

No. 750,162.

PATENTED JAN. 19, 1904.

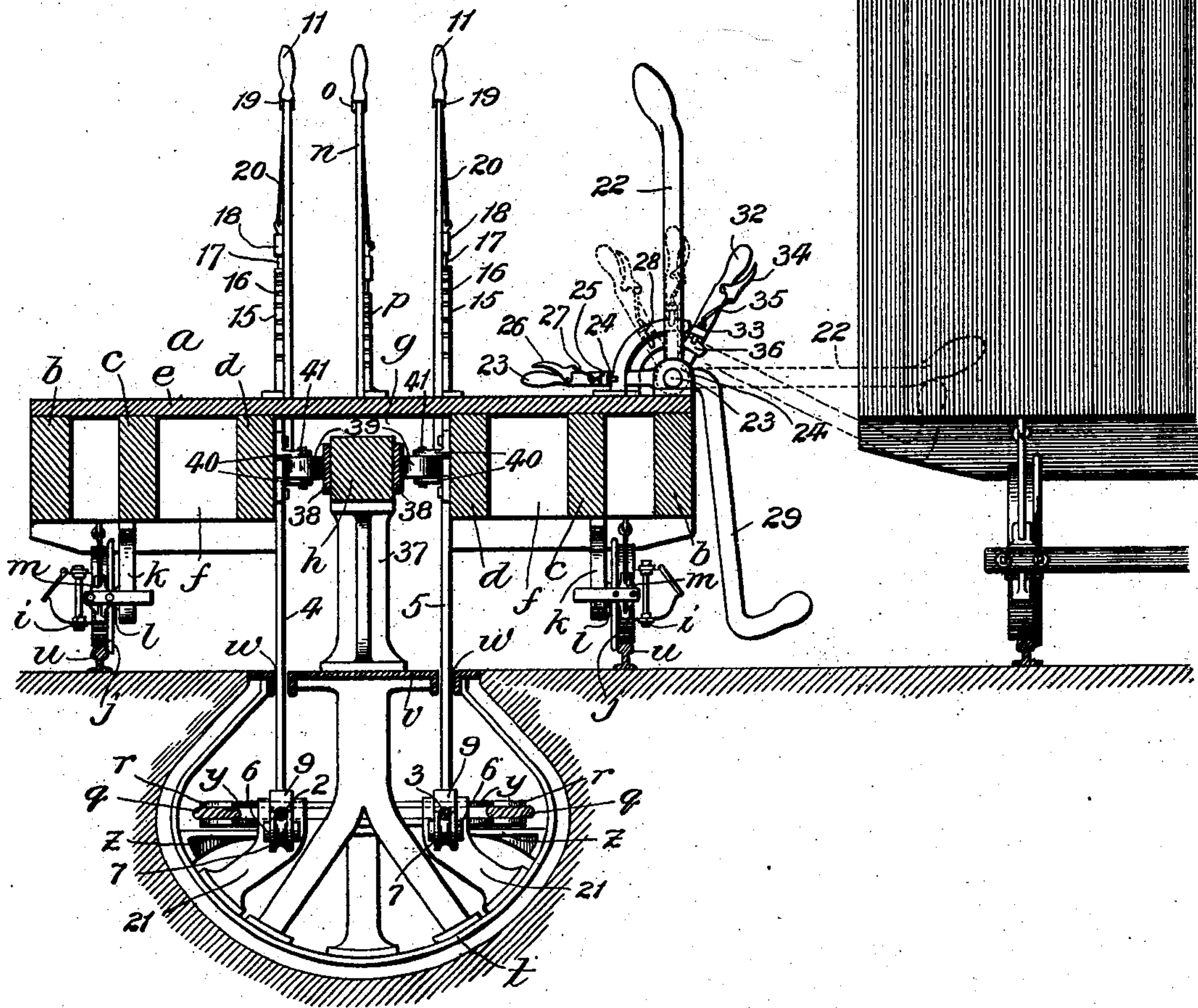
M. BROSNAN.
APPARATUS FOR SWITCHING CARS.

APPLICATION FILED JULY 27, 1903.

NO MODEL.

3 SHEETS—SHEET 1.

Fig. 1.



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Geo. C. Dawson

Inventor:
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By Thomas F. Sheridan,
Att'y.

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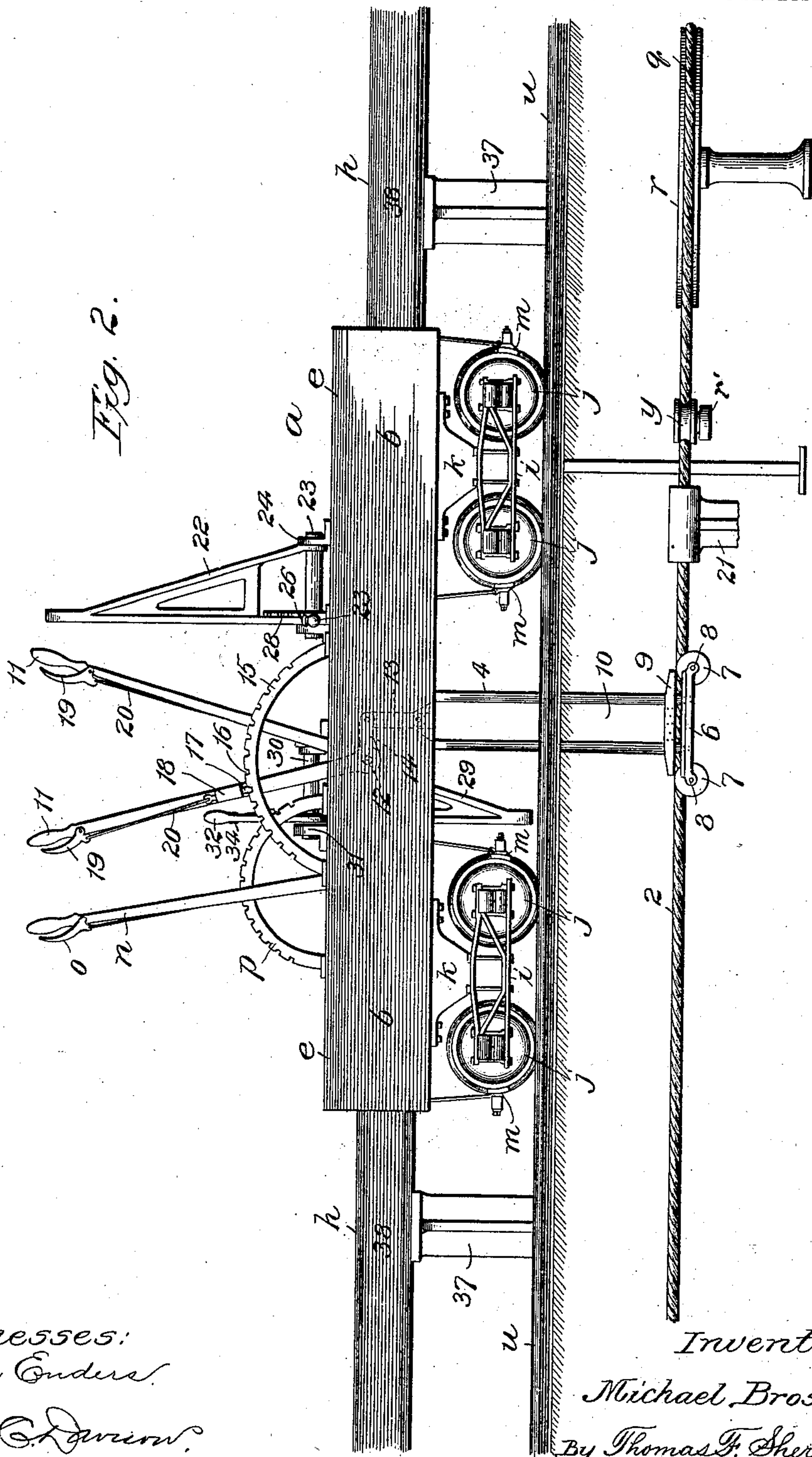
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

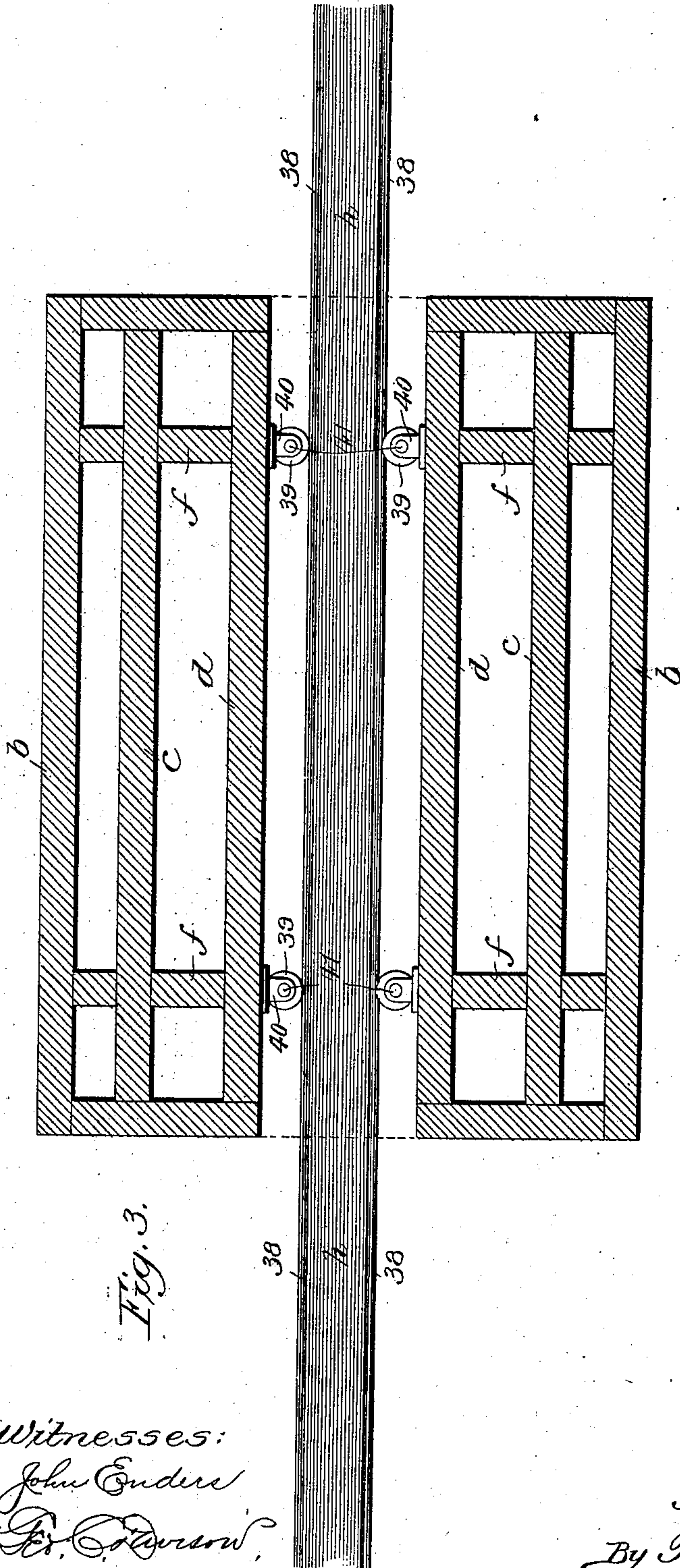


Fig. 3.

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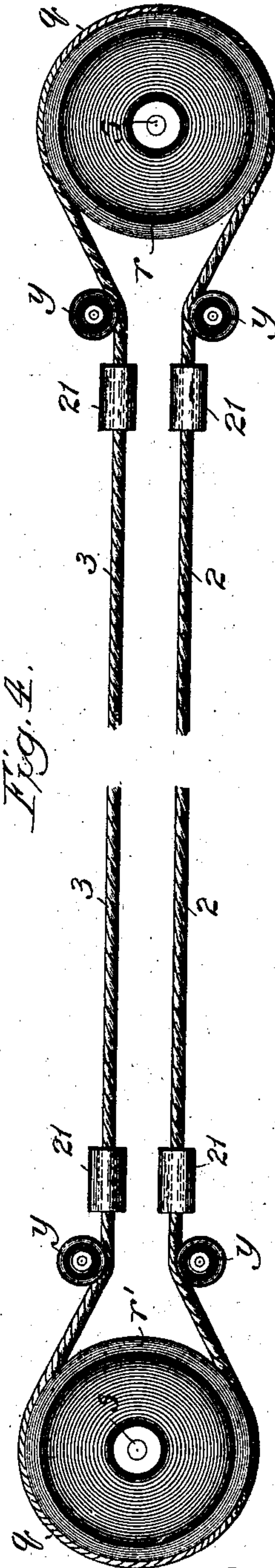


Fig. 4.

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR SWITCHING CARS.

SPECIFICATION forming part of Letters Patent No. 750,162, dated January 19, 1904.

Application filed July 27, 1903. Serial No. 167,172. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL BROSNAN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have
5 invented certain new and useful Improvements in Apparatus for Switching Cars, of which the following is a specification.

My invention relates to that class of apparatus for switching cars comprising a grip-car having a rigid frame provided with laterally-extending arm mechanism adapted to engage the car to be moved, a traction-cable for moving such grip-car, and grip mechanism mounted upon such grip-car for engaging
15 the traction-cable.

It relates particularly to the means for connecting the grip-car operatively with a car on an adjacent track whereby any desired car or cars may be moved and switched upon any
20 desired side track by means of such grip-car and suitable traction-cable mechanism.

It relates also to the arrangement of the traction-cable so that the stretches thereof move in opposite directions longitudinally of the grip-car in position to be engaged by the grip mechanism of the car and to the arrangement of the grip mechanism so that it may be connected with either stretch of the cable and the car be thereby moved in either direction.
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The principal object of my invention is to provide a simple, economical, and efficient apparatus for switching cars.

A further object of the invention is to provide an apparatus for switching cars comprising a grip-car provided with a rigid frame having laterally-extending lever-arms adapted to engage a car or one of any number of cars when such cars are on a track alongside of the grip-car for the purpose of switching them from such track onto any desired side track.
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A further object of the invention is to provide a traction-cable mounted beneath such car and having stretches moving in opposite directions longitudinally of the car and grip mechanism mounted upon such car and adapted to engage either of such stretches or strands, whereby the car may be caused to move in

either direction upon the same track by means of the same cable.

A further object of the invention is to provide suitable means for maintaining such car in position upon the track notwithstanding the great lateral strains to which it is subjected in moving cars upon an adjoining track.
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Other and further objects of the invention will appear from an examination of the drawings and the following description and claims.

The invention consists in the features, combinations, and details of construction herein after described and claimed.
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In the accompanying drawings, Figure 1 is a transverse sectional elevation of an apparatus constructed in accordance with my improvements; Fig. 2, a longitudinal elevation thereof; Fig. 3, a sectional plan view, and Fig. 4 a plan view of the traction-cable mechanism.
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In constructing an apparatus in accordance with my improvements I provide a grip-car comprising a rigid frame *a*, formed of outer longitudinal sills *b*, intermediate longitudinal sills *c*, longitudinal center sills *d*, heavy transverse planks or beams *e*, and transverse brace-beams *f*, all firmly united, so as to form a rigid frame. The center sills are separated, so as to provide an opening *g* for receiving an independently-mounted brace-beam *h*, which is employed for maintaining the car in position upon the track when subjected to the great lateral strains inseparable from its operation for the purposes for which it is intended. Trucks comprising side frames *i* and supporting-wheels *j* are mounted upon the frame of the car by means of suitable brackets *k*, in which the two-part axles *l* of such trucks are mounted, and suitable brakes *m* and a brake-operating lever *n*, with its locking-lever *o* and locking-segment *p*, are provided for retarding and stopping the movement of the car when desired.
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In order to provide suitable means for moving the grip-car, and thereby the cars on the adjoining track or tracks which are to be switched, a suitable endless traction-cable *q* is mounted beneath the car, preferably upon
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horizontally-rotatable pulley-wheels r , supported by suitable vertical axles s , which in turn are mounted in a metallic shell t for receiving and holding the cable mechanism in operative position, such shell being preferably embedded beneath the surface of the ground and extending between and parallel with the track-rails u , which support the car. The upper part of the shell is provided with a metallic plate v , which partially closes such open upper portion, leaving slots w open for receiving the grip mechanism, hereinafter described. Grooved antifriction-rollers y are mounted upon each side of the cable or brackets z for holding oppositely-moving strands or stretches 2 and 3 of the cable in the desired position with relation to each other, so that such stretches are adapted to travel parallel with each other in opposite directions longitudinally of the car. One of the pulleys on which the cable is mounted may be made sufficiently wide to permit a suitable driving-cable r' to be mounted thereon, which driving-cable may be attached to any suitable source of power for driving the traction-cable.

It is very desirable to provide suitable mechanism whereby the grip-car may be operatively connected with either of the oppositely-moving strands or stretches of the traction-cable, so that the car may be moved in either direction by means of the same cable by simply operatively connecting it with the desired stretch thereof. In order to accomplish this purpose, suitable grip mechanism is provided and mounted upon the frame of the car, such grip mechanism comprising a pair of rigid downwardly-extending arms 4 and 5, upon each of which is mounted a rigid grooved block or clutching-jaw 6, each jaw having on its opposite ends grooved antifriction-rolls 7, pivotally mounted by means of pivots 8, so that they are held by the lower gripping-jaw in engagement with the traction-cable, permitting it to travel over the rigid jaw with but little friction when the grip is not in operation. Each grip is provided with a suitable upper movable jaw 9, mounted upon the lower end of a sliding block 10, which in turn is slidingly mounted upon the arm which supports the rigid jaw. A suitable operating-lever 11 is pivotally mounted in the frame of the car upon a pivot-pin 12 and operatively connected with such sliding block by means of a link 13, which is pivotally connected at one end to such sliding block and at the other end to the short arm 14 of such operating-lever. Each operating-lever is also provided with a suitable locking-segment 15, mounted upon the main frame of the car, preferably in sliding engagement with such operating-lever, such locking-segment being provided with suitable slots 16 for admitting a locking-pawl 17, which is slidably mounted in a slot portion 18 and operatively connected with the locking-lever 19 by means of a link or rod 20. One or more of the grip

mechanisms above described is provided for each of the oppositely-moving strands or stretches of the traction-cable, so that the car may be connected to either of such stretches of the cable, and thus caused to move in either direction, according to the direction of the movement of the portion of the cable to which it is attached. The car may thus be operated in either direction upon the same track and by means of a single cable. To prevent the car from being accidentally carried beyond the parallel portions of the cable, and thus cause the grip to come in contact with the cable-supporting wheels to the injury of the mechanism, suitable guards 21 are mounted so as to extend over the strands of the cable between the grip and antifriction-rolls at the opposite ends of the cable. These guards loosely engage the cable, so as to permit it to pass there-through unobstructed and prevent the grip from passing beyond the point where they are mounted.

In order to provide means whereby the grip-car may be operatively connected with cars on an adjoining track, so as to move them onto any desired side track, a suitable lever-arm 22 is mounted upon a rotatable shaft 23, which is supported upon the main frame of the car by means of brackets 24 to permit such arm to be moved to an upright position above the pivotal point when not in use, as shown in full lines in Fig. 1, and to be extended outward laterally of the car into a substantially horizontal position to engage a car or one of any number of cars on the adjoining track, as shown in dotted lines in Fig. 1. This lever-arm is provided with a suitable operating-lever 25, having a locking-pawl 24 slidably mounted in a socket portion 25 and connected with the locking-lever 26 by means of a link 27, such pawl being adapted to engage a slotted locking-segment 28, so as to hold the car-moving lever-arm in either its upright or extended position.

It is often desirable to move a car or cars when the grip-car is in such position that it is not convenient to throw the lever-arm 22 into engagement with the end of the car to be moved or when it is desirable to avoid moving to the end of the car with such lever. To accomplish this purpose, a second lever-arm 29 is provided and pivotally mounted upon the main frame by means of a rotatable shaft 30, which is supported upon the main frame by brackets 31, so as to permit such lever-arm to be thrown downward when not in use, as shown in full lines in Fig. 1, and upward from such position when in use into engagement with the transverse sills of the car, as shown in dotted lines in Fig. 1. This lever-arm is also provided with an operating-lever 32, having a locking-pawl 33 connected with a locking-lever 34 by means of a link 35, such pawl being adapted to engage the slotted segment 36. By this means the car-moving lever

may be thrown into and out of operative position and held in either its raised or lowered position when desired.

In order to prevent transverse play and hold the car in position upon the tracks, notwithstanding the great lateral strains to which it is subjected, the rigid longitudinally-extending brace-beam *h*, already mentioned, is firmly mounted upon standards 37, so that the beam extends longitudinally of the car between the center sills thereof. Suitable metallic protecting-plates 38 are mounted upon the opposite sides of such beam to prevent the wearing away of the beam and a consequent objectionable play of the parts, and antifric-tion-wheels 39 are rotatably mounted upon the center sills of the main frame in brackets 40, so as to rotate horizontally upon vertical shafts 41, intermediate the main frame of the car and such longitudinal beam. By this arrangement it will be readily seen that the protecting-plates of the center beam form suitable tracks for the horizontally-rotatable friction-wheels and at the same time reinforce the beam, so as to provide the necessary strength to withstand the great lateral strains to which the car is subjected, and the beam thus formed of both wood and metallic portions is well adapted to maintain the car in position upon the track notwithstanding such great stress and strains.

I claim—

1. In an apparatus of the class described, the combination of a grip-car provided with a frame, lever mechanism mounted on such frame and extending outward laterally thereof for engaging the car to be driven, traction-cable mechanism mounted beneath such grip, and grip mechanism mounted upon such grip-car in engagement with the traction-cable mechanism, substantially as described.

2. In an apparatus of the class described, the combination of a grip-car provided with a frame and supporting-wheels, tracks upon which such supporting-wheels are mounted, lever mechanism movably mounted on the frame of such car and extending downwardly laterally thereof for engaging the car to be driven on an adjoining track, traction-cable-car mechanism mounted beneath such grip-car, grip mechanism mounted upon such car in engagement with the traction-cable mechanism, independently-mounted rigid brace-beam mechanism extending longitudinally of the grip-car adjacent to the frame thereof, and antifric-tion-wheels mounted intermediate such brace-beam mechanism and the grip-car frame, substantially as described.

3. In an apparatus of the class described, the combination of a grip-car provided with a frame and supporting-wheels, traction-cable mechanism mounted beneath such grip-car comprising a cable having two stretches moving longitudinally of the car in opposite directions, grip mechanism mounted upon the

car, means for connecting such grip mechanism with either of such stretches of the cable, and means for connecting such cable with a suitable source of power, substantially as described.

4. In an apparatus of the class described, the combination of a grip-car provided with a frame and supporting-wheels, lever mechanism movably mounted on the frame of such car and extending outward laterally thereof for engaging the car to be driven, traction-cable mechanism mounted beneath such car comprising stretches moving in opposite directions longitudinally of the car, grip mechanism mounted upon such car, means for connecting such grip mechanism with the desired stretch of such traction-cable, and means for connecting such traction-cable with a suitable source of power, substantially as described.

5. In an apparatus of the class described, the combination of a grip-car provided with a frame and supporting-wheels, lever mechanism movably mounted on the frame of such car and extending outward laterally thereof for engaging the car to be driven, traction-cable mechanism mounted beneath such car comprising parallel stretches moving in opposite directions longitudinally of the car, grip mechanism mounted upon such car, means for connecting such grip mechanism with the desired stretch of such traction-cable, fixed brace-beam mechanism extending longitudinally of the grip-car adjacent to the frame thereof, and horizontal rotatable wheels mounted upon the car-frame in engagement with such fixed brace-beam mechanism, substantially as described.

6. In an apparatus of the class described, the combination of a grip-car provided with a frame having supporting-wheels mounted thereon, lever mechanism movably mounted on the frame of such car comprising a lever extending upward therefrom when in one position and outward laterally thereof when in a second position, means for operating such lever, means for holding it in either its upright or extended position, traction-cable mechanism mounted beneath such car, and grip mechanism mounted upon the car for engaging such traction-cable mechanism, substantially as described.

7. In an apparatus of the class described, the combination of a grip-car provided with a frame having supporting-wheels mounted thereon, lever mechanism pivotally mounted on the frame of such car comprising a lever extending upward from the point of pivotal connection with the frame in one position and outward laterally thereof in a second position and a second lever extending downward from the point of pivotal connection with the frame in one position and outward laterally thereof in a second position, means for operating such levers and holding them in any desired position, traction-cable mechanism mounted be-

neath such car, a rigid brace-beam mounted independently of the car and extending longitudinally thereof adjacent to the car-frame, and antifriction-wheels mounted upon the car-frame in engagement with such rigid brace-beam, substantially as described.

8. In an apparatus of the class described, the combination of a grip-car provided with a frame having supporting-wheels mounted thereon, tracks for supporting such car, lever mechanism pivotally mounted on the frame of such car comprising a lever extending upward from the point of pivotal connection with the frame in one position and outward laterally thereof in a second position and a second lever extending downward from the point of pivotal connection with the frame in one position and outward laterally thereof in a second position, means for operating such levers and holding them in any desired position, traction-cable mechanism mounted beneath such car, a rigid brace-beam mounted independently of the car and extended longitudinally thereof adjacent to the car-frame, antifriction-wheels mounted upon the car-frame in engagement with such rigid brace-beam, and brake mechanism for retarding and stopping the movement of such car, substantially as described.

9. In an apparatus of the class described, the combination of a grip-car provided with a frame having supporting-wheels mounted thereon, lever mechanism movably mounted on such frame and extending outward laterally thereof for engaging a car to be driven

on an adjoining track, brace-beam mechanism mounted independently of the car and extending longitudinally thereof, horizontally-rotatable wheels mounted upon the car-frame in engagement with such brace-beam mechanism, a traction-cable mounted beneath such car, grip mechanism mounted upon the car for engaging such cable mechanism, and means for connecting and disconnecting such grip and cable mechanism, substantially as described.

10. In an apparatus of the class described, the combination of a grip-car provided with a frame having supporting-wheels mounted thereon, lever mechanism movably mounted on such frame and extending outward laterally thereof for engaging a car to be driven on an adjoining track, brace-beam mechanism mounted independently of the car and extending longitudinally thereof, horizontal rotatable wheels mounted upon the car-frame in engagement with such brace-beam mechanism, a traction-cable mounted beneath such car having stretches moving in opposite directions longitudinally thereof, grip mechanism mounted upon the car for engaging such cable, means for connecting such mechanism to either stretch of such cable, and means for connecting such traction-cable with a suitable source of power, substantially as described.

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