

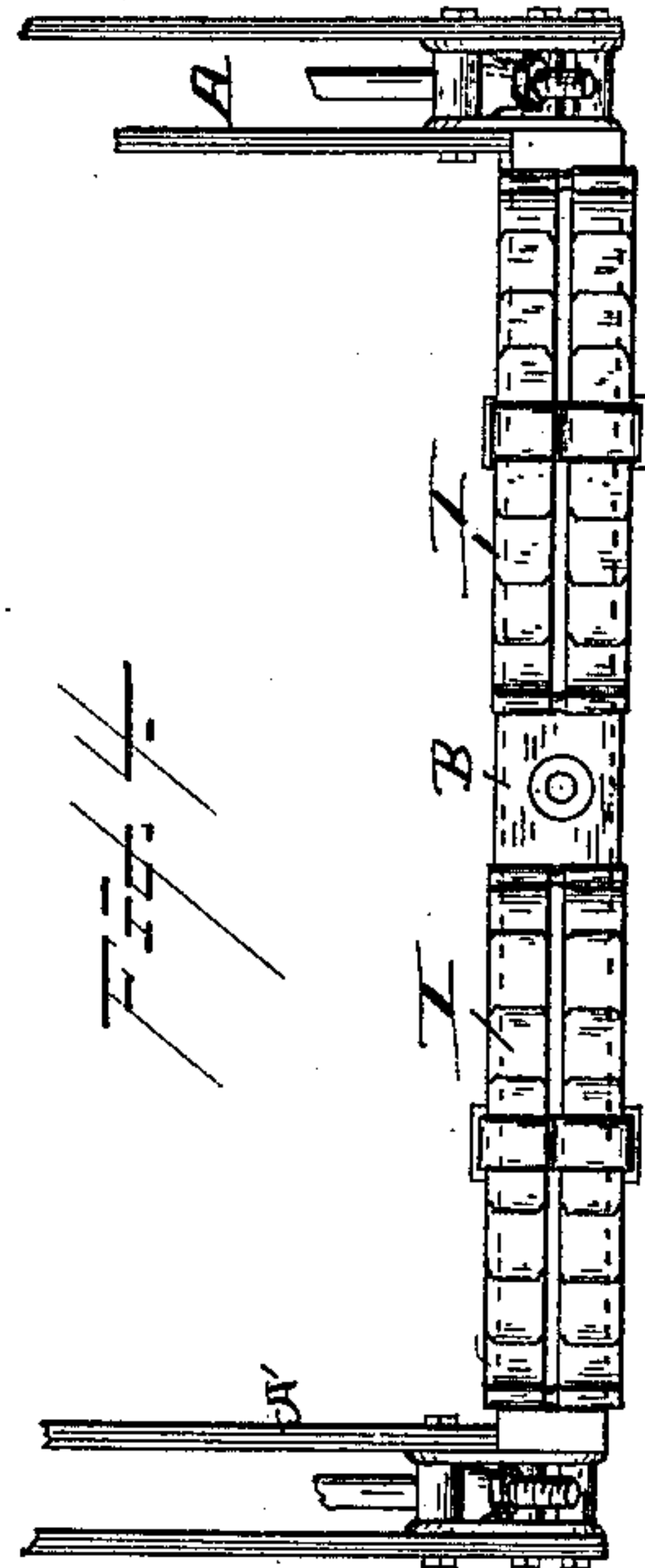
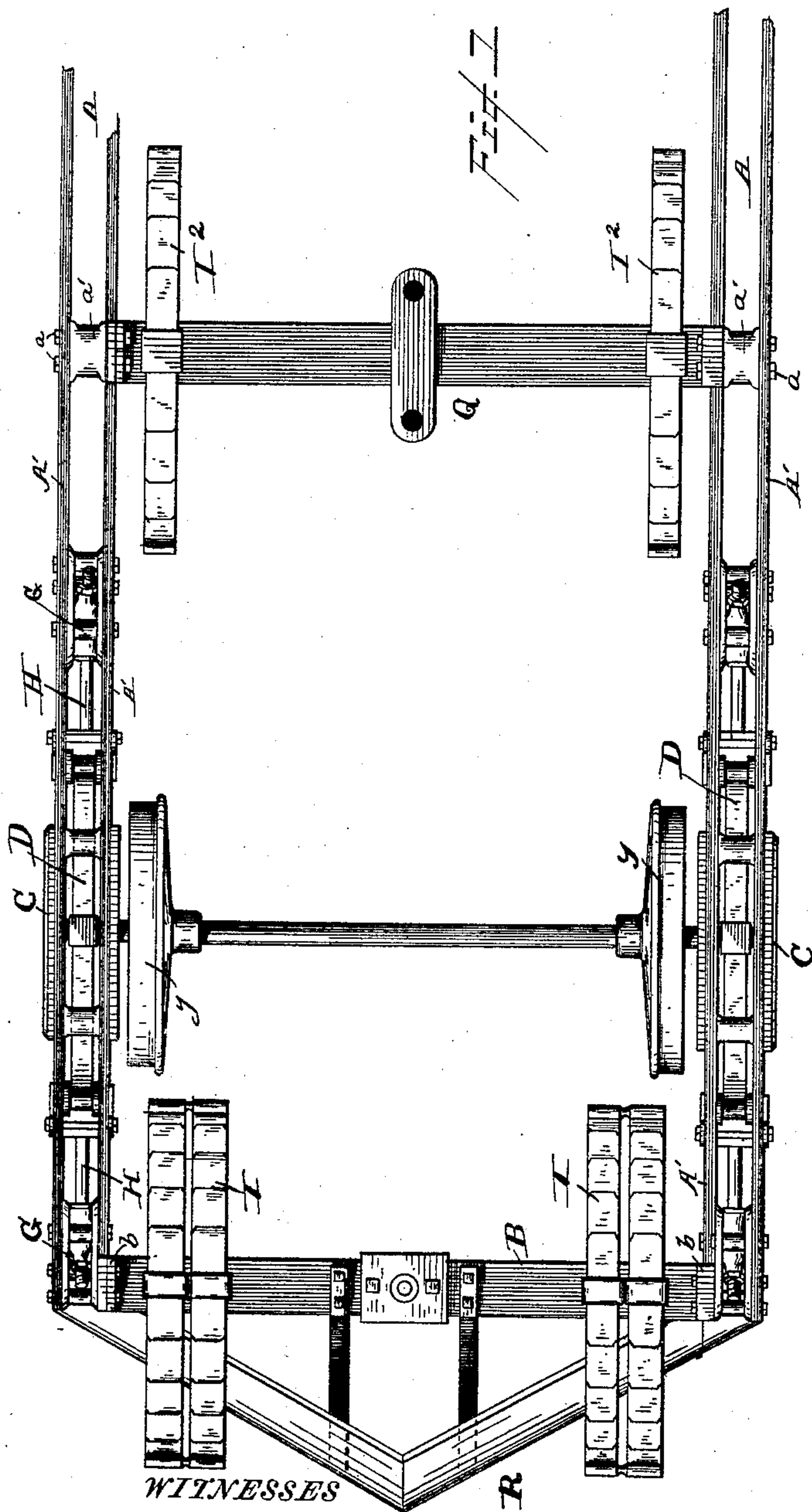
(No Model.)

4 Sheets—Sheet 1.

J. TAYLOR.  
CAR TRUCK.

No. 437,167.

Patented Sept. 23, 1890.



WITNESSES  
Ray L. Brooks  
Arthur E. Swell

INVENTOR  
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Attorney

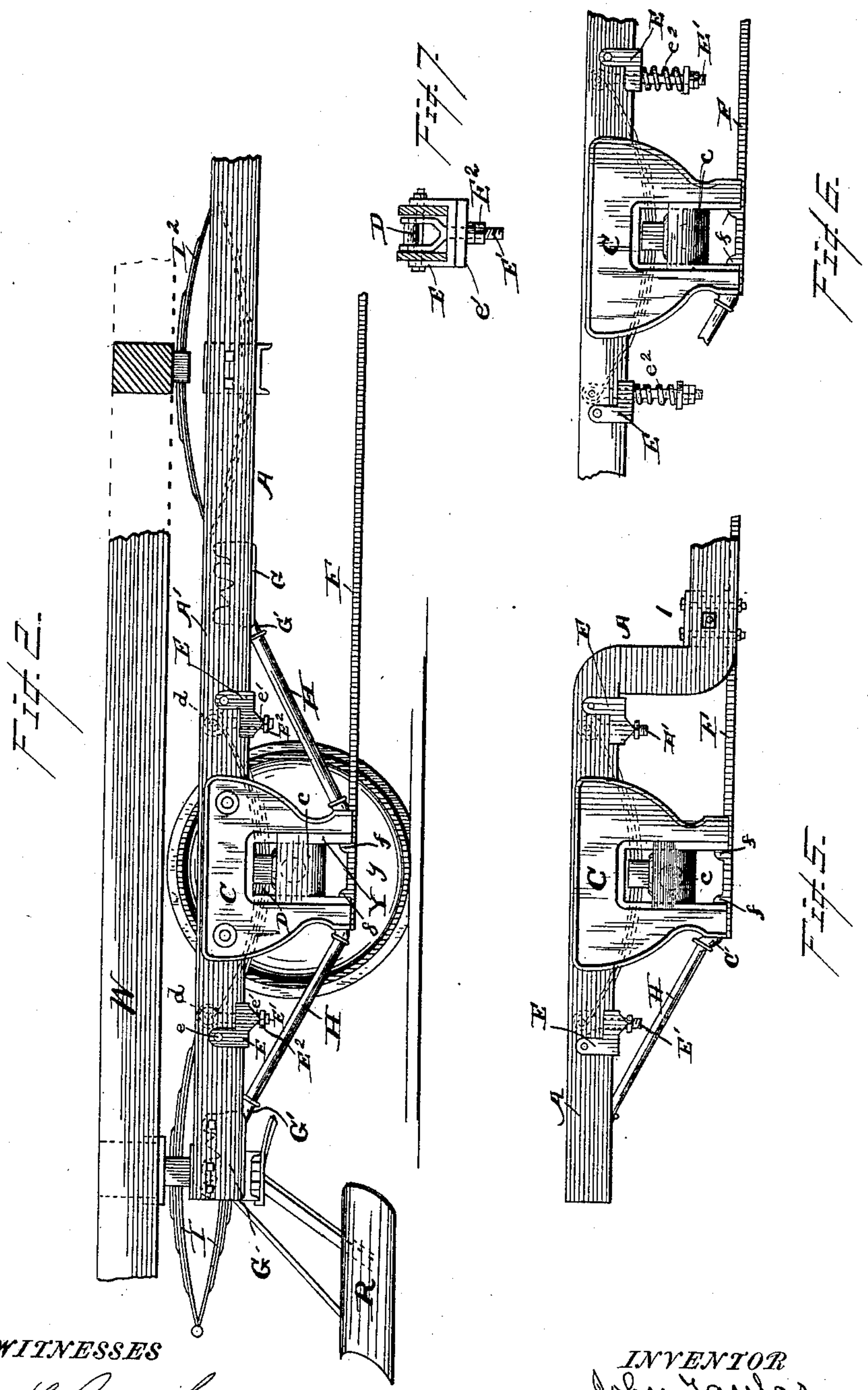
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4 Sheets—Sheet 2.

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(No Model.)

4 Sheets—Sheet 3.

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~~Fig. 3.~~

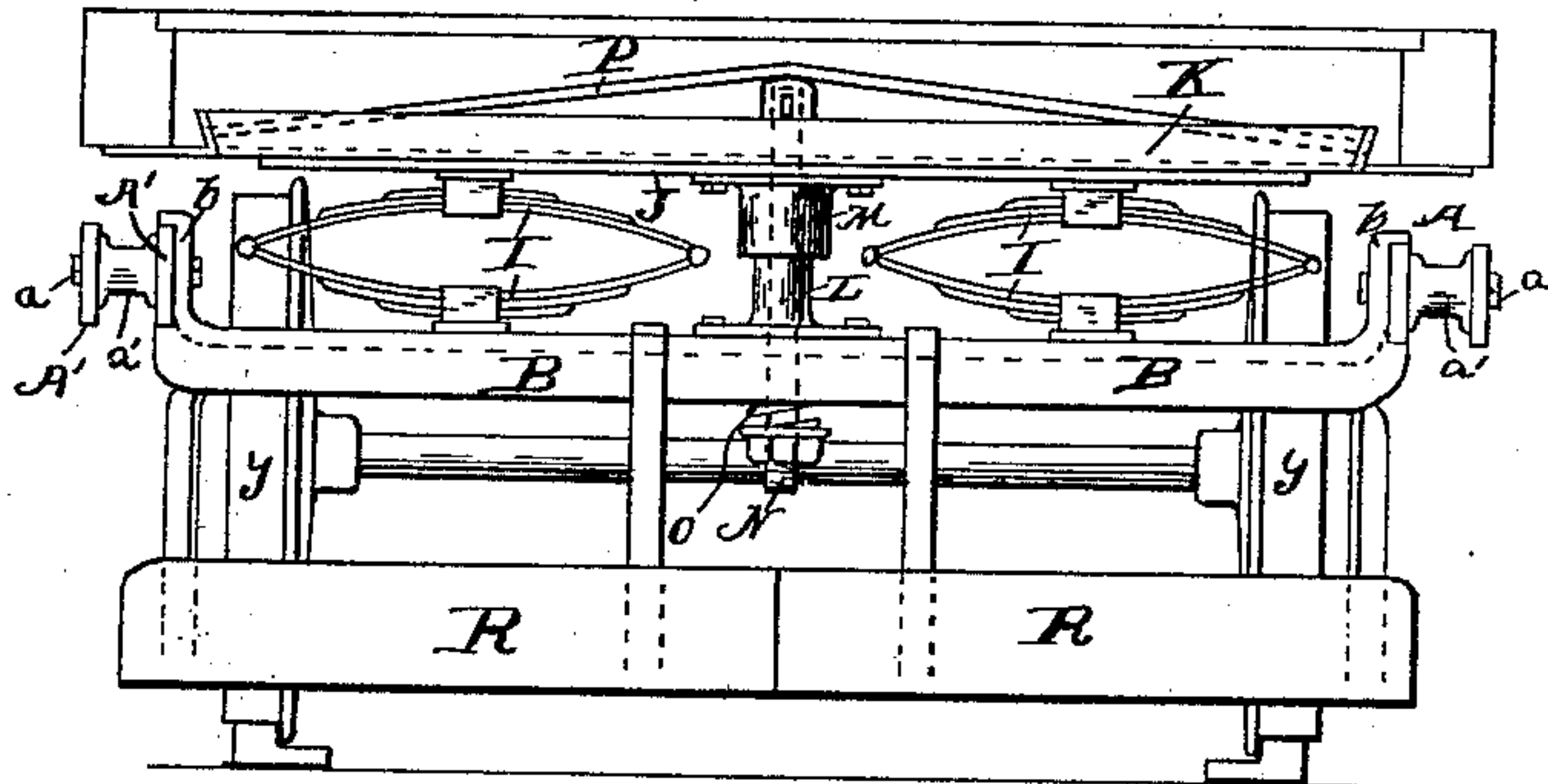


Fig 19

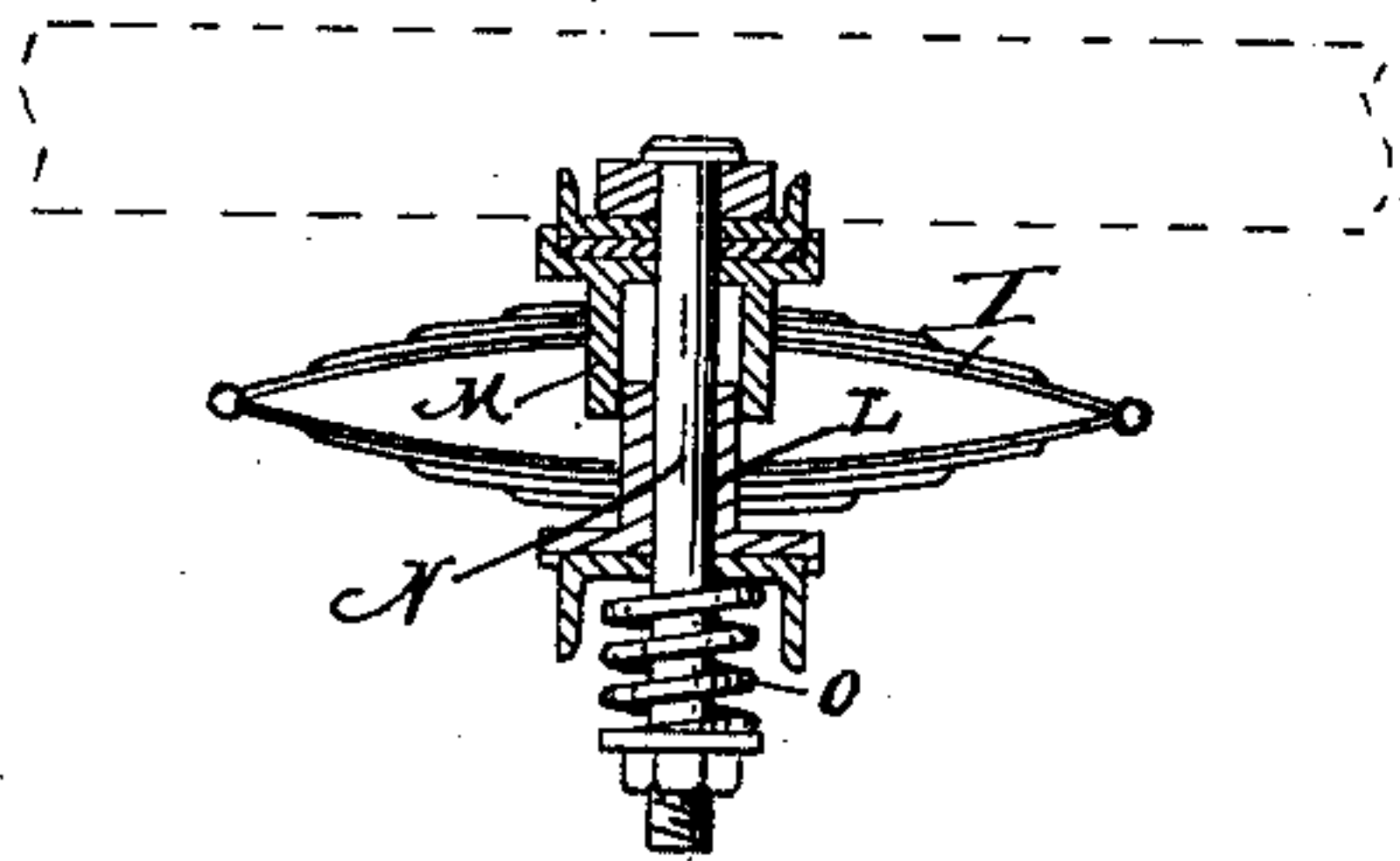


Fig. 14

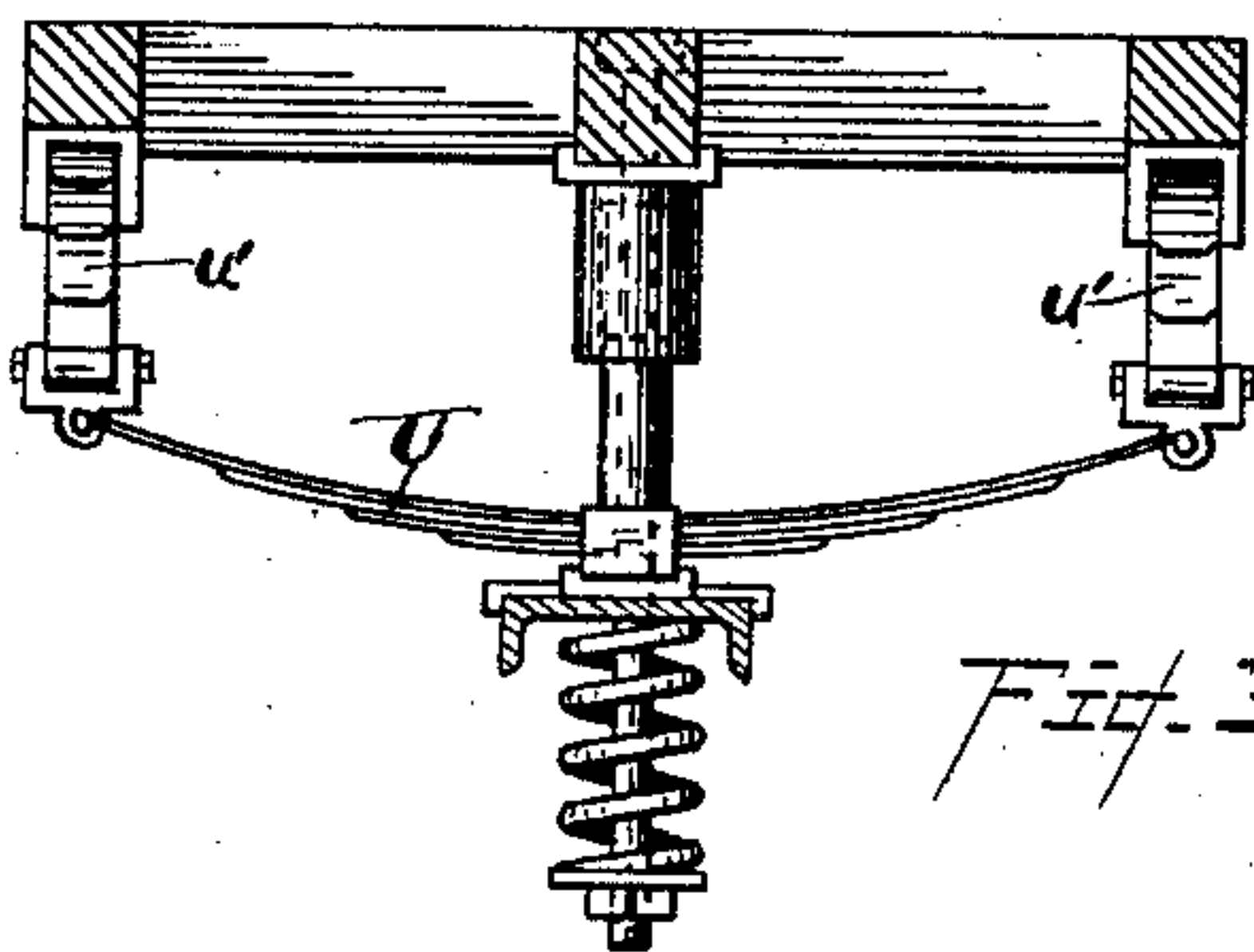
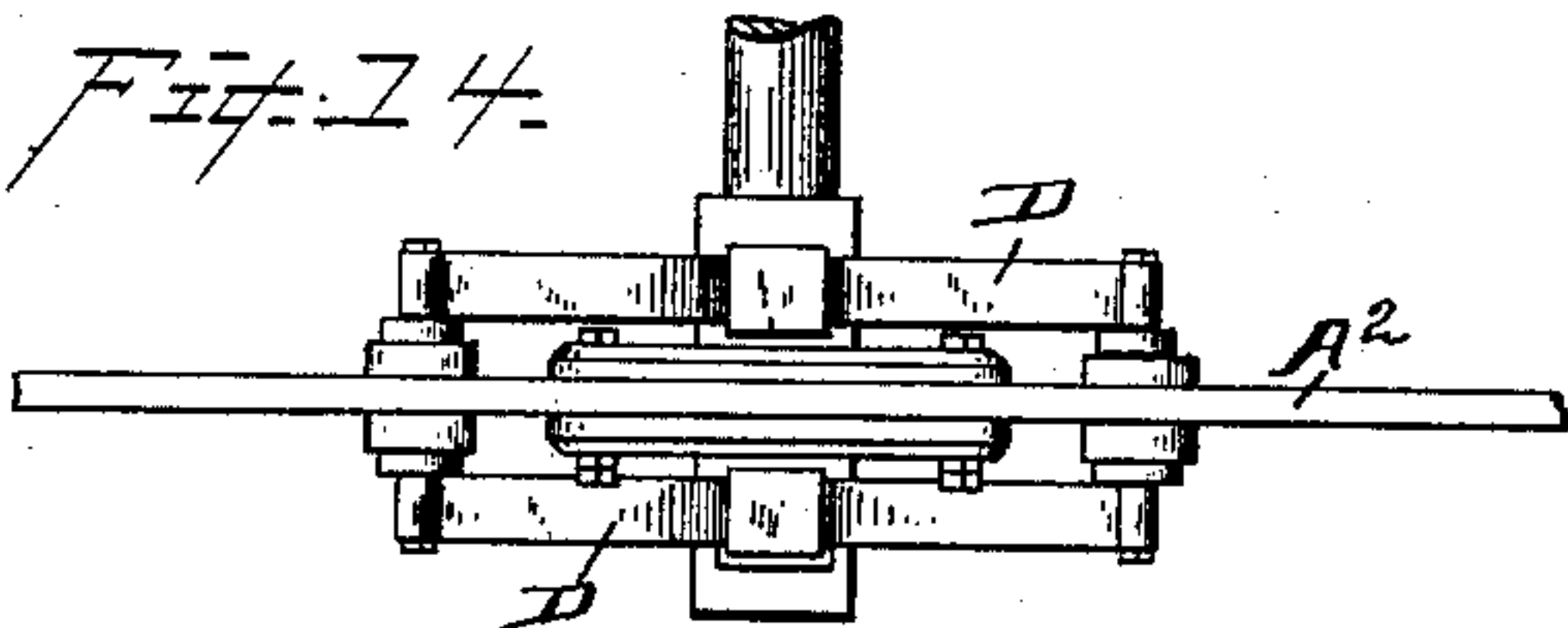


Fig. 33

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~~Fig 15~~

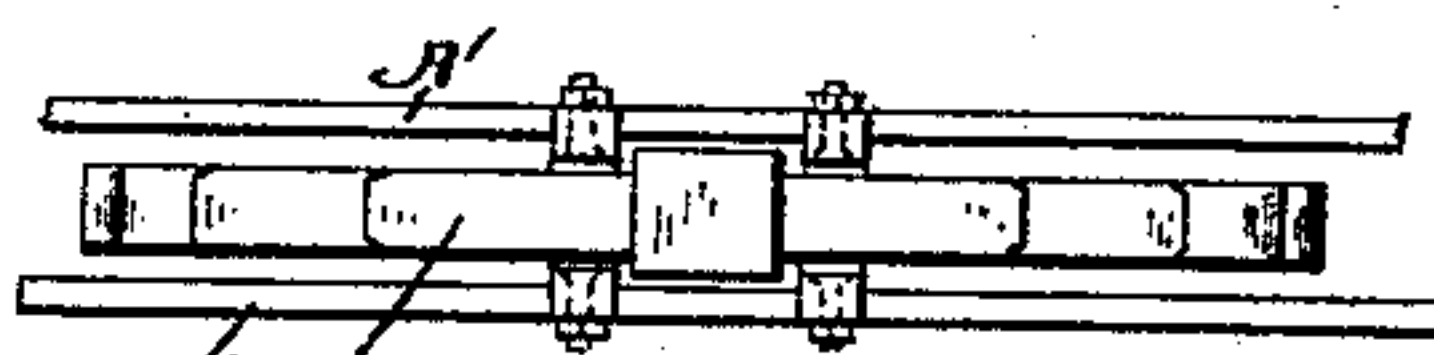
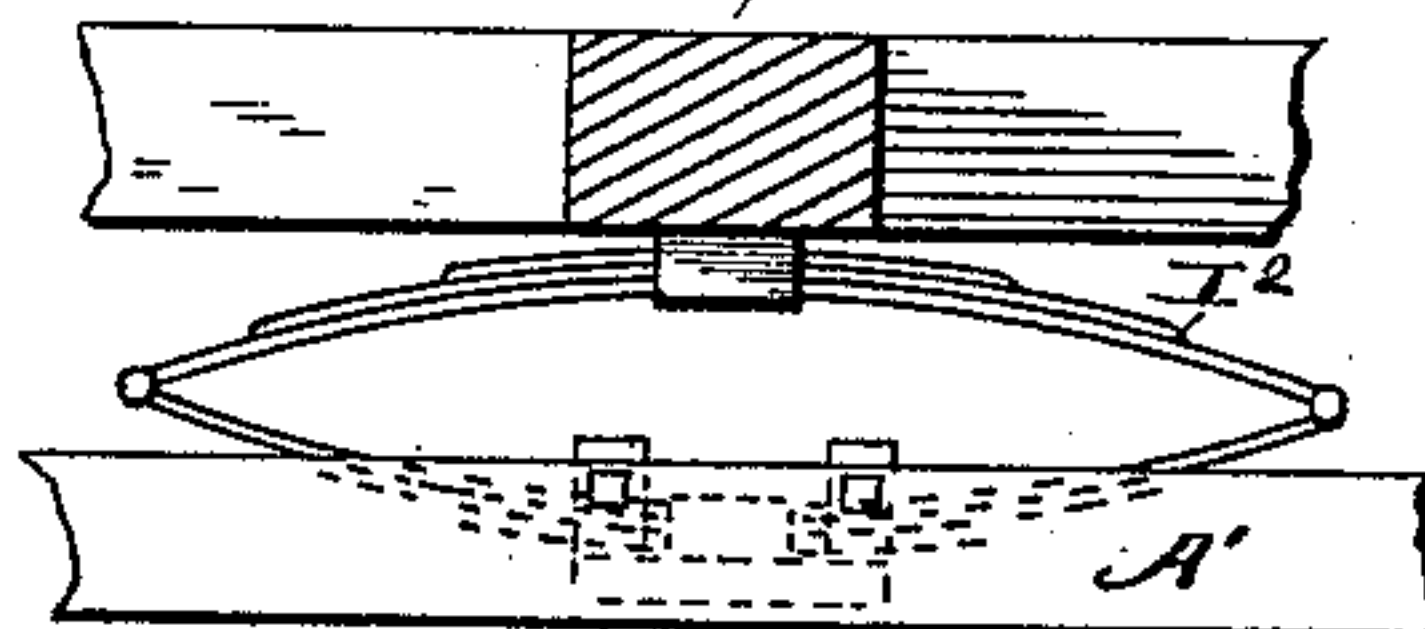


Fig. 16.

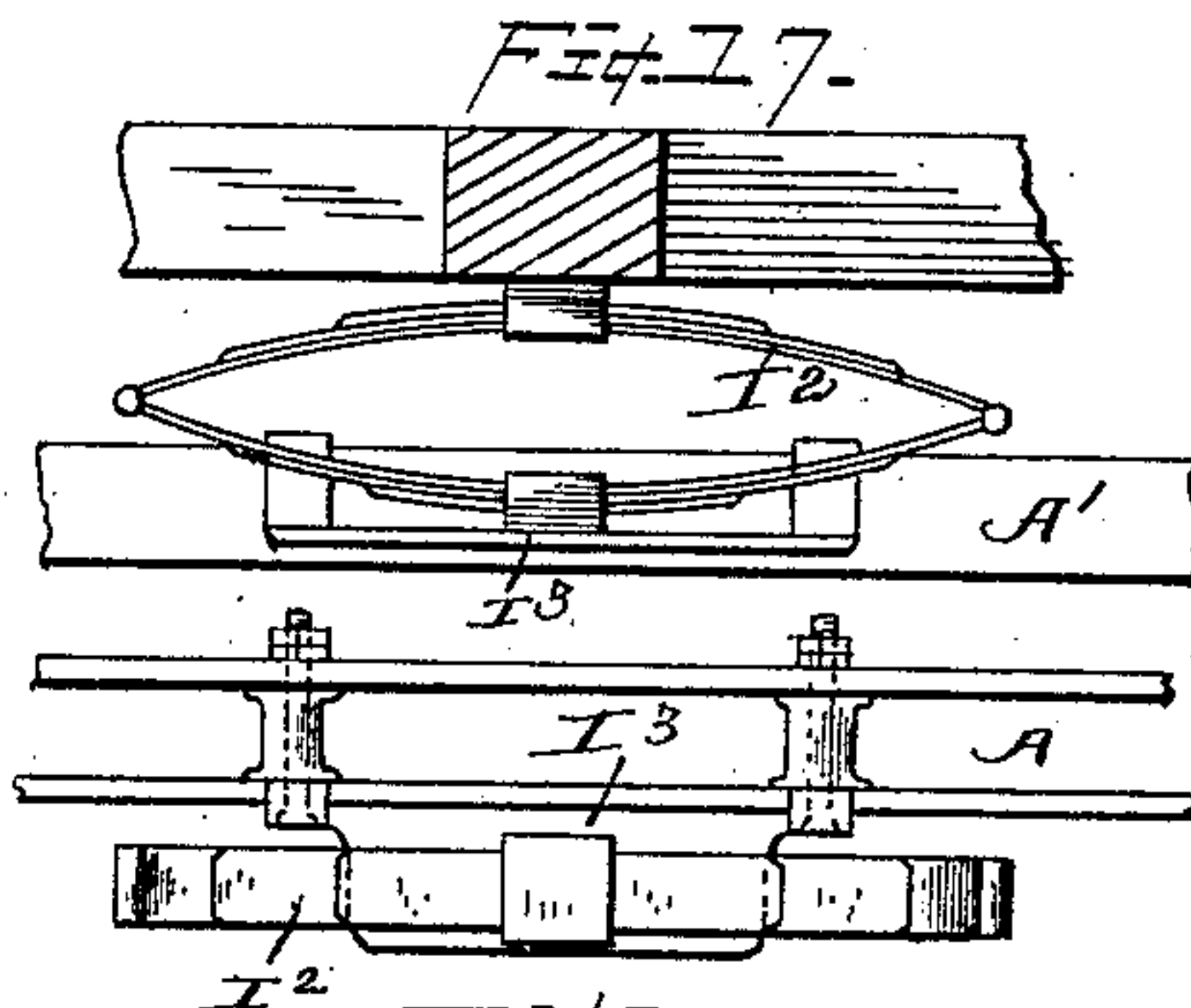


Fig 28.

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(No Model.)

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Fig. 8.

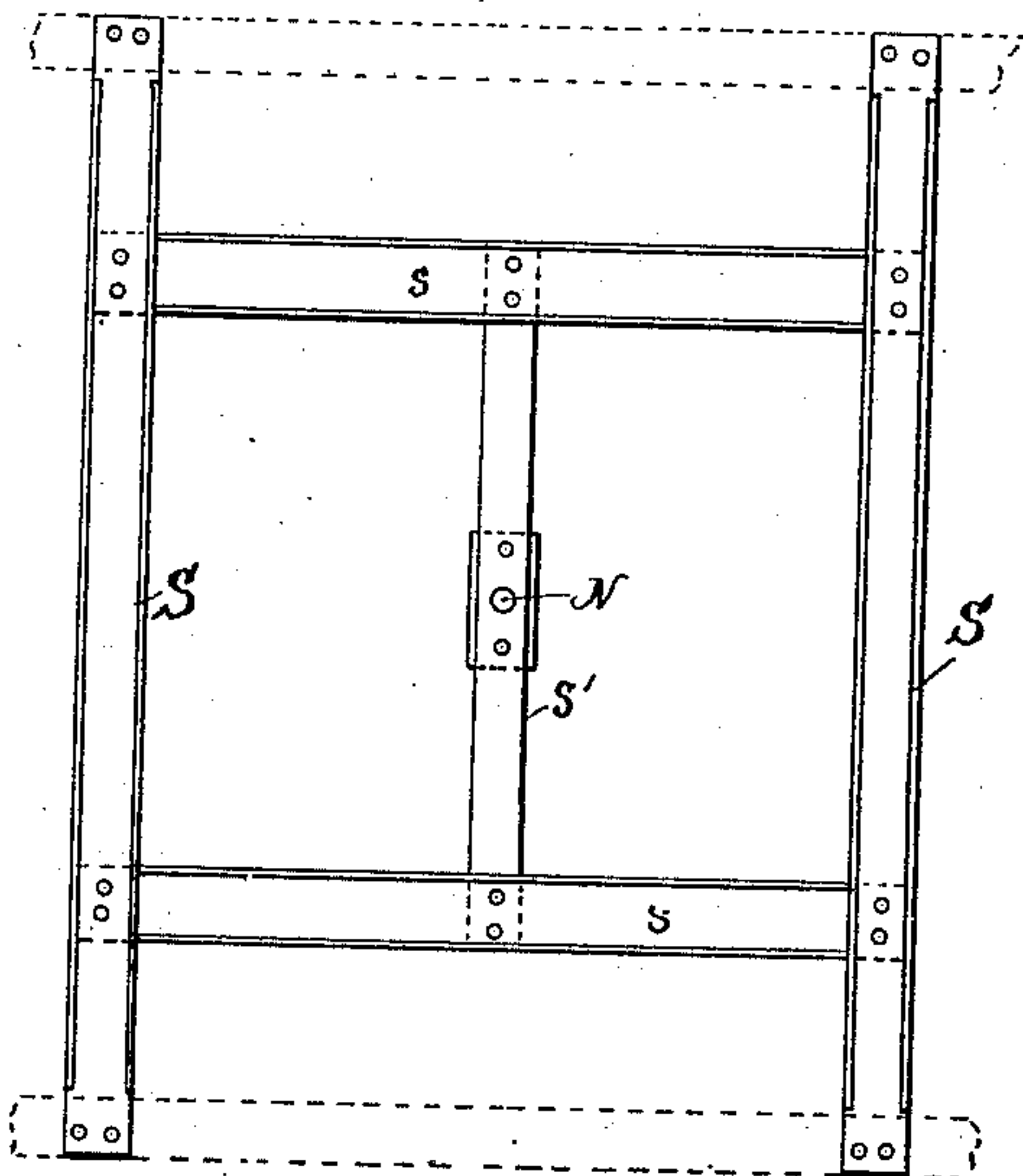


Fig. 9.

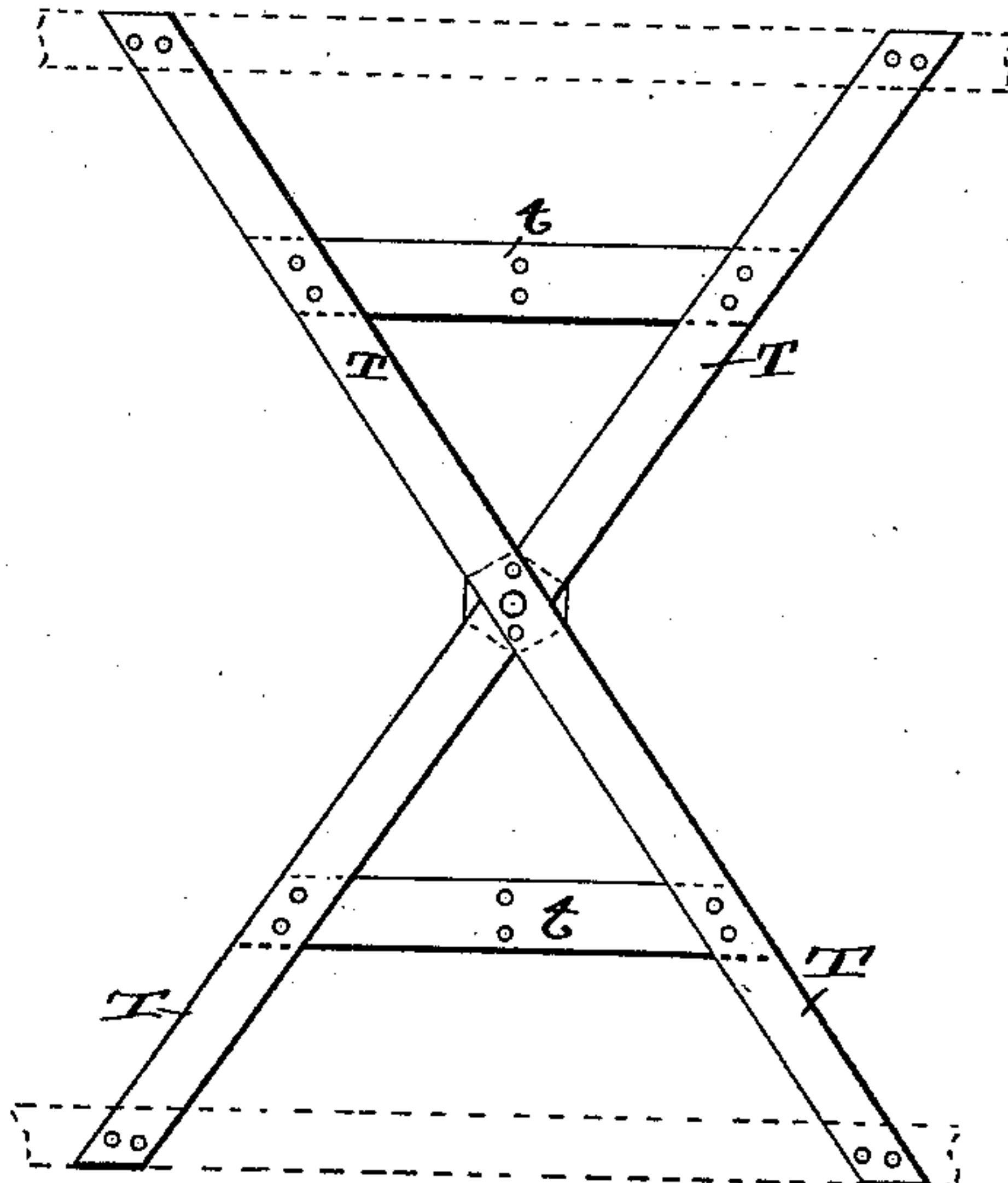


Fig. 11.

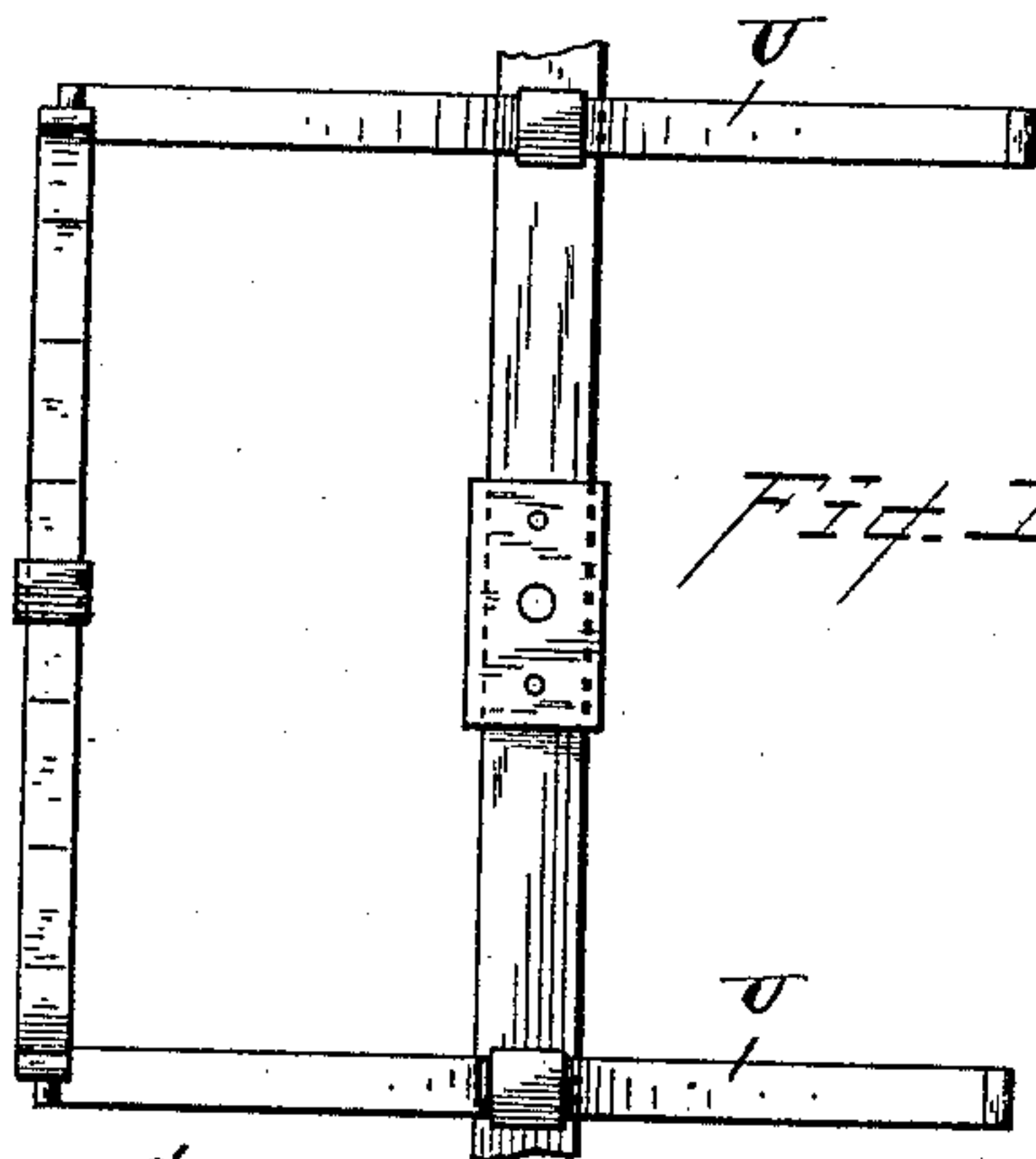


Fig. 12.

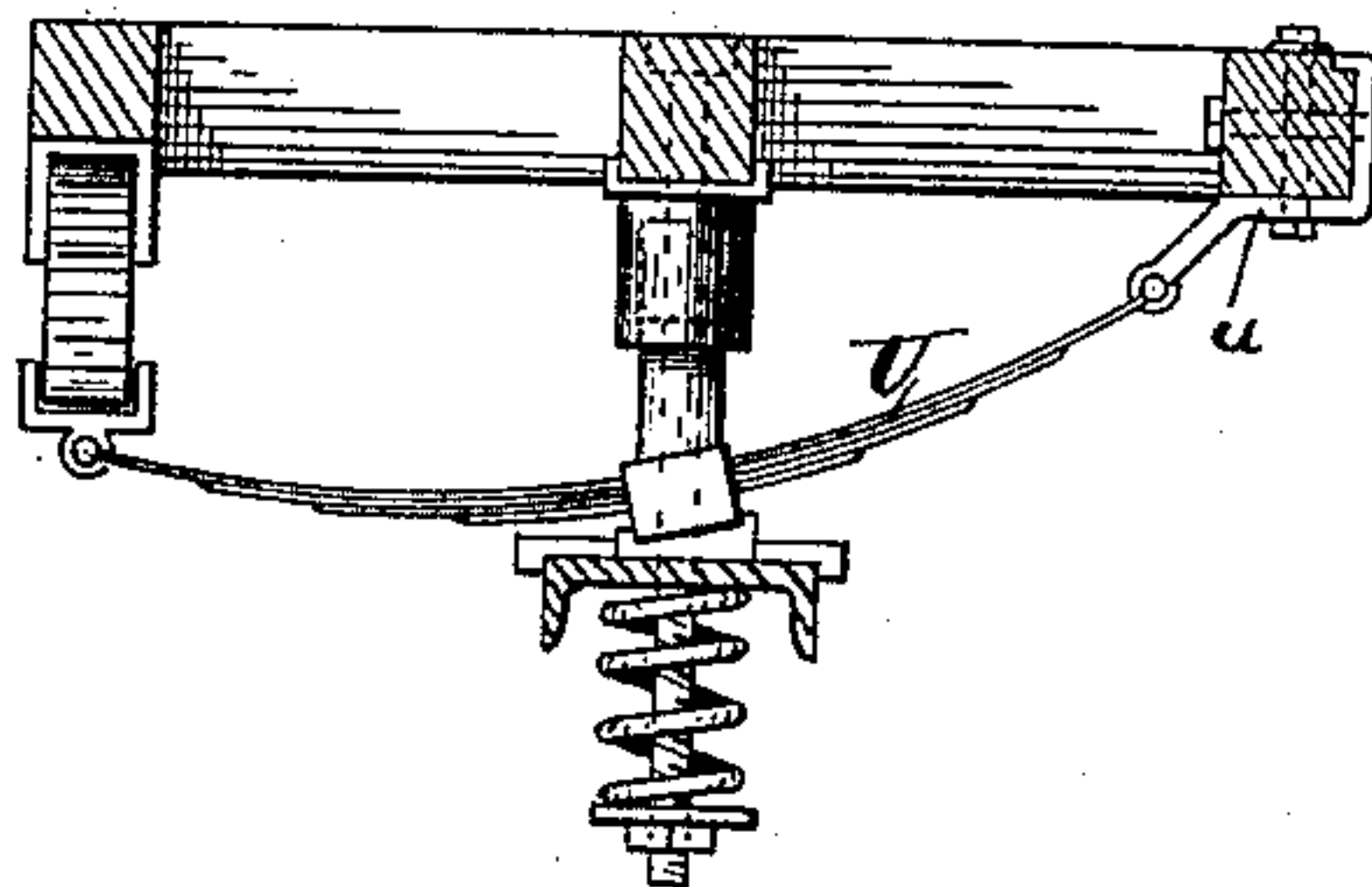
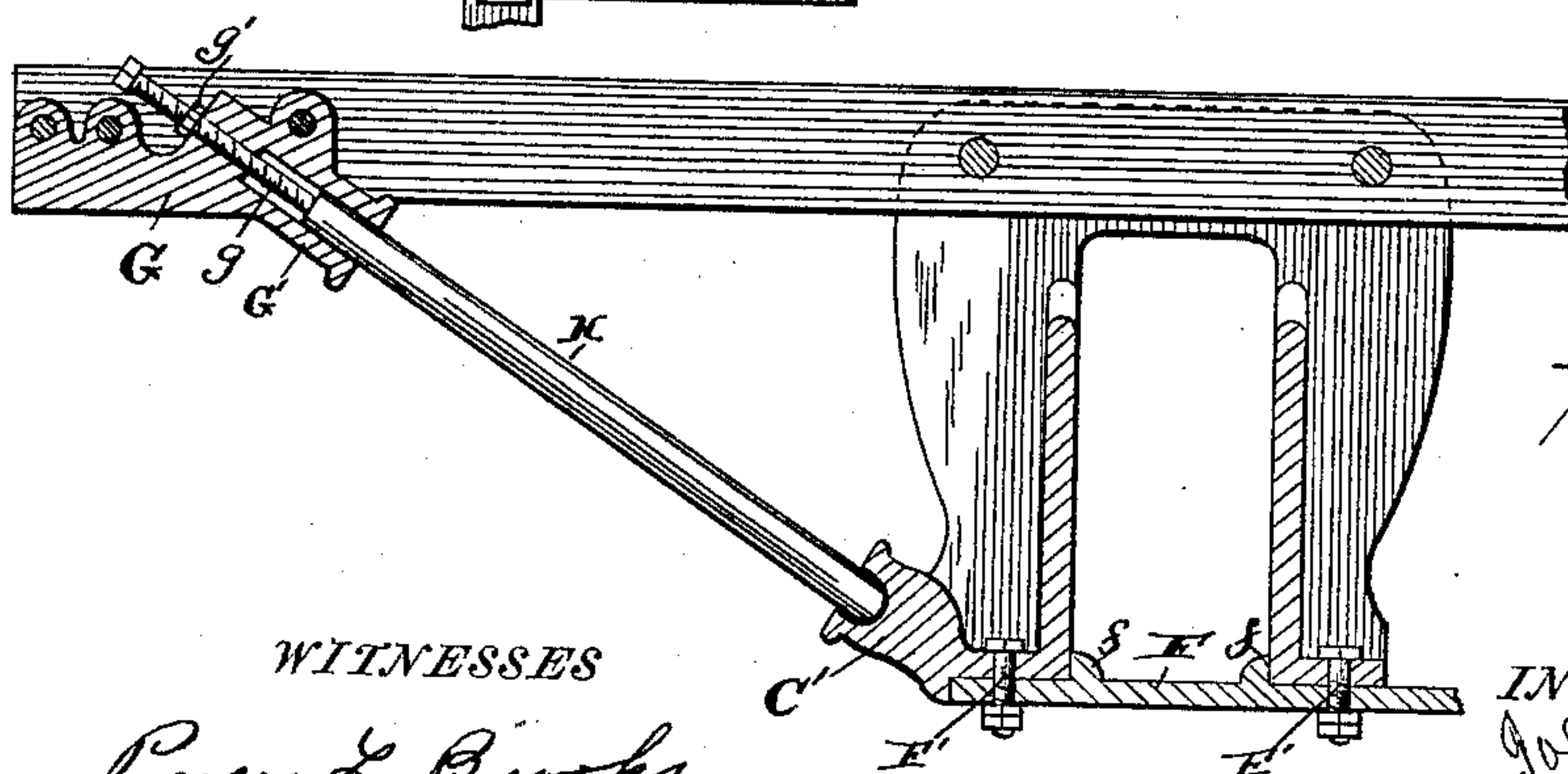


Fig. 10.



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# UNITED STATES PATENT OFFICE.

JOHN TAYLOR, OF TROY, NEW YORK.

## CAR-TRUCK.

SPECIFICATION forming part of Letters Patent No. 437,167, dated September 23, 1890.

Application filed June 25, 1890. Serial No. 356,712. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN TAYLOR, of Troy, in the county of Rensselaer and State of New York, have invented certain new and useful  
5 Improvements in Car-Trucks; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon,  
10 which form part of this specification, in which—

Figure 1 is a plan view of a portion of my improved car-truck. Fig. 2 is a side elevation of Fig. 1. Fig. 3 is an end view of the  
15 truck, showing the body-supporting springs arranged transversely. Fig. 4 is a detail view illustrating the springs arranged transversely of the truck. Fig. 5 is a detail end elevation showing a modified form of side bars. Fig.  
20 6 is a detail view illustrating a manner of attaching the frame-supporting springs to the frame. Fig. 7 is a detail sectional view showing a hanger for the truck-supporting springs. Figs. 8 and 9 are plan views of body-supporting  
25 spider-frames. Fig. 10 is an enlarged sectional view through the journal-box casting and brace. Figs. 11 and 12 are detail plan and sectional views showing one arrangement of body-supporting springs. Fig. 13 illustrates a combination of four body-supporting  
30 springs. Fig. 14 illustrates a single-bar side beam. Figs. 15 and 16 illustrate a modified arrangement of springs for supporting the center of body. Figs. 17 and 18 are illustrations of another arrangement of central body-sustaining springs. Fig. 19 is a sectional  
35 view through the body-fastening to the truck.

The present invention is an improvement in tram or street car trucks especially de-  
40 signed for electric-motor and grip car trucks, and its object is to make an easy-riding, durable, economical, strong, and light truck-frame, and to improve the spring-supports and fastening and sustaining devices for mounting  
45 the bodies on the truck; and to these ends the invention consists in the novel construction, combination, and arrangement of parts, as hereinafter clearly described and claimed.

Referring to the drawings by letters, A' A' designate flat metal bars arranged parallel  
50 and vertically edgewise and rigidly united by transverse bolts  $a$ , but separated by thin-

bles or sleeves  $a'$ , through which the bolts pass. These bars constitute a compound beam A, and there are two such beams, each  
55 constituting one side of the truck-frame, which is rectangular.

B B designate U channel-iron bars forming the end pieces of the truck-frame. These bars have their ends  $b$  upturned at right an-  
60 gles and the flanges sheared off the upturned portions, so that they can fit neatly against the inner face of the inner bar A' of the beams A, and ends  $b$  have their extremities lapped  
65 over the top edge of the inner bar A', as shown in Fig. 3, and are firmly bolted to the beams. The bars B thus lie below the beams A, as shown, for a purpose hereinafter referred to, but constitute with the beams a  
70 rigid frame.

C C designate journal-box castings of ordinary construction bolted to the side beams of the truck near the ends thereof, and  $c$   $c$  are the journal-boxes sliding in the castings, and  
75 to prevent rapid wear I prefer to chill the opposing faces of the castings C and boxes  $c$ .

Y Y designate the axles, and  $y$  the wheels, arranged as usual.

D D designate semi-elliptic springs resting upon boxes  $c$  and lying below beams A in in-  
80 verted position, while their ends rise between the members of the beams.

The ends of springs D D are formed with eyes  $d$ , which are connected to loops or swing-  
85 ing links, the lower ends of which may be strung on transverse bolts secured to beams A, but preferably are attached as follows: E E designate castings or hangers, suspended from beams A by bolts  $e$  at opposite sides of  
90 the journal-boxes and extending under the beam, and in the lower portion of each is an opening or slot, through which passes an eyebolt E', to the upper ends of which eyes  $d$  of  
95 springs D are connected, and the lower ends of bolts E' are screw-threaded, and on them are nuts E'. The hangers may be formed with a knife-edge bearing  $e'$  for the nuts to rest against and facilitate the rocking move-  
100 ment of the eyebolt as the springs D are tensioned or relaxed. If desired, coil-springs  $e^2$  may be placed on the bolts E' between the nut and hanger, as shown in Fig. 6.

The car-bodies vary in weight, and the clearance between the bottom of body and top of



truck is sometimes so reduced by the increased weight of body that there is not room enough for proper action of body-supporting springs. Consequently it is necessary to stiffen the  
 5 springs. With these devices all that is necessary to do is to screw up nuts  $E^2$  to stiffen springs D, or unscrew said nuts to relax said springs. The coiled springs on the bolts (shown in Fig. 3) will further cushion and re-  
 10 duce the shock from wheels.

The box-castings C at the same side of the truck are connected at bottom by a horizontal bar F, formed with shoulders  $f$  on it at points to engage between the limbs of the casting  
 15 below the journal-boxes and prevent longitudinal movement of the bar or separation of the limbs of the casting, and the bar is secured to the casting by bolts  $F'$ , passing through flanges on the castings, as shown.

20 G G are metallic castings, which are secured between the members  $A'$  of beams A at the ends thereof, or exterior to the castings C. Castings G have an inclined tubular portion  $G'$  on their inner ends adjoining box-castings  
 25 C, the bore of the tube inclining toward the adjoining box c and open at bottom but closed at top, and  $g$  are bolts tapped through threaded openings in castings G at the upper end of portion  $G'$ , and  $g'$  are jam-nuts on bolts  $g$ .

30 H H represent brace-rods the lower ends of which are fastened to the outer and lower edges of the respective box-castings C or rest in socket-pieces  $C'$ , secured to or formed on said box-castings. The braces H extend up-  
 35 wardly to beams A and their upper ends enter the bores of tubular portions  $G'$  of castings G and play therein. If desirable to brace the center of the beams, the braces H and castings G may be duplicated, as indicated in  
 40 Figs. 1 and 2, being arranged at each side of the box-castings. This is desirable when using the truck for electric motors, as the weight of the motor sometimes causes the central portion of the side beams to sag. In trucks  
 45 for light cars the inner braces H will not be essentially necessary. The upper end of each brace H may be cavited to receive the end of the bolt  $g$ , which engages therewith, and by tightening or loosening bolts  $g$  the rigidity of  
 50 the frame is controlled and the possible extent of compression of springs D regulated.

I I represent elliptical leaf-springs, which are preferably arranged in pairs and mounted on bars B B, either transversely thereto or  
 55 parallel therewith, as shown in Figs. 1 and 4. It will be observed that, owing to the particular manner of securing bars B to the side beams, the springs scarcely rise above the tops of the beams, so that the body W is not ele-  
 60 vated but slightly above the truck. In some cases it may be desirable to sustain the center of the body by springs, and this can be done as shown in Figs. 1 and 2, where I mount elliptical springs  $I^2$   $I^2$  on the central trans-  
 65 verse bar at the opposite sides of the truck and parallel with and just inside the side beams; or where the transverse bar is not

found the springs  $I^2$  may be mounted between the members of the side beams, as indicated in detail, Figs. 15 and 16, or may be suspended  
 70 from the side beams by strap-hangers  $I^3$ , as indicated in detail, Figs. 17 and 18. This construction enables a very long body and truck to be employed and sustains the body at center.  
 75

J designates a bar supported on springs I I transversely of the truck-frame, and K is a U-shaped channel-bar resting on bar J and bolted to the under side of the car-body.

L L represent hollow studs having their  
 80 lower ends flanged and secured centrally on end bars B. M is a similar inverted and larger sleeve secured to each bar J and telescoping on stud L. A bolt N is passed through open-  
 85 ings in bars J K, stud L, and sleeve M, and bar B, its upper end being headed, as shown, or else transversely slotted and pinned by a key, while its lower end is threaded and a spring O slipped thereon and confined by a  
 90 washer and nut. Bolts N (at each end of the truck) thus secure the body to the truck-frame, and springs O will prevent rocking of the body on the frame, as if either end of the body be depressed the spring maintains close joints  
 95 between the body and bars J K. These bolts constitute the fastening of the body to the truck-frame and enable the bodies to be mounted or dismounted rapidly, and as the fastening is in the center line of the truck and  
 100 car-body only bodies of different width can be mounted on the same truck interchangeably without inconvenience and quickly.

A truss-rod P may be employed to brace bar K and relieve it and bar N from strain, as shown in Fig. 3. A channel-bar Q is secured  
 105 transversely of the frame and centrally thereof to afford a support for the motors. Fenders R R are suspended from the ends of the frame to prevent accidents.

When long or open body cars are to be  
 110 mounted on the frame I propose to employ one of the spider-frames shown in Figs. 8 and 9. That shown in Fig. 8 is rectangular, having two pieces S S, secured transversely to the body and united by two side pieces  $s$ , in turn  
 115 joined by a short central piece  $s'$ , through which bolt N passes to secure the body to the truck-frame. In Fig. 9 two pieces T are arranged in X form and their extremities bolted to the sides of the body, and they are braced  
 120 by short pieces  $t$ , the bolt N passing through both pieces T at their point of intersection.

In Figs. 11 and 12 a modified arrangement of springs U U is shown. In this two semi-  
 125 elliptical springs are employed, which are mounted in inverted form on bars B transversely thereof, and one extremity of each spring is connected by a link  $u$  with a transverse beam in the bottom of the car-body. A third semi-elliptic spring is suspended cen-  
 130 trally from the body, and its ends are linked or shackled to the free ends of springs U U. This constitutes an easy-riding spring-support. In Fig. 13 two springs U U are em-



ployed, and two springs  $u'$ , instead of connecting one end of each spring U direct to the body.

In place of double-bar beams A one bar A<sup>2</sup> might be employed, set edgewise in the position of and taking the place of beams A. In this construction it would be advisable to employ two springs D D above each journal-box, as indicated in Fig. 14. It will be noticed that all the supporting-springs employed are elliptic or semi-elliptic, and hence are less liable to weaken than coil-springs, and yet are so arranged as to present a compact appearance. Springs D, being loosely shackled to the truck-frame, will greatly reduce shock caused by unevenness of the track before it is imparted to the frame, and the other springs yet further reduce the shock and vibration before it could be imparted to the body. The semi-elliptic springs are not as easily affected by lateral and longitudinal movements of the truck as coiled springs, and there is consequently less vibration of the body while in motion. The weight of the body is transferred to the truck at four different points, and the truck-frame is suspended by eight points of attachment on the journal-boxes. The body-supporting springs are arranged exterior to the axles, it will be noticed.

In Fig. 5 the side frames are shown bent down at the inner side of and between the axle-boxes. This is to accommodate the "short motors" now coming into use, which require the center of the truck-frame to be as open as possible. The stay-bars F pass between the members of the beams at the depressed portion thereof, as indicated by dotted lines.

Having thus described my invention, what I claim is—

1. The combination, in a street-car truck, of the socket and journal-box castings with the brace-rods and adjusting-screws, substantially as set forth.
2. The combination, in a street-car truck, of the journal-box casting, the shouldered brace-stay and the brace-rods, socket-castings, and adjustable screws, all substantially as specified.
3. A truck-frame consisting of opposite side beams, the end bars B B, having upturned ex-

tremities  $b b$  fastened to the beams, the journal-box castings attached to said side beams, the bars F F, connecting the said castings at the same side of the frame, and braces H, substantially as specified.

4. The combination, in a street-car truck, of the side beams, the end bars B, and the elliptical springs mounted on said bars between the side beams and exterior to the axles with the body-supporting springs mounted on the frame between the axles, substantially as specified.

5. The combination, with the side beams and the journal-box castings C C, of the castings G, attached to the beams and having tubular portions G' and bolts  $g$  tapped into the said portions, and the brace-rods H, substantially as described.

6. The combination of the truck-frame and the car-body with the telescoping stud L and sleeve M and the spring-controlled bolt N, passing through the stud and sleeve and uniting the body to the truck-frame, all constructed substantially as and for the purpose set forth.

7. The combination of the truck-frame composed of side beams A A, end bars B B the castings C C, bars F F, and braces H H with the springs for sustaining or suspending the frame on the axle journal-boxes, the springs for sustaining the body on the frame, and the spring-controlled bolts N for securing the body to the frame, all substantially as specified.

8. The combination of the truck-frame consisting of the side beams A, end bars B, castings C, the springs sustaining the frame on the journal-boxes, and the body-sustaining springs with the body, the spring-controlled bolt, and the spider-frames for supporting and securing the body to the truck-frame, all constructed to operate substantially as and for the purpose specified.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

JOHN TAYLOR.

Witnesses:

WM. H. JARVIS,  
JAS. B. DE LAND.