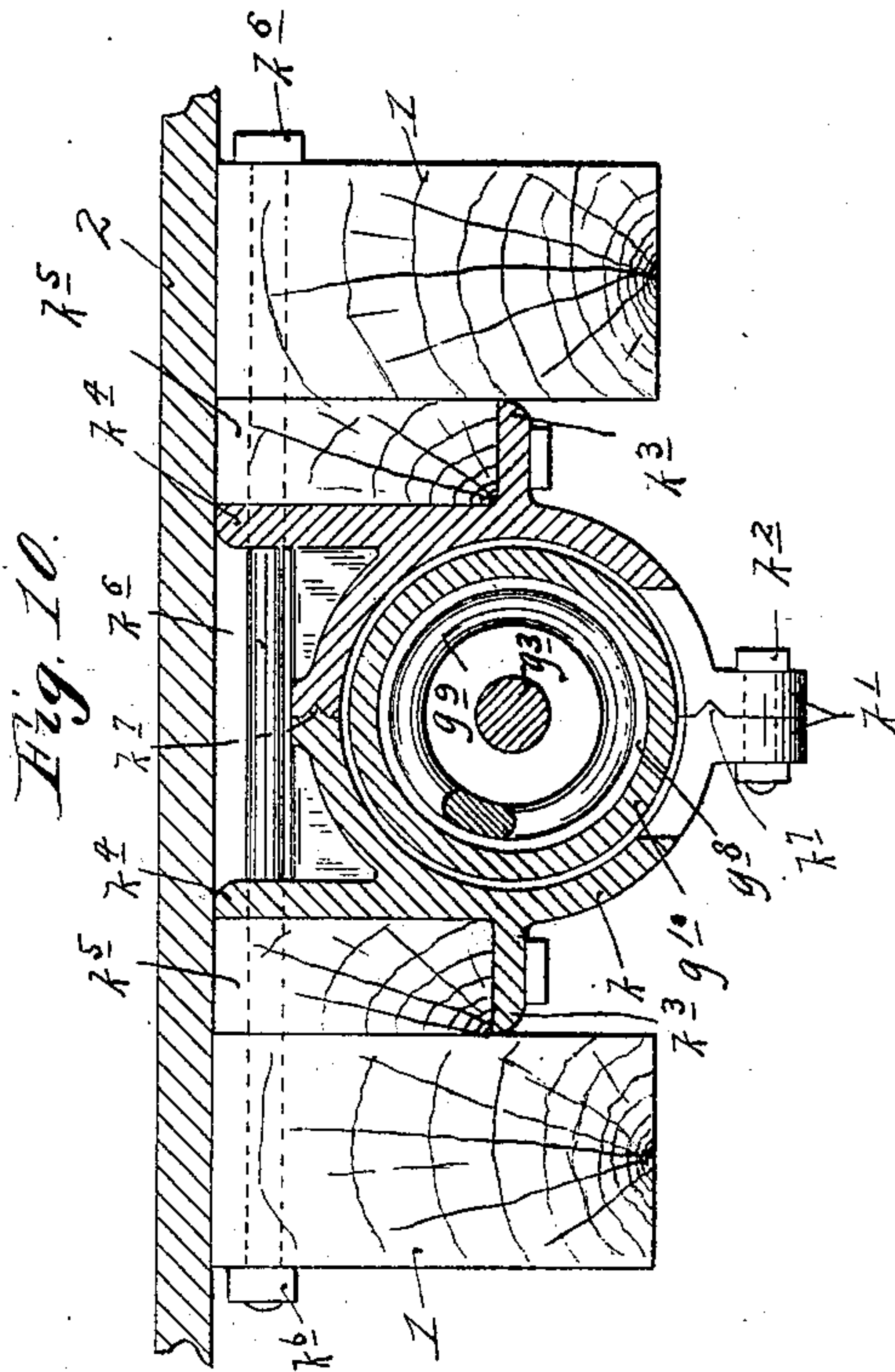
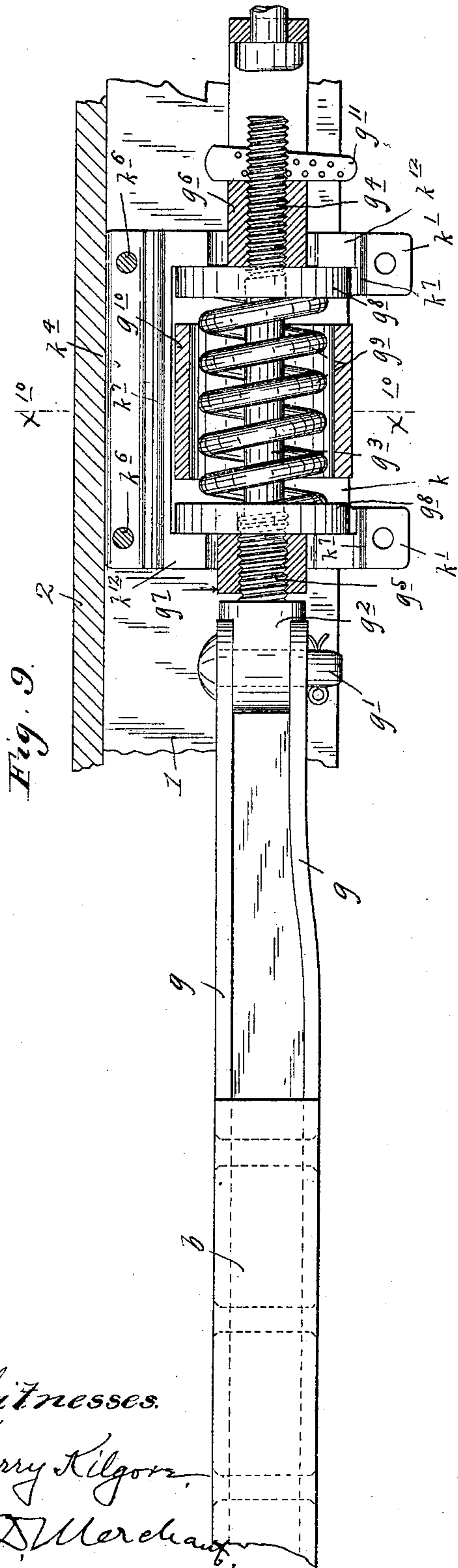
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4 Sheets—Sheet 4.



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# UNITED STATES PATENT OFFICE.

EDWIN C. WASHBURN, OF MINNEAPOLIS, MINNESOTA.

## CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 618,754, dated January 31, 1899.

Application filed August 23, 1898. Serial No. 689,289. (No model.)

*To all whom it may concern:*

Be it known that I, EDWIN C. WASHBURN, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Car-Couplers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My present invention relates to car-couplers, and has for its object to improve the same in the several points hereinafter noted.

The invention consists of the novel devices and combinations of devices hereinafter described, and defined in the claims.

The invention in its preferred form is illustrated in the accompanying drawings, wherein like characters indicate like parts throughout the several views.

Figure 1 is a plan view of my improved coupler with some parts broken away and others removed. Fig. 2 is a horizontal section of the said coupler. Fig. 3 is a longitudinal vertical section of the said coupler with some parts broken away and others shown in full. Figs. 4 and 5 are transverse vertical sections taken approximately on the line  $x^4 x^5$  of Fig. 1, but illustrating different positions of the locking pin or dog. Fig. 6 is a transverse vertical section taken on the line  $x^6 x^6$  of Fig. 1. Fig. 7 is a vertical section taken on the line  $x^7 x^7$  of Fig. 6. Fig. 8 illustrates a modified use of the draw-bar keeper or guide shown in Fig. 6. Fig. 9 illustrates the draft-rigging for securing the inner end of the coupler to the body of the car. Fig. 10 is a transverse vertical section taken approximately on the line  $x^{10} x^{10}$  of Fig. 9, and Fig. 11 is a transverse vertical section showing the draft-box illustrated in Figs. 9 and 10 expanded or spread laterally.

1 indicates the draft-timbers, and 2 a portion of the bottom of the car.

One feature of my invention consists, broadly stated, in constructing the coupler-head and the draft-bar portion of the coupler in two parts and pivotally connecting these two parts together. In the construction illustrated,  $a$  indicates the head of the coupler, which is of the Master Car-Builders' type and

is provided with a vertically-movable locking pin or dog  $a'$ , which coöperates with a novel supplemental tailpiece on the tail of the knuckle, to be hereinafter noted. Said knuckle, as is ordinary, is mounted on a pintle  $a^3$ , passed through the same and through the ears of the coupler-head. The head of the pintle  $a^3$  is cut away at one side, as shown at  $a^4$ , to coöperate with a fixed lug  $a^5$  on the coupler-head, as and for the purposes set forth in my pending application, Serial No. 677,551, filed April 14, 1898, entitled "Car-coupler." The coupler-head is provided with a rearwardly-projecting tail portion  $a^6$ , which is formed at its end with upper and lower bearing-surfaces  $a^7$  and with lateral sockets or spring-seats  $a^8$ . Inward of its free end said stem portion  $a^6$  is provided with a vertical perforation or pin-seat  $a^9$ , and at or near its junction with the body of the coupler-head said stem is provided with a pivot-pin seat  $a^{10}$ . The portion through which this seat  $a^{10}$  passes is reduced from the body of the coupler-head to form shoulders  $a^{11}$  and is increased or made thicker than the tail portion  $a^6$  to form shoulders  $a^{12}$ .

The draw-bar portion  $b$  is formed hollow and at its forward end is adapted to receive the stem portion  $a^6$  of the coupler-head. The coupler-head is pivoted to a pair of horizontally-extended lugs or ears  $b'$ , formed on the forward portion of the draw-bar  $b$ , by means of a strong pintle or pivot-pin  $b^2$ , passed through the said lugs  $b'$  and the said seat  $a^{10}$  in the coupler-head. Under the bumping action on the coupler the shoulders  $a^{11}$  will be forced against the forward edges of the lugs  $b'$ , and the shoulders  $a^{12}$  will at the same time be forced into engagement with lugs  $b^3$  on the draw-bar  $b$ . This serves to distribute the bumping strain upon different portions of the coupler.

The draw-bar  $b$  is formed with upper and lower interior wearing-surfaces  $b^4$ , that coöperate with the heretofore-noted wearing-surfaces  $a^7$  on the tail of the coupler-head to hold the coupler-head from tilting vertically.

In line with the pin-seat  $a^9$  the draw-bar  $b$  is provided with pin-seats  $b^5$ . When the tail of the coupler-head stands in its central or normal position, a lock-pin  $b^6$  may be passed



through the coincident pin-seats  $a^9$  and  $b^5$  to rigidly connect the coupler-head to the draw-bar. In most cases, however, this pin  $b^6$  will not be used.

5 A pair of short but strong coiled springs  $b^7$ , placed one in each seat or socket  $a^8$  of the tail  $a^6$  of the coupler-head and compressed between the walls of the draw-bar  $b$ , tends to hold the coupler-head in its intermediate or normal  
10 position and the tail  $a^6$  of the same centrally of the draw-bar  $b$ . These springs  $b^7$  will, however, yield to permit the coupler to swing laterally on its pintle  $b^2$  to adapt itself to certain coupling actions and strains very im-  
15 portant to be noted. For example, when cars are bumped together or coupled on a curve the coupler-heads, being free for pivotal movements, will yield, so that their engagements will be the same or practically the  
20 same as if the cars were on a straight line of track. With the couplers now in use intense strains, with a corresponding wear, are put upon the couplers in coupling on curves or in traveling curves when coupled. As is  
25 obvious, simply pivoting the draw-bar of the coupler to the draft-rigging will not obviate the above defect. It requires the coupler-head itself to be pivotally movable with respect to the draw-bar, so that on a curve the  
30 engaging portions of the coupled couplers may bear approximately the same relation to a radius of the arc of the curved track that they do when on a straight track to a horizontal line crossing the said straight track at  
35 an angle of ninety degrees.

Coöperating shoulders  $a^{13}$  and  $b^8$ , respectively, on the coupler-head  $a$  and draw-bar  $b$  limit the pivotal movements of said coupler-head with respect to said bar. The pivot pin  
40 or bolt  $b^2$  has one side of its head cut away at  $b^9$  for coöperation with a lug  $b^{10}$  on the draw-bar, whereby said pin or bolt  $b^2$  is prevented from turning within and wearing its seats in the lugs  $b^1$ .

45 The lock dog or pin  $a'$  is adapted to be raised by a novel device which, in addition to its pin-lifting function, serves to lock said pin or dog in its locking or lowered position when the parts are in their normal positions. This de-  
50 vice in its preferred form is best shown in Figs. 4 and 5, in which  $c$  indicates the combined lock and pin-lifting bolt or slide, which is provided with an inclined cam-acting portion  $c'$ . This bolt or slide  $c$  is mounted in  
55 suitable seats formed in the raised or bulged portion  $a^{14}$  of the coupler-head, through which the locking pin or dog  $a'$  works. The lock dog or pin  $a'$  has a transverse opening or passage  
60  $a^{15}$ , through which the cam-section  $c'$  of the bolt or slide  $c$  works. At its upper edge the said cam-section  $c'$  is provided with a pair of bearing projections  $c^2$ , that are adapted to en-  
65 gage in succession with the inclined upper wall of the passage or opening  $a^{15}$ . A coiled spring  $c^3$  on the left-hand end of the bolt or slide  $c$  normally holds the same in its extreme

position toward the left, as shown in Fig. 4, and in this position it will be noted that the straight or body portion of said bolt or slide  $c$  engages the straight bottom of the passage  $a^{15}$ ,  
70 and thus positively locks the dog downward in its locking position. From the left-hand end of said bolt or slide a chain or flexible connection  $c^4$  extends to the side of the car  
75 and is there attached to or provided with some suitable form of hand device (not shown) by means of which the said slide may be manipulated at will. This slide or bolt  $c$  is adapted  
80 to be moved toward the right by a direct pull thereon, and when thus moved the right-hand bearing projection  $c^2$  will first be brought into engagement with the inclined upper wall of  
85 the perforation  $a^{15}$ , this engagement being kept up until said projection has been carried a slight distance on the right-hand side of the center of the locking dog or pin  $a'$ , at which  
90 time the left-hand bearing projection  $c^2$  will be brought into engagement with said inclined upper wall of the passage  $a^{15}$ . By this action the locking pin or dog will be raised by a force  
95 applied always in the immediate vicinity of its axis or vertical center of gravity, and said dog will not be forced laterally to the same extent that it would be if otherwise engaged. It is now evident from the description given  
100 that the bolt or slide  $c$  performs two functions—to wit, that of lifting the pin or locking-dog and of locking the same in its locking position. It performs a third function in that it holds the locking-dog in its seat, so that it  
105 can at no time be removed as long as the said bolt or pin lifting device  $c$  is applied to the coupler. It must be seen that this pin-lifting device, specifically referred to as the bolt or slide  $c$ , while extremely simple and adding  
110 very little complication, in itself has several very important functions and very much simplifies the construction of the coupler, as it supplants several devices previously used to accomplish the several results.

The forward end of the draft-bar  $b$  is supported by and works in a draft-bar keeper or guide which permits the same a limited lateral movement. This keeper or guide consists of a transverse bar  $f$ , which is securable  
115 at its ends by means of suitable bolts and nuts to the bottoms of the draft-timbers 1, this bar being provided with vertical extensions  $f'$ , that extend between said draft-timbers 1 and are tied together at their upper  
120 ends by a transverse but removable tie-bar  $f^2$ . The vertical flanges or extensions  $f'$  are provided with inwardly-projected sockets  $f^3$ , in which the outer ends of strong coiled springs  
125  $f^4$  are fitted. These springs  $f^4$  engage the opposite sides of the draft-bar  $b$  and yieldingly hold the same in its central and normal position. Preferably the vertical extensions  $f^3$   
130 are also provided with ribs  $f^5$ , that are embedded into the draft-timbers 1 to more securely hold the keeper in position, and to give increased rigidity to the parts nutted bolts



$f^6$   $f^7$  are passed through the draft-timbers 1 and through the upper portions of the vertical flanges  $f'$ . The arrangement just described is that illustrated in Figs. 1, 6, and 7.

5 The construction of some cars is such that the draft-bar of the coupler must be thrown or dropped below the draft-timbers. The draft-bar keeper above described is adapted to be reversed to obtain this result. In Fig. 10 the said keeper is shown as reversed or turned upside down and directly secured to a transverse beam  $f^8$ , which in turn is secured to the bottoms of the draft-timbers 1. This reversible feature has an obvious importance. 15 In this preferred construction the rear end of the draft-bar is extended or elongated by a pair of heavy draft-straps  $g$ , suitably bolted or otherwise secured together and to the body of the draft-bar. The rear ends of these draft-straps  $g$  are pivoted by means of a pin  $g'$  to a head  $g^2$ , provided with a draft-bolt extension  $g^3$ , screw-threaded at  $g^4$  and again at  $g^5$ . Nuts  $g^6$  and  $g^7$  work, respectively, on the screw-threaded sections  $g^4$  and  $g^5$  of the said draft-bolt  $g^3$ . Between the nuts  $g^6$   $g^7$  a pair of followers  $g^8$  are placed on the draft-stem  $g^3$ , and on said draft-stem, between said followers, a very heavy coiled draft-spring  $g^9$  is compressed. A loose sleeve  $g^{10}$  of such diameter as to loosely fit around the coiled spring  $g^9$  and to be engaged and pressed between said followers  $g^8$  is placed around the said spring. 30

$g^{11}$  indicates an ordinary lock-key which is placed through the outer end of the draft-bolt  $g^3$ , just to the rear of the nut  $g^6$ .

The draft-box for coöperation with the parts just described preferably consists of an expansible two-part cylindrical box  $k$ , provided with depending ears or end flanges  $k'$ , clamped together by nutted bolts  $k^2$ . The sections of this box are also preferably provided with flanges  $k^3$  and  $k^4$ , that embrace supplemental draft-timbers  $k^5$ , secured to the primary draft-timbers 1. Long nutted bolts  $k^6$  are passed through the timbers 1 and  $k^5$  and through the flanges  $k^4$  to clamp all of the said parts together and securely anchor the draft-box. It is important to note that one section of the draft-box  $k$  is provided with longitudinally-extended V-shaped flanges  $k^7$ , that engage correspondingly-formed grooves or seats in the other box-section, and thus cause the said box-sections to properly aline or position themselves when drawn together. In case it is desired to expand the draft-box laterally spacing-strips  $k^8$  and  $k^9$  are employed, and these strips are provided with V-shaped grooves  $k^{10}$  and V-shaped ribs  $k^{11}$ , that are adapted to coöperate with the V-shaped grooves and flanges of the box-sections just noted. At their ends the draft-box sections are provided with segmental draft lugs or flanges  $k^{12}$ , between which the followers  $g^8$  work. The draft connections just described are placed in working positions, as shown in

Figs. 9 and 10, and when so placed the loose collar  $g^{10}$  takes the place of intermediate draft-lugs with which the draft-boxes are usually provided. With this construction when the spring  $g^9$  is sufficiently compressed either by bumping or drawing strains one or the other of the followers  $g^8$  will be moved against the same and force it against the other follower. 75

By adjusting both of the nuts equal distances in the same direction the entire coupler may be adjusted longitudinally of the car without changing the action of the draft-springs. This is a very important feature, as it often becomes necessary or desirable either to project the coupler farther out from the car or to draw the same inward in order to properly locate the coupler with respect to the bumpers. 85

When the bar  $f^2$  of the draft-bar keeper is removed and the pin  $g'$  is withdrawn, the coupler may be removed bodily without removing the rest of the keeper.

By reference to Fig. 6 it will be noted that the main strap  $f$  of the draw-bar keeper is provided with upturned flanges  $f^8$ , which embrace the outsides of the draft-timbers 1 and prevent the said timbers from spreading. 90

The so-called "supplemental tailpiece" is best illustrated in Fig. 2, and in its preferred form consists of a short section  $p$ , which is pivoted to the tail of the knuckle at  $p'$  and is so set that its upper surface lies flush with the upper surface of the pin-engaging portion of the said tail of the knuckle. When the knuckle is closed, this supplemental tailpiece enters a recess  $p^2$ , formed in the hub portion of the coupler-head, and when the knuckle is opened it will be carried under the lower end of the locking pin or dog  $a'$  and will sustain the said pin or dog as long as the knuckle remains open. It is guided to the proper movement by lug portions  $p^3$  and  $p^4$ , formed in the interior of the coupler-head. This supplemental tailpiece may be made quite light as compared with the tail proper of the knuckle, and by this construction the necessary weight of the knuckle is materially reduced. As shown, a projection  $p^5$  in the interior of the coupler-head limits the closing movement of the knuckle. 100 105 110 115

Attention is further called to the fact that the coupler above described is so mounted for movements transversely of the car that the coupler-head is capable of maintaining the same angular relation to the body of the car throughout these lateral movements. Otherwise stated, if a pair of coupled couplers are caused to move laterally or transversely of the car while on a straight track the outer faces of the knuckles  $a^2$  will throughout such movements remain parallel to the front end of the car, and thus prevent cramping and binding of the parts. Any construction which will permit of the movements above described I consider broadly new as 120 125 130



applied to couplers and desire to claim the same broadly.

It will of course be understood that the several features of my invention above set forth are capable of various modifications. In many cases it will neither be necessary nor desirable to mount the draw-bar of the coupler for lateral movements in connection with the coupler-head pivoted to the draw-bar; but in other cases it is very desirable to provide for these several movements in a single device.

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

1. In a car-coupler, the combination with a hollow integrally-formed draft-bar section and means for securing the same to the car, of a coupler-head pivotally connected to said hollow draft-bar section, and provided with a projecting tailpiece that telescopes into the same and is removable therefrom by telescopic endwise movement, substantially as described.

2. In a car-coupler, the combination with a hollow draft-bar section, of a coupler-head pivoted to the forward end of said draft-bar and provided with a tail portion that works within said draft-bar and bears against the upper wall thereof to prevent sagging of the coupler-head, substantially as described.

3. In a car-coupler, the combination with a hollow draft-bar, of a coupler-head pivoted to said draft-bar and provided with a tail portion extended within said draft-bar, and springs applied between said tail portion and said draft-bar rearward of the pivot of said coupler-head for yieldingly holding the coupler-head in its normal or intermediate position, substantially as described.

4. The combination with the hollow draw-bar  $b$  with lugs  $b'$ , of the coupler-head  $a$  pivoted to said lugs  $b'$  by a pivot-bolt  $b^2$ , and provided with the tail portion  $a^6$  extended beyond said pivot and having the sockets  $a^8$ , and the pair of springs  $b^7$  in said sockets  $a^8$ , compressed between the same and the side walls of said draw-bar, substantially as described.

5. The combination with a coupler-head and draft-bar pivotally connected together for limited oscillation, of means for rigidly securing said head and bar together, substantially as described.

6. In a car-coupler, the combination with head and draft-bar portions pivotally connected for limited oscillation, of springs applied to hold said head in its intermediate position, and means for rigidly connecting the said head and bar, substantially as described.

7. In a car-coupler, the combination with head and draft-bar portions provided with telescoping sections and pivotally connected for limited oscillations, and a pin adapted to be passed through coincident perforations or

seats in the telescoping parts, to rigidly connect said head and bar portions, substantially as described.

8. A draft-bar keeper or guide having parts that embrace the same and adapted to be reversed or turned upside down to support said bar in either of two different horizontal planes, substantially as described.

9. A draft-bar keeper or guide, consisting of the bar  $f$  with vertical extensions  $f'$  formed with the sockets  $f^3$ , the tie-bar  $f^2$  removable while said bar  $f$  is in working position, and the springs  $f^4$  in said sockets  $f^3$  operating to hold the draft-bar in an intermediate position, substantially as described.

10. A draft-bar keeper or guide, consisting of the bar  $f$ , with vertical extensions  $f'$  formed with sockets  $f^3$ , the tie-bar  $f^2$  removable while said bar  $f$  is in working position, the nutted bolts  $f^6$   $f^7$  securing the extensions  $f'$  to the draft-timbers, and the springs  $f^4$  in said sockets  $f^3$ , acting on the draft-bar to hold the same in an intermediate position, substantially as described.

11. The combination with a coupler, of means for securing the same to the car, involving draft-lugs or projections secured with respect to the car, a pair of followers cooperating with said draft-lug, a screw-threaded stem or projection from the coupler, a pair of nuts or screw-threaded sections working on said screw-threaded stem and cooperating with said followers, whereby the coupler may be adjusted longitudinally of the car, substantially as described.

12. The combination with a coupler, of means for securing the same to the car, consisting of draft-lugs or projections spaced apart and secured to the car, a pair of followers working between and cooperating with said draft-lugs, a coiled spring compressed between said followers, a loose collar surrounding said spring and cooperating with said followers, a screw-threaded stem or projection from the coupler passed through said followers and said spring, and a pair of nuts or screw-threaded sections on said stem outward of said followers, substantially as described.

13. A laterally-expandible draft-box comprising longitudinally-split sections and intermediate filling-pieces, the adjoining surfaces of said box-sections and filling-pieces having cooperating V-shaped grooves and flanges for alining said parts, substantially as described.

14. A car-coupler involving a longitudinally-extended draft-bar mounted for lateral movements, and a coupler-head provided with a pivoted knuckle and itself pivoted to said draft-bar, substantially as described.

15. In a car-coupler, the combination with a longitudinally-extended draft-bar mounted for lateral movements, and springs applied to hold the same in its normal position, of a coupler-head provided with a pivoted knuckle



and itself pivoted to said draft-bar, and springs applied to hold said head in its normal position with respect to said draft-bar, substantially as described.

- 5 16. A car-coupler involving a draft-bar extended longitudinally of the car, and connected to the under portion of the body of the same, the coupler-head pivoted to the outer end of said draft-bar, and a knuckle pivoted

to said coupler-head, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

EDWIN C. WASHBURN.

Witnesses:

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