

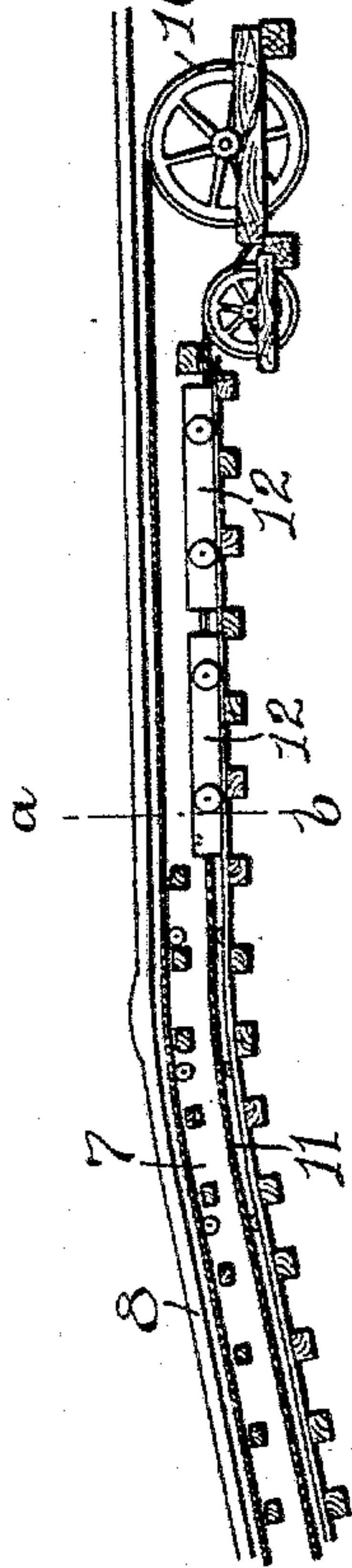
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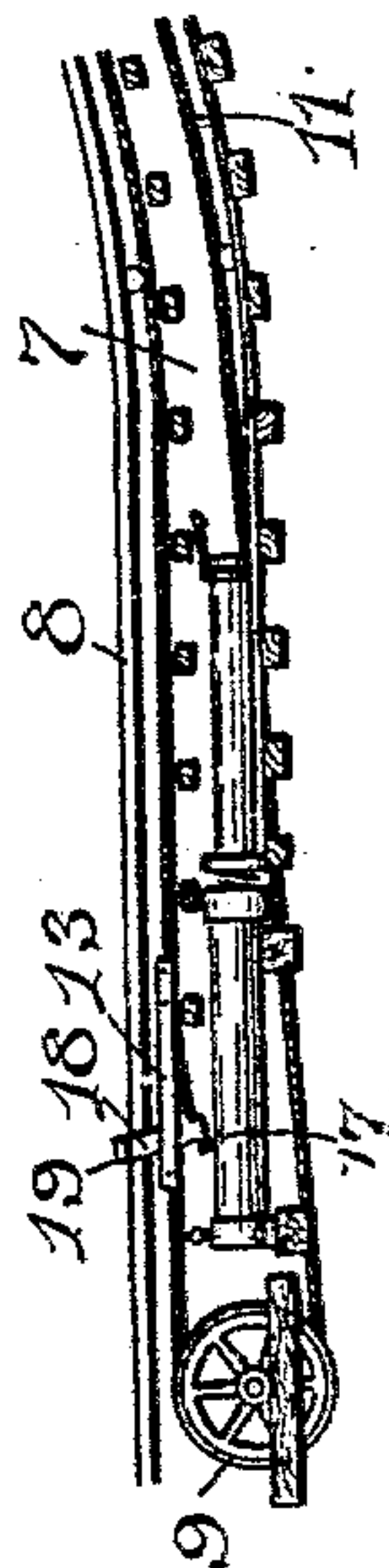
J. P. F. KUHLMANN.  
CABLE COUPLING.

Patented Aug. 27, 1895.

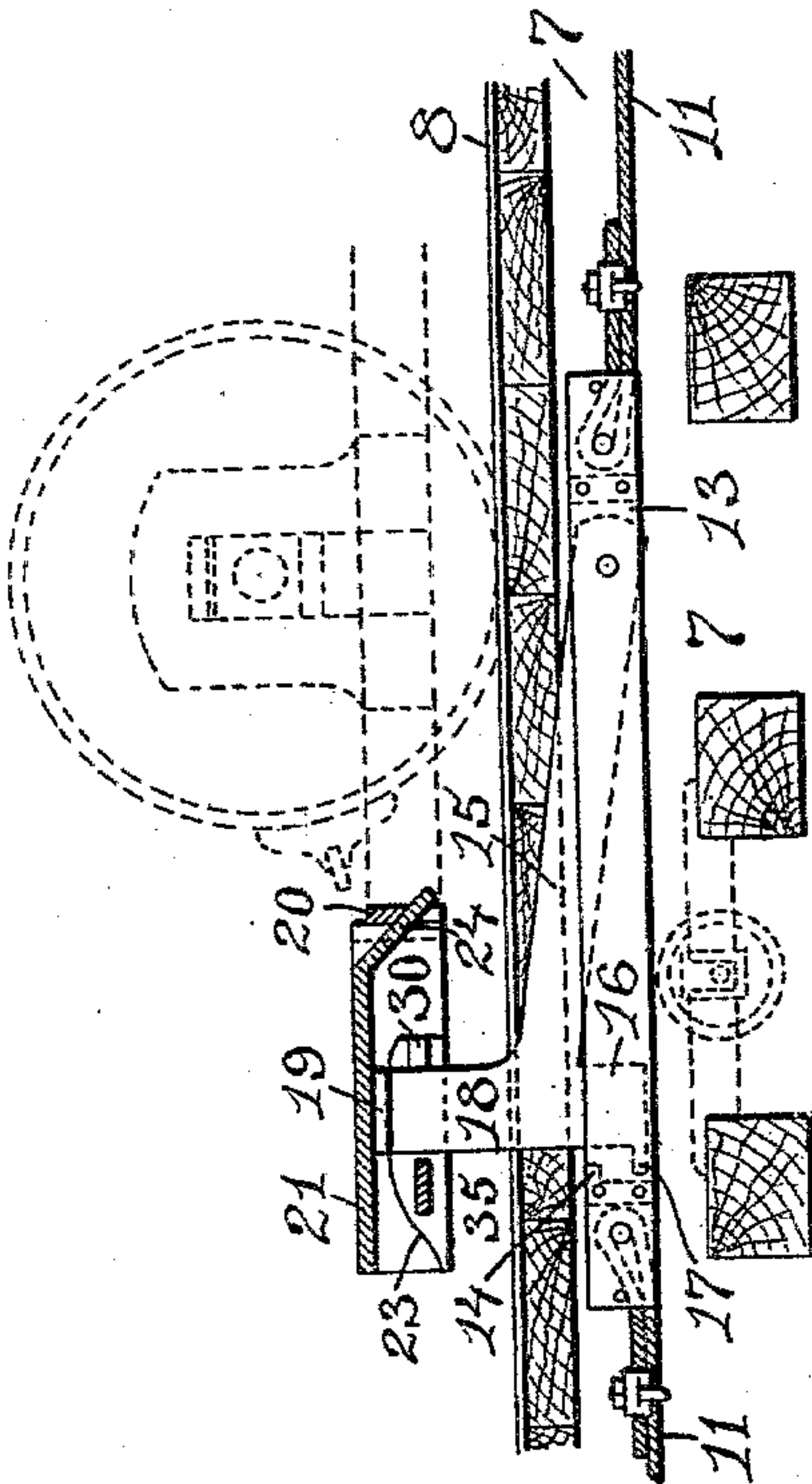
No. 545,164.



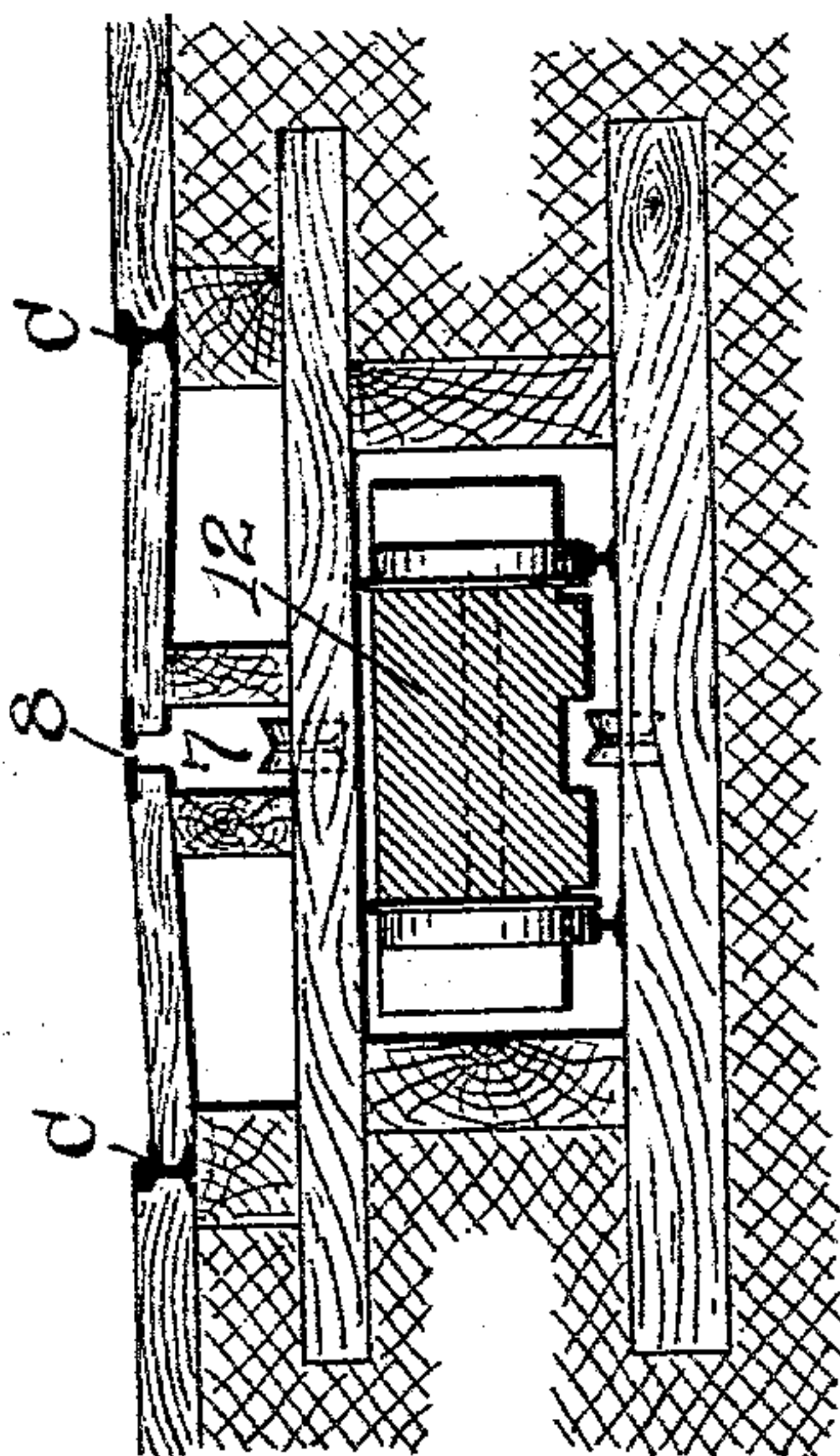
**Fig. 1.**



**Fig. 3.**



**Fig. 2.**



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(No Model.)

2 Sheets—Sheet 2.

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Fig. 4.

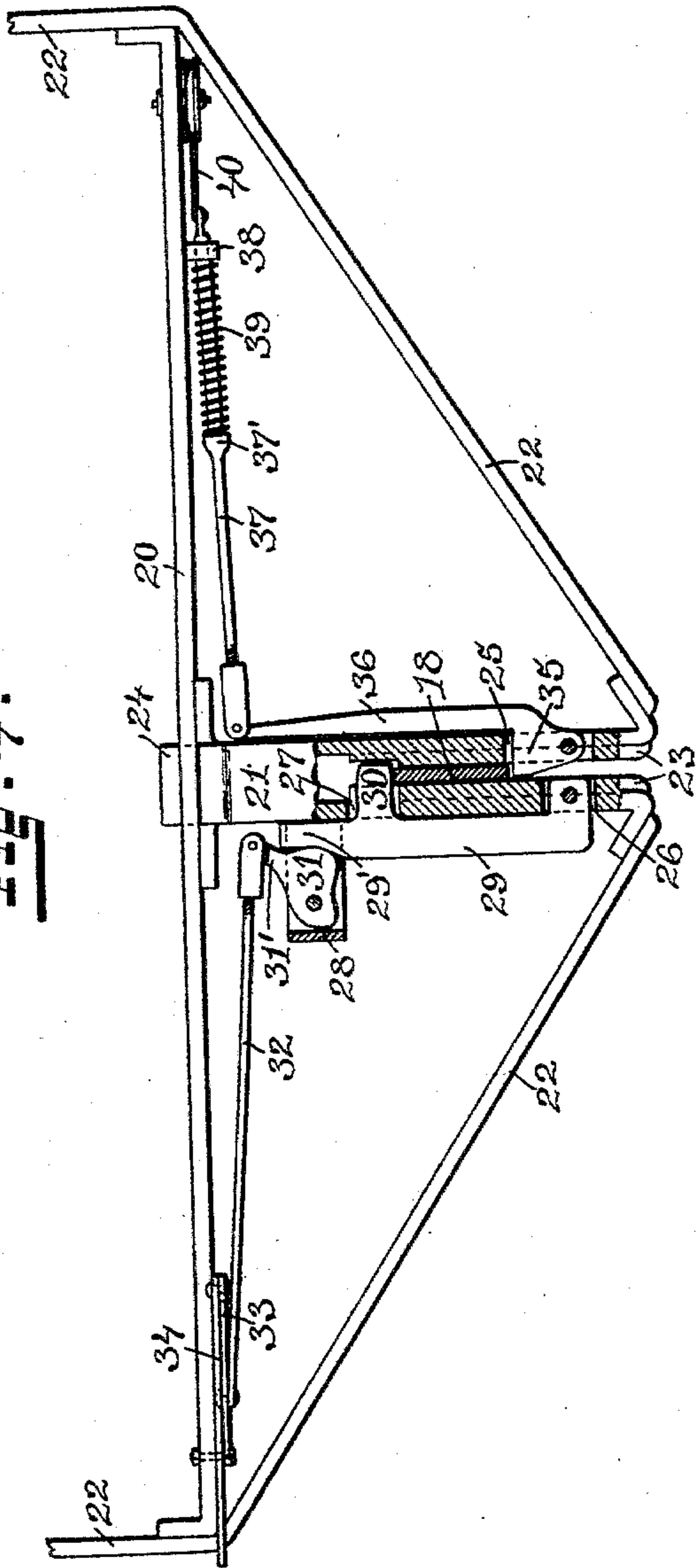
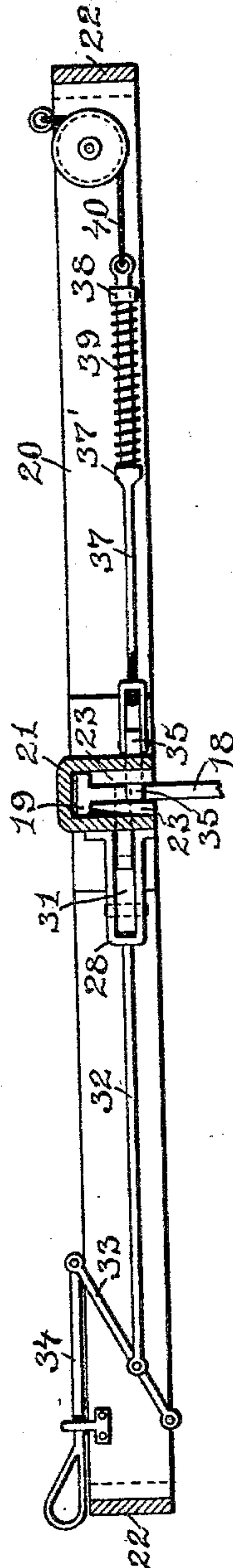


Fig. 5.



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# UNITED STATES PATENT OFFICE.

JOHN P. F. KUHLMANN, OF SEATTLE, WASHINGTON.

## CABLE-COUPLING.

SPECIFICATION forming part of Letters Patent No. 545,164, dated August 27, 1895.

Application filed January 11, 1895. Serial No. 534,569. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN P. F. KUHLMANN, of Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Cable-Couplings; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to improvements in devices for coupling cars to cables.

The object of the invention is to so construct the coupling-tongue and to connect the same with the cable that it may be elevated or depressed.

Still another object of the invention is to so construct the coupling-tongue and the coupling device on the car that the coupling of the cable with the car is effected on the down-grade end of the car.

Another object of the invention is to so construct the coupling-tongue and the coupling device that the tongue may be automatically elevated to engage the coupling device as the car moves into position and to be automatically depressed as the car leaves the tongue.

The invention consists in the combination, with a cable, of a frame attached to the cable and a coupling-tongue pivotally secured in the frame.

The invention also consists in the peculiar coupling device carried by the car, in combination with a cable and a coupling on the cable.

The invention still further consists in such other novel features of construction and combination of parts as may hereinafter be more fully described, and pointed out in the claims.

Figure 1 represents a longitudinal sectional view, partly broken away, of one class of cable systems for use on which the coupling is adapted. Fig. 2 represents a cross-sectional view of the same, taken on a line *a b*, Fig. 1, showing one form of counterweight. Fig. 3 represents a longitudinal section of the cable-conduit and the coupling device on the car, the coupling-tongue on the cable being shown in combination. Fig. 4 represents a plan view of the coupling device on the car partially broken away, the head of the coupling-tongue being shown in section. Fig. 5

represents an end view of the same partially in section.

Similar numbers of reference designate corresponding parts throughout.

This improved cable-coupling is designed to be used on railway systems in which the weight of the car is overcome by means of a cable, in combination with a system of weights or by other mechanism for driving the cable, the coupling being adapted to connect the car with the cable, so that the motion of the cable, however derived, may be imparted to the car to assist in driving the car up the incline or to relieve the main driving mechanism of the weight of the car in its travel down the incline.

In the drawings, 7 indicates a conduit which has a central longitudinal slot 8.

In the conduit, at the upper and lower ends thereof, are located the sheaves or drums 9 and 10, suitably journaled and, if desired, connected with driving mechanism. In the system shown herein, however, the cable 11, mounted on the sheaves and supported intermediate the same by smaller sheaves, is furnished with the counterweights 12, by means of which the weight of the car or a certain proportion of the weight is sustained when the car is on the inclined portion of the rails C C.

Attached to the ends of the cable 11 is a framework 13, consisting of side plates separated by end blocks and secured together by bolts, to which the ends of the cable are secured. At the lower end of the frame is a stop 14, and pivoted between the side plates, at the upper end, is the coupling-tongue 15, having at its free end the depending arm 16, furnished with the stop-finger 17, adapted to be intercepted by the stop 14 on the frame. Extending upward from the tongue is the coupling-arm 18, having at its upper end the T-plate 19. The tongue 15 is therefore free to be swung on its pivot, being limited in its upward movement by the finger 17 coming in contact with the stop 14 of the tongue-frame, while its undue depression is prevented by the T-plate 19, extending across the slot 8.

On the ends of the car-truck is secured the cross-plate 20, provided at its central portion with the channel-bar 21, closed at its upper portion and open along its bottom and at both



ends, the outer end of this channel-bar being braced to the ends of the cross-plate 20 and to the sides of the truck by the fender-plates 22 22.

5 Within the channel-bar 21 and to its sides are secured the upwardly-inclined guide-plates 23 23, adapted to receive the T-plate 19 of the arm or head 18 and to guide the same upward. At the opposite end of the  
10 channel-bar is the downwardly-inclined plate 24, formed in part with the bar, which, as the coupling-head formed by the arm 18 and plate 19 passes, serves to depress the same to a point where it will not interfere with the  
15 running-gear of the car. The sides of the channel-bar have the slots 25, 26, and 27, and to the side having the slots 26 and 27 is secured the bracket 28. In the slot 26 is pivoted the forward extension of the plate 29,  
20 this plate having the locking-bolt 30, extending through the slot 27, and a tapering end 29', working in the bracket 28.

Pivoted in the bracket 28 is the cam 31, shaped so that when it is thrown inward it  
25 will press on the tapering end 29' of the plate 29 and hold the same and the bolt 30 in the locked position, but when thrown outward will permit the plate 29 to swing in the same direction to withdraw the bolt 30 sufficiently  
30 to open the passage in the channel-bar. To the arm 31' of the cam is pivoted the rod 32, the outer end of which is pivoted to the swinging arm 33, to which the operating-handle 34 is pivoted, this handle being mounted to move  
35 in a guide and being so located as to be operated from the side of the car.

Pivoted in the slot 25 is the locking-jaw 35, having an inclined forward edge within the channel-bar and a straight locking-surface at  
40 right angles to which, at the outside of the channel-bar, extends the arm 36. To the free end of the arm is pivoted the plunger-rod 37, having an enlargement 37' and reciprocally mounted at its outer end in the guide 38 se-  
45 cured to the cross-plate 20. On the rod, between the enlargement 37' and the guide 38, is a spring 39 which exerts an inward pressure on the rod 37 and through it on the free end of the arm 36. To the outer end of the rod 37  
50 is secured a rope or other flexible connection 40 which is led over a pulley to a convenient position for operation.

When it is desired to couple a car to the cable, the coupling-tongue being at the lower  
55 portion of the incline, the car is run over the coupling and past the same. The tongue is then thrown upward by any suitable mechanism sufficiently to engage the T-plate 19 of the coupling-head with the guides 23 when the  
60 car is backed down. These guides raise the tongue as the car moves backward until the arm 18 of the coupling acts on the forward inclined edge of the locking-jaw 35 and crowding the same outward against the pressure of  
65 the spring 39 passes by this jaw and comes in contact with the locking-bolt 30, on which the strain is exerted by the cable mechanism and

the coupling-head to overcome the weight of the car. When the car reaches the level above  
70 the incline the connection 40 is drawn outward, thus withdrawing the locking-jaw 35 from within the channel-bar and leaving an open passage for the coupling-head as the car moves onward, the coupling-head being left  
75 in a position where it must intercept a car approaching the incline on the same track, the operation of engaging the coupling-head with the coupling device on the car being similar to that already described, but on the forward end of the car. It being considered im-  
80 portant to always couple the car on its down-grade end, when the descending car reaches the lower portion of the incline the handle 34 is drawn outward, the locking-bolt 30 being  
85 thus withdrawn, and the car moves onward over the coupling-head, which, by the downwardly-inclined guide 24, is depressed to a position where it will not interfere with the car attachments or with its running-gear.

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

1. In a cable-coupling, the combination with a cable and means for driving the same, of a coupling secured to the cable and a device  
95 carried at the down-grade end of the car with which the coupling may engage to resist the weight of the car.

2. In a cable-coupling, the combination with the cable, and a frame included in the length  
100 of the cable, of a coupling-tongue pivoted in the frame and having a T-shaped head.

3. In a cable-coupling, the combination with a car, a channel-bar secured thereto having open ends and open on its lower surface, lock-  
105 ing devices adapted to operate within the channel-bar, and means for actuating the locking-devices, of a cable, and a coupling-tongue mounted thereon and adapted to be engaged by the locking-devices.  
110

4. In a cable-coupling system, the combination with a car, a channel-bar secured thereto and furnished with inclined guides, and locking-devices adapted to operate with-  
115 in the bar, of a cable, and a tongue, pivotally mounted on the cable, adapted to be elevated and depressed by the guides in turn and to be engaged by the locking-devices, as described.

5. The combination with the cable 11, and  
120 the frame 13 secured thereto, of the tongue 15 having the arm 16 furnished with the stop 17 and the arm 18 furnished with the plate 19.

6. The combination with a car-truck, the cross-plate 20 secured thereto, the channel-  
125 bar 21 secured at its inner end to said plate, the fender-plates 22—22 connecting the outer end of the bar with the ends of the cross-plate, said channel-bar having the slots 25, 26 and 27, the guides 23 and 24 at the oppo-  
130 site ends of the bar within the same, the bracket 28 secured to the bar, the plate 29, pivoted in the slot 26, having the locking-bolt 30 working through the slot 27 and the end



29' movable in the bracket 28, the cam 31 pivoted in said bracket and operating against the end of the plate 29, means for actuating the cam, the jaw 35, pivoted in the slot 25, 5 extending within the bar and having the arm 36, and means, including a spring, for actuating the free end of this arm in two directions, of a cable, and a coupling-device carried thereby and adapted to be engaged in said channel-bar. 15

7. In a cable coupling, the combination with

a car-truck, a channel-bar secured thereto and having slots and locking-bolts mounted to operate through said slots, of a cable and a coupling tongue mounted thereon and adapted to be engaged by the locking-devices.

In witness whereof I have hereunto set my hand.

JOHN P. F. KUHLMANN.

Witnesses:

HENRY J. MILLER,

JOSEPH A. MILLER, Jr.