

No. 744,109.

PATENTED NOV. 17, 1903.

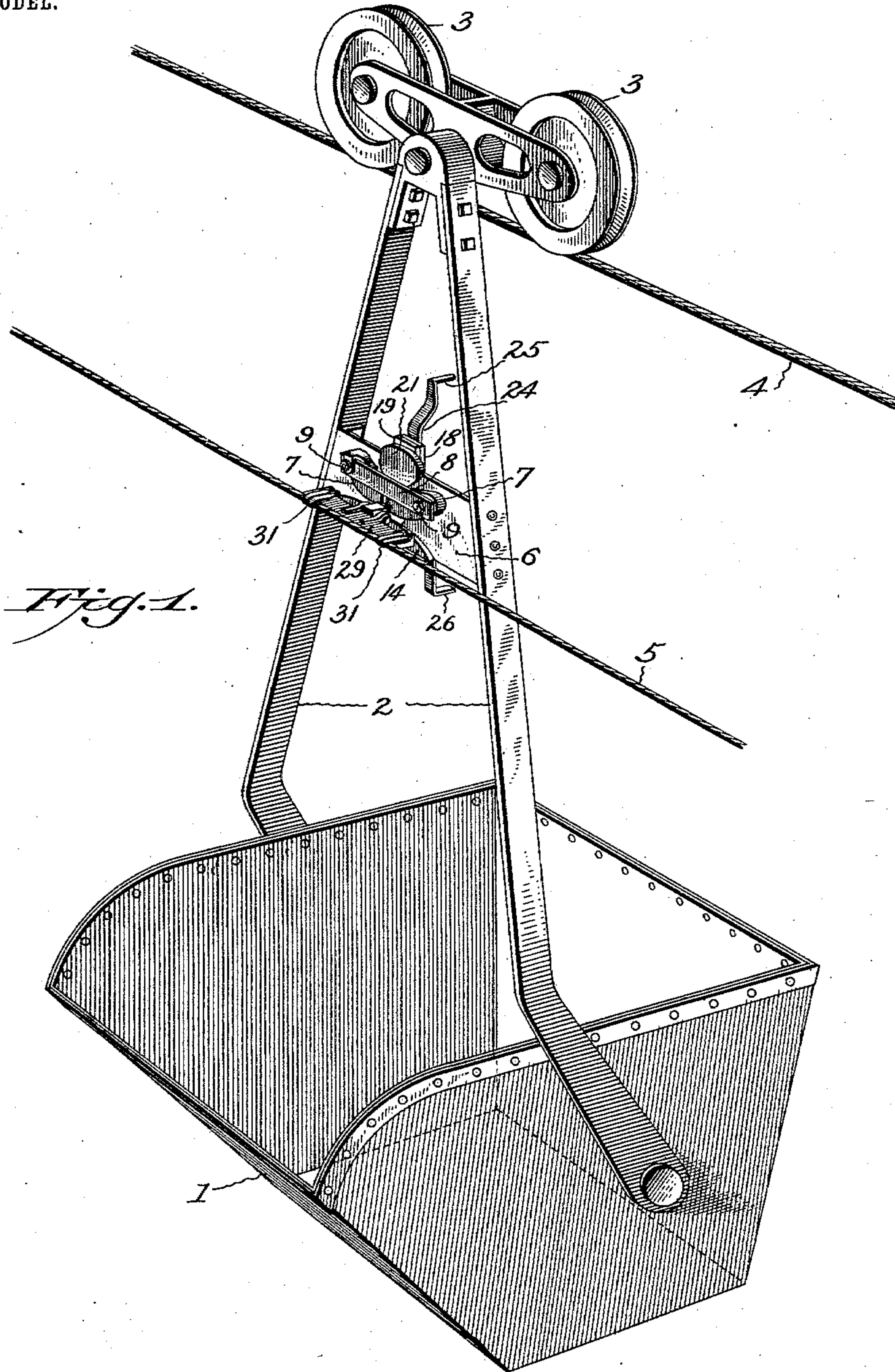
R. N. RIBLET.

BUCKET GRIP FOR ROPE TRAMWAYS.

APPLICATION FILED NOV. 17, 1902. RENEWED SEPT. 18, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses:
G. Darquist Elliott. By Royal N Riblet
Joseph H. Kinison H. S. Bailey. Attorney

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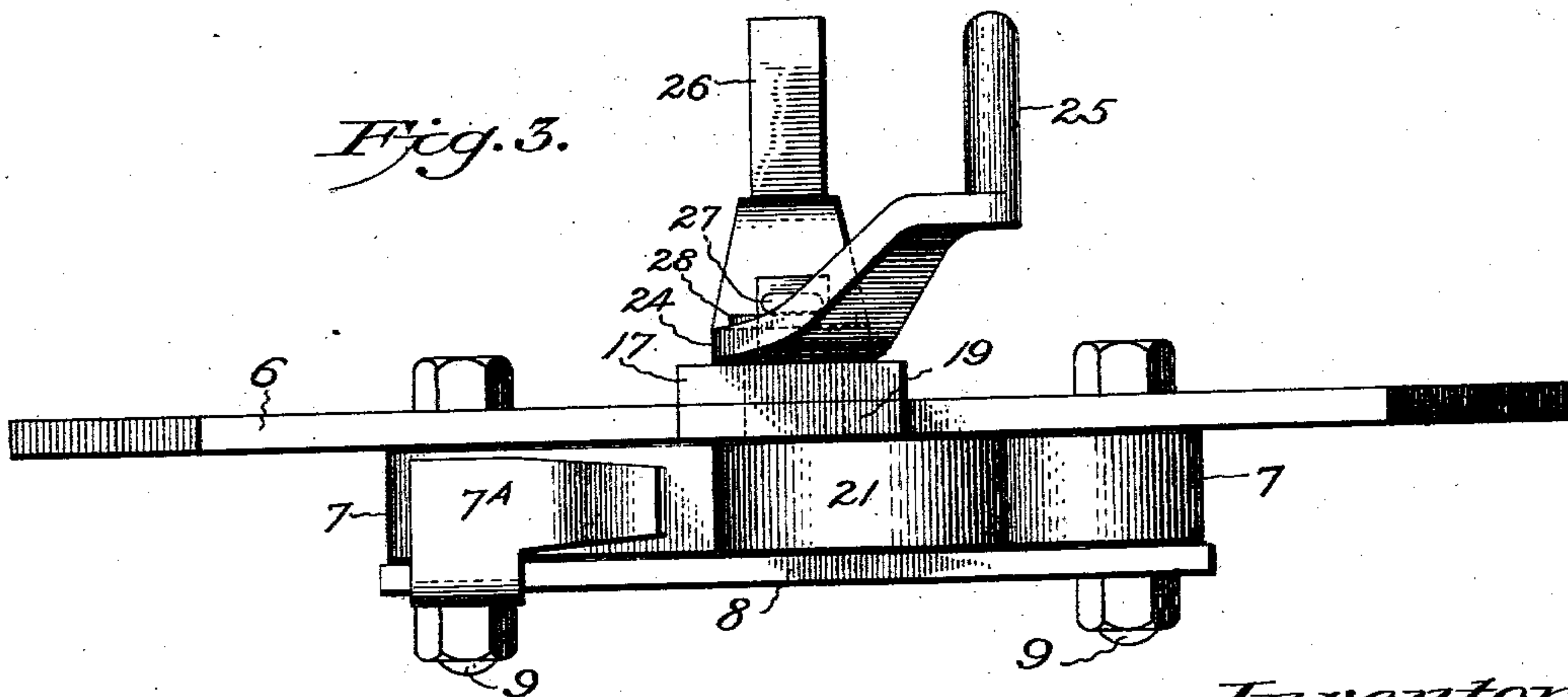
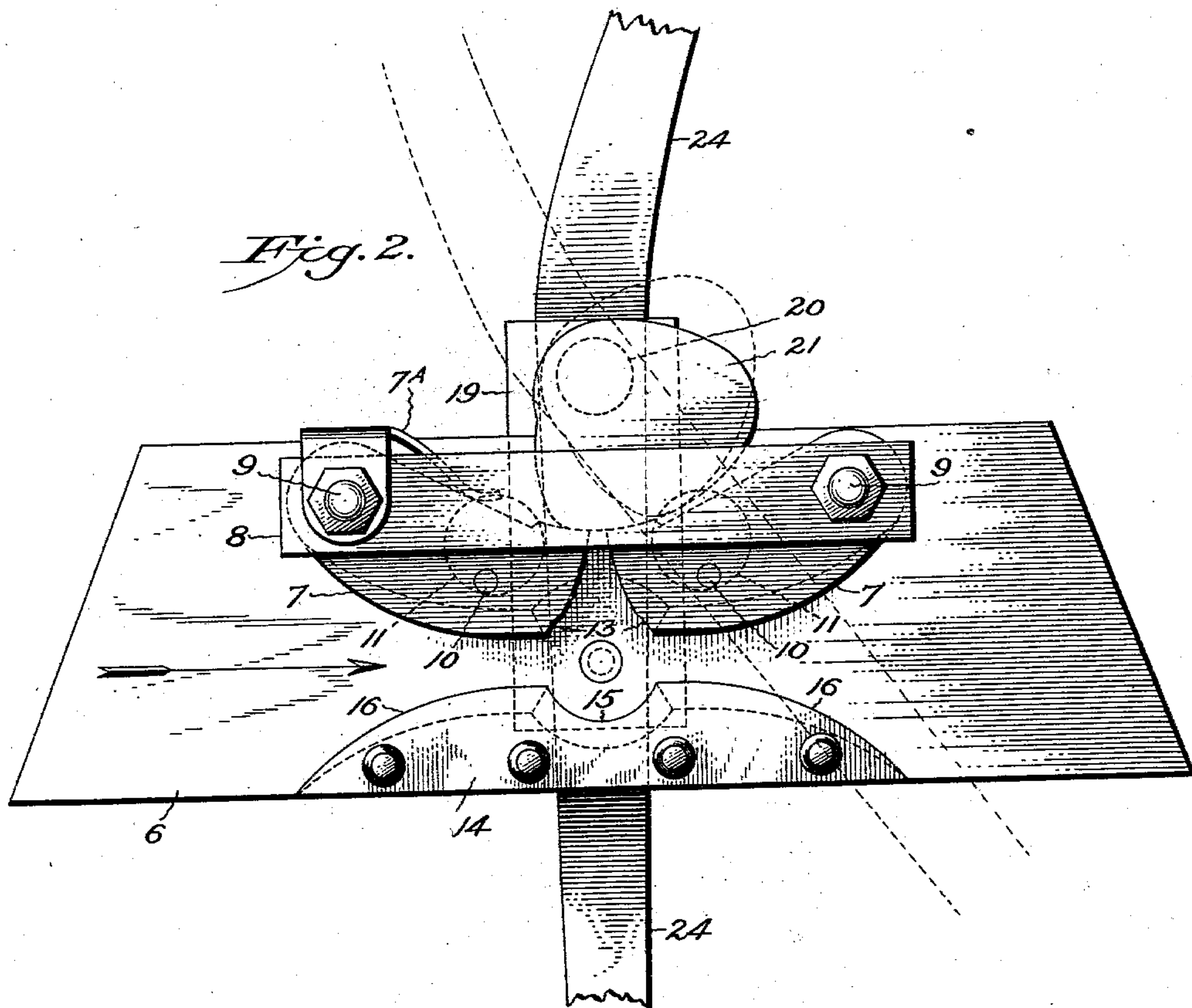
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Witnesses
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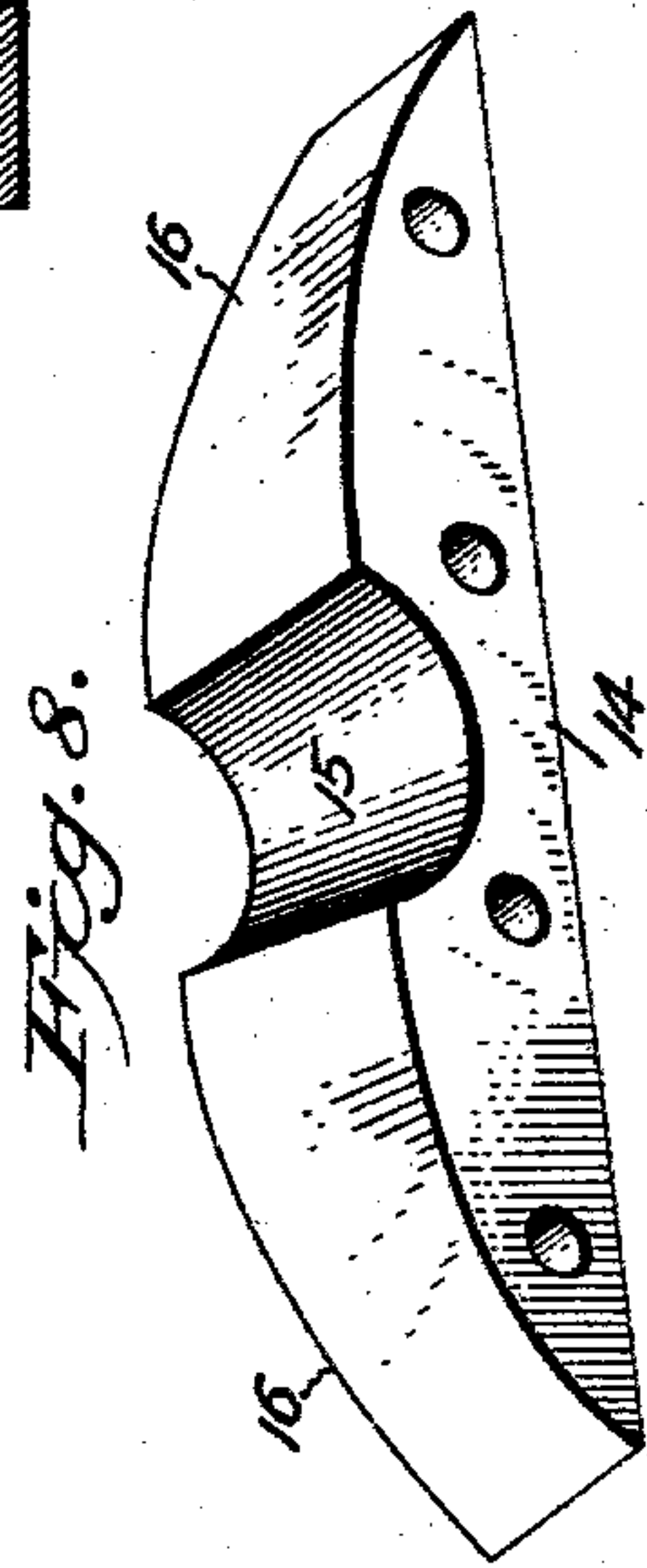
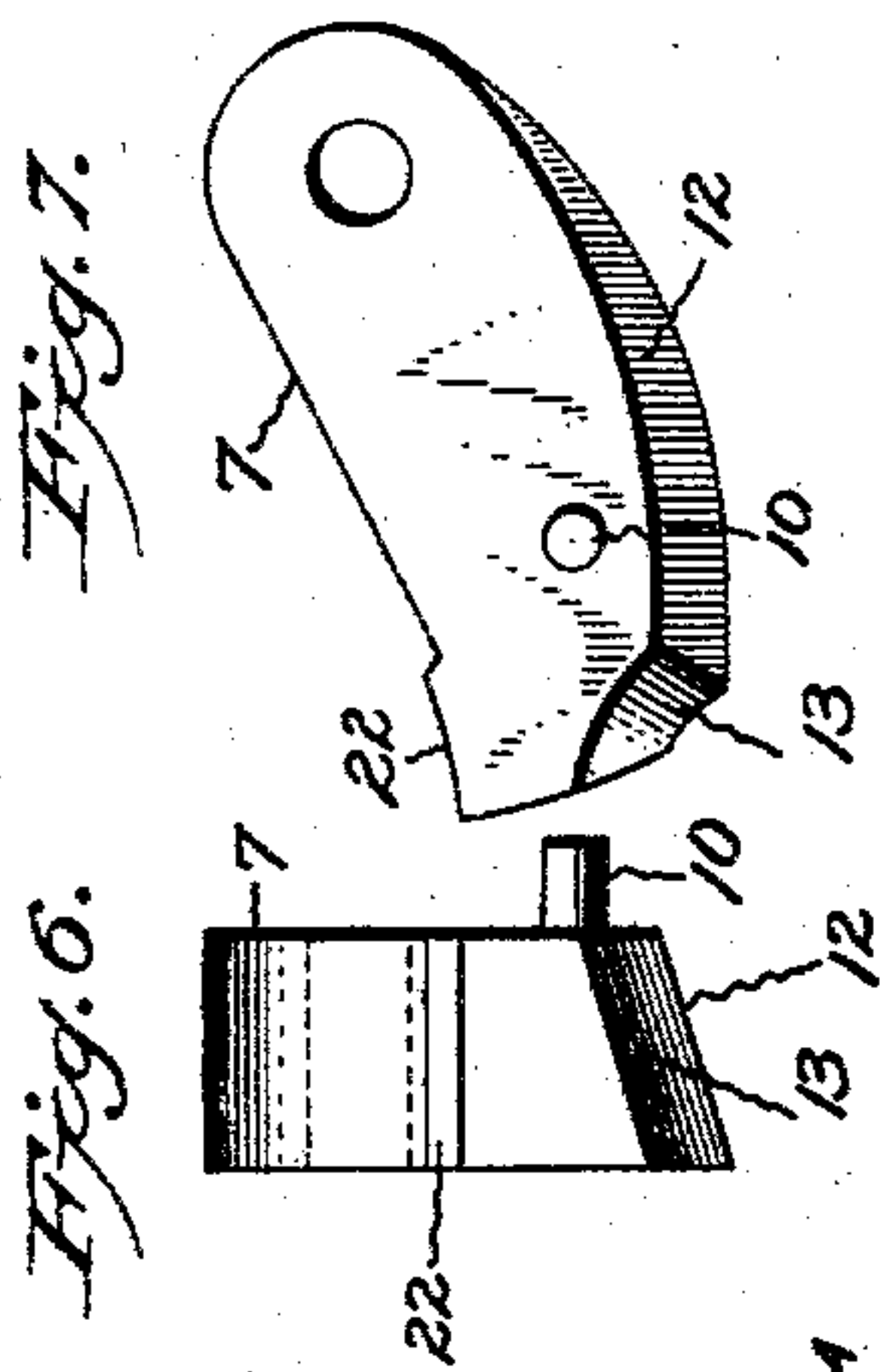
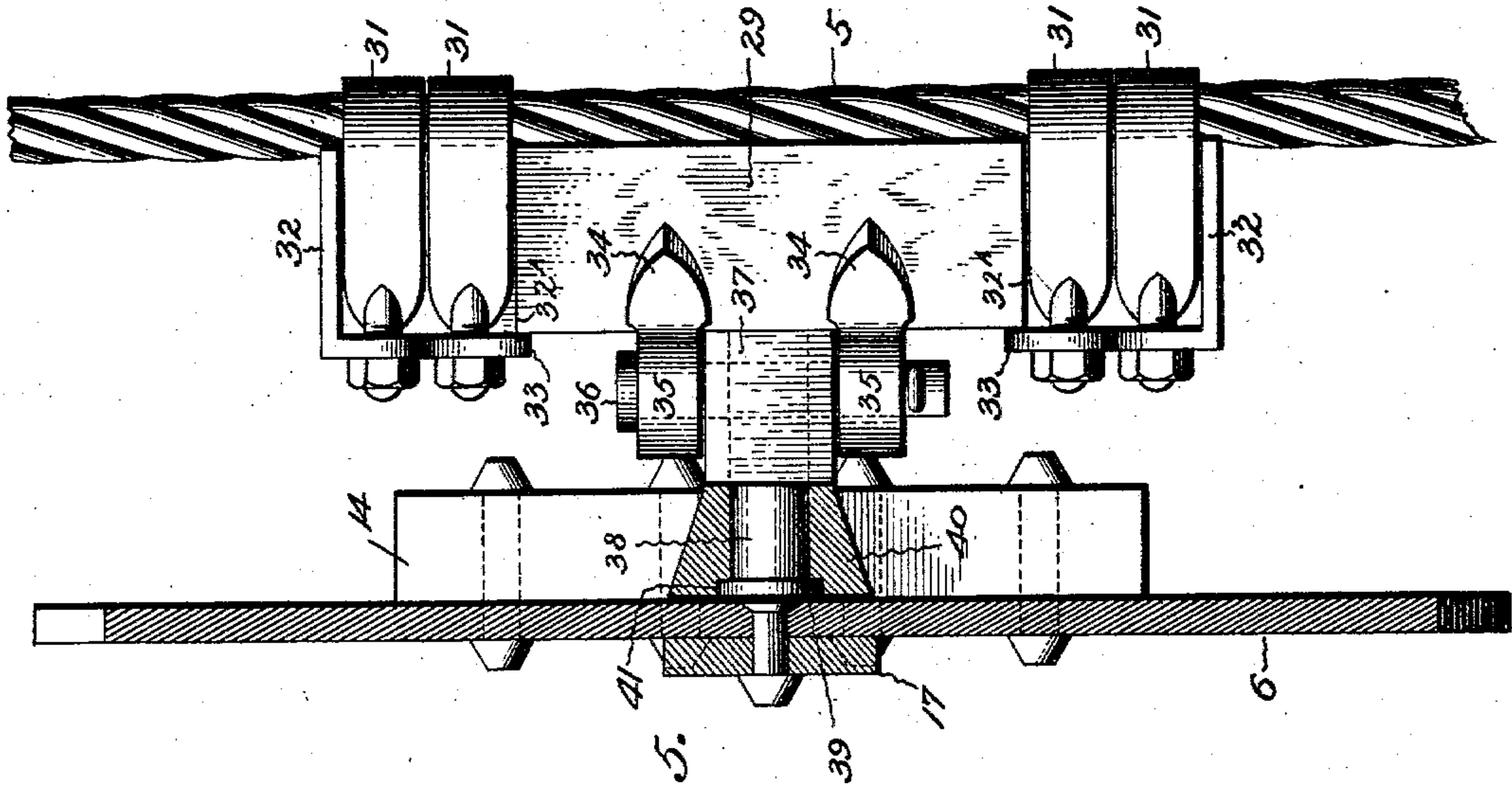
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3 SHEETS—SHEET 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

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BUCKET-GRIP FOR ROPE TRAMWAYS.

SPECIFICATION forming part of Letters Patent No. 744,109, dated November 17, 1903.

Application filed November 17, 1902. Renewed September 18, 1903. Serial No. 173,733. (No model.)

To all whom it may concern:

Be it known that I, ROYAL N. RIBLET, a citizen of the United States of America, residing at Nelson, in the Province of British Columbia, Dominion of Canada, have invented certain new and useful Improvements in Bucket-Grips for Rope Tramways; and I do 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in automatic grips for wire-rope tramways.

The object of the invention is to provide means for automatically attaching and detaching the bucket to and from the running rope of the tramway, and to this end I secure between the arms of the bucket-bail a cross-bar to which is pivotally secured a gripping device consisting of a pair of dogs, below which is rigidly secured a jaw having in its upper face a conical semicircular recess from which the face inclines downwardly on each side to the extremity of the jaw. The dogs are clamped and unclamped by an automatically-operated cam, and a conical knob suitably secured to the clip of the running rope is designed to be gripped between the dogs and the conical recess in the fixed jaw, thus locking the bucket in engagement with the running rope, so that the said bucket may be propelled thereby, all of which will be fully set forth in the accompanying specification and claims.

In the accompanying drawings, Figure 1 is a perspective view of a bucket in operative position upon the stationary rope and in locked engagement with the running rope. Fig. 2 is a front elevation showing the cross-bar with the gripping mechanism secured thereto. Fig. 3 is a top view of Fig. 2. Fig. 4 is a side elevation, partly in section, of the gripping mechanism and clip, the said clip being engaged by the gripping mechanism. Fig. 5 is a plan view, partly in section, showing the clip which is attached to the running rope, the conical knob thereof being in posi-

tion upon the fixed jaw of the gripping device, which is shown in section for the purpose of better illustration. Fig. 6 is an edge view of one of the gripping-dogs. Fig. 7 is a view of the rear side of the same. Fig. 8 is a perspective view of the fixed jaw of the gripping device, taken from the rear side; and Fig. 9 is a central vertical sectional view of the same.

Referring to the accompanying drawings, the numeral 1 indicates the bucket, 2 the bail to which the bucket is attached, 3 the sheaves which are attached to the upper end of the bail, 4 the stationary rope upon which the sheaves travel, and 5 the running rope to which the bucket-clip is attached, all of which are in general use and need no description.

About centrally between the bucket and sheaves a cross-bar 6 is bolted at each end to the arms of the bail, so as to lie between the same, the front face of the cross-bar being flush with the front edges of the arms of the bail, and to this cross-bar is attached the gripping mechanism. The gripping mechanism comprises a fixed jaw, a pair of dogs which operate in connection with the jaw, and a cam for clamping the dogs upon the clip secured to the running rope and holding the said dogs in their clamped position for a predetermined time.

The dogs 7 are each pivoted at one end to the cross-bar 6, near the upper edge thereof, so that their free ends lie toward each other and near together. A plate 8 lies across the front faces of the dogs and is retained in position by bolts 9, upon which the dogs are pivoted. The dogs have an up-and-down swinging movement between the plate and the cross-bar, and the plate will prevent them from being pulled or sprung outward when gripping the clip, as will more fully hereinafter appear. Each dog is provided near its free end with a rearwardly-projecting pin 10, which extends into a hole 11 in the cross-bar and rests upon the lower edge thereof, so as to limit the downward movement of the dogs, the holes 11 being sufficiently large to allow the dogs a considerable upward movement. The free ends of the dogs are on a lower plane than their pivoted ends, and the lower edge of each dog curves

upwardly from its free end to its pivoted end. The lower curved edge of each dog inclines upwardly from its front side to its rear side, as clearly shown by the numeral 12 in Figs. 4, 6, and 7, and at the free end of each dog the curved inclined lower edge is merged into one formed on the arc of a circle, so that the inclined curved surface 13 at the free end of one dog, taken in connection with the corresponding surface at the free end of the other dog, forms a substantially semicircular inclined surface or edge, as will be clearly seen by reference to Fig. 2.

Secured below the dogs and at the lower edge of the cross-bar is a fixed jaw 14, having in its upper edge a substantially semicircular recess 15, the surface of which inclines at an opposite pitch from the curved surfaces in the free ends of the dogs or from the front side downward toward the rear side, as shown in Figs. 4, 8, and 9. This recess is formed on the same arc of a circle with the curved surfaces in the free ends of the dogs, and the upper edge of the jaw curves downwardly from each side of the semicircular recess, as shown at 16, and the surface of this curved edge is oppositely inclined from that of the lower edges of the dogs. The oppositely curved and inclined edges of the dogs and jaw form an entrance-way by which the clip of the running rope is guided between the said dogs and jaw, so as to be gripped between them, as will hereinafter more fully appear. A metal strip or plate 17 is riveted or otherwise rigidly secured to the rear side of the cross-bar 6, so as to extend a slight distance above the upper edge of the same, and this extended portion is provided with a bearing-hole 18. A metal block 19 of the same width and height of the extended end of the plate 7 rests upon the upper edge of the cross-bar and against the extended end of the plate and is provided with a bearing-hole of the same diameter with that in the plate and in alinement therewith. The plate and block together form a bearing for the trunnion 20 of a cam 21, which contacts with slightly-raised curved surfaces 22 on the upper edges of the dogs 7. A portion of the trunnion 20 is reduced in diameter and squared, as shown at 23, and upon this square portion is fitted a vertically-disposed arm 24, having rearward projections 25 and 26 at its upper and lower ends, respectively, by which the arm is moved either manually or automatically to operate the cam in order to lock or unlock the gripping-dogs. A cotter-pin 27, which passes through an opening in the reduced portion of the trunnion, holds the arm 24 upon the square portion of the trunnion, a washer 28 being interposed between the arm and pin.

The clip used in connection with the gripping mechanism which has just been described is of the form shown in United States Patent No. 660,395, which was granted to me on the 23d day of October, 1900, and consists

of a clip-bar 29, the rear edge of which is formed with a semicircular groove which partially incloses the running rope 5. The clip-bar is secured to the rope by strap-clips 31, a pair of which are located at each end of the clip-bar and are prevented either from working laterally or off the end of the bar by the shoulders 32 and 32^A at each end of the same. The free ends of the strap-clips are threaded and pass through holes in integral lugs 33, formed at the front edge of the clip-bar, where they receive clamping-nuts by which the said strap-clips are caused to clamp the rope and clip-bar firmly together.

Centrally of the clip-bar and a suitable distance apart is formed a pair of clips 34, through the eyes 35 of which passes a pin 36. In my prior patent above referred to a swinging bolt was secured upon this pin, which was attached at its outer end to the cross-bar of the bucket-bail by passing through a hole in the same and receiving a cotter-pin which prevented its accidental withdrawal therefrom. The operation of attaching and detaching the bucket was therefore accomplished manually; but in the present instance a metal block 37 is secured upon the pin 36 between the eyes 35, the pin passing through a hole in the said block and through a hole in a bolt 38, which passes through the block and projects a suitable distance beyond the front end thereof and is provided with a head 39. Upon the extended end of the bolt 38, so as to lie between the head 39 and the front face of the block 37, is a conical roller or knob 40, which is held upon the extended end of the bolt by the said head 39, which fits in a recess 41 in the front face of the knob, so as to lie flush therewith. This knob is designed to be gripped by the gripping device when it is desired to connect the bucket to the running rope. The running rope is an endless rope and is provided at intervals with the above-described clips carrying the knobs 40. Now when it is desired to connect a bucket to the running rope the arm 24 is turned so that cam 21 will release the dog at the entrance side of the grip, so that the same may be raised, while the other dog is held down. The bucket, which is at one of the terminals, is then moved along so as to be in the path of the running rope, and as the clip approaches the grip the knob 40 thereof will contact with the curved upper face of the fixed jaw 14 of the grip and will be guided into the semicircular recess 15 thereof. As the knob rides up the curved upper edge of the jaw the dog 7 at that side will be raised thereby, thus permitting the knob to pass; but when it reaches the recess 15 it at the same time abuts against the opposite dog 7, which is locked down by cam 21, and is thus prevented escaping from the grip. The arm 24 is then turned to a vertical position, when cam 21 will act to lock both dogs, and the knob 40 will thus be securely gripped between the dogs and the fixed jaw, and the bucket will then be carried for-

ward by the running rope. A spring 7^A is secured upon the pivot-bolt of the dog at the entrance sides of the grip, so as to bear upon the upper edge of the dog and normally hold the same down.

The knob 40 in its gripped position lies within the semicircular recess of the jaw and the corresponding recess formed in the ends of the dogs, so that it cannot move laterally in either direction so long as the dogs are held down by the cam, and its conical form will prevent its withdrawal in direction of the line of its axis. Strain in this direction would tend to spring the dogs outward; but the plate 8, which lies across their front faces, will securely hold them against any outward pull.

The running rope with the bucket attached travels in the direction of the arrow shown in Fig. 2, and when the bucket reaches the opposite terminal and is to be disengaged either for dumping or loading the rearward projection 25 at the upper end of arm 24 will strike a suitable arm or obstruction (not shown) which lies in its path, and the arm 24 will be tripped, causing the cam to release the dogs and allowing the knob 40 of the clip to pass out of the grip. When the bucket has been disengaged from the running rope, it is moved out of the path of the same, and after being loaded or dumped, as the case may be, it is again gripped to the running rope in the manner before described.

From the foregoing it will be seen that my device is simple in construction, practical in operation, and admirably adapted to the work for which it is intended.

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

1. In a grip for wire-rope tramways, the combination with the running rope, and cross-bar of the bucket-bail, of a grip secured to the cross-bar consisting of a fixed jaw, having a semicircular recess in its upper edge from each side of which, the edge is given a downward curve, and a pair of dogs pivoted above the said fixed jaw, so that their free ends are above the semicircular recess therein; a clip secured to the running rope, having a knob which is designed to be gripped between the free ends of the dogs, and the recess of the fixed jaw, and means for locking and unlocking the dogs, substantially as shown.

2. In a grip for wire-rope tramways, the combination with the running rope, and cross-bar of the bucket-bail, of a grip secured to the cross-bar, consisting of a fixed jaw, having a semicircular recess in its upper edge, from each side of which the said edge slopes downwardly, and a pair of dogs pivoted above the jaw, so that their free ends will be close to each other, and above the semicircular recess in the jaw, the lower edges of said dogs being oppositely sloped from the upper edge of the jaw; means for limiting the downward movement of each dog; and a spring for normally holding one of said dogs down; a clip secured

to the running rope, having a knob which is designed to be gripped between the free ends of the dogs and the recess of the jaw, and a cam for locking and unlocking said dogs, substantially as shown.

3. In a grip for wire-rope tramways, the combination with the running rope and cross-bar of the bucket-bail, of a grip carried by the cross-bar, comprising a fixed jaw, having a semicircular recess in its upper edge, from each side of which the edge slopes downward, the surface of said edge and recess having a downward and rearward incline from the front side of the jaw; a pair of dogs pivoted above the jaw, so that their free ends lie near together and above the semicircular recess in the jaw, the lower edge of each dog having an upward slope from its free end to its pivoted end and the surface of said edge having an upward and rearward incline from their front faces, a portion of the free end of each dog being similarly inclined but on the arc of a circle, so that when taken together, they form a substantially semicircular inclined surface which corresponds to the inclined surface of the semicircular recess in the upper edge of the jaw; means for limiting the downward movement of said dogs, a cam for locking and unlocking the same, and a clip secured to the running rope, having a conical knob secured thereto, which is designed to be gripped between the semicircular inclined surfaces of the dogs and jaw, substantially as shown.

4. In a grip for wire-rope tramways, the combination with the running rope and cross-bar of the bucket-bail, of a grip carried by the cross-bar, comprising a fixed jaw, having a semicircular recess in its upper edge, the surface of which is flared inwardly, the said edge having a downward and inward slant from each side of the recess; a pair of dogs pivoted above the jaw, so that their free ends are contiguous, and adjacent to the semicircular recess of the jaw, the lower edges of said dogs being upwardly and inwardly inclined from their free ends, a portion of the said free ends being similarly inclined, but on the arc of a circle, so that when taken together they form a substantially semicircular, inwardly-flared surface corresponding to the flared semicircular recess in the jaw; pins projecting from the rear sides of the dogs, which rest upon the lower edges of recesses in the cross-bar, and limit the downward movement of the dogs; a plate secured to the cross-bar so as to lie across the front faces of the dogs and prevent outward springing of the same; a cam for locking and unlocking the dogs; an arm by which said cam is operated, and a clip secured to the running rope, having a conical knob, which is designed to be clamped between the flared, semicircular surfaces of the dogs and jaw, substantially as shown.

5. In a grip for wire-rope tramways, the combination with the running rope and cross-

bar of the bucket-bail, of a clip secured to the running rope, comprising a bar having eyes formed upon its front edge; a block located between the said eyes, carrying a headed pin; 5 a second pin which passes through the eyes, and through the block and headed pin, so that the said block and pin may have an oscillating movement; a conical knob secured upon the end of the headed pin so as to revolve 10 thereon, and a grip attached to the cross-bar of the bucket-bail, comprising a fixed jaw, and movable dogs, between which the conical knob of the clip is held, and means for locking and unlocking the dogs, substantially as 15 shown.

6. In a grip for wire-rope tramways, the combination with the running rope and cross-bar of the bucket-bail, of a clip comprising a bar which is secured to the running rope, having shoulders at each end between which the securing means are located; and eyes formed upon its front edge; a block positioned between the eyes, having a headed pin inserted therein, the headed end thereof extending be- 20 yond the block; a pintle which passes through the eyes and through the block and pin, so that the block and pin shall have an oscillating movement thereon; a conical roller revolvably mounted upon the extended end of the

headed bolt, and retained thereon by the said 30 head; and a grip secured upon the cross-bar of the bucket-bail, comprising a fixed jaw and movable dogs, between which, the conical roller of the clip is clamped; a cam for locking and unlocking the dogs, and an arm 35 for operating the cam, substantially as shown.

7. A clip for wire-rope tramways, comprising a bar which is secured to the running rope, and which is provided with shoulders, be- 40 tween which the securing means are located, and with eyes which are formed upon its front edge; a block carrying a headed pin, which is located between the eyes, and a pintle which passes through the eyes and through the block and pin, so that the said block and 45 pin may have a rocking movement thereon; a revoluble knob carried by the headed pin; in combination with a suitable grip carried by the cross-bar of the bucket-bail, comprising a fixed jaw, and locking-dogs, and means for 50 locking and unlocking one or both dogs, substantially as shown.

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

ROYAL N. RIBLET.

Witnesses:

W. S. RIBLET,
A. G. REESE.