

No. 661,453.

Patented Nov. 6, 1900.

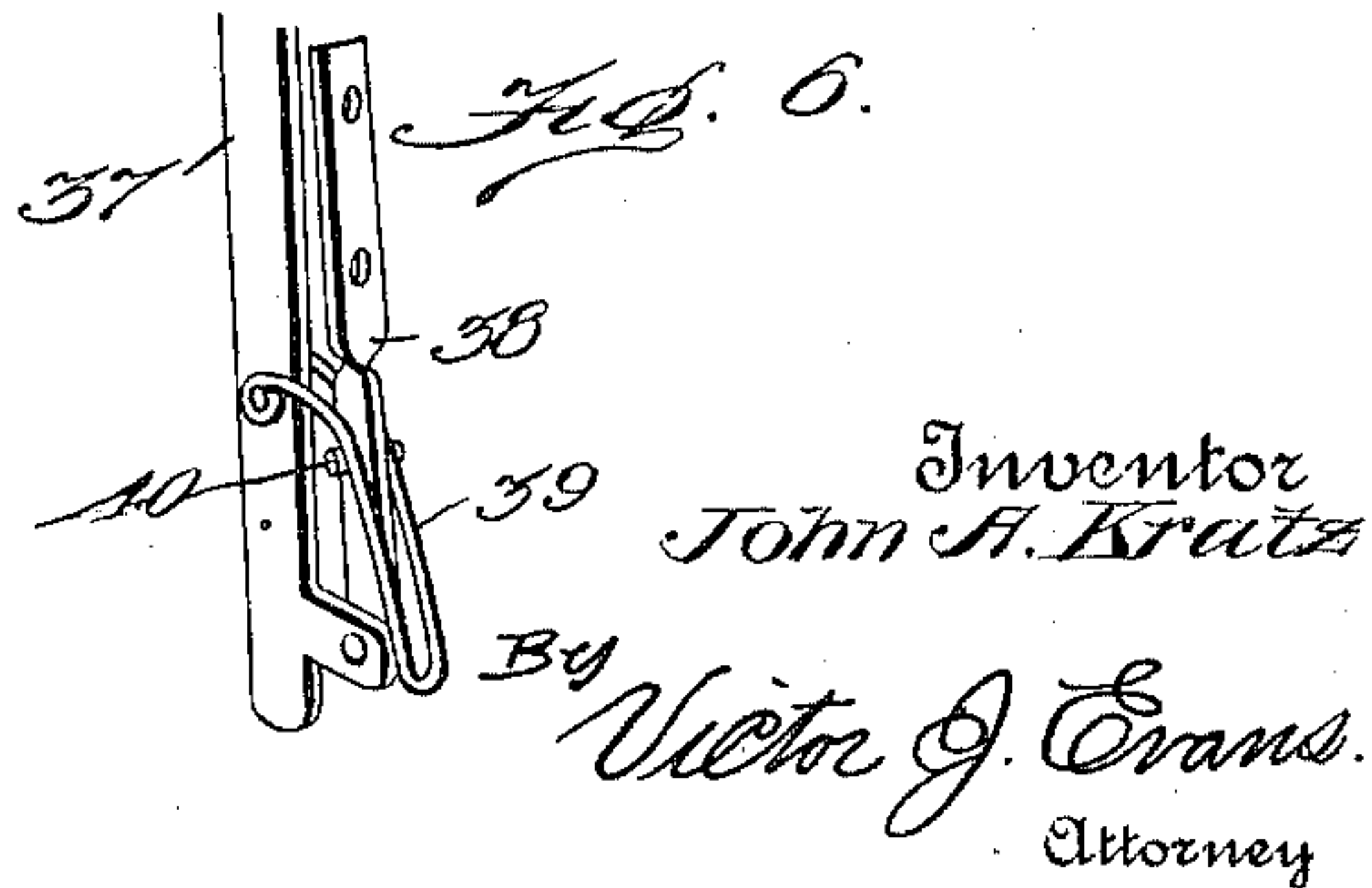
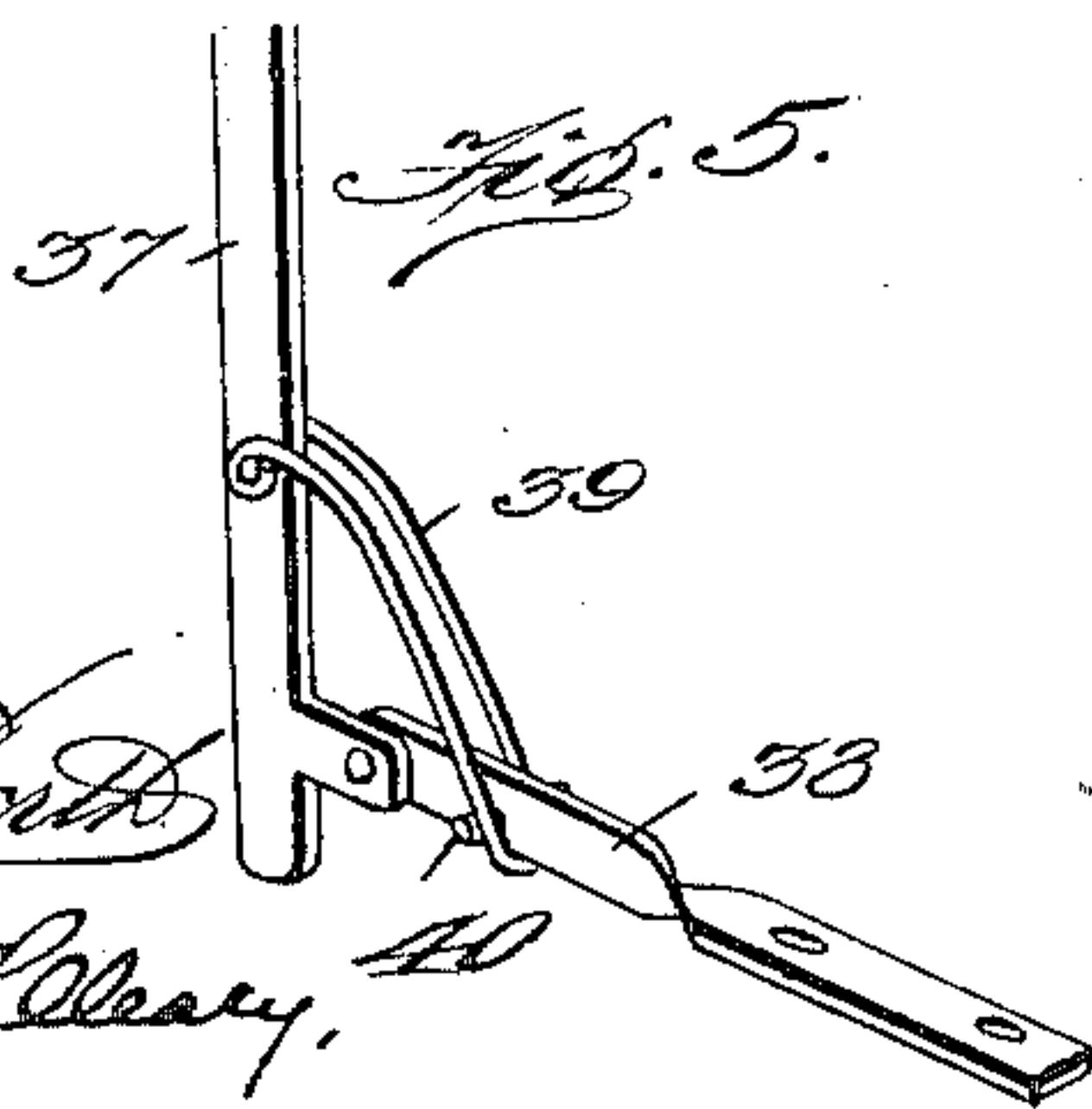
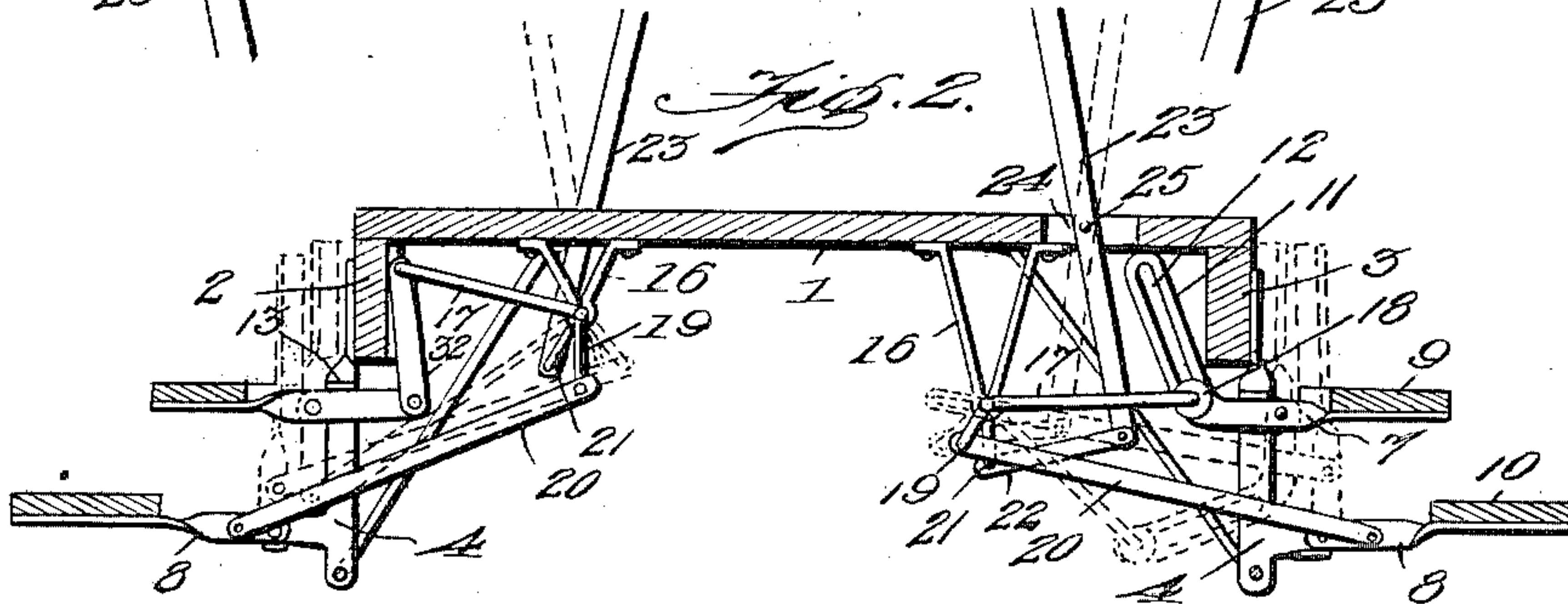
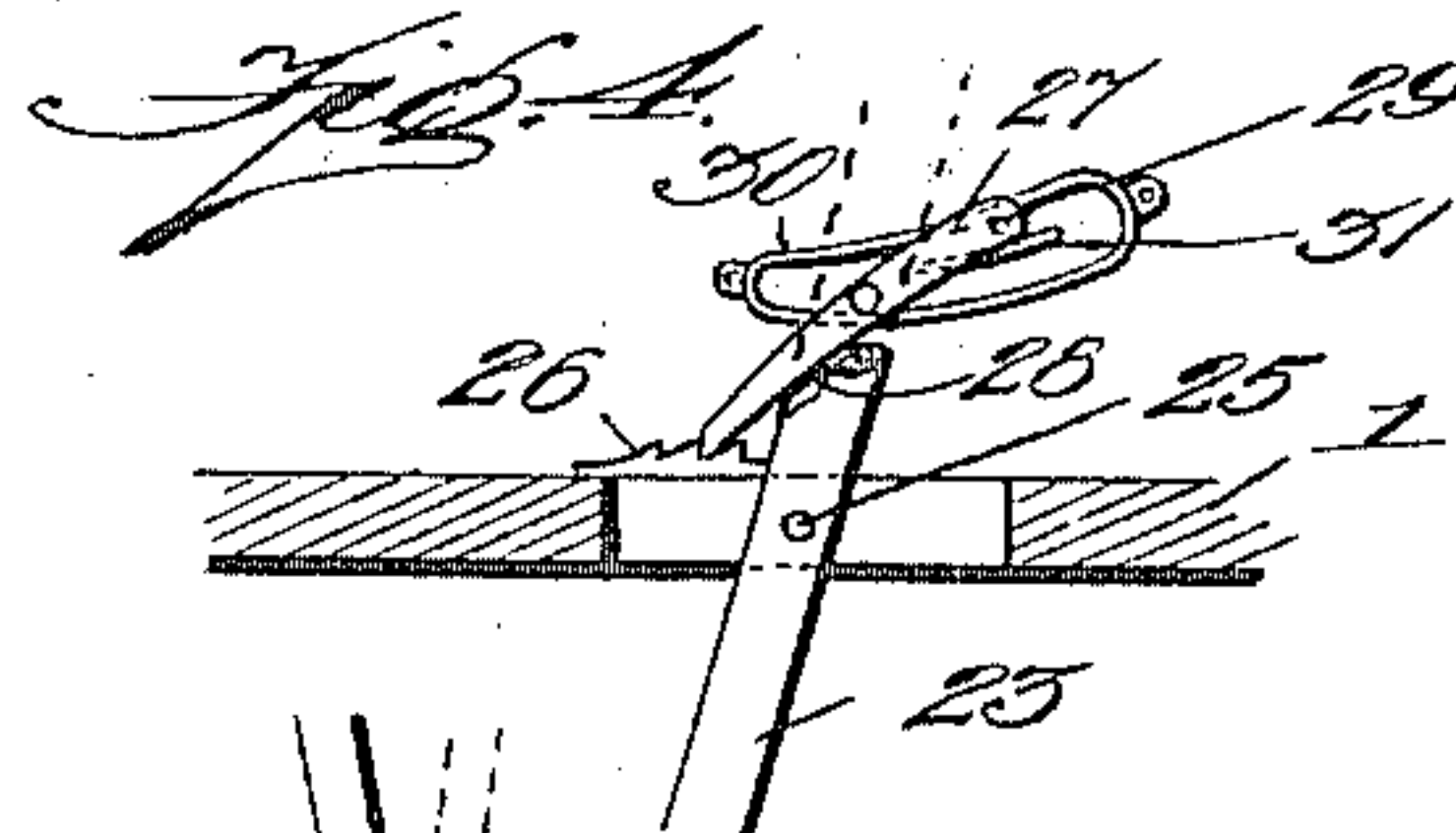
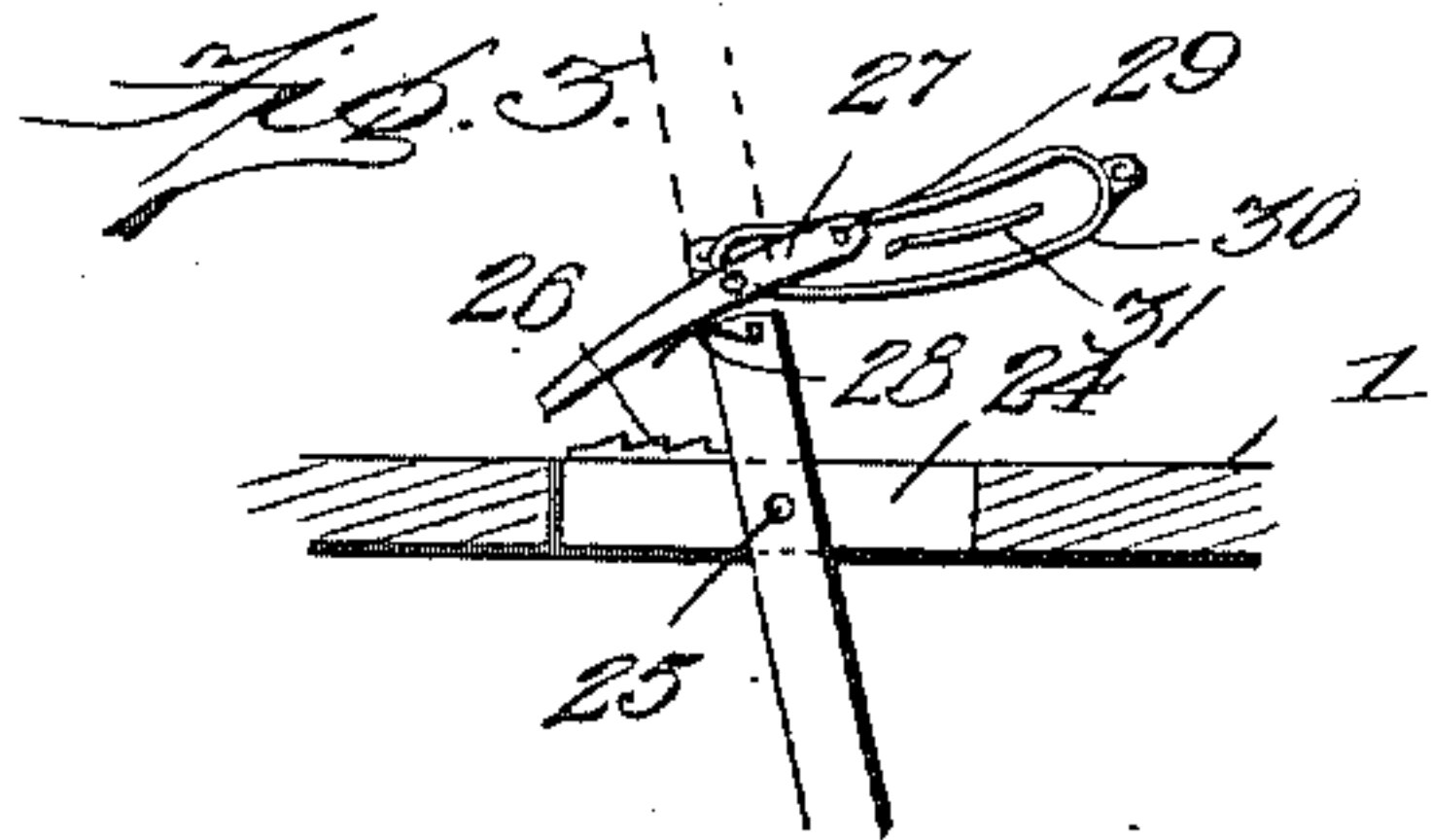
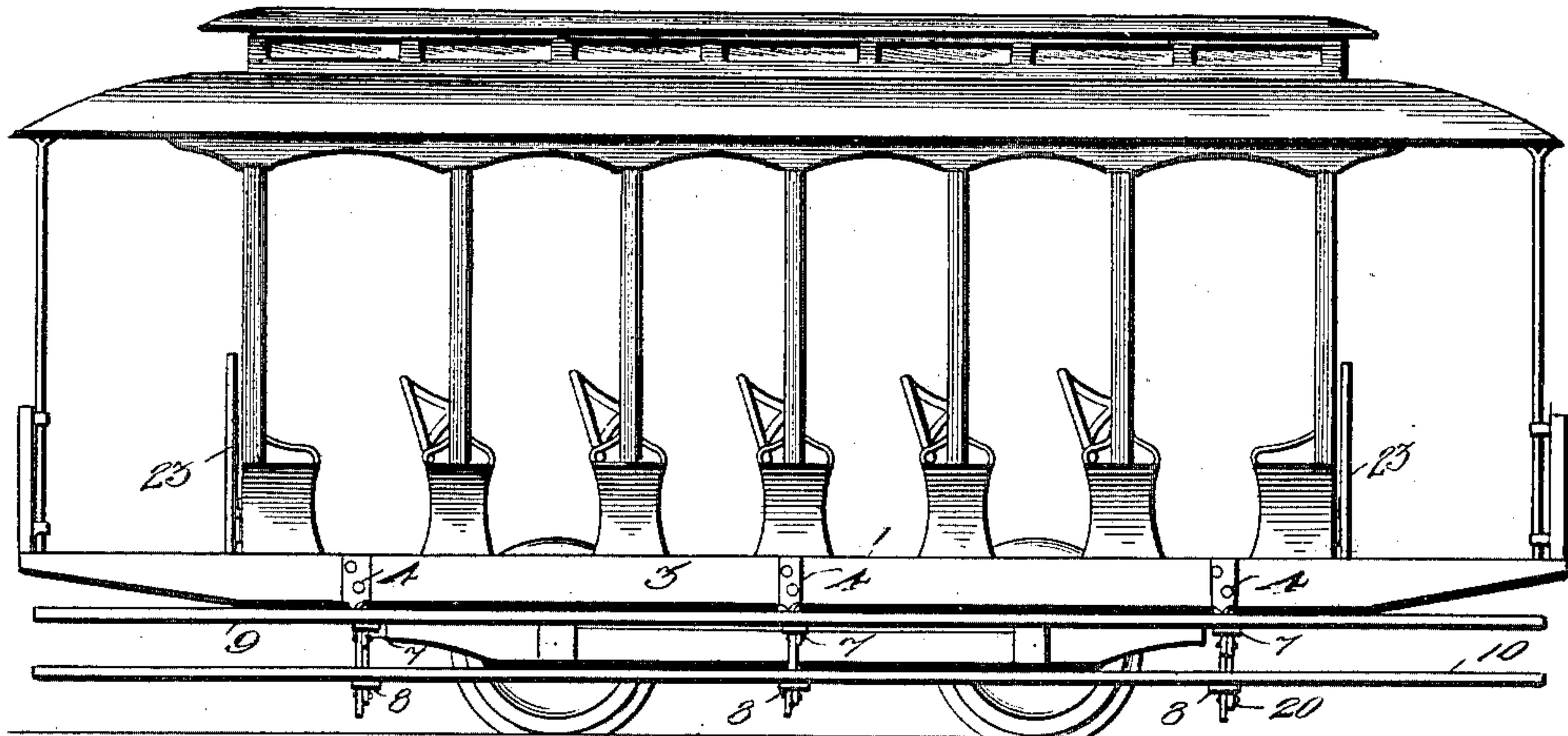
J. A. KRATZ.
RAILWAY CAR STEP.

(Application filed Apr. 21, 1900.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1



Witnesses
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3 Sheets—Sheet 2.

Fig. 7.

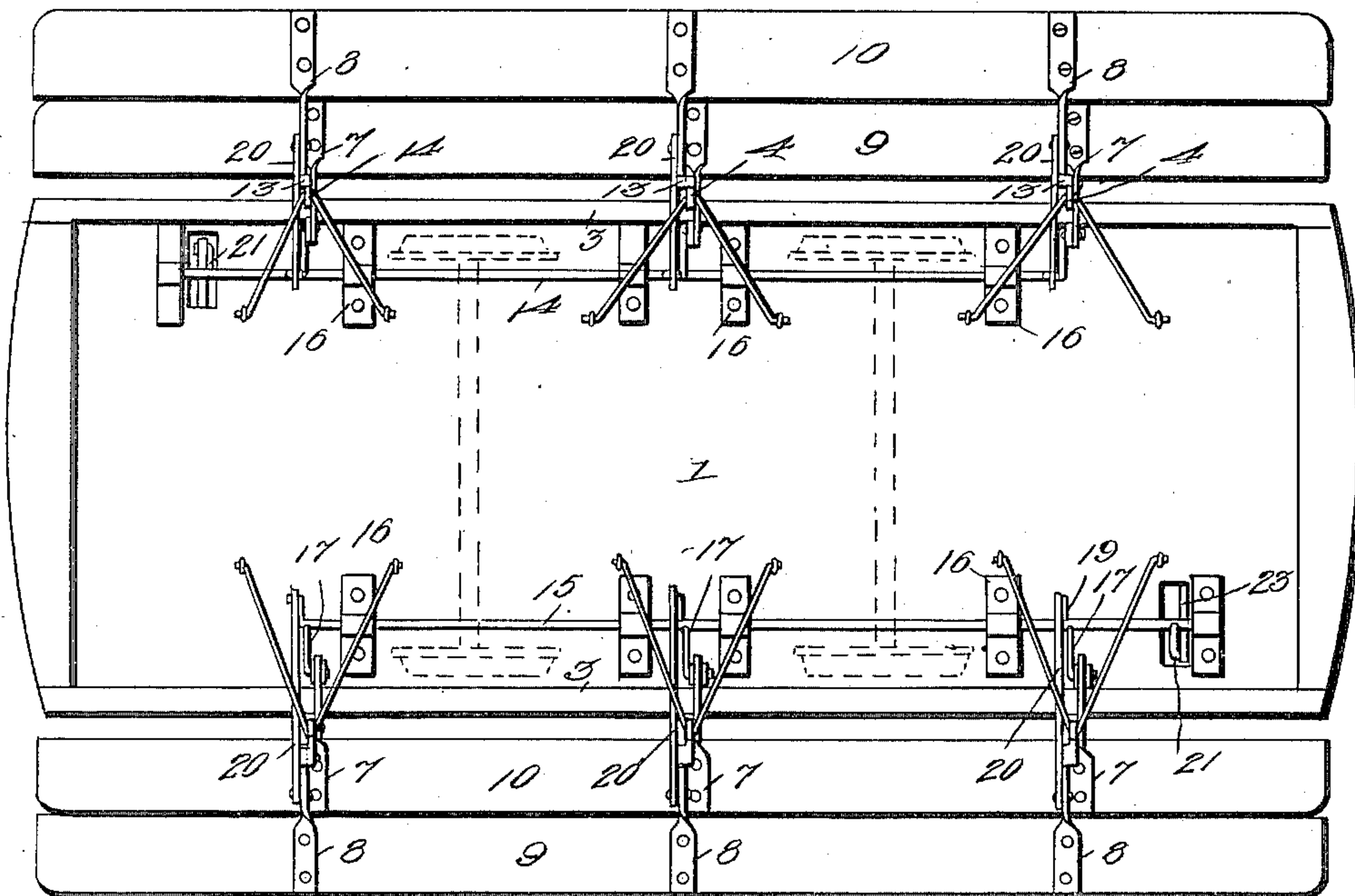


Fig. 8.

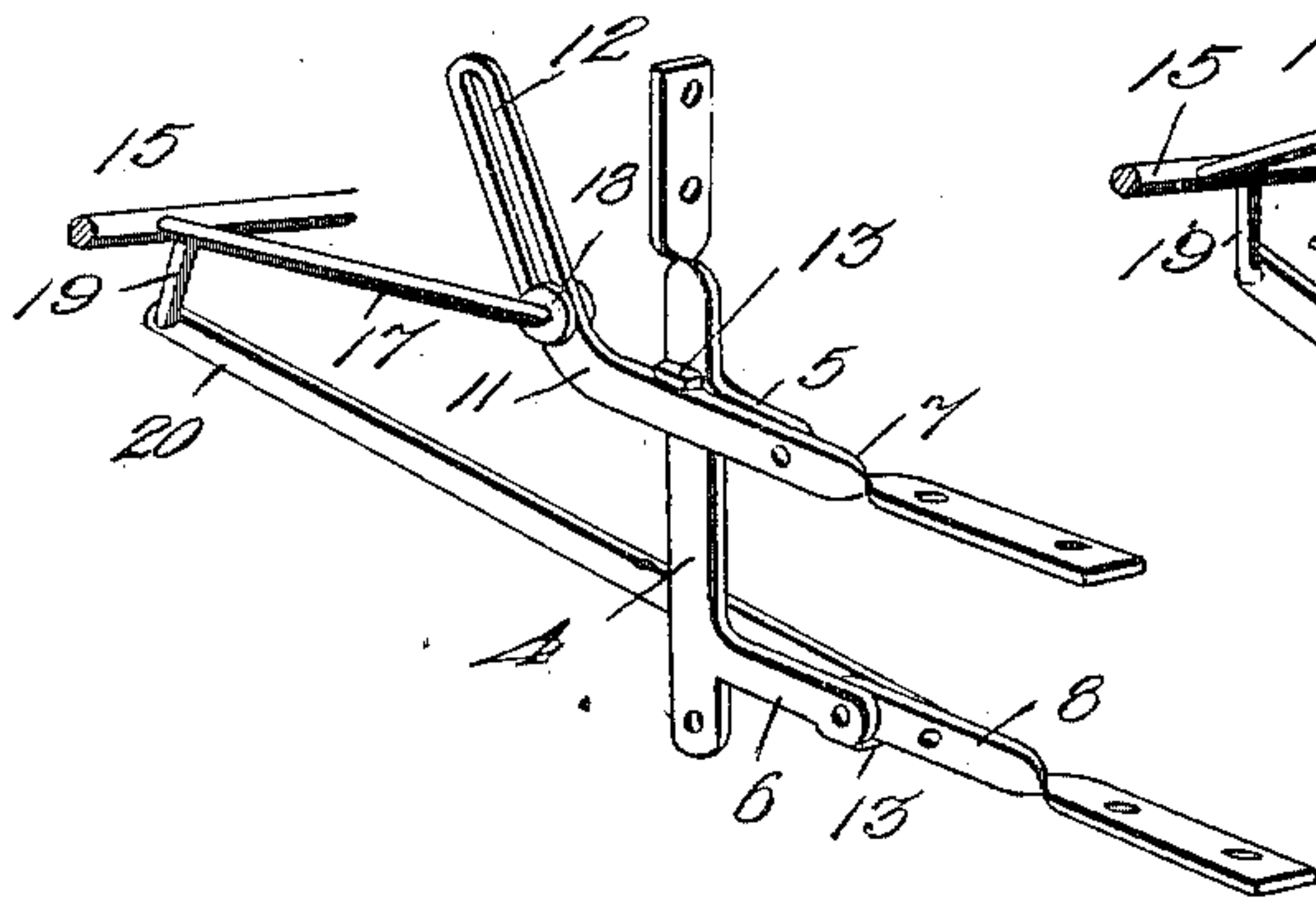
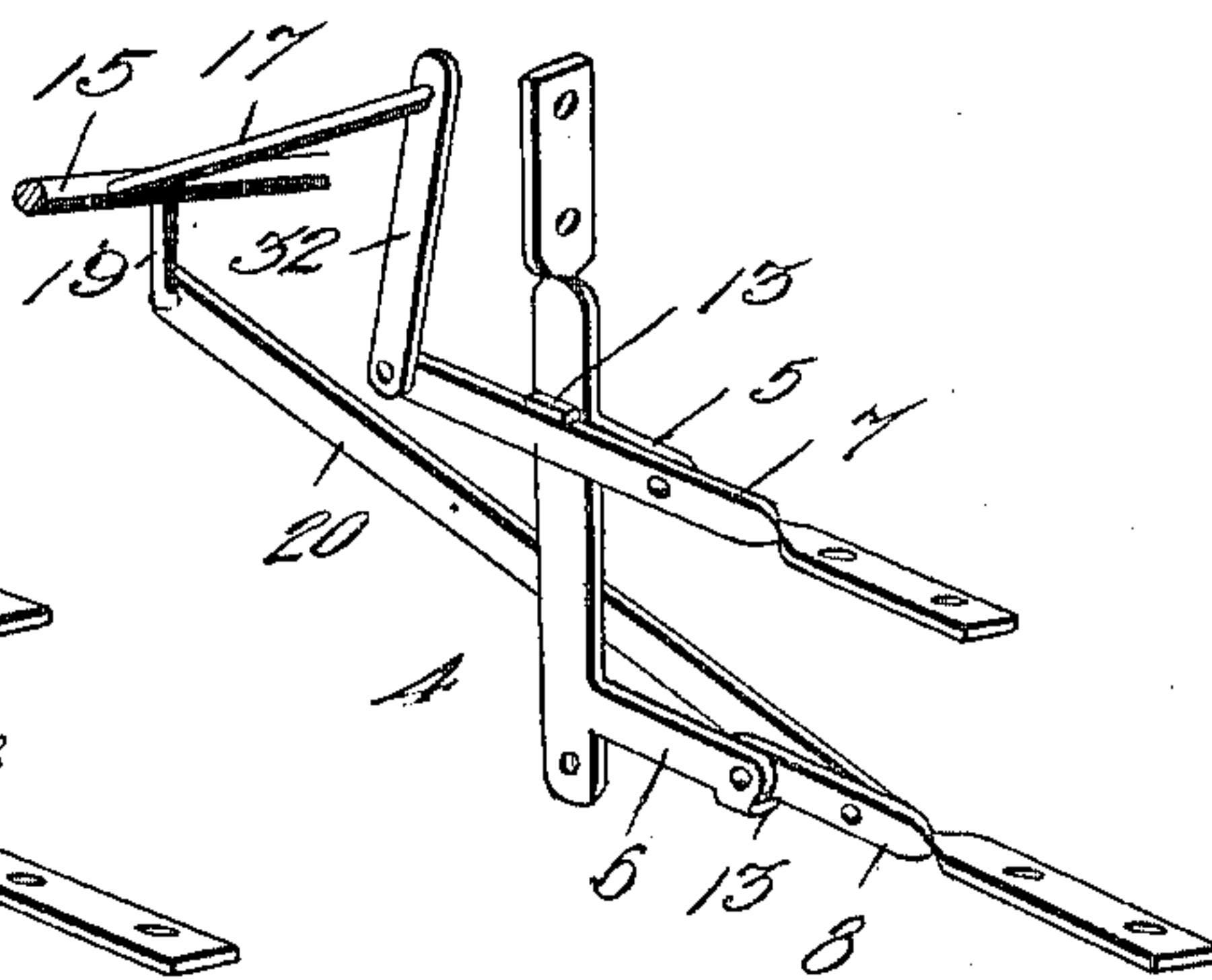


Fig. 9.



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3 Sheets—Sheet 3.

Fig. 10.

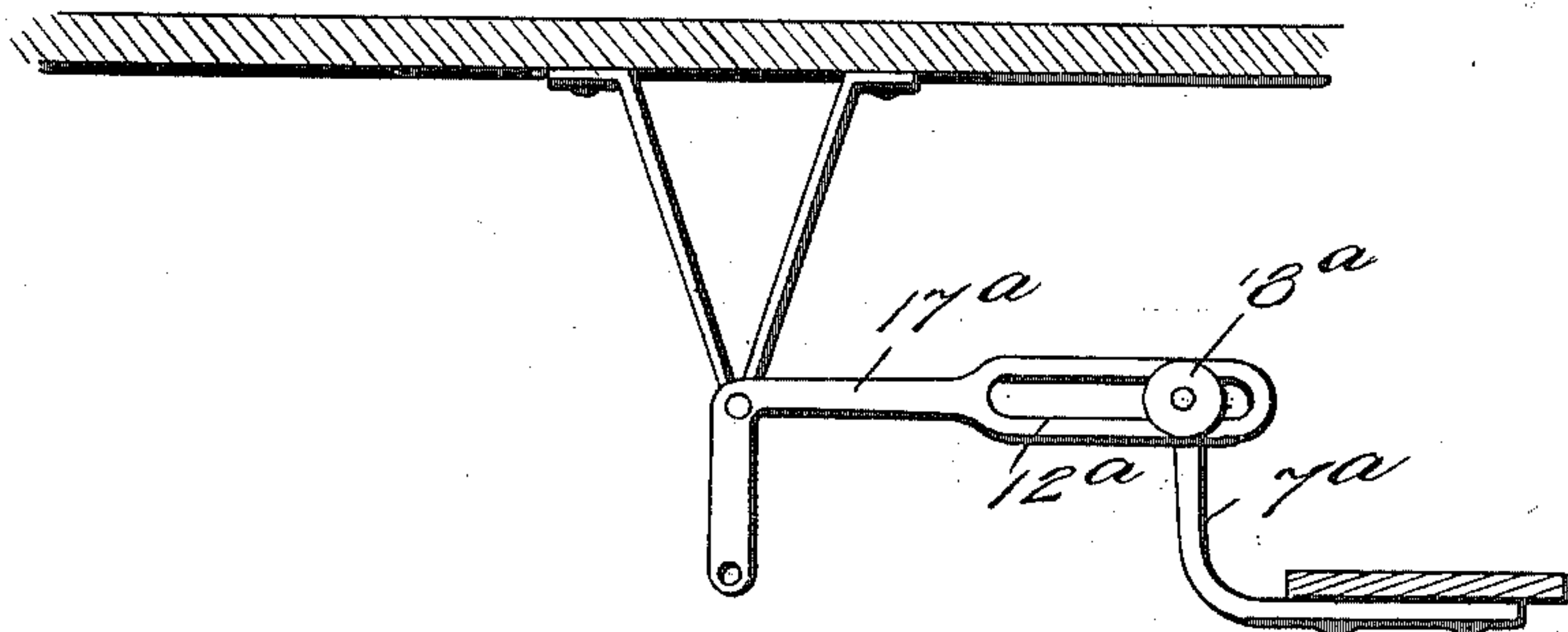


Fig. 11.

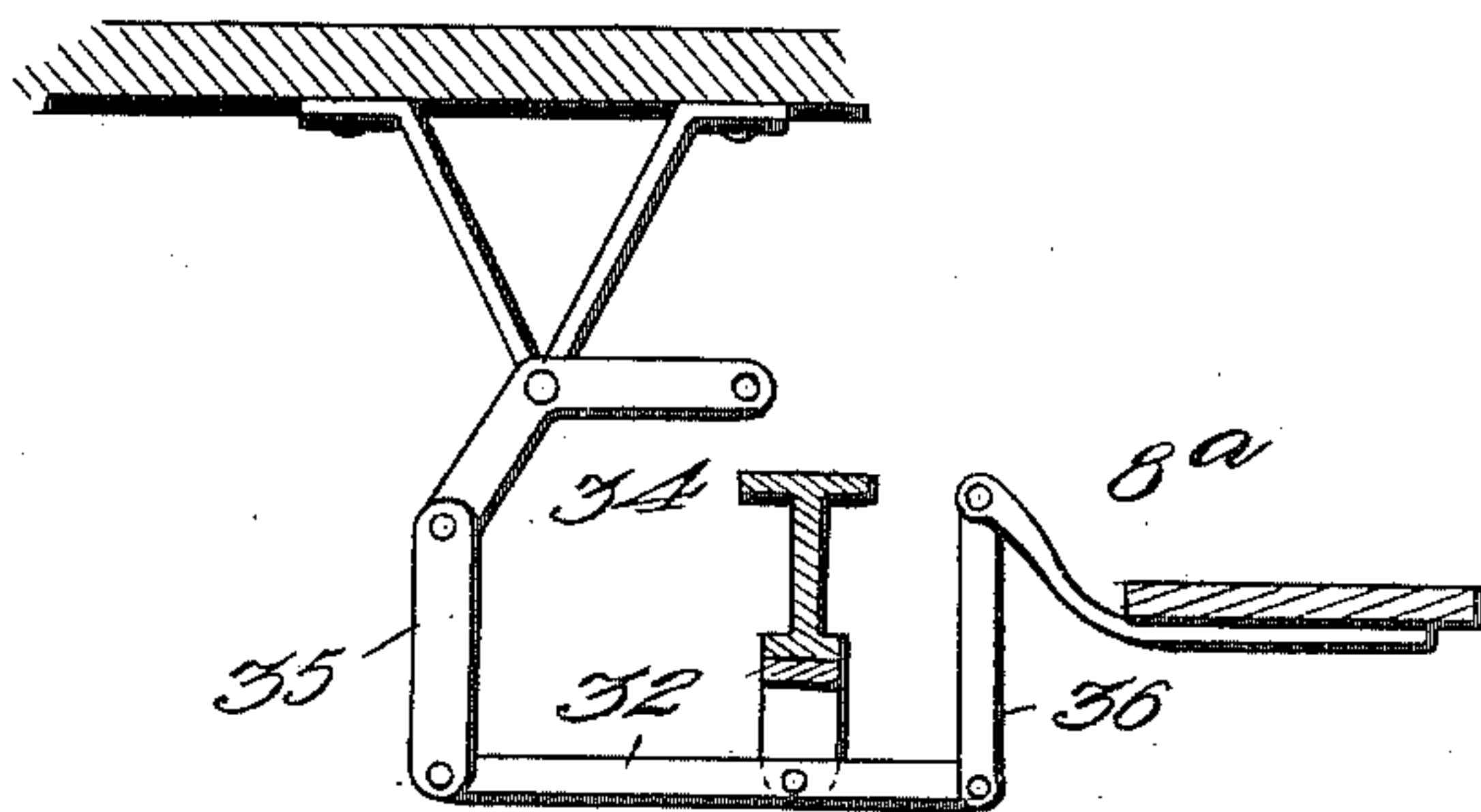
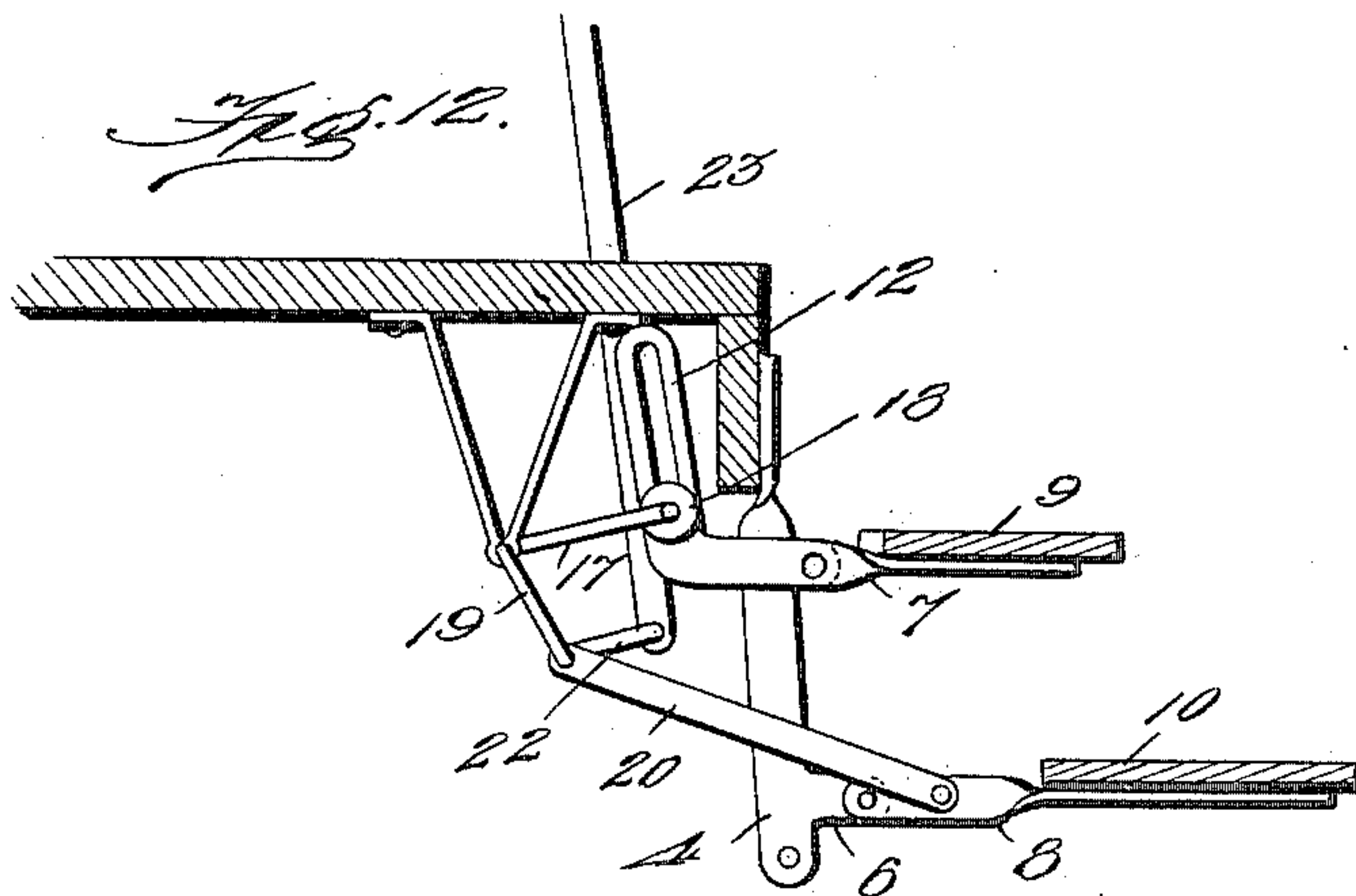


Fig. 12.



Witnesses

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UNITED STATES PATENT OFFICE.

JOHN A. KRATZ, OF BALTIMORE, MARYLAND, ASSIGNOR OF ONE-FOURTH
TO ROBERT ROSENBUSH, OF SAME PLACE.

RAILWAY-CAR STEP.

SPECIFICATION forming part of Letters Patent No. 661,453, dated November 6, 1900.

Application filed April 21, 1900. Serial No. 13,778. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. KRATZ, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Railway-Car Steps, of which the following is a specification.

My invention relates to railway-car steps, and more particularly to mechanism for raising and lowering the steps or running-boards of cars.

The invention consists of the improved mechanism hereinafter described, which is adapted for use upon either street-cars or steam-railway cars and with car-trucks of any of the constructions now in general use.

The novel features of the invention will be fully described and defined in the appended claims, in connection with the accompanying drawings, which form a part of this specification.

In the drawings, Figure 1 is a side elevation of a street-car equipped with my invention. Fig. 2 is a transverse section of a car floor and steps with my improvements applied thereto. Figs. 3 and 4 are sectional views of a car-platform, showing in elevation the means for securing the levers which raise and lower the steps or running-boards. Figs. 5 and 6 are perspective views of supplemental supports for the car-steps. Fig. 7 is a bottom plan of a street-car provided with the invention. Fig. 8 is a perspective view of the step-folding devices detached from the car. Fig. 9 is a perspective view of a modified construction of the folding devices, and Figs. 10, 11, and 12 are sectional views illustrating different embodiments of the invention as applied to various constructions of car-trucks in common use.

Referring now to Figs. 1 to 9, inclusive, the reference-numeral 1 designates a car-floor having the depending side bars 2 and 3, to which are secured brackets 4, having horizontally-extending arms 5 and 6, to which are respectively pivoted metallic straps 7 and 8, to which the upper and lower running-boards 9 and 10 are secured. The strap 7 is provided with an angular extension 11, formed with an elongated slot 12, and said strap is adapted to contact with a stop 13, projecting from the bracket 4.

14 and 15 designate shafts extending longitudinally of the car and supported in bracket-bearings 16. Each of these shafts is provided with arms 17, the outer ends of which are bent at right angles to form axes for flanged antifriction-rollers 18, which fit within the slots 12 of the angle extensions 11 of the straps 7. The shafts 14 and 15 are also provided with projecting arms 19, to which are pivotally secured the inner ends of the links 20, the outer ends of which are pivotally secured to the brackets 8, supporting lower runners 10. The shafts 14 and 15 are further provided with arms 21, connected by links 22 to the lower ends of levers 23, extending through openings 24 in the car-platform and fulcrumed on pins 25.

The devices for securing and releasing the levers constitute an important feature of the invention and will now be described. Adjacent to each opening 24 a ratchet-plate 26 is secured to the car-platform, and to each of the levers 23 is pivotally secured a pawl or dog 27, controlled by a spring 28. The pawls 27 are each provided with a laterally-projecting pin 29, said pins extending into a guide-loop 30, secured to the end wall of the car. Within the guide-loop 30 is a longitudinal projecting rib or plate 31, around which the pin 29 is adapted to pass. When the lever is turned to raise the steps, the pin 29 is above the rib 31 and the pawl 27 engages the ratchet-plate 26. A further movement of the lever causes the pin 29 to pass under the rib and to the position shown in Fig. 3, the spring 28 forcing the pawl away from the ratchet, permitting the steps to be lowered.

In Fig. 9 I have shown a modification in which a pivoted link 32 is employed as the connection between the strap 7 and arm 17. It will be obvious that when only a single step or running-board is used instead of two the connection for raising and lowering the lower step or board is omitted.

Inasmuch as the shafts 14 and 15 extend under the car from one end to the other, it is necessary to modify the construction of the step-lifting mechanism located intermediate of the car-platforms to accommodate them to car-trucks of different construction. The construction shown in Fig. 10 is adapted for trucks of the Brill or Bemis type, and it dif-

fers from the form shown in Fig. 2 in that the slot 12^a is formed in the arm 17^a and the roller 18^a is carried by the strap 7^a.

The construction shown in Fig. 11 is adapted for use upon trucks of the Lord Baltimore or Peckham types and employs a lever 32, fulcrumed upon a portion of the truck and connected with the angle-lever 34 and strap 8^a by links 35 and 36.

Another construction is shown in Fig. 12, designed for use with the Laclede or Bemis trucks, the location of the mechanism being such that it may be operated without contact with the truck.

In addition to the straps 7 and 8 and their supports supplemental supports, such as those shown in Figs. 5 and 6, may be employed at intervals, comprising a bracket 37, a strap 38 pivoted thereto, and a pivoted bail 39, the free end of said bail passing under the strap and resting against the projecting ends of a cross-pin 40, extending through the strap when the step is unfolded and adapted to fall by gravity to the position shown in Fig. 6 when the step is raised.

I claim—

1. The combination with a car; of a rock-shaft supported in bearings below the car-body; a running-board pivotally supported at the side of the car and arranged parallel to said rock-shaft; arms projecting from said rock-shaft; means for connecting said running-board with the rock-shaft at two or more points, comprising a plurality of pivotally-secured straps each formed with an elongated slot; and rollers carried by said arms and moving within the slots of the straps.

2. The combination with a car; of a longitudinally-disposed rock-shaft supported in bearings below the car-body; arms projecting from said shaft; a roller carried by one

of said arms; a plurality of pivoted straps; an upper and a lower step or running-board secured to said straps; a slotted angle extension on one of said straps cooperating with said roller; a link connecting another of said arms with the straps of the lower step; and a lever for rocking said shaft.

3. The combination with a car; of a longitudinally-disposed rock-shaft supported in bearings below the car-body; an arm projecting from said shaft; a pivotally-secured strap connected to said arm; a lever for rocking said shaft; means for securing said lever; and a supplemental support for the steps comprising a pivoted bracket having lateral projections; and a loosely-pivoted bail adapted to engage said projections.

4. The combination with a car; of a pivotally-supported step or running-board; a lever for raising and lowering said step or running-board; connections between said lever and step; and means for securing said lever, comprising a ratchet-plate fixed upon the car-platform; a pawl pivoted upon said lever; a lateral projection from said lever; and a guide-loop having a projecting rib or plate.

5. The combination with a car; of a pivotally-secured step or running-board; means for raising and lowering said step, and a supplemental support for the step comprising a bracket fixed upon the car; a strap pivotally secured thereto; a cross-pin extending through said strap and a pivoted bail adapted to engage the ends of said cross-pin.

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

JOHN A. KRATZ.

Witnesses:

ROBT. ROSENBUSH,
JAS. S. STONE.