No. 725,550. PATENTED APR. 14, 1903.

R. W. FOX.

DRAW BAR RIGGING.

APPLICATION FILED DEC. 15, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

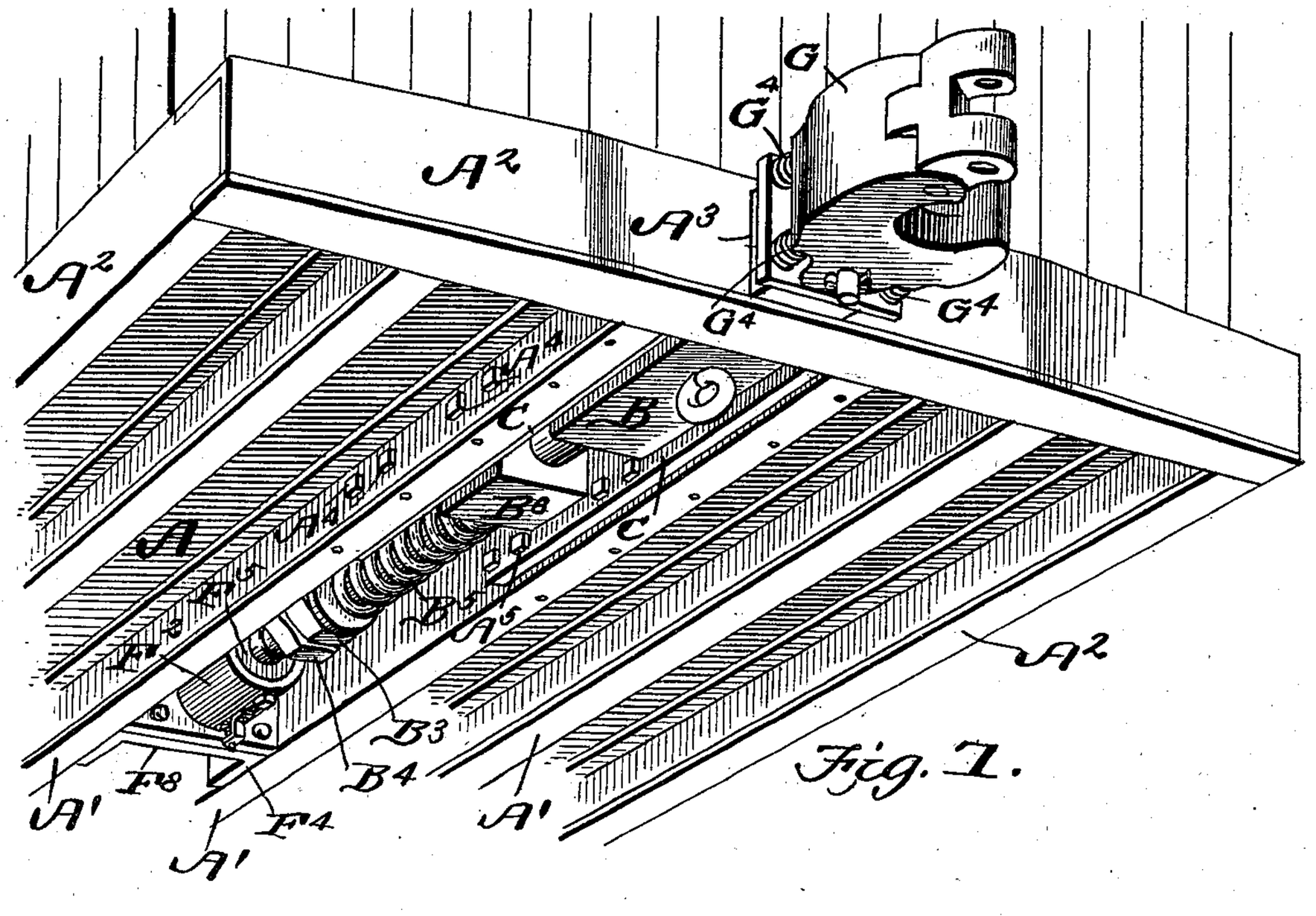


Fig. 1.

Fig. 2.

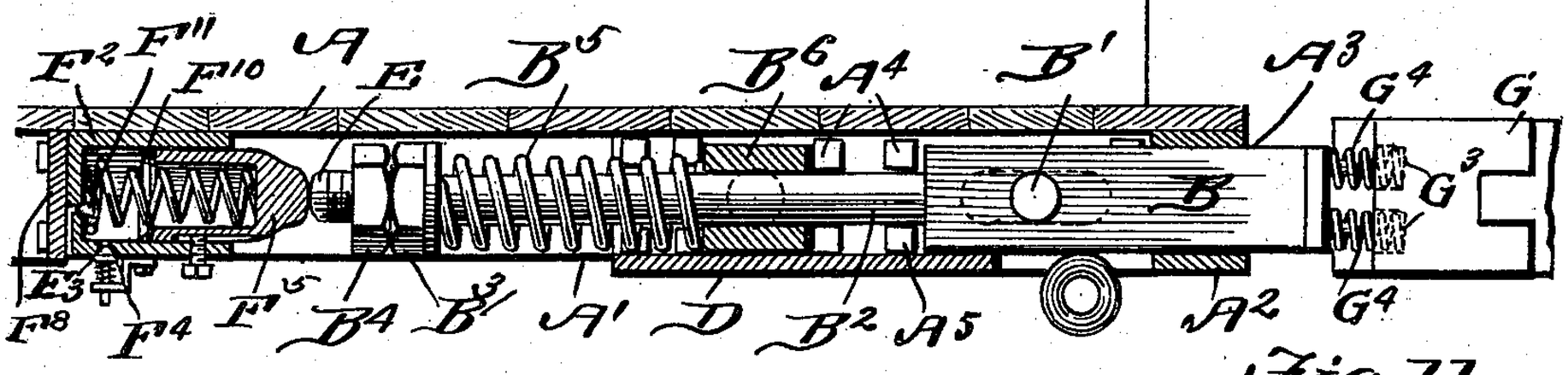


Fig. 8

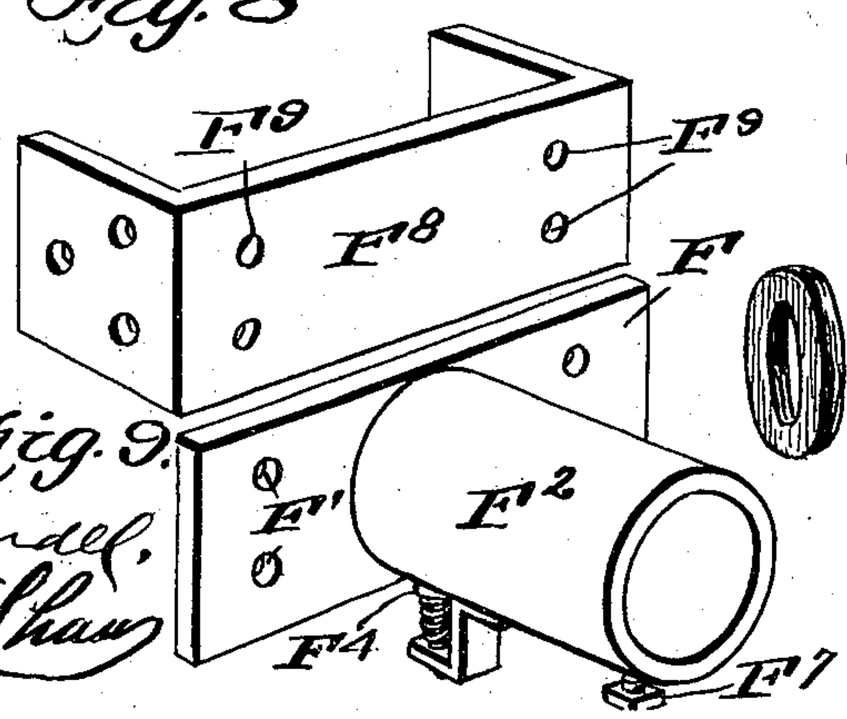


Fig. 9.

Fig. 11.

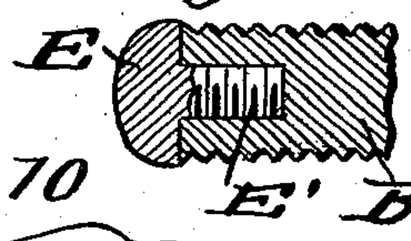
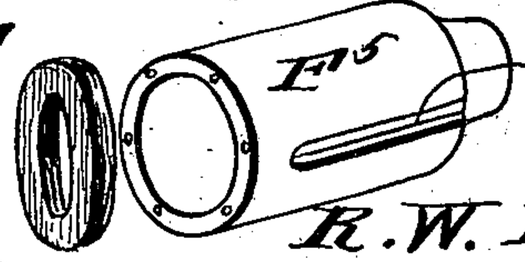


Fig. 10



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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 3.

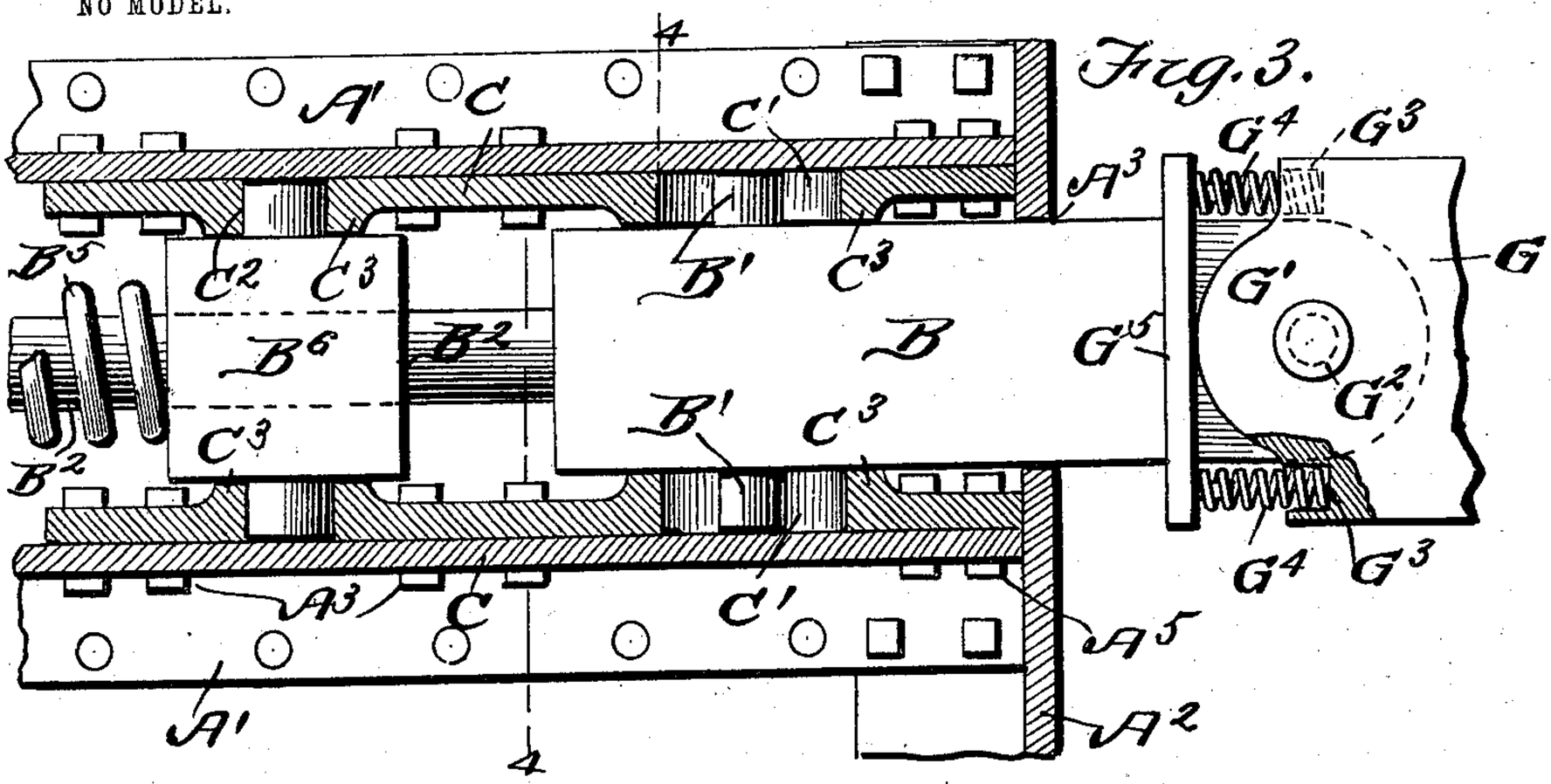


Fig. 4

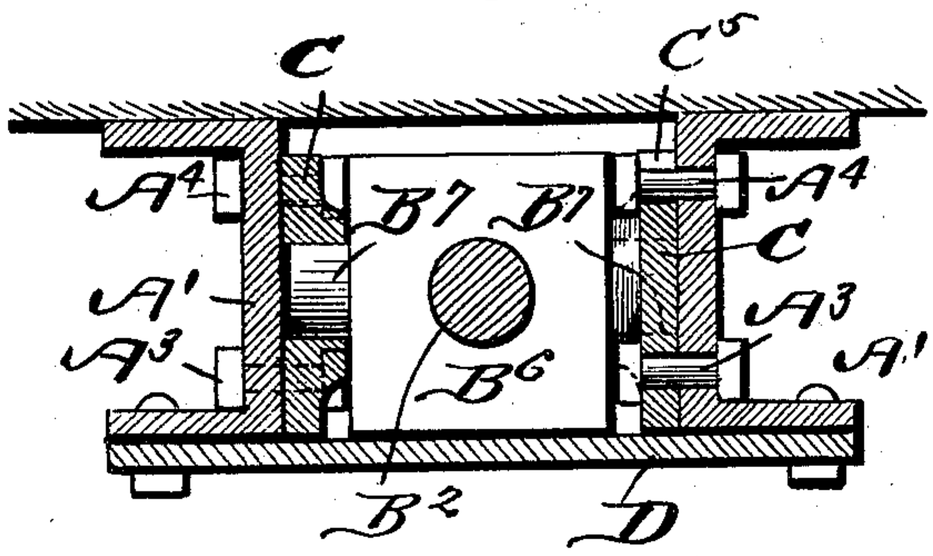


Fig. 5.

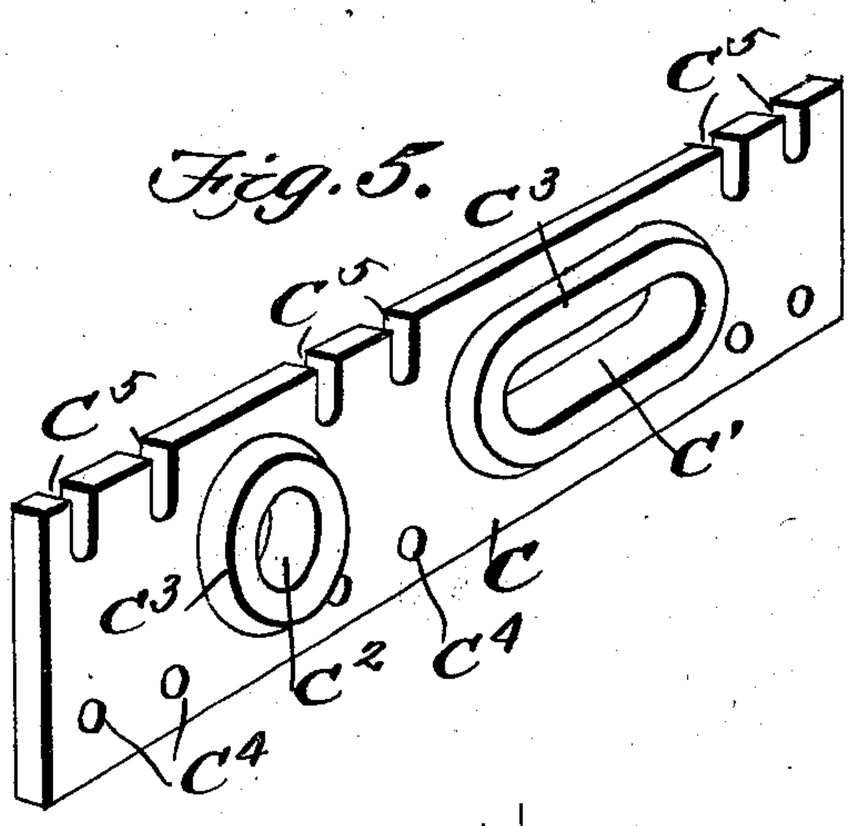


Fig. 6.

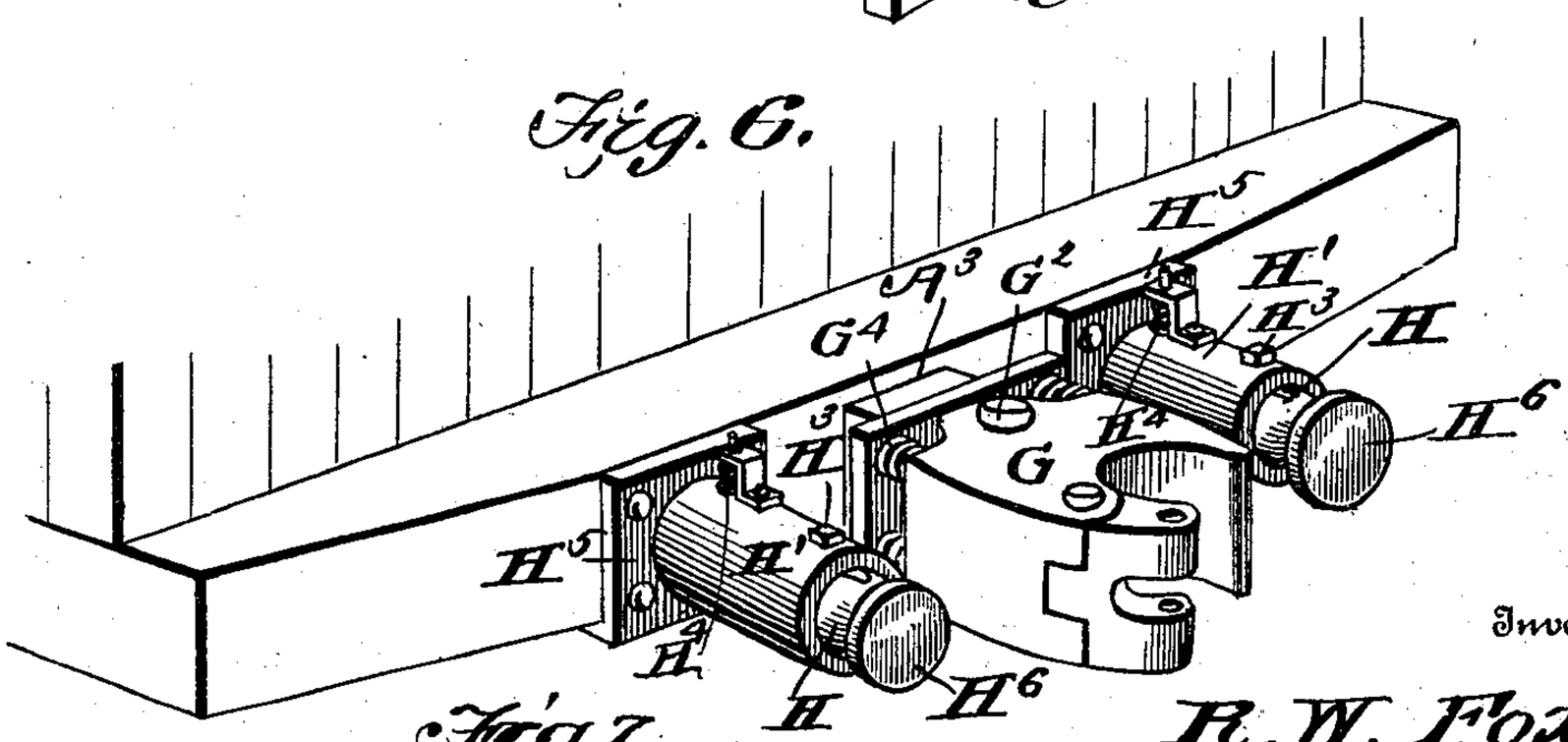
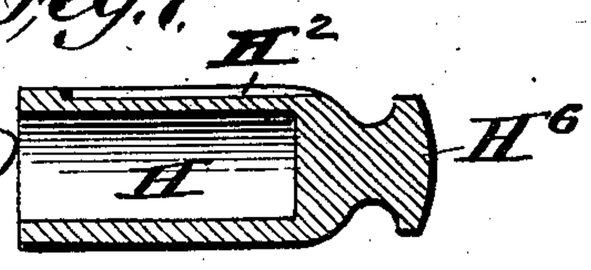


Fig. 7.



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UNITED STATES PATENT OFFICE.

RICHARD W. FOX, OF ALTOONA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO WILLIAM E. DILLING, OF ALTOONA, PENNSYLVANIA.

DRAW-BAR RIGGING.

SPECIFICATION forming part of Letters Patent No. 725,550, dated April 14, 1903.

Application filed December 15, 1902. Serial No. 135,280. (No model.)

To all whom it may concern:

Be it known that I, RICHARD W. FOX, a citizen of the United States, residing at Altoona, in the county of Blair and State of Pennsylvania, have invented a new and useful Draw-Bar Rigging, of which the following is a specification.

My invention relates to draw-bars for couplers and is an improvement on the draw-bar rigging for which application for United States Letters Patent was made February 8, 1902, Serial No. 93,167, to which reference is had.

My present improvement relates more especially to means for permitting a lateral swinging motion of the coupler when coupling on a curve and means for providing a combined spring and air-cushion adapted to more effectually take up and break the force of impact when two cars come together, thereby greatly prolonging the life of both the coupler and draw-bar rigging.

As in my former application, my improvements are shown as applied to the Janney coupler, though they could be used with any couplers of the well-known Master Car-Builders' type.

In the accompanying drawings, Figure 1 is a persective view of the under side of a car, showing my improvements in position, the bottom plate being removed. Fig. 2 is a sectional elevation of my improved coupler. Fig. 3 is an enlarged sectional plan view of a portion of my improvements, illustrating the connection of the castings to the channel-beams of a car. Fig. 4 is a sectional view drawn substantially on the line 4 4 of Fig. 3. Fig. 5 is a detail perspective view of one of the castings. Fig. 6 is a perspective view illustrating my improved buffers in use upon the end of a car. Fig. 7 is a detail sectional view of one of the sliding members of my buffer. Figs. 8, 9, and 10 are views illustrating my improved buffer in detail, and Fig. 11 is a detail sectional view drawn through the extreme rear of the draw-bar.

The present improvement is designed especially for use with steel cars, and in the drawings, A represents the bottom of such a car having the channel-beams A′ and the side and end beams A^2, usually U-shaped, the end beam being cut away at A^3 to permit the draw-bar B to work therethrough. This draw-bar has the laterally-projecting studs B′, the rearwardly-projecting shank B^2, threaded at its rear end to receive the jam-nuts B^3 B^4 and surrounded by the spiral spring B^5, bearing at its rear end on the jam-nuts and at its forward end against the rear side of the guide-block B^6, all of which are fully shown and described in the application for Letters Patent above referred to.

In Fig. 5 I have shown an improved casting C, longitudinally slotted at C′ and perforated at C^2, the slot and perforation being surrounded by a reinforcing-boss C^3. Adjacent its lower edge the casting is perforated, as at C^4, while a series of notches C^5 are formed along its upper edge. The castings are secured on each side of the draw-bar, being firmly bolted to the channel-beams, as shown in Figs. 3 and 4. The castings are placed in position adjacent the draw-bar, the studs B′ resting in the slot C′ and the trunnions B^7 of the guide-block fitting into the perforations C^2.

The bottom plate D, Fig. 4, not being in position and the bolts A^3 of the beams A′ being removed, the draw-bar and castings are lifted into position, and the notches C^5 will fit over the bolts A^4 and the bolts A^3, and the bottom plate D can then be placed in position, thus securely holding the draw-bar in place, while the bolts A^4, the nuts of which can be tightened after the bar is in place, serve to hold the casting against the longitudinal strain due to the impact and weight of the cars.

In Fig. 11 I have shown a detail view of an end cap E, having a threaded shank E′, intended to protect the threads of the rear end of the shank B^2. The shank has a threaded recess at its end in the rear of the jam-nuts, into which fits the threaded shank E′ of the cap-piece. In the rear of this end cap is positioned the buffer. (Shown in section in position in Fig. 2 and in perspective detail in Figs. 8, 9, and 10.) This buffer comprises a rectangular plate F, perforated at F′ adjacent each corner, and a cylinder F^2, which can be cast integral with the plate, the central portion of the latter forming the rear end

of the cylinder. The cylinder is perforated, and a bracket F^3 is attached to the cylinder adjacent the perforation, said bracket carrying a valve F^4, which comprises a stem, a coiled spring around same, and a valve-head adapted to be seated in the perforations and normally held there by the force of the spring.

The cylinder F^2 is open at its forward end, and slidingly fitting within same is a cylinder F^5, open at its inner end and having an integral outer reduced end of considerable thickness, which contacts with the cap-piece E, the cylinder F^5 acting as a piston. A longitudinal groove F^6 extends along the greater length of the lower side of the cylinder F^5, and a threaded bolt F^7, which passes through the cylinder F^2, extends into this groove, and as the groove does not extend to the inner end of the cylinder F^5 its movement in an outward direction is limited to the length of the groove. A rectangular plate F^8, angled at each end, is secured between the channel-beams and has perforations F^9 alining with the perforations F', through which the two plates are bolted together. A coiled spring F^{10} bears at one end against the end of cylinder F^2 and at its opposite end against the end of cylinder F^5. The rear of the cylinder F^2 is perforated, and within the cylinder is located a flap-valve F^{11}. When the spring F^{10} forces the cylinder F^5 outward, air is drawn into the cylinders and compressed, when the last-mentioned cylinder is again forced inward. The spring and compressed air form together a combined spring and pneumatic cushion, against which the rear end of the draw-bar bears. The object of the safety-valve F^4 is to prevent bursting of the cylinders in the event of the cars coming together with more than usual force, in which case a part of the confined air would escape through the valve. In order to make the cylinders perfectly air-tight, a packing-ring may be bolted to the inner end of the smaller cylinder.

The coupler G is formed with curved rearwardly-extending ears G', centrally perforated, which fit over the reduced perforated end of the draw-bar B and are secured thereto by the bolt G^2. On each side of these ears the coupler is recessed to form sockets G^3, in which are secured the ends of coiled springs G^4, their opposite ends bearing against the front end plate G^5 of the draw-bar head. On each side of the coupler are secured buffers, comprising the two cylinders H H', the latter sliding in the former, and these buffers are similar in construction to the buffer located in the rear of the draw-bar, the cylinder H' being grooved at H^2 corresponding with the groove F^6, into which extends the pin H^3, corresponding to the pin F^7, and these cylinders contain a coiled spring similar to the spring F^{10}, and are filled with compressed air, the cylinder H being provided with a safety-valve H^4, this cylinder being cast with a plate H^5, which is angled and bolted to the front and under faces of the car-sill.

The forward end H^6 of the cylinder H' is enlarged to form a buffer-head of suitable size and strength.

It will be readily seen that the above-described arrangement and construction provide a very efficient draw-bar rigging, readily applied, by reason of the notches formed on one side of the casting C to steel cars and that the buffers placed in the rear of the draw-bar and at the sides of the coupler will break the force of the blow given by the cars coming together, thus increasing the life of the car, and also that the coupler connection to the draw-bar head will permit lateral movement of the couplers in coupling on a curve, the springs G^4 yieldingly resisting such swinging motion.

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

1. The combination with a draw-bar, of a forwardly-open cylinder, a rearwardly-open cylinder sliding in and projecting from the first-mentioned cylinder, the sliding cylinder being longitudinally grooved a portion of its length, a stop-pin extending through the wall of the first cylinder and into the groove of the second cylinder and a coiled spring in said cylinders adapted to resist rearward movement of the sliding cylinder.

2. A draw-bar rigging comprising a rectangular casting perforated along its lower edge and notched along its upper edge, the casting having a longitudinal slot and a circular aperture, and bosses formed on one side of the casting, said bosses surrounding the slot and aperture, respectively.

3. The combination with a draw-bar, having a head-plate and reduced and extending in advance of the plate, of a coupler having rearwardly-extending ears pivotally secured to the reduced end of the draw-bar, said coupler having sockets formed on each side of the draw-bar, and springs secured at one end in said sockets and at their opposite ends to the head-plate.

4. A draw-bar rigging comprising a plurality of springs seated at their outer ends in sockets formed in a coupler, their inner ends bearing against the head-plate of the draw-bar, side castings having notched upper edges, a cap-piece threaded into the rear end of the draw-bar, and a telescopic cylinder adapted to contain compressed air and to yieldingly resist rearward movement of the draw-bar, substantially as described.

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Witnesses:
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