

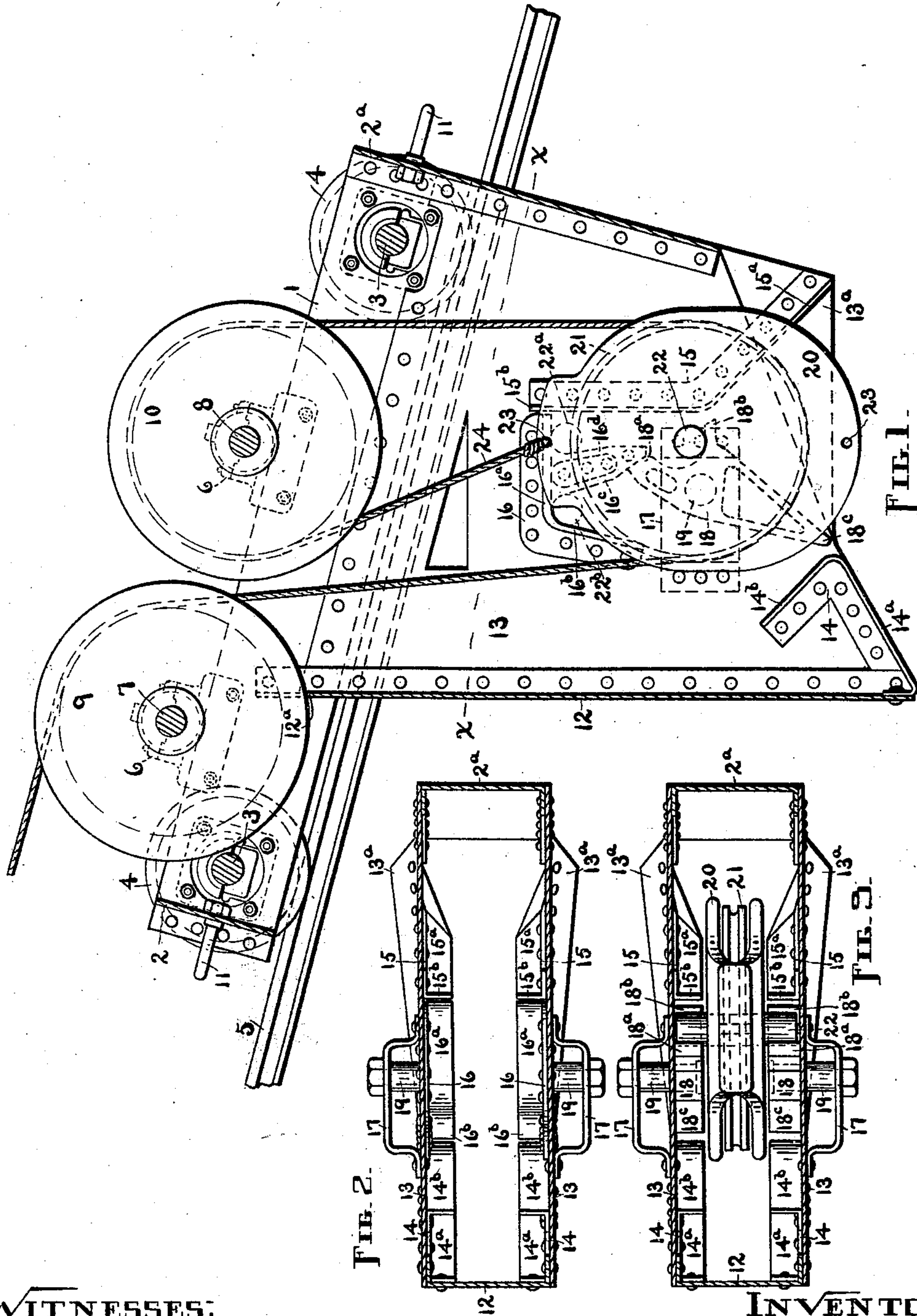
(No Model.)

3 Sheets—Sheet 1.

G. H. HULETT.  
TROLLEY WAGON.

No. 551,586.

Patented Dec. 17, 1895.



WITNESSES:

E. R. Heyman  
H. P. Bailey

INVENTOR:

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(No Model.)

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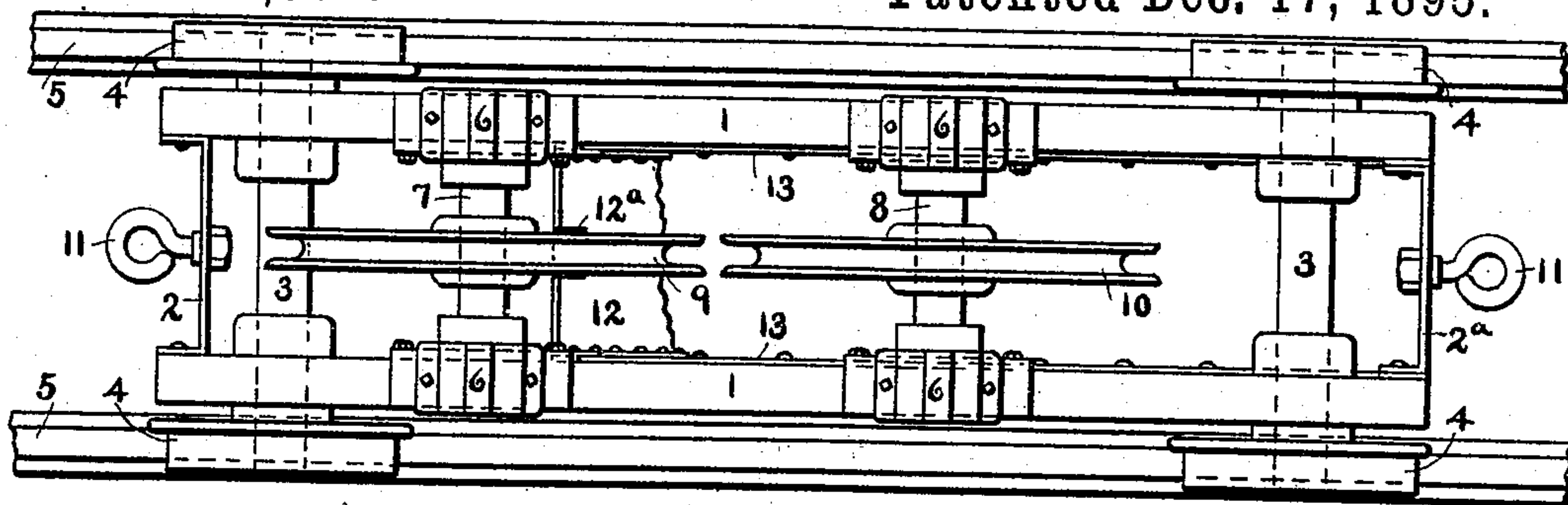


FIG. 4.

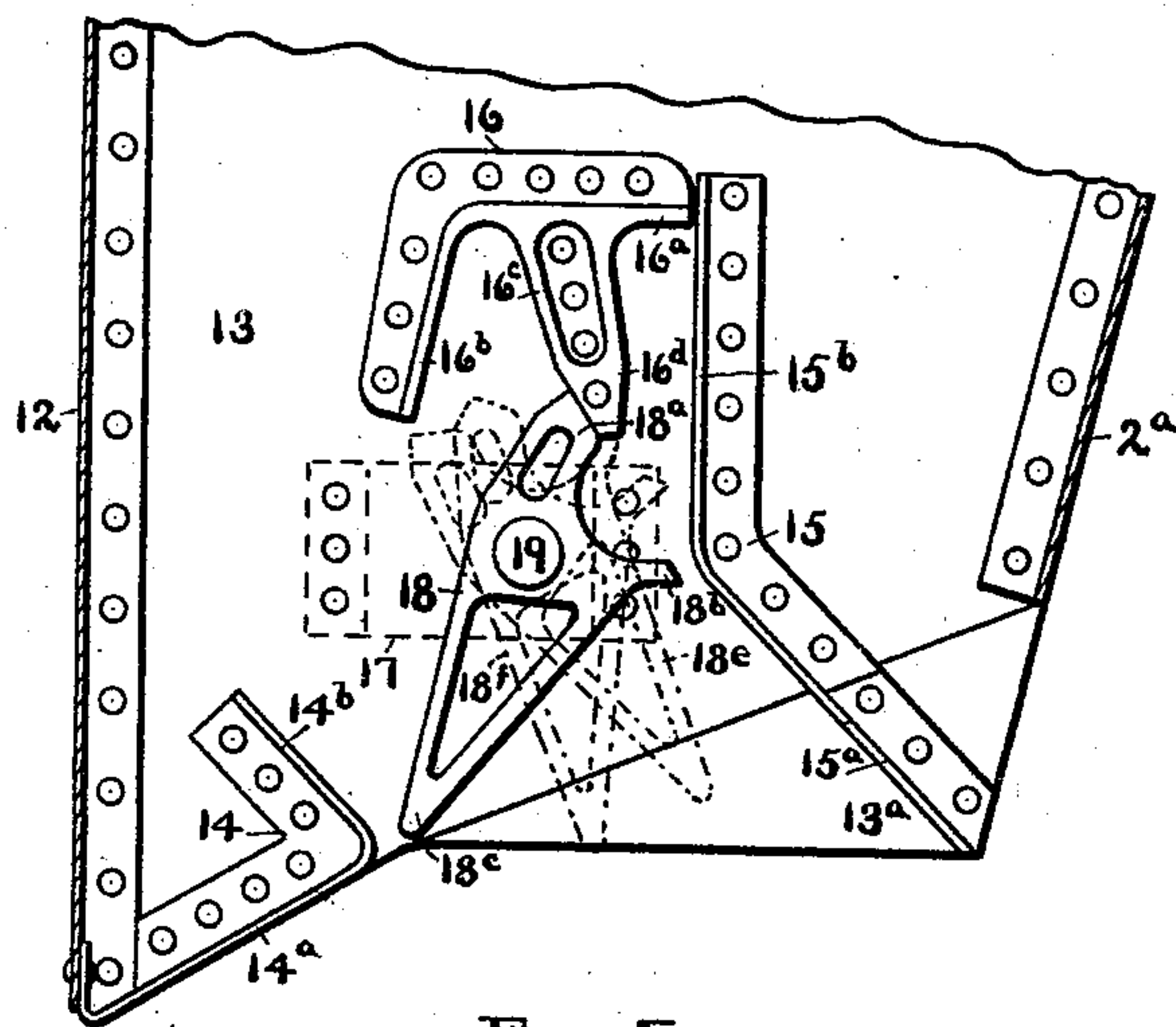


FIG. 5.

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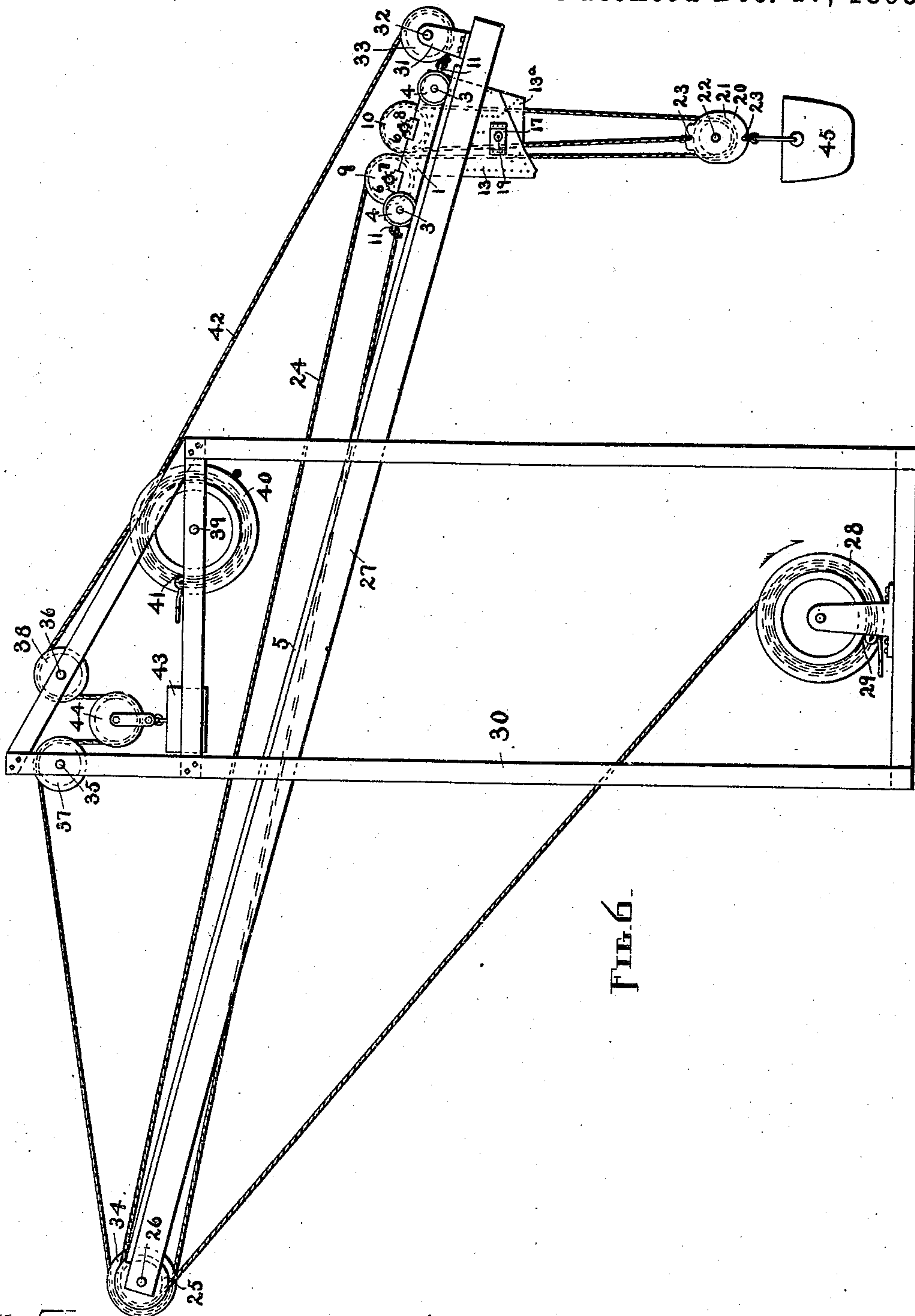


FIG. 6.

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# UNITED STATES PATENT OFFICE.

GEORGE H. HULETT, OF CLEVELAND, OHIO.

## TROLLEY-WAGON.

SPECIFICATION forming part of Letters Patent No. 551,586, dated December 17, 1895.

Application filed April 29, 1895. Serial No. 547,447. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE H. HULETT, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Trolley-Wagons, of which the following is a full, clear, and exact description.

My invention relates to that class of trolley-wagons designed to run on a bridge or trestle provided with a track, for the purpose of conveying a bucket or other load from one end of said bridge or trestle to the other, in either direction; and it consists of the several parts hereinafter fully set forth and claimed.

The object of my improvement is to provide a trolley-wagon of the class designated above, operated by drums driven by an ordinary hoisting or winding engine, which is capable of being held at any desired point on its track, of automatically unlocking the load and lowering the same, of again elevating the load, relocking, and proceeding to another position where these operations are again performed, and all without the use of any stops fastened to the supporting bridge or trestle as commonly used with other wagons for this purpose.

That my invention may be seen and fully understood by those skilled in the art, reference will be had to the following specification and annexed drawings forming a part thereof, in which—

Figure 1 is a vertical section of my trolley-wagon, showing the hoisting-block in its normal or locked position; Fig. 2, a horizontal section on lines *x x*, Fig. 1, the hoisting-block removed; Fig. 3, a horizontal section on lines *x x*, Fig. 1, the upper guides removed, and showing the hoisting-block resting in its normal position on the latches; Fig. 4, a top view of the trolley-wagon; Fig. 5, a vertical section of the depending frame without the hoisting-block, and showing the three positions of the latch; and Fig. 6, a side view of a trestle with my wagon thereon and the several drums, sheaves, ropes, &c., necessary for operating the same.

Similar figures of reference designate like parts in the drawings and specification.

The wagon proper or body consists of the side irons 1 1, joined by the end irons 2 2<sup>a</sup>,

and said wagon is provided with the axles 3 3, and the wheels 4 which support it on the rails 5 5. The four bearings 6 are bolted to the side irons 1 1, two upon each iron, to receive and support the shafts 7 and 8. The sheave 9 is fast on the center of the shaft 7 and the sheave 10 is fast on the center of the shaft 8. Projecting from the end irons 2 and 2<sup>a</sup> are the eye-bolts 11 11. The end iron 2<sup>a</sup> extends downward between the rails 5 at right angles to the side irons 1, and the iron 12, riveted at its upper terminus to said side irons forward of the center, extends vertically downward between said rails, converging toward said end iron 2<sup>a</sup>, since said rails are inclined. The irons 2<sup>a</sup> and 12 form the ends of a box-like frame, the sides of which consist of the plates 13 13, riveted at their upper extremities to the side irons 1 and at their vertical edges to said irons 2<sup>a</sup> and 12. The iron 12 is somewhat longer than the iron 2<sup>a</sup>, and from its base the lower edges of the plates 13 incline upward at an angle of about thirty-five degrees and then extend horizontally. From below a line connecting the intersection of the inclined and horizontal lower edges of each plate 13 with the intersection of said plate and the base of the iron 2<sup>a</sup>, said plate is bent outward to form the wing 13<sup>a</sup>, for the purpose hereinafter described. The guides 14 consist of angle-irons riveted to the inside of the plates 13, the lower flanges 14<sup>a</sup> of said guides extending rearward from the bases of the irons 12 flush with the inclined edges of the plates 13 nearly to the front corners of the wings 13<sup>a</sup>, where they turn forward at an angle of about forty-five degrees to form the upper flanges 14<sup>b</sup>. The guides 15 consist of angle-irons riveted to the inside of the plates 13, the lower flanges 15<sup>a</sup> starting at the lower rear corners of the wings 13<sup>a</sup> and extending upward at an angle of about forty-five degrees until well on to the main portions of said plates, when they turn vertically upward to form the flanges 15<sup>b</sup>. Riveted to the inside of each plate 13, near and forward of the upper end of the guide 15, is the stop 16. The stop 16 has the horizontal flange 16<sup>a</sup> and the downwardly-extending flanges 16<sup>b</sup>, 16<sup>c</sup>, and 16<sup>d</sup>. The boxes 17 17 are riveted to the outside of the plates 13, opposite each other, and the latches 18 18 are pivoted on the inside of said plates by the pins 19 19, which



extend through said plates and boxes, each latch 18 consisting of the nose 18<sup>a</sup>, the lug 18<sup>b</sup>, and the tail 18<sup>c</sup>. The latch-nose 18<sup>a</sup> normally rests against the base of the stop-flange 16<sup>c</sup>. The slot 12<sup>a</sup> is cut in the top of the iron 12 to receive the periphery of the sheave 9.

The hoisting-block 20 is provided with the sheave 21, connected thereto by the shaft 22, which projects each side of said block to engage the latches 18, the guides 14 and 15, and the stop 16. A hole 23 extends through the top of the block 20 and another through the base. The rope 24 is secured at one end through the upper hole 23 of the block 20, passes up over the sheave 10, down around the sheave 21, up over the sheave 9, around the sheave 25 on the shaft 26, at the upper end of the trestle 27, to the winding-drum 28. The drum 28 is supported on suitable bearings and controlled by the brake 29.

The inclined trestle 27 is supported by the frame 30, and has at its lower end the bearing 31 for the shaft 32, on which is the sheave 33. The shaft 26 carries the sheave 34 in addition to the sheave 25. The shafts 35 and 36 at the top of the frame 30 carry the sheaves 37 and 38, respectively, and the shaft 39 carries the drum 40, which is controlled by the brake 41. The rope 42 is fast at one end to the eyebolt 11 in the end iron 2<sup>a</sup> of the trolley-wagon, passes over the sheave 33, several times around the drum 40, over the sheaves 38 and 37, and around the sheave 34 to be attached to the eyebolt 11, in the end iron 12 of said wagon. The counterweight 43 is suspended from the rope 42, between the sheaves 37 and 38 by means of the sheave 44, for the purpose of taking up the slack in said rope. The drum 28 is driven by an engine. (Not shown in the drawings.) The bucket 45 is suspended from the hoisting-block 20.

With the wagon held at the lower end of the trestle 27 by the friction produced from the several turns of the rope 42 around the drum 40, which is held by the brake 41, and the action of the counterweight 43, and the bucket 45 lowered, as shown in Fig. 6, the operation of my device is as follows: Release the brake 29 from the drum 28, rotate said drum and wind up the rope 24 until the hoisting-block 20 with the attached bucket 45 is elevated between the plates 13, the wings 13<sup>a</sup> serving to center said block in case of any lateral oscillation of the same, while the guide-flanges 14<sup>a</sup> and the back edges of the latch-tails 18<sup>c</sup> in front, and the guide-flanges 15<sup>a</sup> in the rear, cause the shaft 22 to pass between the guide-flanges 15<sup>b</sup> and the stop-flanges 16<sup>d</sup> until the projecting ends of said shaft are at the junctions of said flanges 16<sup>d</sup> and the stop-flanges 16<sup>a</sup>, as indicated by the dotted lines 22<sup>a</sup> in Fig. 1. In their upward passage the projecting ends of the shaft 22 strike the under sides of the latch-lugs 18<sup>b</sup> and rock said latches until they stand, as shown by the dotted lines 18<sup>c</sup> in Fig. 5, with the ends of said lugs against the intersections of the stop-

flanges 16<sup>c</sup> and 16<sup>d</sup>, thereby causing said shaft to pass upward to the point above indicated. As soon as the shaft 22 has cleared the lugs 18<sup>b</sup> the latches 18 swing back into their normal positions with the noses 18<sup>a</sup> against the bases of the stop-flanges 16<sup>c</sup>. The drum 40 is now released from the brake 41 and the drum 28 rotated in the direction of the arrow, thereby drawing the wagon by the rope 24 along the rails 5 on the wheels 4, and the shaft 22 settles down on the tops of the latch-lugs 18<sup>b</sup>, as shown in Fig. 1. The turns of the rope 42 around the drum 40 in conjunction with the counterweight 43 produce a sufficient amount of friction to hold the wagon and load at any given point, when the brake 41 is applied to said drum. As soon as the wagon arrives at the upper end of the trestle 27, or at any given place intermediate of the ends, apply the brake 41 to the drum 40 and hold said wagon stationary. The continued rotation of the drum 28 winds up the rope 24 and elevates the shaft 22 until its ends rest at the junctions of the stop-flanges 16<sup>b</sup> and 16<sup>c</sup>, as indicated by the dotted lines 22<sup>b</sup> in Fig. 1. A perpendicular line representing the center of gravity of the hoisting-block 20 freely suspended from the sheaves 9 and 10 passes through the point indicated by the dotted lines 22<sup>b</sup>. Hence the tendency of said block is forward when the shaft 22 is raised from the latch-lugs 18<sup>b</sup>, and in passing upward between the stop-flanges 16<sup>b</sup> and 16<sup>c</sup> the ends of said shaft rock the latches 18 sufficiently to permit said ends to pass, as shown by the dotted lines 18<sup>c</sup> in Fig. 5. Since the heaviest parts of the latches 18 are below the pins 19 said latches always return to their normal position as soon as the shaft 22 clears them. Now permit the rope 24 to unwind from the drum 28, said drum being governed by the brake 29, until the block 20 has passed below the wagon-frame and the bucket 45 is low enough to be relieved of its contents. The shaft 22 is guided in its descent with the block 20, by the stop-guides 16<sup>b</sup> and the upper front edges of the latches 18 until below the pins 19, where the front edges of the latch-tails 18<sup>c</sup> are encountered and said latches rocked to permit said shaft to pass from between the plates 13, the guide-flanges 14<sup>b</sup> serving to facilitate the passage in case of a forward oscillation of said block. After freeing the bucket 45 of its contents, elevate it until the ends of the shaft 22 rest upon the latch-lugs 18<sup>b</sup>, in the manner hereinbefore described, and controlling the drum 28 by the brake 29, permit the wagon to descend by gravity to the lower end of the trestle 27, where it is again held and said bucket allowed to descend for another load in the same way as previously explained.

If the trestle is horizontal a rope attached at one end to the rear of the wagon, passed over a second sheave on the shaft 32 and having a counterweight on its opposite end, may be employed to draw said wagon back to the starting-point, or steam-power may be



used as a propelling medium in both directions.

I do not wish to limit myself to the use of two sheaves on top of the wagon, since more or less than that number may be employed without departing from the nature of my invention. If one sheave only is used, the rope 24 will not, of course, pass around the block-sheave 21. The object of using two sheaves is to accelerate the movement of the block and load.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination in a trolley wagon, of a body, a frame provided with the outwardly extending wings 13<sup>a</sup> depending from said body, the angular flanged guides 14 and 15, and stops 16, fast on the inside of said frame, and the rocking latches 18 pivoted within said frame with their noses normally resting against the rear depending flanges of said stops, substantially as and for the purpose set forth.

2. The combination in a trolley wagon, of a body having one or more sheaves mounted thereon and a depending frame, the angular flanged guides 14 and 15, and stops 16, fast on the inside of said frame, the rocking

latches 18 pivoted within said frame with their noses normally resting against the rear depending flanges of said stops, a hoisting-block provided with a shaft extended on both sides to engage said guides, latches and stops, and a rope arranged to operate said block, substantially as and for the purpose set forth.

3. The combination in a trolley wagon, of a body having one or more sheaves mounted thereon and a depending frame, the angular flanged guides 14 and 15, and stops 16, fast on the inside of said frame, the rocking latches 18 pivoted within said frame with their noses normally resting against the rear depending flanges of said stops, a hoisting-block provided with a shaft extended on both sides to engage said guides, latches and stops, a rope arranged to operate said block, and means for operating said rope and reciprocating said wagon, substantially as and for the purpose set forth.

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

GEORGE H. HULETT.

Witnesses:

HARRY P. BAILEY,  
F. A. CUTTER.